Technical Data

DSP56371/D
Rev. 2, 04/2004

DSP56371 Electrical Specifications

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Topic **Page**

1.0 Introduction

The DSP56371 is a high density CMOS device with 5.0 volt compatible inputs and outputs.

NOTE: This document contains information on a new product. Specifications and information herein are subject to change without notice.

Finalized specifications may be published after further characterization and device qualifications are completed.

2.0 Maximum Ratings

CAUTION

This device contains circuitry protecting against damage due to high static voltage or electrical fields. However, normal precautions should be taken to avoid exceeding maximum voltage ratings. Reliability of operation is enhanced if unused inputs are pulled to an appropriate logic voltage level (e.g., either GND or V_{DD}). The suggested value for a pullup or pulldown resistor is 10 kΩ.

NOTE: In the calculation of timing requirements, adding a maximum value of one specification to a minimum value of another specification does not yield a reasonable sum. A maximum specification is calculated using a worst case variation of process parameter values in one direction. The minimum specification is calculated using the worst case for the same parameters in the opposite direction. Therefore, a “maximum” value for a specification will never occur in the same device that has a “minimum” value for another specification; adding a maximum to a minimum represents a condition that can never exist.

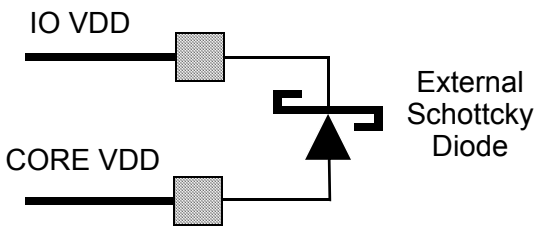
Table 1 Maximum Ratings

Rating[1]	Symbol	Value[1, 2]	Unit
Supply Voltage	V_{CORE_VDD}, V_{PLLD_VDD}	–0.3 to + 1.6	V
	V_{PLLP_VDD}, V_{IO_VDD}, V_{PLLA_VDD},	–0.3 to + 4.0	V
All “5.0V tolerant” input voltages	V_{IN}	GND – 0.3 to 5.5V	V
Current drain per pin excluding V_{DD} and GND (Except for pads listed below)	I	12	mA
SCK_SCL	I_{SCK}	16	mA
ACI_PD0,ADO_PD1	I_{DAX}	24	mA
TDO	Ijtag	24	mA
Operating temperature range[3]	T_J	-40 to +115	°C
Storage temperature	T_{STG}	–55 to +125	°C

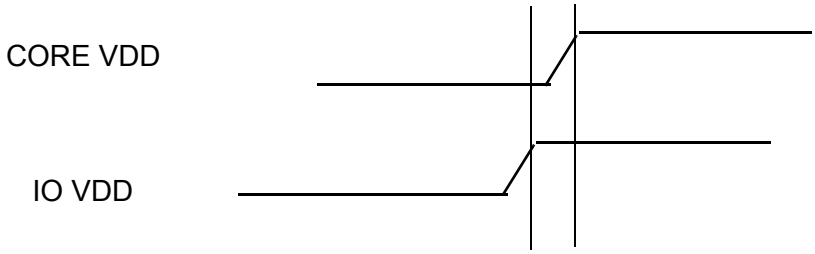
Note:
1. GND = 0 V; T_J = –40°C to 115°C for 150 MHz; T_J = 0°C to 100°C for 181 MHz; CL = 50PF
2. Absolute maximum ratings are stress ratings only, and functional operation at the maximum is not guaranteed. Stress beyond the maximum rating may affect device reliability or cause permanent damage to the device.
3. Operating temperature qualified for consumer applications.

3.0 Power Requirements

To prevent high current conditions due to possible improper sequencing of the power supplies, the connection shown below is recommended to be made between the DSP56371 IO_VDD and CORE_VDD power pins.



To prevent a high current condition upon power up, the IOVDD must be applied ahead of the CORE VDD as shown below if the external Schottcky is not used.



4.0 Thermal Characteristics

Table 2 Thermal Characteristics

Characteristic	Symbol	TQFP Value	Unit
Natural Convection, Junction-to-ambient thermal resistance[1,2]	$R_{\theta JA}$ or θ_{JA}	39	°C/W
Junction-to-case thermal resistance[3]	$R_{\theta JC}$ or θ_{JC}	18.25	°C/W

Note:
1. Junction temperature is a function of die size, on-chip power dissipation, package thermal resistance, mounting site (board) temperature, ambient temperature, air flow, power dissipation of other components on the board, and board thermal resistance.
2. Per SEMI G38-87 and JEDEC JESD51-2 with the single layer board horizontal.
3. Thermal resistance between the die and the case top surface as measured by the cold plate method (MIL SPEC-883 Method 1012.1).

5.0 DC Electrical Characteristics

Table 3 DC ELECTRICAL CHARACTERISTICS[4]

Characteristics	Symbol	Min	Typ	Max	Unit
Supply voltages • Core (core_vdd) • PLL (plld_vdd)	V_{DD}	1.2	1.25	1.3[1]	V
Supply voltages • Vio_vdd • PLL (pllp_vdd) • PLL (plla_vdd)	V_{DDIO}	3.135	3.3	3.46[1]	V
Input high voltage • All pins	V_{IH}	2.0	—	V_{IO_VDD}+2V	V
Note: All 3.3 volt supplies must rise prior to the rise of the 1.25 volt supplies to avoid a high current condition and possible system damage.					
Input low voltage • All pins	V_{IL}	–0.3	—	0.8	V
Input leakage current (All pins)	I_{IN}	—	—	84	μA
Clock pin Input Capacitance (EXTAL)	C_{IN}		3.749		pF
High impedance (off-state) input current (@ 3.46 V)	I_{TSI}	–84	—	84	μA
Output high voltage	V_{OH}	2.4	—	—	V
Output low voltage	V_{OL}	—	—	0.4	V
Internal supply current[1] at internal clock of 181MHz • In Normal mode	I_{CCI}	—	99	200	mA
• In Wait mode	I_{CCW}	—	48	150	mA
• In Stop mode[3]	I_{CCS}	—	2.5	82	mA
IO supply current		—	115	150	mA
Input capacitance[4]	C_{IN}	—	—	10	pF

Note:
1. The Power Consumption Considerations section provides a formula to compute the estimated current requirements in Normal mode. In order to obtain these results, all inputs must be terminated (i.e., not allowed to float). Measurements are based on synthetic intensive DSP benchmarks. The power consumption numbers in this specification are 90% of the measured results of this benchmark. This reflects typical DSP applications. Typical internal supply current is measured with V_{CORE_VDD} = 1.25V, V_{DD_IO} = 3.3V at T_J = 25°C. Maximum internal supply current is measured with V_{CORE_VDD} = 1.30V, $V_{IO\_VDD)}$ = 3.46V at T_J = 115°C.
2. In order to obtain these results, all inputs, which are not disconnected at Stop mode, must be terminated (i.e., not allowed to float).
3. Periodically sampled and not 100% tested
4. T_J = –40°C to 115°C for 150 MHz; T_J = 0°C to 100°C for 181 MHz; CL=50pF

6.0 AC Electrical Characteristics

The timing waveforms shown in the AC electrical characteristics section are tested with a V_{IL} maximum of 0.8V and a V_{IH} minimum of 2.0V for all pins. AC timing specifications, which are referenced to a device input signal, are measured in production with respect to the 50% point of the respective input signal's transition. DSP56371 output levels are measured with the production test machine V_{OL} and V_{OH} reference levels set at 1.0V and 1.8V, respectively.

NOTE: Although the minimum value for the frequency of EXTAL is 0 MHz (PLL bypassed), the device AC test conditions are 5 MHz and rated speed.

7.0 Internal Clocks

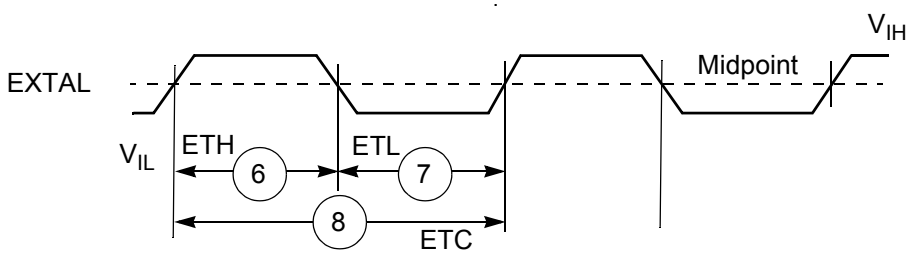
Table 4 INTERNAL CLOCKS

No.	Characteristics	Symbol	Min	Typ	Max	UNIT	Condition
1	Comparison Frequency	Fref**[1]**	5	--	20	MHZ	Fref = FN/NR
2	Input Clock Frequency	FIN	Fref*NR				NR is input divider value
3	Output clock Frequency (with PLL enabled**[2] [3]**	FOUT	75	(1000/Etc × MF x FM)/ (PDF × DF x OD)	--	MHZ	FOUT=FVCO/NO where NO is output divider value
4	Output clock Frequency (with PLL disabled**[2] [3]**	FOUT	--	1000/Etc	--	MHZ	---
5	Duty Cycle	--	40	50	60	%	FVCO=300MHZ~600MHZ

Note:
1. See users manual for definition.
2. DF = Division Factor
   Ef = External frequency
   MF = Multiplication Factor
   PDF = Predivision Factor
   FM= Feedback Multiplier
   OD = Output Divider
3. Maximum frequency will vary depending on the ordered part number.

8.0 External Clock Operation

The DSP56371 system clock is an externally supplied square wave voltage source connected to EXTAL (see Figure 1).



Note: The midpoint is 0.5 (V_{IH} + V_{IL}).

Figure 1 External Clock Timing

Table 5 Clock Operation 150 and 181 MHz Values

No.	Characteristics	Symbol	150 MHz		181 MHz	
			Min	Max	Min	Max
6	EXTAL input high [1,2] (40% to 60% duty cycle)	Eth	3.33ns	100ns	2.75ns	100ns
7	EXTAL input low[1,2] (40% to 60% duty cycle)	Etl	3.33ns	100ns	2.75ns	100ns
8	EXTAL cycle time[2] • With PLL disabled • With PLL enabled	Etc	 6.66ns 6.66ns	 inf 200ns	 5.52ns 5.52ns	 inf 200ns
9	Instruction cycle time= I_{CYC} = T_C[3] • With PLL disabled • With PLL enabled	Icyc	 6.66ns 6.66ns	 inf 13.0ns	 5.52ns 5.52ns	 inf 13.0ns

Note:
1. Measured at 50% of the input transition
2. The maximum value for PLL enabled is given for minimum V_{CO} and maximum MF.
3. The maximum value for PLL enabled is given for minimum V_{CO} and maximum DF.
4. The indicated duty cycle is for the specified maximum frequency for which a part is rated. The minimum clock high or low time required for correct operation, however, remains the same at lower operating frequencies; therefore, when a lower clock frequency is used, the signal symmetry may vary from the specified duty cycle as long as the minimum high time and low time requirements are met.

9.0 Reset, Stop, Mode Select, and Interrupt Timing

Table 6 Reset, Stop, Mode Select, and Interrupt Timing

No.	Characteristics	Expression	Min	Max	Unit
10	Delay from $\overline{\text{RESET}}$ assertion to all output pins at reset value[3]	—	—	11	ns
11	Required $\overline{\text{RESET}}$ duration[4]				
	• Power on, external clock generator, PLL disabled	2 x T_C	11.1	—	ns
	• Power on, external clock generator, PLL enabled	2 x T_C	11.1	--	ns
12	Syn reset setup time from RESET				
	• Maximum	T_C	—	5.5	ns
13	Syn reset de assert delay time				
	• Minimum	2× T_C	11.1	—	ns
	• Maximum(PLL enabled)	$(2xT_C)+T_{LOCK}$	5.0		ms
14	Mode select setup time		10.0	—	ns
15	Mode select hold time		10.0	—	ns
16	Minimum edge-triggered interrupt request assertion width	2 xT_C	11.1	—	ns
17	Minimum edge-triggered interrupt request deassertion width	2 xT_C	11.1	—	ns
18	Delay from interrupt trigger to interrupt code execution.	10 xT_C + 5	60.0		ns
19	Duration of level sensitive $\overline{\text{IRQA}}$ assertion to ensure interrupt service (when exiting Stop)[2, 3]				
	• PLL is active during Stop and Stop delay is enabled (OMR Bit 6 = 0)	9+(128K× T_C)	704	—	us
	• PLL is active during Stop and Stop delay is not enabled (OMR Bit 6 = 1)	25× T_C	138	—	ns
	• PLL is not active during Stop and Stop delay is enabled (OMR Bit 6 = 0)	$9+(128KxT_C)+T_{lock}$	5.7		ms
	• PLL is not active during Stop and Stop delay is not enabled (OMR Bit 6 = 1)	$(25 \times T_C)+T_{lock}$	5		ms

Table 6 Reset, Stop, Mode Select, and Interrupt Timing (continued)

No.	Characteristics	Expression	Min	Max	Unit
20	• Delay from $\overline{\text{IRQA}}$, $\overline{\text{IRQB}}$, $\overline{\text{IRQC}}$, $\overline{\text{IRQD}}$, $\overline{\text{NMI}}$ assertion to general-purpose transfer output valid caused by first interrupt instruction execution	$10 \times T_C + 3.0$		59.0	ns
21	Interrupt Requests Rate				
	• ESAI, ESAI_1, SHI, DAX, Timer	$12 \times T_C$	—	—	ns
	• DMA	$8 \times T_C$	—	—	ns
	• $\overline{\text{IRQ}}$, $\overline{\text{NMI}}$ (edge trigger)	$8 \times T_C$	—	—	ns
	• $\overline{\text{IRQ}}$ (level trigger)	$12 \text{ c } T_C$	—	—	ns
22	DMA Requests Rate				
	• Data read from ESAI, ESAI_1, SHI, DAX	$6 \times T_C$	—	—	ns
	• Data write to ESAI, ESAI_1, SHI, DAX	$7 \times T_C$	—	—	ns
	• Timer	$2 \times T_C$	—	—	ns
	• $\overline{\text{IRQ}}$, $\overline{\text{NMI}}$ (edge trigger)	$3 \times T_C$	—	—	ns

Note:

1. When using fast interrupts and $\overline{\text{IRQA}}$, $\overline{\text{IRQB}}$, $\overline{\text{IRQC}}$, and $\overline{\text{IRQD}}$ are defined as level-sensitive, timings 19 through 21 apply to prevent multiple interrupt service. To avoid these timing restrictions, the deasserted Edge-triggered mode is recommended when using fast interrupts. Long interrupts are recommended when using Level-sensitive mode.
2. For PLL disable, using external clock (PCTL Bit 13 = 0), no stabilization delay is required and recovery time will be defined by the OMR Bit 6 settings.

   For PLL enable, (if bit 12 of the PCTL register is 0), the PLL is shutdown during Stop. Recovering from Stop requires the PLL to get locked. The PLL lock procedure duration, PLL Lock Cycles (PLC), may be in the range of 0.5 ms.
3. Periodically sampled and not 100% tested
4. $\overline{\text{RESET}}$ duration is measured during the time in which $\overline{\text{RESET}}$ is asserted, V_{DD} is valid, and the EXTAL input is active and valid. When the V_{DD} is valid, but the other "required $\overline{\text{RESET}}$ duration" conditions (as specified above) have not been yet met, the device circuitry will be in an uninitialized state that can result in significant power consumption and heat-up. Designs should minimize this state to the shortest possible duration.

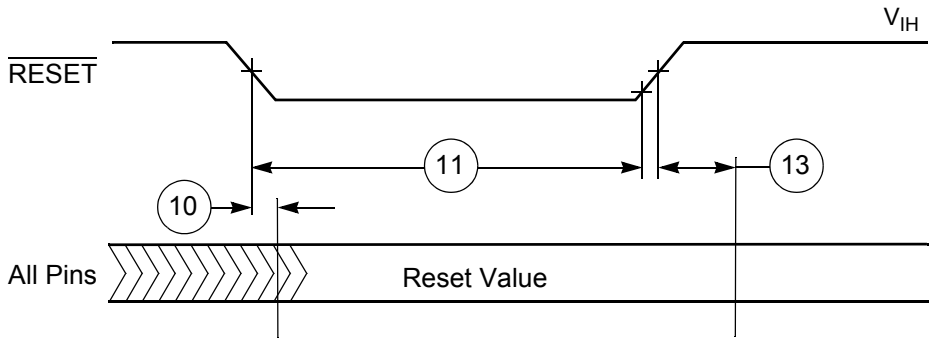


Figure 2 Reset Timing

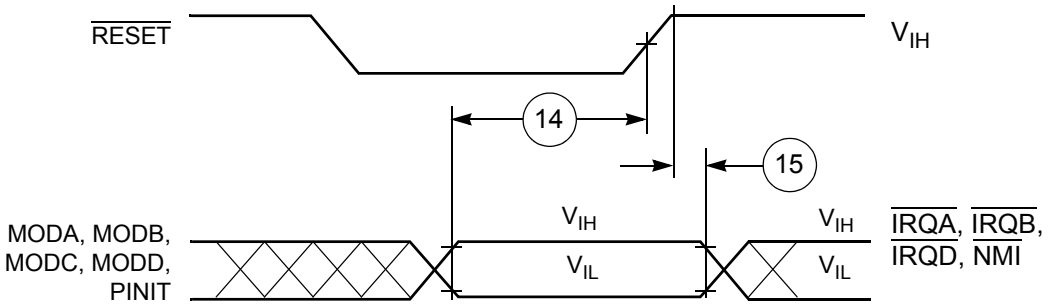


Figure 3 Recovery from Stop State Using IRQA Interrupt Service

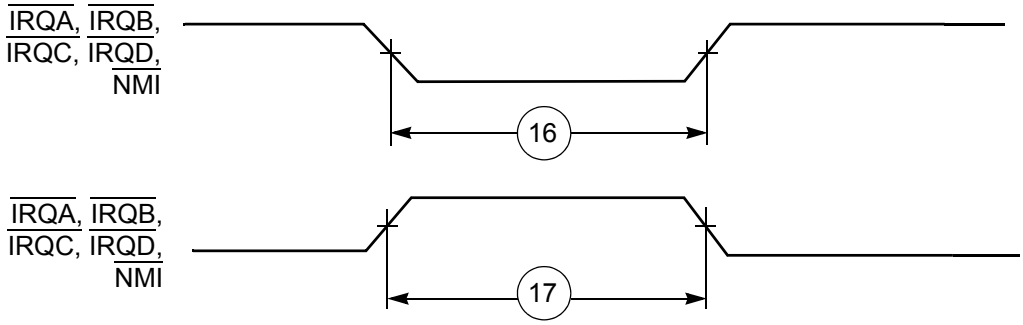


Figure 4 External Interrupt Timing (Negative Edge-Triggered)

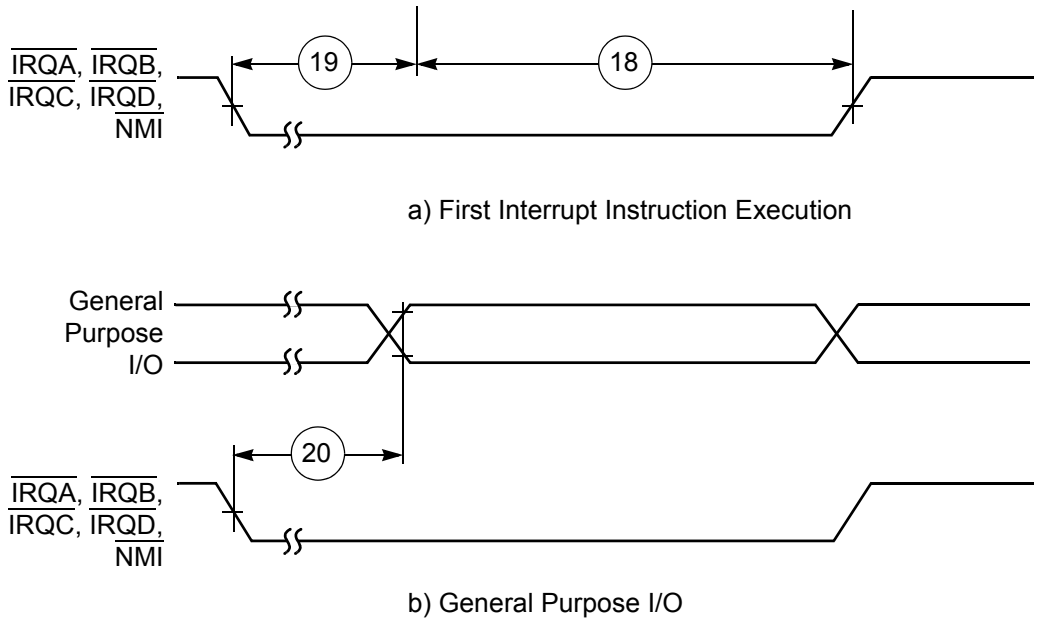


Figure 5 External Fast Interrupt Timing

10.0 Serial Host Interface SPI Protocol Timing

Table 7 Serial Host Interface SPI Protocol Timing

No.	Characteristics[1]	Mode	Expression	Min	Max	Unit
23	Minimum serial clock cycle = t_{SPICC}(min)	Master	$6\times T_C+46$	79.0	—	ns
24	Serial clock high period	Master	$0.5\times t_{SPICC}-10$	29.5	—	ns
		Slave	$2.5\times T_C+12$	25.8	—	ns
25	Serial clock low period	Master	$0.5\times t_{SPICC}-10$	29.5	—	ns
		Slave	$2.5\times T_C+12$	25.8	—	ns
26	Serial clock rise/fall time	Master	—	—	10	ns
		Slave	—	—	10	ns
27	$\overline{SS}$ assertion to first SCK edge CPHA = 0	Slave	$3.5\times T_C+15$	34.4	—	ns
	CPHA = 1	Slave	—	10	—	ns

Table 7 Serial Host Interface SPI Protocol Timing (continued)

No.	Characteristics[1]	Mode	Expression	Min	Max	Unit
28	Last SCK edge to $\overline{SS}$ not asserted	Slave	—	12	—	ns
29	Data input valid to SCK edge (data input set-up time)	Master/ Slave	—	0	—	ns
30	SCK last sampling edge to data input not valid	Master/ Slave	$2 \times T_C+10$	22.4	—	ns
31	$\overline{SS}$ assertion to data out active	Slave	—	5	—	ns
32	$\overline{SS}$ deassertion to data high impedance[2]	Slave	—	—	9	ns
33	SCK edge to data out valid (data out delay time)	Master/ Slave	$2 \times T_C+10$	—	100	ns
34	SCK edge to data out not valid (data out hold time)	Master/ Slave	$2xT_C+10$	21.4	—	ns
35	$\overline{SS}$ assertion to data out valid (CPHA = 0)	Slave	T_C+9	—	15.0	ns
36	First SCK sampling edge to HREQ output deassertion	Slave	$3 \times T_C+30$	50	—	ns
37	Last SCK sampling edge to HREQ output not deasserted (CPHA = 1)	Slave	$4 \times T_C+30$	52.2	—	ns
38	SS deassertion to HREQ output not deasserted (CPHA = 0)	Slave	$3 \times T_C+30$	46.6	—	ns
39	SS deassertion pulse width (CPHA = 0)	Slave	T_C+6	12.7	—	ns
40	HREQ in assertion to first SCK edge	Master	$0.5 \times t_{SPICC}$ + $3 \times T_C+43$	—	—	ns
41	HREQ in deassertion to last SCK sampling edge (HREQ in set-up time) (CPHA = 1)	Master	—	0	—	ns
42	First SCK edge to HREQ in not asserted (HREQ in hold time)	Master	—	0	—	ns
43	HREQ assertion width	Master	$3 \times T_C$			ns

Note: 1. $V_{CORE\_VDD} = 1.2\ 5 \pm 0.05$ V; $T_J = –40°C$ to 115°C for 150 MHz; $T_J = 0°C$ to 100°C for 181 MHz; $C_L = 50$ pF
2. Periodically sampled, not 100% tested

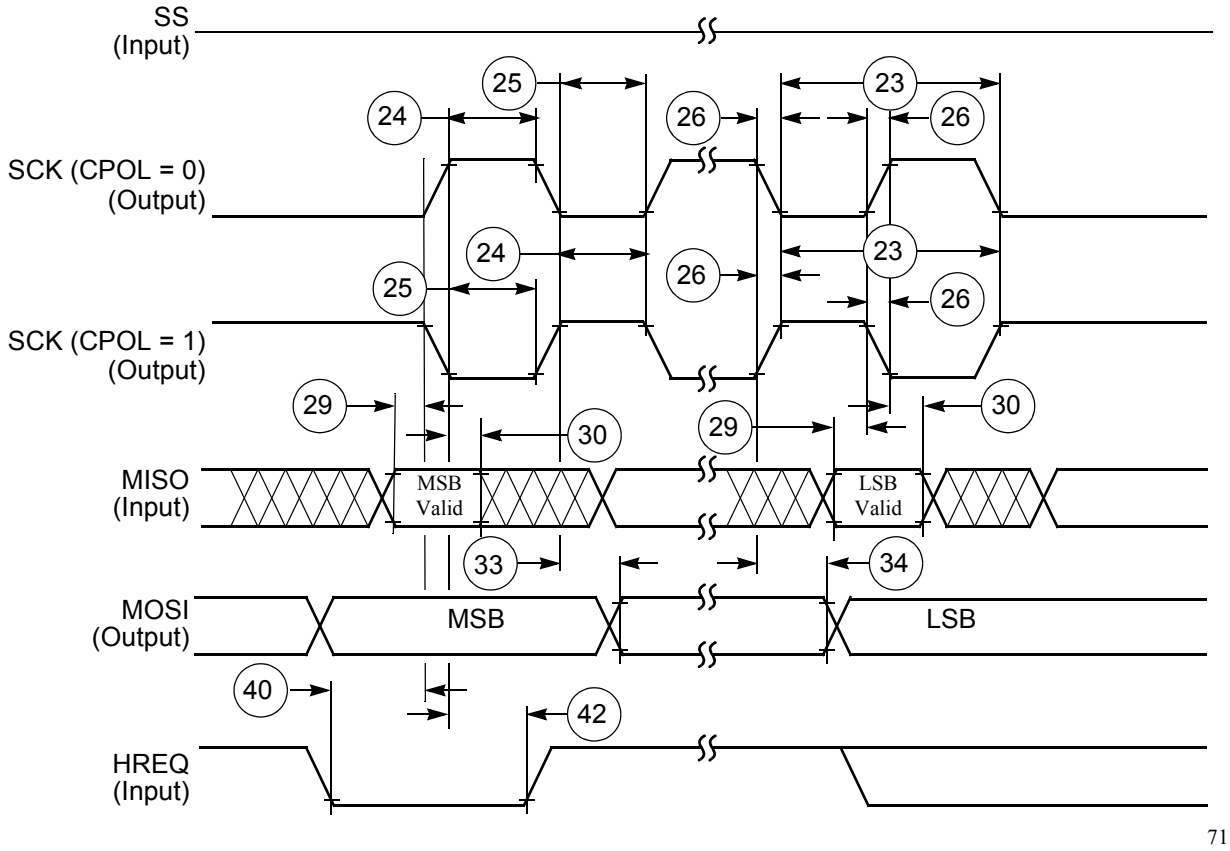


Figure 6 SPI Master Timing (CPHA = 0)

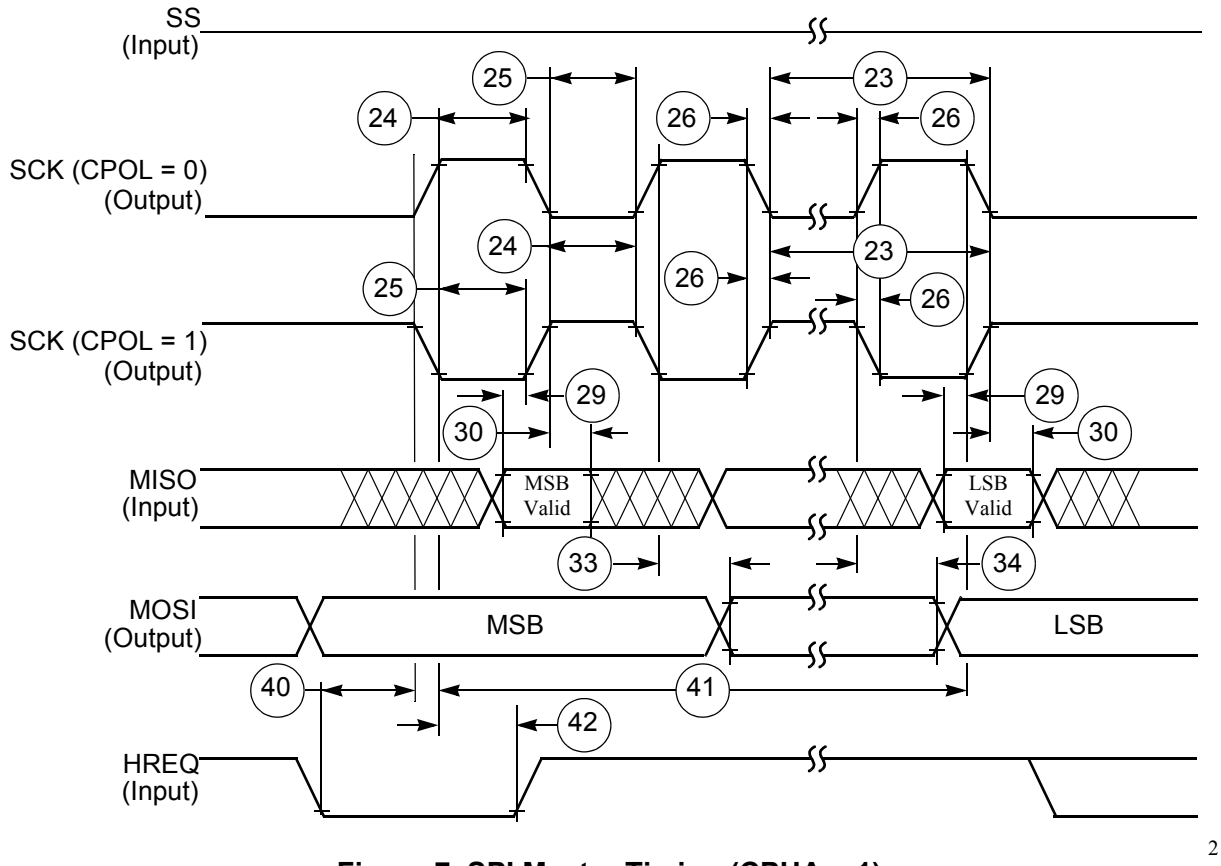


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Figure 7 SPI Master Timing (CPHA = 1)

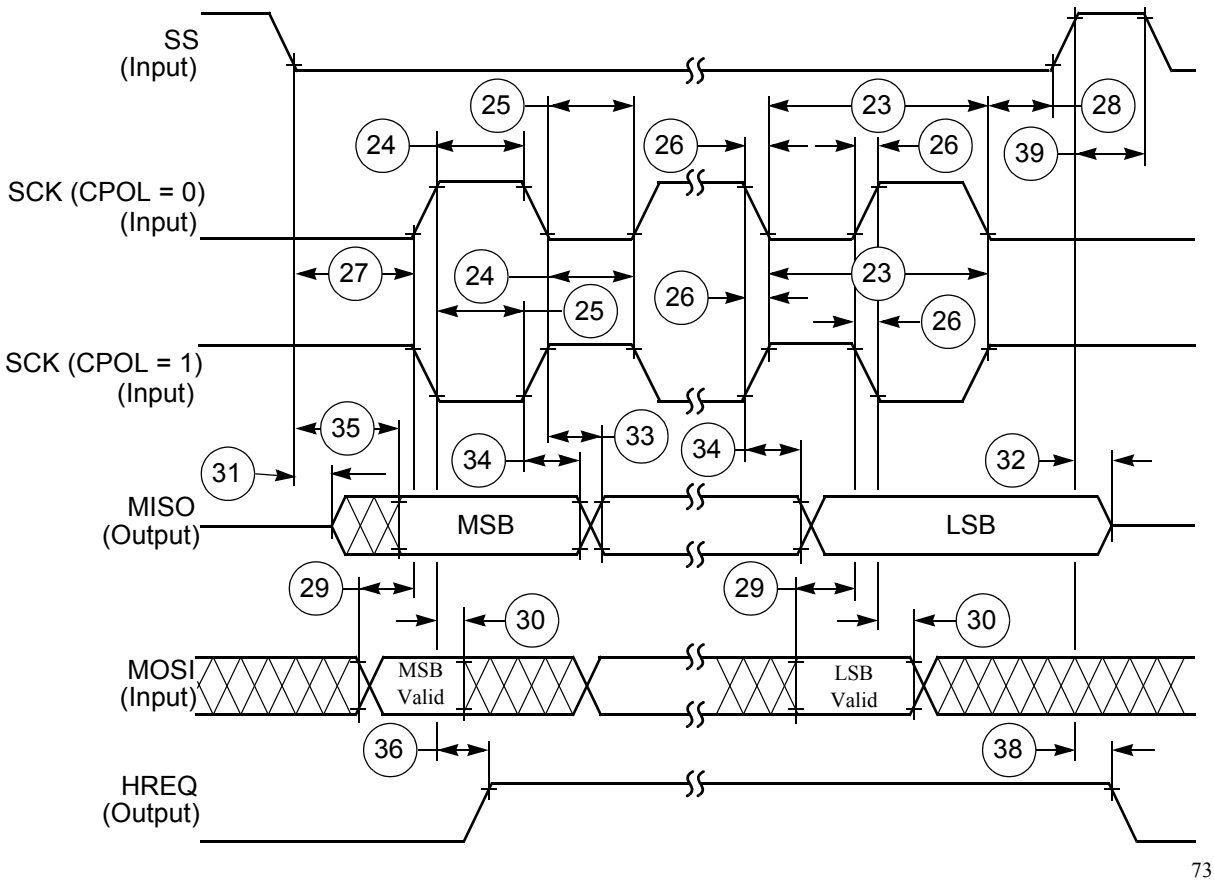


Figure 8 SPI Slave Timing (CPHA = 0)

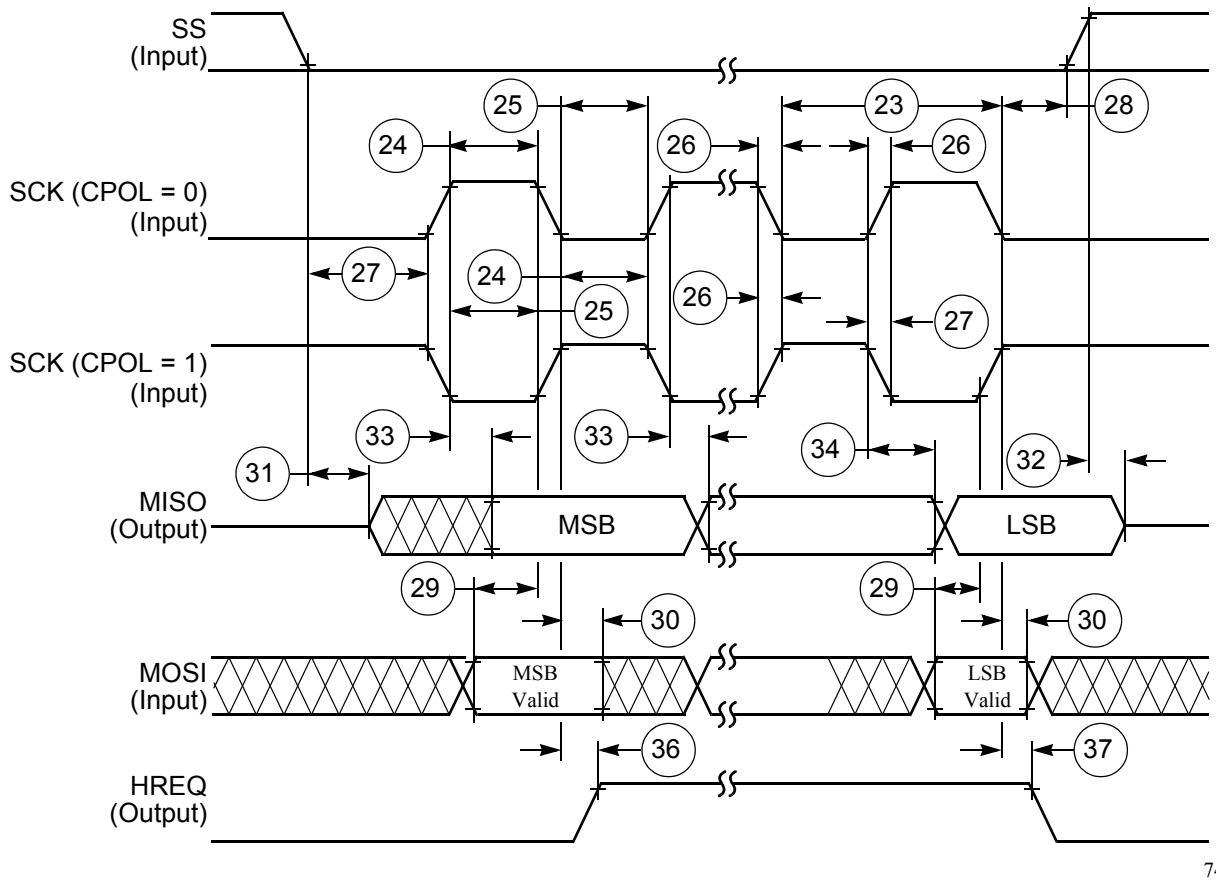


Figure 9 SPI Slave Timing (CPHA = 1)

11.0 Serial Host Interface (SHI) I2C Protocol Timing

Table 8 SHI I2C Protocol Timing

Standard I2C*							
No.	Characteristics[1]	Symbol/ Expression	Standard		Fast-Mode		Unit
			Min	Max	Min	Max	
44	SCL clock frequency	F_{SCL}	—	100	—	400	kHz
44	SCL clock cycle	T_{SCL}	10	—	2.5	—	µs
45	Bus free time	T_{BUF}	4.7	—	1.3	—	µs
46	Start condition set-up time	T_{SUSTA}	4.7	—	0.6	—	µs
47	Start condition hold time	$T_{HD;STA}$	4.0	—	0.6	—	µs
48	SCL low period	T_{LOW}	4.7	—	1.3	—	µs
49	SCL high period	T_{HIGH}	4.0	—	1.3	—	µs
50	SCL and SDA rise time	T_R	—	10	—	10	ns
51	SCL and SDA fall time	T_F	—	10	—	10	ns
52	Data set-up time	$T_{SU;DAT}$	250	—	100	—	ns
53	Data hold time	$T_{HD;DAT}$	0.0	—	0.0	0.9	µs
54	DSP clock frequency	F_{OSC}	10.6	—	28.5	—	MHz
55	SCL low to data out valid	$T_{VD;DAT}$	—	3.4	—	0.9	µs
56	Stop condition setup time	$T_{SU;STO}$	4.0	—	0.6	—	µs
57	$\overline{\text{HREQ}}$ in deassertion to last SCL edge ($\overline{\text{HREQ}}$ in set-up time)	$t_{SU;RQI}$	0.0	—	0.0	—	ns
58	First SCL sampling edge to $\overline{\text{HREQ}}$ output deassertion	$T_{NG;RQO}$ $4 \times T_C + 30$	—	—	—	—	ns
59	Last SCL edge to HREQ output not deas-serted	$T_{AS;RQO}$ $2 \times T_C + 30$	50	—	50	—	ns

Table 8 SHI I2C Protocol Timing (continued)

Standard I2C*							
No.	Characteristics[1]	Symbol/ Expression	Standard		Fast-Mode		Unit
			Min	Max	Min	Max	
60	HREQ in assertion to first SCL edge • •	$T_{AS;RQI}$ $0.5 \times T_I2_{CCP}$ $-0.5 \times T_C - 21$	4327	—	927	—	ns
61	First SCL edge to $\overline{\text{HREQ}}$ in not asserted (HREQ in hold time.)	$t_{HO;RQI}$	0.0	—	0.0	—	ns

Note: 1. VCORE_VDD = 1.2 5 ± 0.05 V; T_J = –40°C to 115°C for 150 MHz; T_J = 0°C to 100°C for 181 MHz; CL = 50 pF

11.1 Programming the Serial Clock

The programmed serial clock cycle, T_{I^2CCP}, is specified by the value of the HDM[7:0] and HRS bits of the HCKR (SHI clock control register).

The expression for T_{I^2CCP} is

$$T_{I^2CCP} = [T_C \times 2 \times (HDM[7:0] + 1) \times (7 \times (1 - HRS) + 1)]$$

where

— HRS is the pr-scaler rate select bit. When HRS is cleared, the fixed divide-by-eight pre-scaler is operational. When HRS is set, the pre-scaler is bypassed.

— HDM[7:0] are the divider modulus select bits. A divide ratio from 1 to 256 (HDM[7:0] = $00 to $FF) may be selected.

In I2C mode, the user may select a value for the programmed serial clock cycle from

$6 \times T_C$ (if HDM[7:0] = $02 and HRS = 1)

to

$4096 \times T_C$ (if HDM[7:0] = $FF and HRS = 0)

The programmed serial clock cycle (T_{I^2CCP}), SCL rise time (T_R), should be chosen in order to achieve the desired SCL serial clock cycle (T_{SCL}), as shown in Table 9.

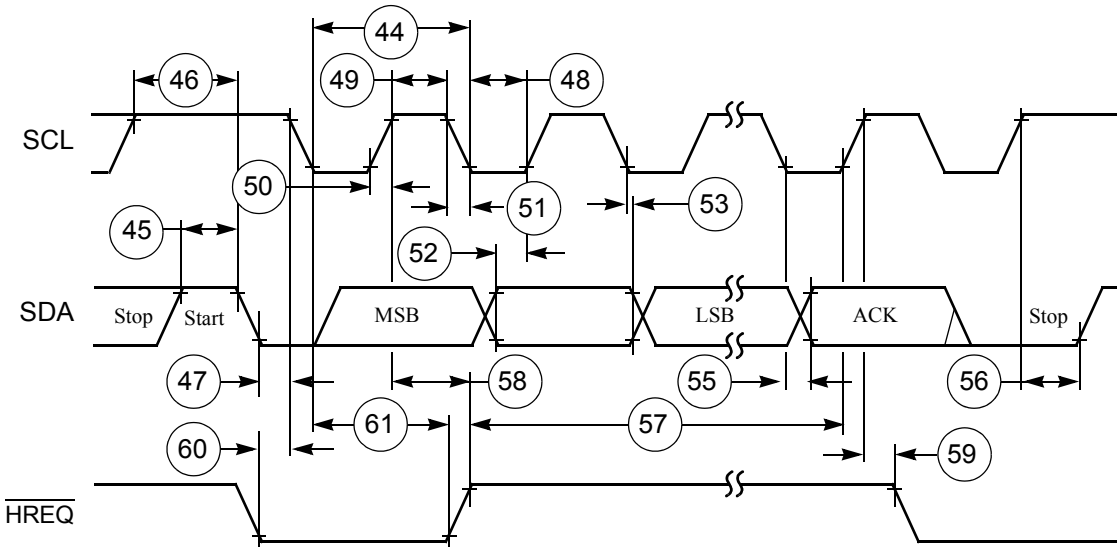


Figure 10 I2C Timing

12.0 Enhanced Serial Audio Interface Timing

Table 9 Enhanced Serial Audio Interface Timing

No.	Characteristics[1, 2, 3]	Symbol	Expression[3]	Min	Max	Condition [4]	Unit
62	Clock cycle[5]	t_{SSICC}	$4 \times T_C$	22.3	—	i ck	ns
			$4 \times T_C$	22.3	—	x ck	
			SCKT:max[(3*T_C) or t87]	26.5	—	x ck	
63	Clock high period • For internal clock	—	$2 \times T_C - 10.0$	3.4	—		ns
	• For external clock		$2 \times T_C$	10.0	—		
64	Clock low period • For internal clock	—	$2 \times T_C - 10.0$	3.4	—		ns
	• For external clock		$2 \times T_C$	10.0	—		
65	SCKR rising edge to FSR out (bl) high	—	—	— —	37.0 22.0	x ck i ck a	ns
66	SCKR rising edge to FSR out (bl) low	—	—	— —	37.0 22.0	x ck i ck a	ns
67	SCKR rising edge to FSR out (wr) high[6]	—	—	— —	39.0 24.0	x ck i ck a	ns
68	SCKR rising edge to FSR out (wr) low[6]	—	—	— —	39.0 24.0	x ck i ck a	ns
69	SCKR rising edge to FSR out (wl) high	—	—	— —	36.0 21.0	x ck i ck a	ns
70	SCKR rising edge to FSR out (wl) low	—	—	— —	37.0 22.0	x ck i ck a	ns
71	Data in setup time before SCKR (SCK in synchronous mode) falling edge	—	—	0.0 19.0	— —	x ck i ck	ns
72	Data in hold time after SCKR falling edge	—	—	5.0 3.0	— —	x ck i ck	ns
73	FSR input (bl, wr) high before SCKR falling edge [6]	—	—	1.0 23.0	— —	x ck i ck a	ns
74	FSR input (wl) high before SCKR falling edge	—	—	1.0 23.0	— —	x ck i ck a	ns
75	FSR input hold time after SCKR falling edge	—	—	3.0 0.0	— —	x ck i ck a	ns

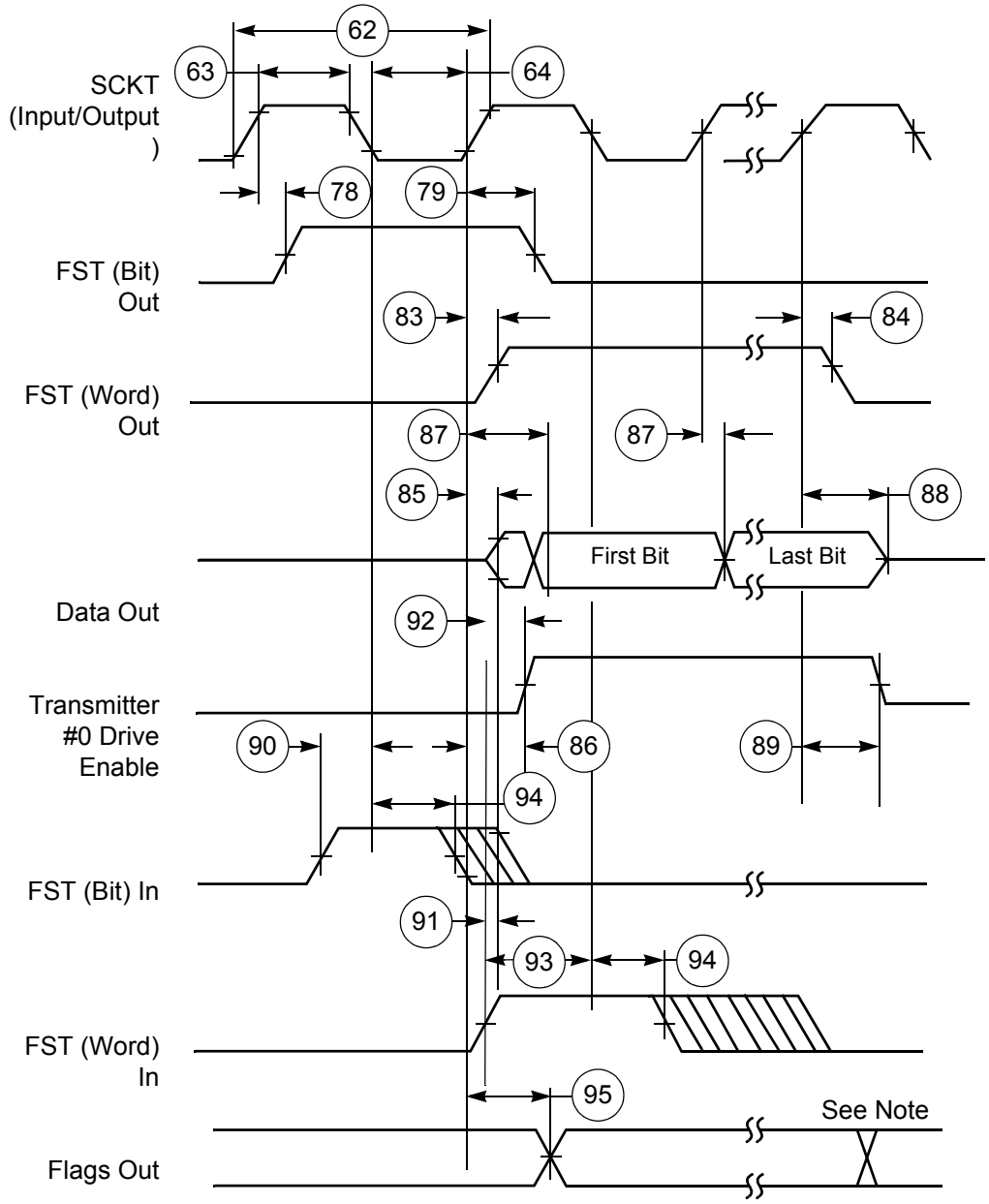
Table 9 Enhanced Serial Audio Interface Timing (continued)

No.	Characteristics[1, 2, 3]	Symbol	Expression[3]	Min	Max	Condition[4]	Unit
76	Flags input setup before SCKR falling edge	—	—	0.0 19.0	— —	x ck i ck s	ns
77	Flags input hold time after SCKR falling edge	—	—	6.0 0.0	— —	x ck i ck s	ns
78	SCKT rising edge to FST out (bl) high	—	—	— —	29.0 15.0	x ck i ck	ns
79	SCKT rising edge to FST out (bl) low	—	—	— —	31.0 17.0	x ck i ck	ns
80	SCKT rising edge to FST out (wr) high[6]	—	—	— —	31.0 17.0	x ck i ck	ns
82	SCKT rising edge to FST out (wr) low[6]	—	—	— —	33.0 19.0	x ck i ck	ns
83	SCKT rising edge to FST out (wl) high	—	—	— —	30.0 16.0	x ck i ck	ns
84	SCKT rising edge to FST out (wl) low	—	—	— —	31.0 17.0	x ck i ck	ns
85	SCKT rising edge to data out enable from high impedance	—	—	— —	31.0 17.0	x ck i ck	ns
86	SCKT rising edge to transmitter #0 drive enable assertion	—	—	— —	34.0 20.0	x ck i ck	ns
87	SCKT rising edge to data out valid	—	—	— —	26.5 21.0	x ck i ck	ns
88	SCKT rising edge to data out high impedance[7]	—	—	— —	31.0 16.0	x ck i ck	ns
89	SCKT rising edge to transmitter #0 drive enable deassertion[7]	—	—	— —	34.0 20.0	x ck i ck	ns
90	FST input (bl, wr) setup time before SCKT falling edge[6]	—	—	2.0 21.0	— —	x ck i ck	ns
91	FST input (wl) to data out enable from high impedance	—	—	—	27.0	—	ns
92	FST input (wl) to transmitter #0 drive enable assertion	—	—	—	31.0	—	ns
93	FST input (wl) setup time before SCKT falling edge	—	—	2.0 21.0	— —	x ck i ck	ns
94	FST input hold time after SCKT falling edge	—	—	4.0 0.0	— —	x ck i ck	ns
95	Flag output valid after SCKT rising edge	—	—	— —	32.0 18.0	x ck i ck	ns

Table 9 Enhanced Serial Audio Interface Timing (continued)

No.	Characteristics[1, 2, 3]	Symbol	Expression[3]	Min	Max	Condition [4]	Unit
96	HCKR/HCKT clock cycle	—	$2 \times T_C$	40.0	—		ns
97	HCKT input rising edge to SCKT output	—	—	—	18.0		ns
98	HCKR input rising edge to SCKR output	—	—	—	18.0		ns

Note:
1. $V_{CORE\_VDD} = 1.25 \pm 0.05$ V; $T_J = -40°C$ to 115°C for 150 MHz; $T_J = 0°C$ to 100°C for 181 MHz; $C_L = 50$ pF
2. i ck = internal clock
   x ck = external clock
   i ck a = internal clock, asynchronous mode
   (asynchronous implies that SCKT and SCKR are two different clocks)
   i ck s = internal clock, synchronous mode
   (synchronous implies that SCKT and SCKR are the same clock)
3. bl = bit length
   wl = word length
   wr = word length relative
4. SCKT(SCKT pin) = transmit clock
   SCKR(SCKR pin) = receive clock
   FST(FST pin) = transmit frame sync
   FSR(FSR pin) = receive frame sync
   HCKT(HCKT pin) = transmit high frequency clock
   HCKR(HCKR pin) = receive high frequency clock
5. For the internal clock, the external clock cycle is defined by Icyc and the ESAI control register.
6. The word-relative frame sync signal waveform relative to the clock operates in the same manner as the bit-length frame sync signal waveform, but spreads from one serial clock before first bit clock (same as bit length frame sync signal), until the one before last bit clock of the first word in frame.
7. Periodically sampled and not 100% tested
8. ESAI_1 specs match those of ESAI_0



Note: In network mode, output flag transitions can occur at the start of each time slot within the frame. In normal mode, the output flag state is asserted for the entire frame period.

Figure 11 ESAI Transmitter Timing

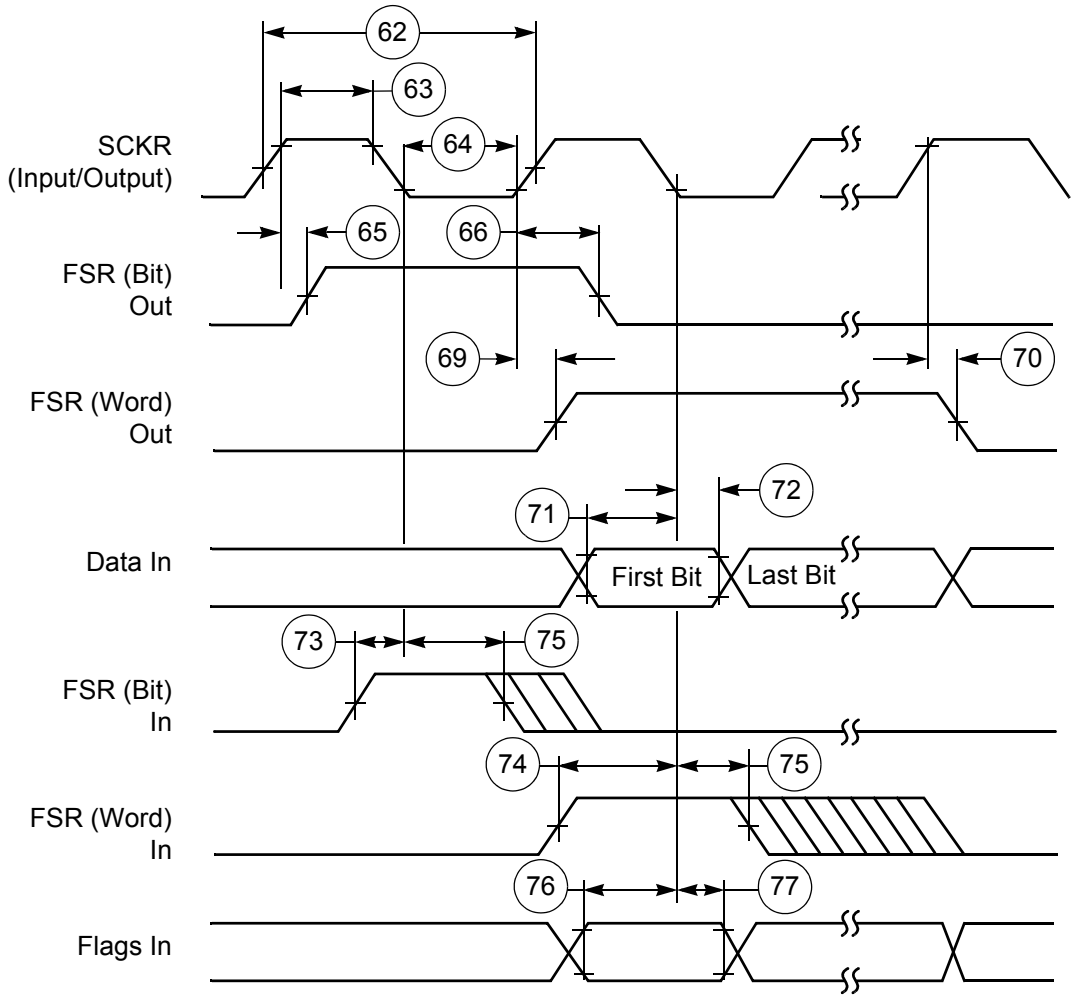


Figure 12 ESAI Receiver Timing

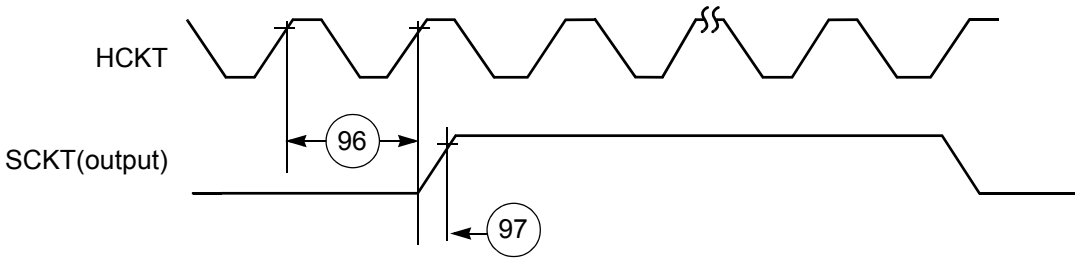


Figure 13 ESAI HCKT Timing

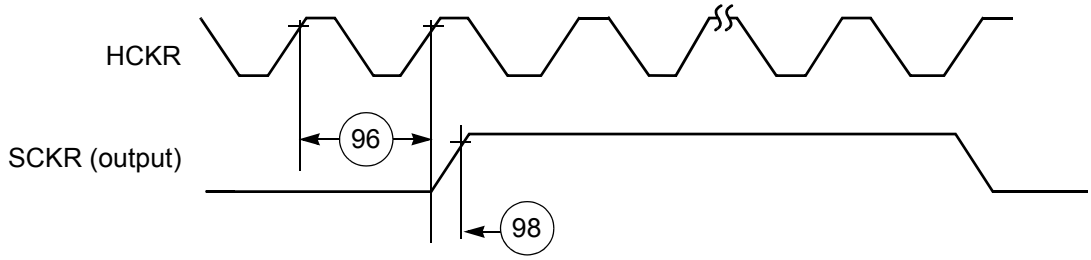


Figure 14 ESAI HCKR Timing

13.0 Digital Audio Transmitter Timing

Table 10 Digital Audio Transmitter Timing

No.	Characteristic	Expression	181 MHz		Unit
			Min	Max	
99	ACI frequency (see note)	$1 / (2 \times T_C)$	—	90	MHz
100	ACI period	$2 \times T_C$	11.1	—	ns
101	ACI high duration	$0.5 \times T_C$	2.8	—	ns
102	ACI low duration	$0.5 \times T_C$	2.8	—	ns
103	ACI rising edge to ADO valid	$1.5 \times T_C$	—	8.3	ns
Note:	In order to assure proper operation of the DAX, the ACI frequency should be less than 1/2 of theDSP56371 internal clock frequency. For example, if the DSP56371 is running at 181 MHz internally, the ACI frequency should be less than 90MHz.				

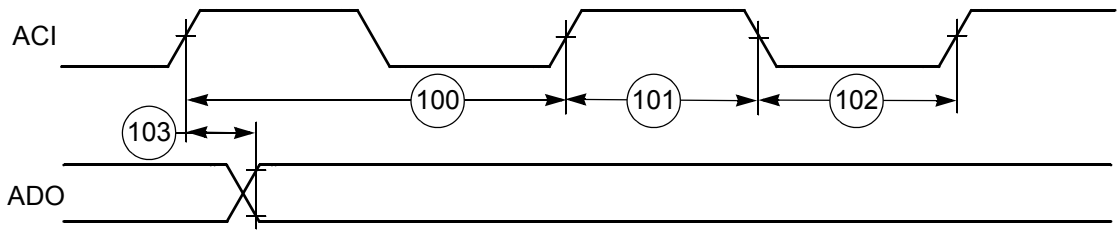


Figure 15 Digital Audio Transmitter Timing

14.0 Timer Timing

Table 11 Timer Timing

No.	Characteristics	Expression	181 MHz		Unit
			Min	Max	
104	TIO Low	$2 \times T_C + 2.0$	13	—	ns
105	TIO High	$2 \times T_C + 2.0$	13	—	ns
Note:	V_{CORE_VDD} = 1.25 V ± 0.05 V; T_J = –40°C to 115°C for 150 MHz; T_J = 0°C to 100°C for 181 MHz; C_L = 50 pF				

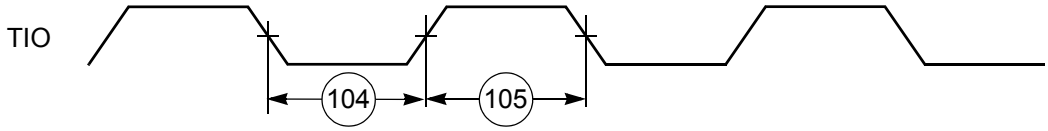


Figure 16 TIO Timer Event Input Restrictions

15.0 GPIO Timing

Table 12 GPIO Timing

No.	Characteristics[1]	Expression	Min	Max	Unit
106	FOSC edge to GPIO out valid (GPIO out delay time)		—	7	ns
107	FOSC edge to GPIO out not valid (GPIO out hold time)		----	7	ns
108	FOSC In valid to EXTAL edge (GPIO in set-up time)		2	---	ns
109	FOSC edge to GPIO in not valid (GPIO in hold time)		0	---	ns
110	Minimum GPIO pulse high width (except Port F)	$2 \times T_C$	11.1	—	ns
111	Minimum GPIO pulse low width (except Port F)	$2 \times T_C$	11.1		ns
112	Minimum GPIO pulse low width (port F)	$6 \times T_C$	33.3		ns
113	Minimum GPIO pulse high width (port F)	$6 \times T_C$	33.3		ns
114	GPIO out rise time	—	—	13	ns
115	GPIO out fall time	—	—	13	ns
Note:	1. V_{CORE_VDD} = 1.25 V ± 0.05 V; T_J = –40°C to 115°C for 150 MHz; T_J = 0°C to 100°C for 181 MHz; C_L = 50 pF				

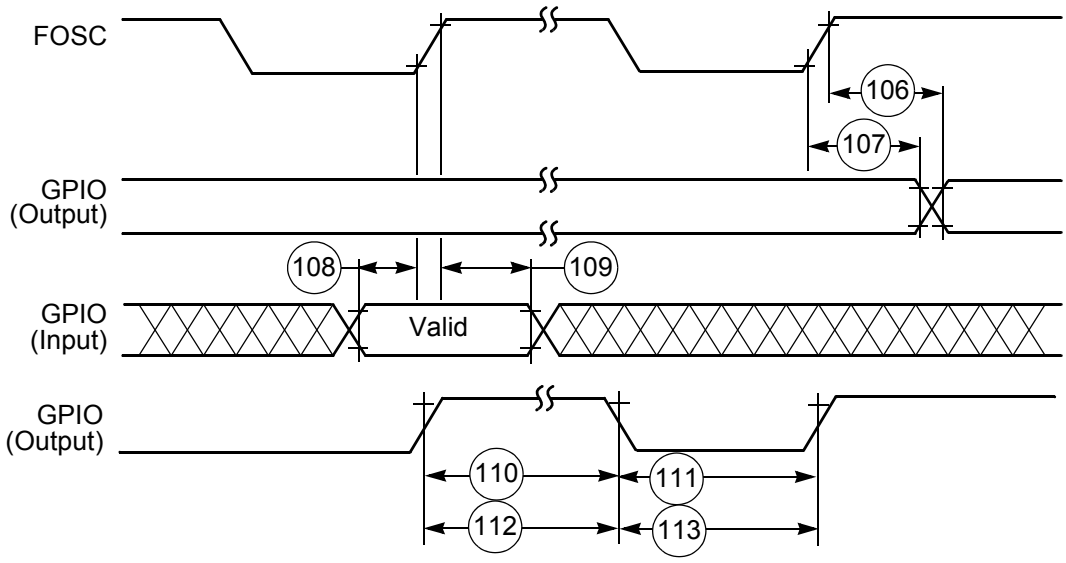


Figure 17 GPIO Timing

16.0 JTAG Timing

Table 13 JTAG Timing

No.	Characteristics	All frequencies		Unit
		Min	Max	
116	TCK frequency of operation ($1/(T_C \times 6)$; maximum 22 MHz)	0.0	22.0	MHz
117	TCK cycle time	45.0	—	ns
118	TCK clock pulse width	20.0	—	ns
119	TCK rise and fall times	0.0	10.0	ns
120	TCK low to output data valid	0.0	40.0	ns
121	TCK low to output high impedance	0.0	40.0	ns
122	TMS, TDI data setup time	5.0	—	ns
123	TMS, TDI data hold time	25.0	—	ns
124	TCK low to TDO data valid	0.0	44.0	ns
125	TCK low to TDO high impedance	0.0	44.0	ns

Note: 1. V_{CORE_VDD} = 1.25 V ± 0.05 V; T_J = –40°C to 115°C for 150 MHz; T_J = 0°C to 100°C for 181 MHz; C_L = 50 pF
2. All timings apply to OnCE module data transfers because it uses the JTAG port as an interface.

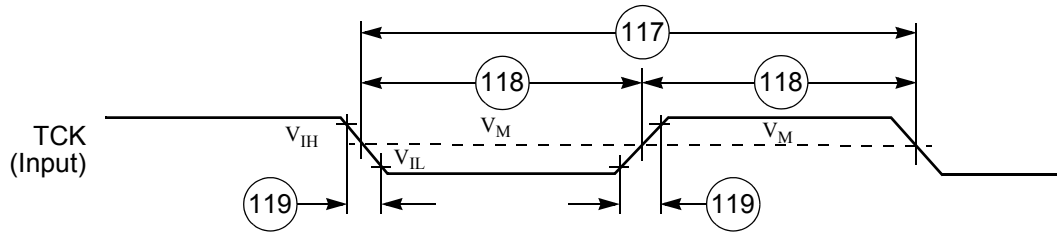


Figure 18 Test Clock Input Timing Diagram

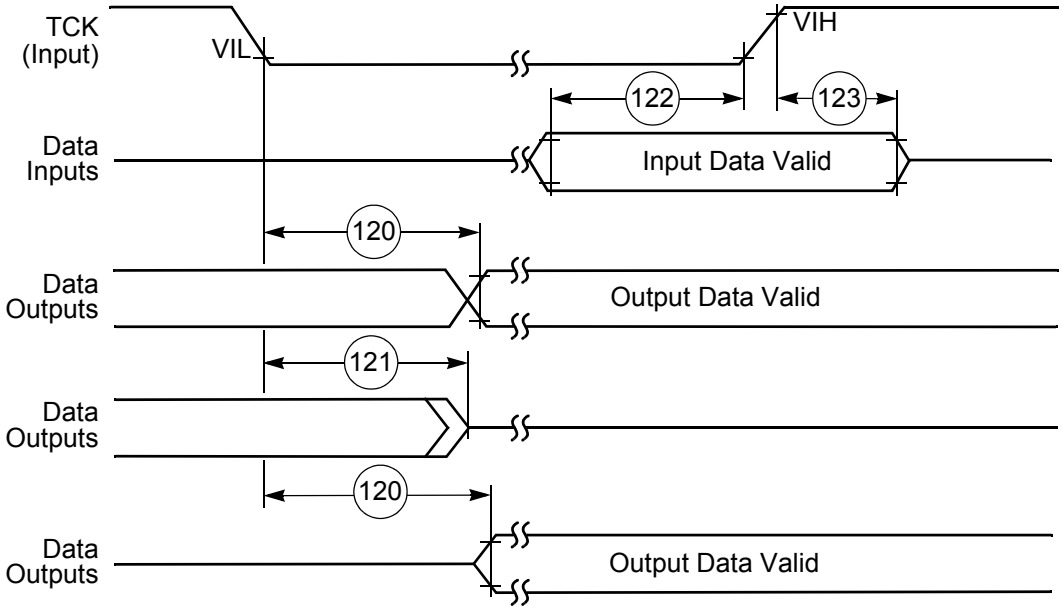


Figure 19 Debugger Port Timing Diagram

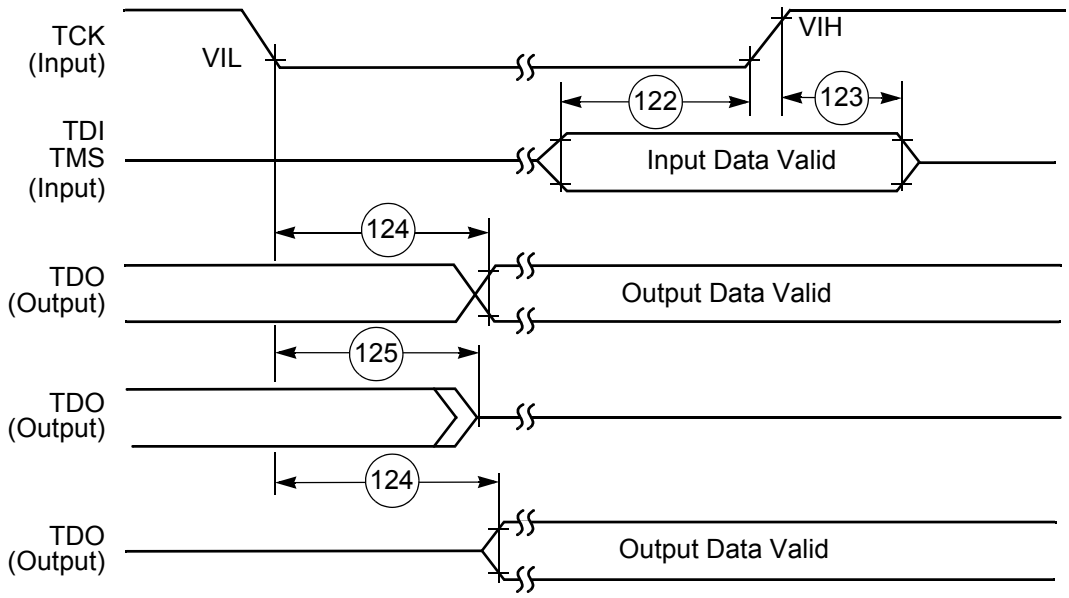


Figure 20 Test Access Port Timing Diagram

17.0 Package Information

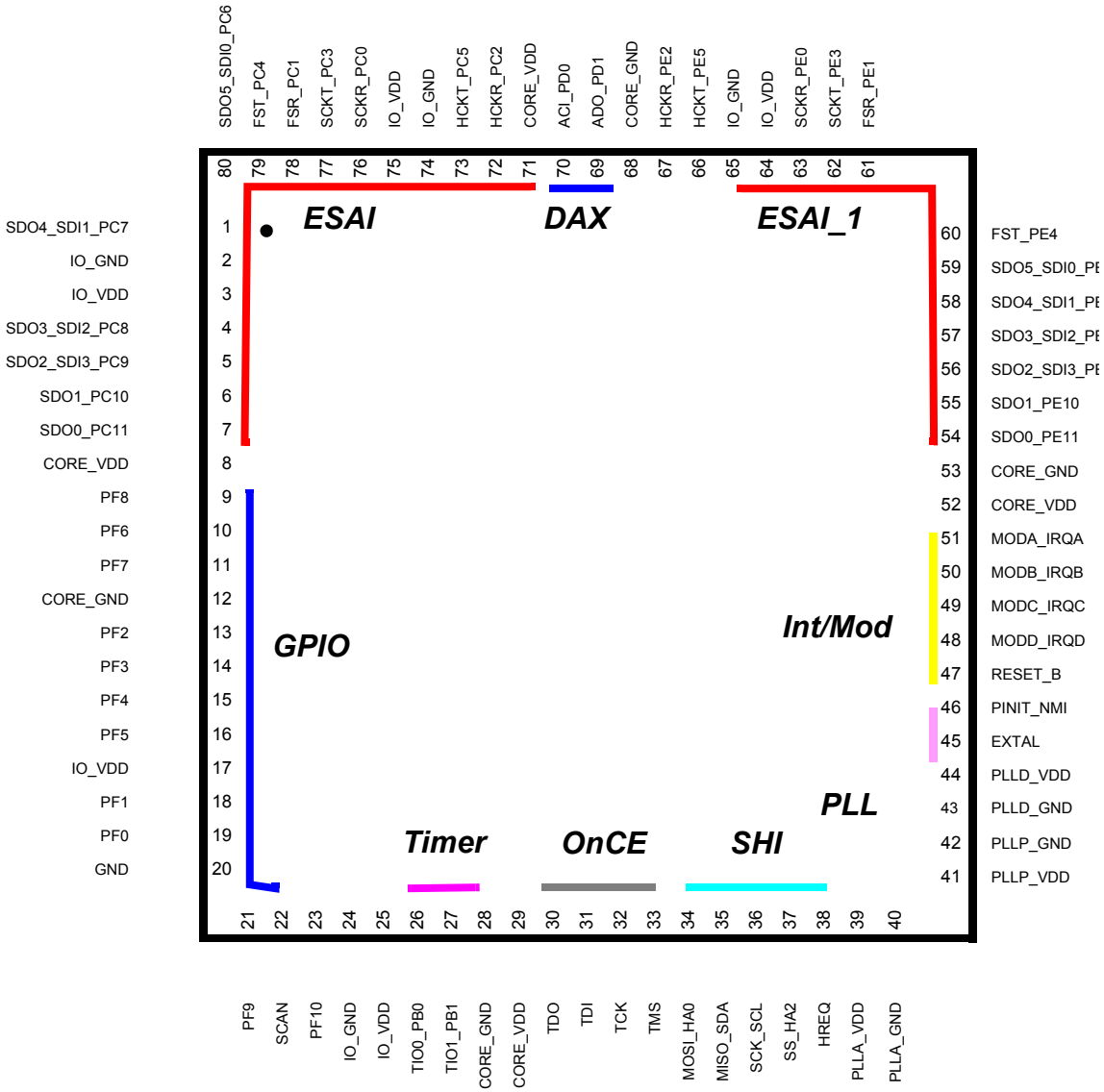
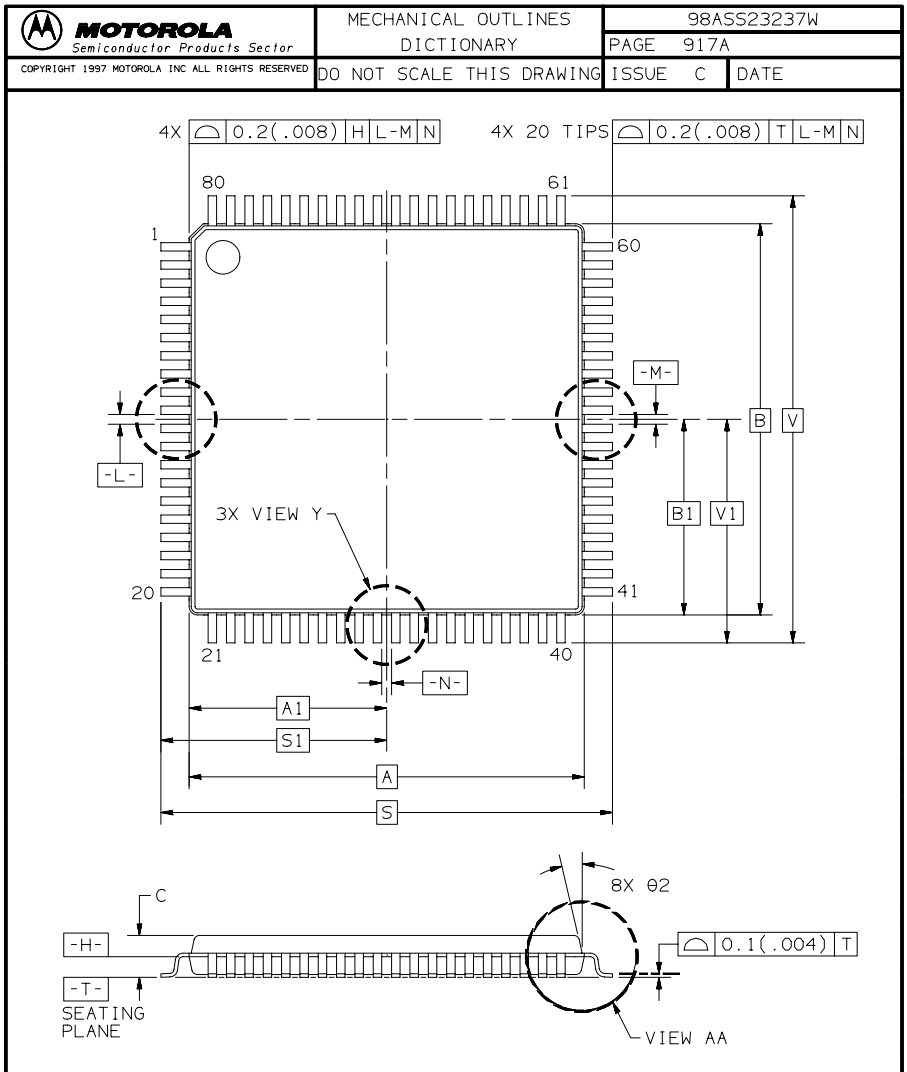


Figure 21 DSP56371 Pinout

Table 14 Signal Identification by Pin Number

Pin No.	Signal Name	Pin No	Signal Name	Pin No	Signal Name	Pin No	Signal Name
1	SDO4_SDI1_PC7	21	PF9	41	PLLP_VDD	61	FSR_PE1
2	IO_GND	22	SCAN	42	PLLP_GND	62	SCKT_PE3
3	IO_VDD	23	PF10	43	PLLD_GND	63	SCKR_PE0
4	SDO3_SDI2_PC8	24	IO_GND	44	PLLD_VDD	64	IO_VDD
5	SDO2_SDI3_PC9	25	IO_VDD	45	EXTAL	65	IO_GND
6	SDO1_PC10	26	TI0_PB0	46	PINIT_NMI	66	HCKT_PE5
7	SDO0_PC11	27	TI0_PB1	47	RESET_B	67	HCKR_PE2
8	CORE_VDD	28	CORE_GND	48	MODD_IRQD	68	CORE_GND
9	PF8	29	CORE_VDD	49	MODC_IRQC	69	ADO_PD1
10	PF6	30	TDO	50	MODB_IRQB	70	ADI_PD0
11	PF7	31	TDI	51	MODA_IRQA	71	CORE_VDD
12	CORE_GND	32	TCK	52	CORE_VDD	72	HCKR_PC2
13	PF2	33	TMS	53	CORE_GND	73	HCKT2_PC5
14	PF3	34	MOSI_HA0	54	SDO0_PE11	74	IO_GND
15	PF4	35	MISO_SDA	55	SDO1_PE10	75	IO_VDD
16	PF5	36	SCK_SCL	56	SDO2_SDI3_PE9	76	SCKR_PC0
17	IO_VDD	37	SS_HA2	57	SDO3_SDI2_PE8	77	SCKT_PC3
18	PF1	38	HREQ	58	SDO4_SDI1_PE7	78	FSR_PC1
19	PF0	39	PLLA_VDD	59	SDO5_SD10_PE6	79	FST_PC4
20	GND	40	PLLA_GND	60	FST_PE4	80	SDO5_SDI10_PC6



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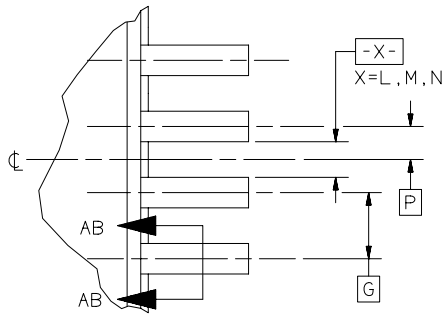
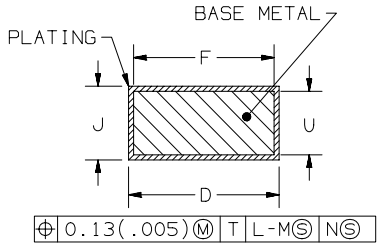
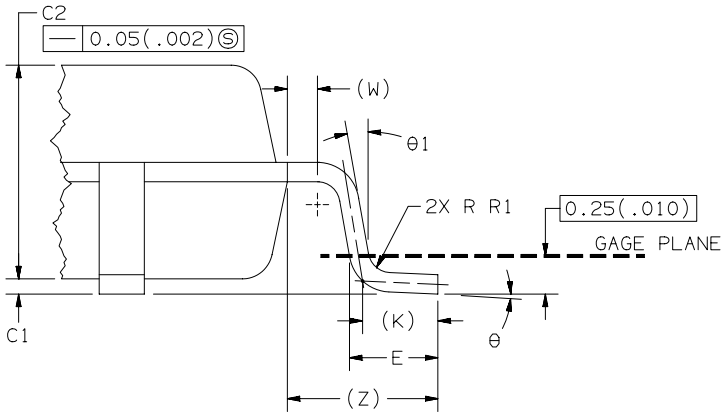


VIEW Y



SECTION AB-AB
ROTATED 90° CLOCKWISE



VIEW AA

CASE NO.	917A-02
STANDARD	MOTOROLA STANDARD
REFERENCE	
TITLE	80 LD TQFP, 14 X 14 PKG, 0.65 PITCH, 1.4 THICK

SHEET 2 OF 3

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NOTES

1. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DATUM PLANE -H- IS LOCATED AT BOTTOM OF LEAD AND IS COINCIDENT WITH THE LEAD WHERE THE LEAD EXITS THE PLASTIC BODY AT THE BOTTOM OF THE PARTING LINE.
4. DATUMS -L-, -M- AND -N- TO BE DETERMINED AT DATUM PLANE -H-.
5. DIMENSIONS S AND V TO BE DETERMINED AT SEATING PLANE -T-.
6. DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION. ALLOWABLE PROTRUSION IS 0.25(.010) PER SIDE. DIMENSIONS A AND B DO INCLUDE MOLD MISMATCH AND ARE DETERMINED AT DATUM PLANE -H-.
7. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. DAMBAR PROTRUSION SHALL NOT CAUSE THE LEAD WIDTH TO EXCEED 0.46(.018). MINIMUM SPACE BETWEEN PROTRUSION AND ADJACENT LEAD OR PROTRUSION 0.07(.003).

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	14.00 BSC		0.551 BSC	
A1	7.00 BSC		0.276 BSC	
B	14.00 BSC		0.551 BSC	
B1	7.00 BSC		0.276 BSC	
C	---	1.60	---	0.063
C1	0.04	0.24	0.002	0.009
C2	1.30	1.50	0.051	0.059
D	0.22	0.38	0.009	0.015
E	0.40	0.75	0.016	0.030
F	0.17	0.33	0.007	0.013
G	0.65 BSC		0.026 BSC	
J	0.09	0.27	0.004	0.011
K	0.50 REF		0.020 REF	
P	0.325 BSC		0.013 REF	
R1	0.10	0.20	0.004	0.008
S	16.00 BSC		0.630 BSC	
S1	8.00 BSC		0.315 BSC	
U	0.09	0.16	0.004	0.006
V	16.00 BSC		0.630 BSC	
V1	8.00 BSC		0.315 BSC	
W	0.20 REF		0.008 REF	
Z	1.00 REF		0.039 REF	
θ	0°	10°	0°	10°
θ1	0°	----	0°	----
θ2	9°	14°	9°	14°

CASE NO.	917A-02
STANDARD	MOTOROLA STANDARD
REFERENCE	
TITLE	80 LD TQFP, 14 X 14 PKG, 0.65 PITCH, 1.4 THICK

SHEET 3 OF 3

18.0 Design Considerations

18.1 Thermal Design Considerations

An estimation of the chip junction temperature, T_J, in °C can be obtained from the following equation:

$$T_J = T_A + (P_D \times R_{\theta JA})$$

Where: T_A = ambient temperature °C
R_{qJA} = package junction-to-ambient thermal resistance °C/W
P_D = power dissipation in package W

Historically, thermal resistance has been expressed as the sum of a junction-to-case thermal resistance and a case-to-ambient thermal resistance.

$$R_{\theta JA} = R_{\theta JC} + R_{\theta CA}$$

Where: $R_{\theta JA}$ = package junction-to-ambient thermal resistance °C/W
$R_{\theta JC}$ = package junction-to-case thermal resistance °C/W
$R_{\theta CA}$ = package case-to-ambient thermal resistance °C/W

$R_{\theta JC}$ is device-related and cannot be influenced by the user. The user controls the thermal environment to change the case-to-ambient thermal resistance, $R_{\theta CA}$. For example, the user can change the air flow around the device, add a heat sink, change the mounting arrangement on the printed circuit board (PCB), or otherwise change the thermal dissipation capability of the area surrounding the device on a PCB. This model is most useful for ceramic packages with heat sinks; some 90% of the heat flow is dissipated through the case to the heat sink and out to the ambient environment. For ceramic packages, in situations where the heat flow is split between a path to the case and an alternate path through the PCB, analysis of the device thermal performance may need the additional modeling capability of a system level thermal simulation tool.

The thermal performance of plastic packages is more dependent on the temperature of the PCB to which the package is mounted. Again, if the estimations obtained from $R_{\theta JA}$ do not satisfactorily answer whether the thermal performance is adequate, a system level model may be appropriate.

A complicating factor is the existence of three common ways for determining the junction-to-case thermal resistance in plastic packages.

- To minimize temperature variation across the surface, the thermal resistance is measured from the junction to the outside surface of the package (case) closest to the chip mounting area when that surface has a proper heat sink.
- To define a value approximately equal to a junction-to-board thermal resistance, the thermal resistance is measured from the junction to where the leads are attached to the case.
- If the temperature of the package case (T_T) is determined by a thermocouple, the thermal resistance is computed using the value obtained by the equation $(T_J - T_T)/P_D$.

As noted above, the junction-to-case thermal resistances quoted in this data sheet are determined using the first definition. From a practical standpoint, that value is also suitable for determining the junction temperature from a case thermocouple reading in forced convection environments. In natural convection, using the junction-to-case thermal resistance to estimate junction temperature from a thermocouple reading on the case of the package will estimate a junction temperature slightly hotter than actual

temperature. Hence, the new thermal metric, thermal characterization parameter or Ψ_{JT}, has been defined to be $(T_J - T_T)/P_D$. This value gives a better estimate of the junction temperature in natural convection when using the surface temperature of the package. Remember that surface temperature readings of packages are subject to significant errors caused by inadequate attachment of the sensor to the surface and to errors caused by heat loss to the sensor. The recommended technique is to attach a 40-gauge thermocouple wire and bead to the top center of the package with thermally conductive epoxy.

18.2 Electrical Design Considerations

CAUTION

This device contains circuitry protecting against damage due to high static voltage or electrical fields. However, normal precautions should be taken to avoid exceeding maximum voltage ratings. Reliability of operation is enhanced if unused inputs are tied to an appropriate logic voltage level (e.g., either GND or V_{CC}). The suggested value for a pullup or pulldown resistor is 10 k ohm.

Use the following list of recommendations to assure correct DSP operation:

- Provide a low-impedance path from the board power supply to each V_{CC} pin on the DSP and from the board ground to each GND pin.
- Use at least six 0.01–0.1 μF bypass capacitors positioned as close as possible to the four sides of the package to connect the V_{CC} power source to GND.
- Ensure that capacitor leads and associated printed circuit traces that connect to the chip V_{CC} and GND pins are less than 1.2 cm (0.5 inch) per capacitor lead.
- Route the DVDD pin carefully to minimize noise.
- Use at least a four-layer PCB with two inner layers for V_{CC} and GND.
- Because the DSP output signals have fast rise and fall times, PCB trace lengths should be minimal. This recommendation particularly applies to the IRQA, IRQB, IRQC, and IRQD pins. Maximum PCB trace lengths on the order of 15 cm (6 inches) are recommended.
- Consider all device loads as well as parasitic capacitance due to PCB traces when calculating capacitance. This is especially critical in systems with higher capacitive loads that could create higher transient currents in the V_{CC} and GND circuits.
- Take special care to minimize noise levels on the V_{CCP} and GND_P pins.
- If multiple DSP56371 devices are on the same board, check for cross-talk or excessive spikes on the supplies due to synchronous operation of the devices.
- RESET must be asserted when the chip is powered up. A stable EXTAL signal must be supplied before deassertion of RESET.
- At power-up, ensure that the voltage difference between the 3.3 V tolerant pins and the chip V_{CC} never exceeds a 3.00 V.

18.3 Power Consumption Considerations

Power dissipation is a key issue in portable DSP applications. Some of the factors which affect current consumption are described in this section. Most of the current consumed by CMOS devices is alternating current (ac), which is charging and discharging the capacitances of the pins and internal nodes.

Current consumption is described by the following formula:

$$I = C \times V \times f$$

where C = node/pin capacitance
V = voltage swing
f = frequency of node/pin toggle

Power Consumption Example

For a GPIO address pin loaded with 50 pF capacitance, operating at 3.3 V, and with a 150 MHz clock, toggling at its maximum possible rate (75 MHz), the current consumption is

$$I = 50 \times 10^{-12} \times 3.3 \times 75 \times 10^{6} = 12.375\text{mA}$$

The maximum internal current (I_{CCI}max) value reflects the typical possible switching of the internal buses on best-case operation conditions, which is not necessarily a real application case. The typical internal current (I_{CCItyp}) value reflects the average switching of the internal buses on typical operating conditions.

For applications that require very low current consumption, do the following:

- Minimize the number of pins that are switching.
- Minimize the capacitive load on the pins.

One way to evaluate power consumption is to use a current per MIPS measurement methodology to minimize specific board effects (i.e., to compensate for measured board current not caused by the DSP). Use the test algorithm, specific test current measurements, and the following equation to derive the current per MIPS value.

$$I/\text{MIPS} = I/\text{MHz} = (I_{typF2} - I_{typF1})/(F2 - F1)$$

where : I_{typF2} = current at F2
I_{typF1} = current at F1
F2 = high frequency (any specified operating frequency)
F1 = low frequency (any specified operating frequency lower than F2)

NOTE: F1 should be significantly less than F2. For example, F2 could be 66 MHz and F1 could be 33 MHz. The degree of difference between F1 and F2 determines the amount of precision with which the current rating can be determined for an application.

19.0 Power Consumption Benchmark

The following benchmark program permits evaluation of DSP power usage in a test situation.

```
;*********************************;*****************************
;* ;* CHECKS Typical Power Consumption
;*****************************************************************

ORG P:$000800
move #$000000,r1
move #$000000,r0
do #1024,ldmem
move r1,p:(r0)
move r1,y:(r0)+
ldmem nop



move #0,b1

;jmp $FF2AE0
;org P:$FF2AE0
move b1,y:>$100
move #$FF,B
move #>$AF080,X0
move #>$FF2AD6,r0
move #$0,r1
dor #6,loop1

move p:(r0)+,x1
move x0,p:(r1)+
move x1,p:(r1)+
nop
loop1
move #$0,vba
move #$0,sp
move #$0,sc
reset
move #$FFFFFF,m0
move m0,m1
move m0,m2
move m0,m3
move m0,m4
move m0,m5
move m0,m6
move m0,m7
move #>$102,ep
move #>$18,sz
move #>$110000,omr
```

```
move #$300,sr
movep #>$F02000,X:$FFFFFF
movep #$187,X:$FFFFFE
;then sets up BCR and AAR registers
;then sets up PORTB and HDI08 PORT
andi #$FC,mr
;start running ROM intialisation stage
;jsr $FF1C7E
; Set green HLX zone table
jsr $FF1D64
; Run GPIONil function
jsr $FF2F82
; Initialise Green HLX
jsr $FF1FA1
; Disable DAX
move #>$15F,x1
move x1,P:$FF0D7F
; Run Green HLX
jmp $FF1FDB

nop
nop
nop
nop
nop
nop
dor forever,endprog
nop
nop
endprog nop
```

20.0 IBIS Model

[IBIS ver] 2.1
[File name] tpz013g3.ibs
[File Rev] 1.0
[Date] 07/30/2002
[Source] Made By 0.13uu HSPICE model.
[Disclaimer] This information is for modeling purposes only and is not guaranteed.
[Copyright] Copyright 2002, Design Service, tsmc, All Rights Reserved.
|
|***
| Component tpz013g3
|***

(Pin)	signal_name	model_name
1	SDO4_SDI1_PC7	PRD12DGZ
2	IO_GND	PVSS3DGZ
3	IO_VDD	PVDD2DGZ
4	SDO3_SDI2_PC8	PRD12DGZ
5	SDO2_SDI3_PC9	PRD12DGZ
6	SDO1_PC10	PRD12DGZ
7	SDO0_PC11	PRD12DGZ
8	CORE_VDD	PVDD1DGZ
9	PF8	PRD12DGZ
10	PF6	PRD12DGZ
11	PF7	PRD12DGZ
12	CORE_GND	PVSS3DGZ
13	PF2	PRD12DGZ
14	PF3	PRD12DGZ
15	PF4	PRD12DGZ
16	PF5	PRD12DGZ
17	IO_VDD	PVDD2DGZ
18	PF1	PRD12DGZ
19	PF0	PRD12DGZ
20	GND	PVSS2DGZ
21	PF9	PRD12DGZ
22	SCAN	PDDDGZ
23	PF10	PRD12DGZ
24	IO_GND	PVSS3DGZ
25	IO_VDD	PVDD2DGZ
26	TI0_PB0	PVDD2DGZ
27	TI1_PB1	PVDD2DGZ

28	CORE_GND	PVSS3DGZ
29	CORE_VDD	PVDD1DGZ
30	TDO	PRT24DGZ
31	TDI	PDUDGZ
32	TCK	PDUDGZ
33	TMS	PDUDGZ
34	MOSI_HA0	PRD12DGZ
35	MISO_SDA	PRD12DGZ
36	SCK_SCL	PRD16DGZ
37	SS_HA2	PDUSDGZ
38	HREQ	PRD12DGZ
39	PLLA_VDD	PVDD1P
40	PLLA_GND	PVSS1P
41	PLLP_VDD	PVDD2DGZ
42	PLLP_GND	PVSS2P
43	PLLD_GND	PVSS1P
44a	PLLD_VDD	PVDD1PC
44b	PLLD_VDD	PVDD1DGZ
45	EXTAL	PDIDGZ
46	PINIT_NMI	PDUSDGZ
47	RESET_B	PDUSDGZ
48	MODD_IRQD	PDUSDGZ
49	MODC_IRQC	PDUSDGZ
50	MODB_IRQB	PDUSDGZ
51	MODA_IRQA	PDUSDGZ
52	CORE_VDD	PVDD1DGZ
53	CORE_GND	PVSS3DGZ
54	SDO0_PE11	PRD12DGZ
55	SDO1_PE10	PRD12DGZ
56	SDO2_SDI3_PE9	PRD12DGZ
57	SDO3_SDI2_PE8	PRD12DGZ
58	SDO4_SDI1_PE7	PRD12DGZ
59	SDO5_SDI0_PE6	PRD12DGZ
60	FST_PE4	PRD12DGZ
61	FSR_PE1	PRD12DGZ
62	SCKT_PE4	PRD12DGZ
63	SCKR_PE0	PRD12DGZ
64	IO_VDD	PVDD2DGZ
65	IO_GND	PVSS3DGZ
66	HCKT_PE5	PRD12DGZ
67	HCKR_PE2	PRD12DGZ
68	CORE_GND	PVSS3DGZ
69	ADO_PD1	PRD24DGZ
70	ADI_PD2	PRD24DGZ

71	CORE_VDD	PVDD1DGZ
72	HCKR_PC2	PRD12DGZ
73	HCKT_PC5	PRD12DGZ
74	IO_GND	PVSS3DGZ
75	IO_VDD	PVDD2DGZ
76	SCKR_PC0	PRD12DGZ
77	SCKT_PC4	PRD12DGZ
78	FSR_PC1	PRD12DGZ
79	FST_PC4	PRD12DGZ
80	SDO5_SDI0_PC6	PRD12DGZ

```
|********************************************************************
|                    Model prd12dgz
|********************************************************************
|
[Model]                 prd12dgz
Model_type              I/O
Polarity                Non-Inverting
Enable                  Active-Low
Vinl =   0.80V
Vinh =   2.00V
Vmeas =   1.50V
Cref =  50.00pF
Rref =   1.00M
Vref =  0.000V
C_comp                  4.17pF          3.75pF          4.58pF
|
|
[Temperature Range]      25.00           0.12k           0.000
[Pullup Reference]      3.30V           3.00V           3.60V
[Pulldown Reference]    0.000V          0.000V          0.000V
[POWER Clamp Reference] 5.00V           4.50V           5.50V
[GND Clamp Reference]   0.000V          0.000V          0.000V
[Pulldown]
| voltage      I(typ)          I(min)          I(max)
|
  -3.30         0.000A          0.000A          0.000A
  -3.10         0.000A          0.000A          -10.00mA
  -2.90         0.000A          0.000A          0.000A
  -2.70         0.000A          0.000A          0.000A
  -2.50         0.000A          -10.00mA        0.000A
  -2.30         -10.00mA        0.000A          -10.00mA
  -2.10         0.000A          -10.00mA        0.000A
  -1.90         0.000A          0.000A          -10.00mA
```

-1.70	0.000A	0.000A	-10.00mA
-1.50	-10.00mA	0.000A	-10.00mA
-1.00	-11.00mA	-5.00mA	-13.00mA
-0.90	-12.00mA	-5.00mA	-15.00mA
-0.80	-24.00mA	-7.00mA	-32.51mA
-0.70	-29.14mA	-8.00mA	-32.35mA
-0.60	-26.47mA	-13.80mA	-29.35mA
-0.50	-22.61mA	-14.54mA	-25.54mA
-0.40	-18.32mA	-12.17mA	-20.93mA
-0.30	-13.87mA	-9.16mA	-15.91mA
-0.20	-9.33mA	-6.10mA	-10.74mA
-0.10	-4.70mA	-3.05mA	-5.43mA
-0.00	2.86nA	7.25nA	11.72nA
0.10	4.61mA	2.94mA	5.36mA
0.20	8.96mA	5.69mA	10.49mA
0.30	13.07mA	8.26mA	15.36mA
0.40	16.92mA	10.65mA	20.00mA
0.50	20.53mA	12.86mA	24.40mA
0.60	23.91mA	14.90mA	28.55mA
0.70	27.04mA	16.76mA	32.48mA
0.80	29.95mA	18.46mA	36.18mA
0.90	32.61mA	19.99mA	39.64mA
1.00	35.06mA	21.37mA	42.87mA
1.10	37.27mA	22.58mA	45.87mA
1.20	39.27mA	23.64mA	48.64mA
1.30	41.04mA	24.55mA	51.19mA
1.40	42.60mA	25.32mA	53.50mA
1.50	43.95mA	25.95mA	55.60mA
1.60	45.08mA	26.44mA	57.46mA
1.70	46.00mA	26.80mA	59.11mA
1.80	46.70mA	27.07mA	60.53mA
1.90	47.20mA	27.26mA	61.71mA
2.00	47.55mA	27.41mA	62.63mA
2.10	47.81mA	27.53mA	63.31mA
2.20	48.01mA	27.63mA	63.79mA
2.30	48.17mA	27.71mA	64.15mA
2.40	48.31mA	27.78mA	64.43mA
2.50	48.42mA	27.85mA	64.65mA
2.60	48.53mA	27.90mA	64.84mA
2.70	48.62mA	27.96mA	65.00mA
2.80	48.70mA	28.01mA	65.14mA
2.90	48.78mA	28.05mA	65.27mA
3.00	48.85mA	28.09mA	65.38mA
3.10	48.92mA	28.14mA	65.49mA

3.20	48.99mA	28.18mA	65.59mA
3.30	49.05mA	28.23mA	65.68mA
3.40	49.12mA	28.42mA	65.77mA
3.50	49.20mA	28.97mA	65.86mA
3.60	49.24mA	29.74mA	65.95mA
3.70	49.31mA	30.57mA	66.04mA
3.80	49.40mA	31.13mA	66.12mA
3.90	49.61mA	28.60mA	66.22mA
4.00	50.41mA	28.66mA	66.33mA
4.10	51.65mA	28.72mA	66.49mA
4.20	52.87mA	28.80mA	66.72mA
4.30	50.78mA	28.89mA	67.28mA
4.50	50.67mA	29.12mA	70.40mA
4.70	51.17mA	29.42mA	73.03mA
4.90	51.85mA	29.83mA	69.12mA
5.10	52.75mA	30.37mA	70.18mA
5.30	53.86mA	31.02mA	71.45mA
5.50	55.21mA	31.82mA	73.05mA
5.70	56.82mA	32.77mA	74.98mA
5.90	58.68mA	33.86mA	77.25mA
6.10	60.78mA	35.10mA	79.83mA
6.60	66.91mA	38.73mA	87.50mA

|
[Pullup]

voltage	I(typ)	I(min)	I(max)
-3.30	0.11A	82.01mA	0.13A
-3.10	0.11A	79.25mA	0.13A
-2.90	0.10A	76.07mA	0.12A
-2.70	97.60mA	72.55mA	0.11A
-2.50	92.41mA	68.70mA	0.11A
-2.30	87.04mA	64.55mA	0.10A
-2.10	81.44mA	60.13mA	94.69mA
-1.90	75.56mA	55.45mA	87.72mA
-1.70	69.36mA	50.52mA	80.48mA
-1.50	62.83mA	45.36mA	73.03mA
-1.00	48.46mA	31.37mA	56.75mA
-0.90	43.82mA	28.63mA	50.74mA
-0.80	38.59mA	28.69mA	44.61mA
-0.70	33.28mA	24.97mA	38.60mA
-0.60	28.26mA	21.04mA	33.20mA
-0.50	23.64mA	17.11mA	27.91mA
-0.40	19.01mA	13.34mA	22.52mA
-0.30	14.32mA	9.87mA	17.03mA

-0.20	9.58mA	6.53mA	11.45mA
-0.10	4.80mA	3.23mA	5.78mA
0.00	34.08uA	11.20uA	71.92uA
0.10	-4.58mA	-3.08mA	-5.50mA
0.20	-8.94mA	-5.98mA	-10.80mA
0.30	-13.04mA	-8.72mA	-15.82mA
0.40	-16.89mA	-11.27mA	-20.56mA
0.50	-20.50mA	-13.66mA	-25.04mA
0.60	-23.86mA	-15.87mA	-29.25mA
0.70	-26.98mA	-17.92mA	-33.21mA
0.80	-29.87mA	-19.80mA	-36.91mA
0.90	-32.53mA	-21.51mA	-40.36mA
1.00	-34.96mA	-23.06mA	-43.56mA
1.10	-37.16mA	-24.45mA	-46.52mA
1.20	-39.15mA	-25.68mA	-49.24mA
1.30	-40.92mA	-26.75mA	-51.73mA
1.40	-42.48mA	-27.66mA	-53.98mA
1.50	-43.83mA	-28.43mA	-56.01mA
1.60	-44.98mA	-29.05mA	-57.81mA
1.70	-45.94mA	-29.53mA	-59.40mA
1.80	-46.72mA	-29.90mA	-60.77mA
1.90	-47.35mA	-30.20mA	-61.93mA
2.00	-47.86mA	-30.45mA	-62.90mA
2.10	-48.29mA	-30.66mA	-63.70mA
2.20	-48.65mA	-30.85mA	-64.37mA
2.30	-48.97mA	-31.02mA	-64.93mA
2.40	-49.25mA	-31.17mA	-65.40mA
2.50	-49.50mA	-31.31mA	-65.82mA
2.60	-49.72mA	-31.44mA	-66.18mA
2.70	-49.92mA	-31.56mA	-66.50mA
2.80	-50.11mA	-31.67mA	-66.79mA
2.90	-50.28mA	-31.78mA	-67.05mA
3.00	-50.44mA	-31.88mA	-67.29mA
3.10	-50.59mA	-31.98mA	-67.51mA
3.20	-50.74mA	-32.08mA	-67.72mA
3.30	-50.88mA	-32.20mA	-67.92mA
3.40	-51.01mA	-32.75mA	-68.11mA
3.50	-51.14mA	-40.35mA	-68.29mA
3.60	-51.27mA	-0.14A	-68.47mA
3.70	-51.42mA	-0.94A	-68.64mA
3.80	-51.84mA	-2.69A	-68.80mA
3.90	-53.78mA	-4.48A	-68.97mA
4.00	-64.80mA	-6.27A	-69.30mA
4.10	-0.29A	-8.06A	-70.82mA

4.20	-1.85A	-9.85A	-75.29mA
4.30	-3.90A	-11.63A	-83.12mA
4.50	-8.00A	-15.21A	-1.14A
4.70	-12.10A	-18.79A	-5.39A
4.90	-16.20A	-22.36A	-9.64A
5.10	-20.30A	-25.94A	-13.89A
5.30	-24.40A	-29.51A	-18.15A
5.50	-28.50A	-33.09A	-22.41A
5.70	-32.60A	-36.67A	-26.66A
5.90	-36.70A	-40.24A	-30.92A
6.10	-40.80A	-43.82A	-35.17A
6.60	-51.05A	-52.76A	-45.81A

|
[GND_clamp]

voltage	I(typ)	I(min)	I(max)
-5.00	-85.83A	-77.78A	-88.32A
-4.80	-81.73A	-74.20A	-84.06A
-4.60	-77.63A	-70.62A	-79.80A
-4.40	-73.53A	-67.04A	-75.54A
-4.20	-69.43A	-63.46A	-71.28A
-4.00	-65.33A	-59.88A	-67.02A
-3.80	-61.23A	-56.30A	-62.76A
-3.60	-57.13A	-52.72A	-58.50A
-3.40	-53.03A	-49.14A	-54.24A
-3.20	-48.93A	-45.56A	-49.98A
-3.00	-44.84A	-41.99A	-45.73A
-2.80	-40.74A	-38.42A	-41.48A
-2.60	-36.64A	-34.84A	-37.22A
-2.40	-32.54A	-31.27A	-32.97A
-2.20	-28.45A	-27.69A	-28.72A
-2.00	-24.35A	-24.12A	-24.46A
-1.80	-20.25A	-20.54A	-20.21A
-1.60	-16.15A	-16.97A	-15.95A
-1.40	-12.05A	-13.39A	-11.70A
-1.20	-7.95A	-9.82A	-7.44A
-1.00	-3.85A	-6.24A	-3.19A
-0.80	-0.23A	-2.66A	-70.99mA
-0.60	-2.25mA	-0.10A	-5.98mA
-0.40	-89.81uA	-0.52mA	-0.26mA
-0.20	-27.92uA	-14.70uA	-42.92uA
-0.00	-87.63nA	-89.05nA	-0.10uA
0.20	18.71uA	7.31uA	32.27uA
0.40	29.19uA	10.25uA	54.12uA

0.60	32.49uA	10.67uA	65.78uA
0.80	33.07uA	10.78uA	69.33uA
1.00	33.30uA	10.86uA	70.17uA
1.20	33.45uA	10.92uA	70.55uA
1.40	33.57uA	10.97uA	70.80uA
1.60	33.68uA	11.02uA	70.99uA
1.80	33.77uA	11.07uA	71.16uA
2.00	33.87uA	11.11uA	71.32uA
2.20	33.96uA	11.14uA	71.46uA
2.40	34.01uA	11.15uA	71.61uA
2.60	34.03uA	11.16uA	71.76uA
2.80	34.05uA	11.17uA	71.84uA
3.00	34.06uA	11.19uA	71.86uA
3.20	34.07uA	11.51uA	71.88uA
3.40	34.07uA	10.95uA	71.90uA
3.60	34.07uA	10.39uA	71.92uA
3.80	34.07uA	9.83uA	71.94uA
4.00	34.07uA	9.27uA	71.96uA
4.20	34.07uA	8.71uA	71.98uA
4.40	34.07uA	8.15uA	72.00uA
4.60	34.07uA	7.59uA	72.02uA
4.80	34.07uA	7.03uA	72.04uA
5.00	34.07uA	6.47uA	72.06uA

|
[POWER_clamp]

voltage	I(typ)	I(min)	I(max)
-5.00	48.57uA	16.33uA	95.57uA
-4.90	48.24uA	16.21uA	95.07uA
-4.80	47.91uA	16.09uA	94.57uA
-4.70	47.58uA	15.97uA	94.07uA
-4.60	47.25uA	15.85uA	93.57uA
-4.50	46.92uA	15.73uA	93.07uA
-4.40	46.59uA	15.61uA	92.57uA
-4.30	46.26uA	15.49uA	92.07uA
-4.20	45.93uA	15.37uA	91.57uA
-4.10	45.60uA	15.25uA	91.07uA
-4.00	45.27uA	15.13uA	90.57uA
-3.90	44.94uA	15.01uA	90.07uA
-3.80	4.61uA	14.89uA	89.57uA
-3.70	44.28uA	14.77uA	89.07uA
-3.60	43.95uA	14.65uA	88.57uA
-3.50	43.62uA	14.53uA	88.07uA
-3.40	43.29uA	14.41uA	87.57uA

-3.30	42.96uA	14.29uA	87.07uA
-3.20	42.63uA	14.17uA	86.57uA
-3.10	42.30uA	14.05uA	86.07uA
-3.00	41.97uA	13.93uA	85.57uA
-2.90	41.64uA	13.81uA	85.07uA
-2.80	41.31uA	13.69uA	84.57uA
-2.70	40.98uA	13.57uA	84.07uA
-2.60	40.65uA	13.45uA	83.57uA
-2.50	40.32uA	13.33uA	83.07uA
-2.40	39.99uA	13.21uA	82.57uA
-2.30	39.66uA	13.09uA	82.07uA
-2.20	39.33uA	12.97uA	81.57uA
-2.10	39.00uA	12.85uA	81.07uA
-2.00	38.67uA	12.73uA	80.57uA
-1.90	38.34uA	12.61uA	80.07uA
-1.80	38.01uA	12.49uA	79.57uA
-1.70	37.68uA	12.37uA	79.07uA
-1.60	37.35uA	12.25uA	78.57uA
-1.50	37.02uA	12.15uA	78.07uA
-1.40	36.71uA	12.05uA	77.57uA
-1.30	36.42uA	11.95uA	77.07uA
-1.20	36.15uA	11.87uA	76.57uA
-1.10	35.89uA	11.79uA	76.07uA
-1.00	35.66uA	11.72uA	75.57uA
-0.90	35.45uA	11.66uA	75.10uA
-0.80	35.26uA	11.60uA	74.67uA
-0.70	35.09uA	11.55uA	74.28uA
-0.60	34.93uA	11.51uA	73.93uA
-0.50	34.80uA	11.47uA	73.61uA
0.40	34.68uA	11.43uA	73.34uA
-0.30	34.59uA	11.41uA	73.10uA
-0.20	34.50uA	11.38uA	72.89uA
-0.10	34.43uA	11.36uA	72.72uA
0.00	34.37uA	11.34uA	72.57uA

|

[Ramp]

variable	typ	min	max
dV/dt_r	1.21/2.06n	0.85/2.62n	1.45/1.82n
dV/dt_f	1.22/2.51n	0.78/3.11n	1.45/2.14n

R_load = 50.00

|

[Rising Waveform]

R_fixture = 50.00

V_fixture = 0.000
V_fixture_min = 0.000
V_fixture_max = 0.000
L_fixture = 0.000H
C_fixture = 0.000F

time	V(typ)	V(min)	V(max)
0.000S	1.26uV	1.62uV	1.22uV
0.20nS	1.04uV	1.45uV	0.74uV
0.40nS	-5.64uV	-1.36uV	11.59uV
0.60nS	-0.29mV	-5.13uV	-3.27mV
0.80nS	-3.54mV	25.94uV	-9.17mV
1.00nS	-3.50mV	-4.79uV	56.24mV
1.20nS	33.86mV	-0.86mV	0.13V
1.40nS	79.34mV	-3.75mV	0.19V
1.60nS	0.14V	-8.09mV	0.27V
1.80nS	0.20V	3.52mV	0.36V
2.00nS	0.28V	38.97mV	0.47V
2.20nS	0.36V	82.84mV	0.59V
2.40nS	0.47V	0.13V	0.74V
2.60nS	0.60V	0.18V	0.90V
2.80nS	0.77V	0.27V	1.12V
3.00nS	0.92V	0.34V	1.32V
3.20nS	1.03V	0.40V	1.46V
3.40nS	1.16V	0.50V	1.63V
3.60nS	1.29V	0.59V	1.78V
3.80nS	1.39V	0.67V	1.91V
4.00nS	1.49V	0.75V	2.01V
4.20nS	1.58V	0.84V	2.11V
4.40nS	1.65V	0.91V	2.18V
4.60nS	1.69V	0.95V	2.21V
4.80nS	1.72V	0.99V	2.23V
5.00nS	1.76V	1.03V	2.27V
5.20nS	1.80V	1.07V	2.29V
5.40nS	1.83V	1.12V	2.31V
5.60nS	1.86V	1.16V	2.33V
5.80nS	1.88V	1.18V	2.34V
6.00nS	1.89V	1.20V	2.34V
6.20nS	1.91V	1.23V	2.35V
6.40nS	1.92V	1.25V	2.36V
6.60nS	1.93V	1.27V	2.37V
6.80nS	1.94V	1.28V	2.38V
7.00nS	1.95V	1.30V	2.38V
7.20nS	1.96V	1.31V	2.39V

7.40nS	1.97V	1.33V	2.39V
7.60nS	1.98V	1.34V	2.39V
7.80nS	1.98V	1.35V	2.40V
8.00nS	1.98V	1.36V	2.40V
8.20nS	1.99V	1.37V	2.40V
8.40nS	1.99V	1.37V	2.40V
8.60nS	1.99V	1.38V	2.41V
8.80nS	2.00V	1.39V	2.41V
9.00nS	2.00V	1.39V	2.41V
9.20nS	2.00V	1.40V	2.41V
9.40nS	2.01V	1.40V	2.41V
9.60nS	2.01V	1.41V	2.42V
9.80nS	2.01V	1.41V	2.42V
10.00nS	2.01V	1.41V	2.42V

|

[Rising Waveform]
R_fixture = 50.00
V_fixture = 3.30
V_fixture_min = 3.00
V_fixture_max = 3.60
L_fixture = 0.000H
C_fixture = 0.000F

time	V(typ)	V(min)	V(max)
0.000S	1.27V	1.66V	1.18V
0.20nS	1.27V	1.66V	1.18V
0.40nS	1.27V	1.66V	1.18V
0.60nS	1.27V	1.66V	1.19V
0.80nS	1.28V	1.66V	1.24V
1.00nS	1.40V	1.66V	1.47V
1.20nS	1.60V	1.67V	1.71V
1.40nS	1.77V	1.69V	1.88V
1.60nS	1.99V	1.80V	2.12V
1.80nS	2.24V	1.95V	2.41V
2.00nS	2.50V	2.13V	2.70V
2.20nS	2.74V	2.32V	2.99V
2.40nS	2.94V	2.49V	3.21V
2.60nS	3.09V	2.63V	3.34V
2.80nS	3.18V	2.79V	3.44V
3.00nS	3.24V	2.87V	3.49V
3.20nS	3.26V	2.91V	3.52V
3.40nS	3.27V	2.96V	3.55V
3.60nS	3.29V	2.98V	3.57V
3.80nS	3.29V	2.99V	3.59V

4.00nS	3.30V	2.99V	3.59V
4.20nS	3.30V	3.00V	3.60V
4.40nS	3.30V	3.00V	3.60V
4.60nS	3.30V	3.00V	3.60V
4.80nS	3.30V	3.00V	3.60V
5.00nS	3.30V	3.00V	3.60V
5.20nS	3.30V	3.00V	3.60V
5.40nS	3.30V	3.00V	3.60V
5.60nS	3.30V	3.00V	3.60V
5.80nS	3.30V	3.00V	3.60V
6.00nS	3.30V	3.00V	3.60V
6.20nS	3.30V	3.00V	3.60V
6.40nS	3.30V	3.00V	3.60V
6.60nS	3.30V	3.00V	3.60V
6.80nS	3.30V	3.00V	3.60V
7.00nS	3.30V	3.00V	3.60V
7.20nS	3.30V	3.00V	3.60V
7.40nS	3.30V	3.00V	3.60V
7.60nS	3.30V	3.00V	3.60V
7.80nS	3.30V	3.00V	3.60V
8.00nS	3.30V	3.00V	3.60V
8.20nS	3.30V	3.00V	3.60V
8.40nS	3.30V	3.00V	3.60V
8.60nS	3.30V	3.00V	3.60V
8.80nS	3.30V	3.00V	3.60V
9.00nS	3.30V	3.00V	3.60V
9.20nS	3.30V	3.00V	3.60V
9.40nS	3.30V	3.00V	3.60V
9.60nS	3.30V	3.00V	3.60V
9.80nS	3.30V	3.00V	3.60V
10.00nS	3.30V	3.00V	3.60V

|

[Falling Waveform]
R_fixture = 50.00
V_fixture = 0.000
V_fixture_min = 0.000
V_fixture_max = 0.000
L_fixture = 0.000H
C_fixture = 0.000F

|time	V(typ)	V(min)	V(max)
	0.000S	2.02V	1.44V	2.43V
	0.20nS	2.02V	1.44V	2.43V
	0.40nS	2.02V	1.44V	2.43V

0.60nS	2.02V	1.44V	2.38V
0.80nS	1.97V	1.44V	2.13V
1.00nS	1.73V	1.44V	1.82V
1.20nS	1.45V	1.42V	1.49V
1.40nS	1.24V	1.38V	1.24V
1.60nS	0.96V	1.29V	0.92V
1.80nS	0.70V	1.12V	0.67V
2.00nS	0.50V	0.92V	0.50V
2.20nS	0.36V	0.73V	0.38V
2.40nS	0.27V	0.55V	0.30V
2.60nS	0.20V	0.40V	0.24V
2.80nS	0.14V	0.27V	0.17V
3.00nS	99.16mV	0.20V	0.13V
3.20nS	79.41mV	0.16V	0.11V
3.40nS	53.08mV	0.11V	78.74mV
3.60nS	36.21mV	75.26mV	59.16mV
3.80nS	23.36mV	51.00mV	39.59mV
4.00nS	12.42mV	31.87mV	27.31mV
4.20nS	6.73mV	18.57mV	15.01mV
4.40nS	2.10mV	8.15mV	7.54mV
4.60nS	1.57mV	5.93mV	4.99mV
4.80nS	1.14mV	3.71mV	2.45mV
5.00nS	0.68mV	1.71mV	1.29mV
5.20nS	0.62mV	1.31mV	0.88mV
5.40nS	0.54mV	0.89mV	0.54mV
5.60nS	0.46mV	0.73mV	0.46mV
5.80nS	0.41mV	0.65mV	0.42mV
6.00nS	0.37mV	0.59mV	0.38mV
6.20nS	0.34mV	0.53mV	0.34mV
6.40nS	0.32mV	0.48mV	0.29mV
6.60nS	0.27mV	0.43mV	0.26mV
6.80nS	0.22mV	0.38mV	0.22mV
7.00nS	0.18mV	0.34mV	0.20mV
7.20nS	0.18mV	0.30mV	0.18mV
7.40nS	0.18mV	0.26mV	0.15mV
7.60nS	0.15mV	0.23mV	0.13mV
7.80nS	0.12mV	0.22mV	0.12mV
8.00nS	0.11mV	0.20mV	0.11mV
8.20nS	0.11mV	0.18mV	0.10mV
8.40nS	0.12mV	0.17mV	92.36uV
8.60nS	97.87uV	0.16mV	78.53uV
8.80nS	59.73uV	0.15mV	64.71uV
9.00nS	36.18uV	0.14mV	61.02uV
9.20nS	61.23uV	0.12mV	60.74uV

9.40nS	87.87uV	0.10mV	58.12uV
9.60nS	67.13uV	0.10mV	46.02uV
9.80nS	29.42uV	0.10mV	39.81uV
10.00nS	71.42uV	84.83uV	50.29uV

|
[Falling Waveform]
R_fixture = 50.00
V_fixture = 3.30
V_fixture_min = 3.00
V_fixture_max = 3.60
L_fixture = 0.000H
C_fixture = 0.000F

time	V(typ)	V(min)	V(max)
0.000S	3.30V	3.00V	3.60V
0.20nS	3.30V	3.00V	3.60V
0.40nS	3.30V	3.00V	3.60V
0.60nS	3.30V	3.00V	3.59V
0.80nS	3.30V	3.00V	3.48V
1.00nS	3.22V	3.00V	3.36V
1.20nS	3.12V	3.00V	3.25V
1.40nS	3.06V	3.00V	3.16V
1.60nS	2.96V	3.00V	3.04V
1.80nS	2.86V	2.95V	2.90V
2.00nS	2.75V	2.89V	2.76V
2.20nS	2.64V	2.83V	2.61V
2.40nS	2.52V	2.77V	2.48V
2.60nS	2.40V	2.70V	2.34V
2.80nS	2.26V	2.61V	2.18V
3.00nS	2.16V	2.54V	2.04V
3.20nS	2.10V	2.48V	1.93V
3.40nS	2.01V	2.41V	1.79V
3.60nS	1.93V	2.35V	1.68V
3.80nS	1.86V	2.30V	1.57V
4.00nS	1.78V	2.25V	1.49V
4.20nS	1.68V	2.19V	1.41V
4.40nS	1.58V	2.13V	1.34V
4.60nS	1.53V	2.10V	1.31V
4.80nS	1.49V	2.08V	1.29V
5.00nS	1.43V	2.04V	1.26V
5.20nS	1.39V	2.01V	1.24V
5.40nS	1.35V	1.98V	1.22V
5.60nS	1.32V	1.95V	1.21V
5.80nS	1.31V	1.94V	1.20V

6.00nS	1.30V	1.93V	1.20V
6.20nS	1.29V	1.91V	1.19V
6.40nS	1.29V	1.90V	1.19V
6.60nS	1.29V	1.88V	1.19V
6.80nS	1.28V	1.87V	1.19V
7.00nS	1.28V	1.85V	1.19V
7.20nS	1.28V	1.84V	1.19V
7.40nS	1.28V	1.83V	1.19V
7.60nS	1.28V	1.82V	1.19V
7.80nS	1.28V	1.81V	1.19V
8.00nS	1.28V	1.81V	1.19V
8.20nS	1.28V	1.80V	1.19V
8.40nS	1.27V	1.79V	1.19V
8.60nS	1.27V	1.79V	1.19V
8.80nS	1.27V	1.78V	1.19V
9.00nS	1.27V	1.77V	1.19V
9.20nS	1.27V	1.76V	1.19V
9.40nS	1.27V	1.75V	1.19V
9.60nS	1.27V	1.73V	1.18V
9.80nS	1.27V	1.72V	1.18V
10.00nS	1.27V	1.71V	1.18V

```
|
| End [Model] prd12dgz
|
|********************************************************************************
|                        Model prd16dgz
|********************************************************************************
|
[Model]          prd16dgz
Model_type       I/O
Polarity         Non-Inverting
Enable           Active-Low
Vinl =   0.80V
Vinh =   2.00V
Vmeas =   1.50V
Cref =  50.00pF
Rref =   1.00M
Vref =  0.000V
C_comp                      3.86pF          3.48pF          4.25pF
|
|
[Temperature Range]          25.00           0.12k           0.000
[Pullup Reference]          3.30V           3.00V           3.60V
[Pulldown Reference]        0.000V          0.000V          0.000V
```

[POWER Clamp Reference]	5.00V	4.50V	5.50V
[GND Clamp Reference]	0.000V	0.000V	0.000V

[Pulldown]

voltage	I(typ)	I(min)	I(max)
-3.30	-10.00mA	0.000A	0.000A
-3.10	0.000A	0.000A	0.000A
-2.90	0.000A	0.000A	0.000A
-2.70	0.000A	0.000A	0.000A
-2.50	0.000A	0.000A	0.000A
-2.30	0.000A	0.000A	0.000A
-2.10	-10.00mA	0.000A	0.000A
-1.90	0.000A	0.000A	-10.00mA
-1.70	-10.00mA	0.000A	-10.00mA
-1.50	-10.00mA	0.000A	-20.00mA
-1.00	-16.00mA	-6.00mA	-18.00mA
-0.90	-16.00mA	-8.00mA	-21.00mA
-0.80	-32.00mA	-8.00mA	-43.34mA
-0.70	-38.86mA	-10.60mA	-43.13mA
-0.60	-35.29mA	-18.40mA	-39.13mA
-0.50	-30.14mA	-19.39mA	-34.05mA
-0.40	-24.42mA	-16.22mA	-27.89mA
-0.30	-18.49mA	-12.22mA	-21.21mA
-0.20	-12.44mA	-8.14mA	-14.32mA
-0.10	-6.27mA	-4.06mA	-7.24mA
-0.00	4.09nA	6.98nA	10.67nA
0.10	6.14mA	3.92mA	7.15mA
0.20	11.95mA	7.59mA	13.98mA
0.30	17.42mA	11.01mA	20.48mA
0.40	22.56mA	14.20mA	26.67mA
0.50	27.38mA	17.14mA	32.53mA
0.60	31.88mA	19.86mA	38.07mA
0.70	36.06mA	22.35mA	43.31mA
0.80	39.93mA	24.61mA	48.24mA
0.90	43.49mA	26.66mA	52.85mA
1.00	46.74mA	28.49mA	57.16mA
1.10	49.69mA	30.11mA	61.16mA
1.20	52.35mA	31.52mA	64.86mA
1.30	54.72mA	32.74mA	68.25mA
1.40	56.80mA	33.76mA	71.34mA
1.50	58.59mA	34.59mA	74.13mA
1.60	60.11mA	35.25mA	76.62mA
1.70	61.33mA	35.74mA	78.81mA
1.80	62.26mA	36.09mA	80.70mA

1.90	62.93mA	36.35mA	82.27mA
2.00	63.40mA	36.55mA	83.51mA
2.10	63.75mA	36.71mA	84.41mA
2.20	64.01mA	36.84mA	85.06mA
2.30	64.23mA	36.95mA	85.54mA
2.40	64.41mA	37.04mA	85.91mA
2.50	64.56mA	37.13mA	86.20mA
2.60	64.70mA	37.21mA	86.45mA
2.70	64.82mA	37.28mA	86.66mA
2.80	64.94mA	37.34mA	86.85mA
2.90	65.04mA	37.40mA	87.02mA
3.00	65.14mA	37.46mA	87.17mA
3.10	65.23mA	37.51mA	87.32mA
3.20	65.32mA	37.57mA	87.45mA
3.30	65.40mA	37.63mA	87.58mA
3.40	65.49mA	37.81mA	87.70mA
3.50	65.59mA	38.34mA	87.82mA
3.60	65.66mA	39.10mA	87.93mA
3.70	65.75mA	39.94mA	88.05mA
3.80	65.86mA	40.42mA	88.16mA
3.90	66.08mA	38.09mA	88.29mA
4.00	66.86mA	38.16mA	88.44mA
4.10	68.11mA	38.25mA	88.63mA
4.20	69.36mA	38.35mA	88.90mA
4.30	67.34mA	38.47mA	89.46mA
4.50	67.43mA	38.78mA	92.67mA
4.70	68.10mA	39.19mA	95.47mA
4.90	69.00mA	39.73mA	91.91mA
5.10	70.20mA	40.44mA	93.29mA
5.30	71.67mA	41.32mA	95.00mA
5.50	73.47mA	42.38mA	97.12mA
5.70	75.61mA	43.64mA	99.69mA
5.90	78.09mA	45.10mA	0.10A
6.10	80.89mA	46.75mA	0.11A
6.60	89.06mA	51.59mA	0.12A

|
[Pullup]

voltage	I(typ)	I(min)	I(max)
-3.30	0.16A	0.12A	0.19A
-3.10	0.16A	0.12A	0.18A
-2.90	0.15A	0.11A	0.17A
-2.70	0.14A	0.11A	0.16A
-2.50	0.14A	0.10A	0.16A

-2.30	0.13A	96.26mA	0.15A
-2.10	0.12A	89.72mA	0.14A
-1.90	0.11A	82.79mA	0.13A
-1.70	0.10A	75.47mA	0.12A
-1.50	93.76mA	67.80mA	0.11A
-1.00	70.54mA	46.98mA	82.43mA
-0.90	63.97mA	42.83mA	74.23mA
-0.80	56.74mA	41.47mA	65.83mA
-0.70	49.39mA	36.27mA	57.50mA
-0.60	42.27mA	30.78mA	49.67mA
-0.50	35.43mA	25.27mA	41.79mA
-0.40	28.50mA	19.90mA	33.74mA
-0.30	21.47mA	14.79mA	25.52mA
-0.20	14.35mA	9.79mA	17.14mA
-0.10	7.19mA	4.85mA	8.64mA
0.00	34.08uA	11.19uA	71.92uA
0.10	-6.89mA	-4.62mA	-8.29mA
0.20	-13.43mA	-8.98mA	-16.24mA
0.30	-19.58mA	-13.08mA	-23.77mA
0.40	-25.36mA	-16.92mA	-30.88mA
0.50	-30.77mA	-20.50mA	-37.60mA
0.60	-35.81mA	-23.82mA	-43.93mA
0.70	-40.49mA	-26.89mA	-49.86mA
0.80	-44.83mA	-29.70mA	-55.41mA
0.90	-48.81mA	-32.27mA	-60.59mA
1.00	-52.46mA	-34.60mA	-65.39mA
1.10	-55.77mA	-36.68mA	-69.83mA
1.20	-58.75mA	-38.52mA	-73.91mA
1.30	-61.41mA	-40.13mA	-77.64mA
1.40	-63.75mA	-41.50mA	-81.02mA
1.50	-65.77mA	-42.65mA	-84.06mA
1.60	-67.50mA	-43.58mA	-86.77mA
1.70	-68.93mA	-44.31mA	-89.14mA
1.80	-70.10mA	-44.87mA	-91.20mA
1.90	-71.04mA	-45.31mA	-92.94mA
2.00	-71.82mA	-45.68mA	-94.40mA
2.10	-72.46mA	-46.00mA	-95.60mA
2.20	-73.01mA	-46.28mA	-96.60mA
2.30	-73.48mA	-46.53mA	-97.44mA
2.40	-73.90mA	-46.76mA	-98.15mA
2.50	-74.27mA	-46.97mA	-98.77mA
2.60	-74.60mA	-47.17mA	-99.31mA
2.70	-74.91mA	-47.35mA	-99.80mA
2.80	-75.18mA	-47.52mA	-0.10A

2.90	-75.44mA	-47.68mA	-0.10A
3.00	-75.68mA	-47.83mA	-0.10A
3.10	-75.90mA	-47.97mA	-0.10A
3.20	-76.12mA	-48.11mA	-0.10A
3.30	-76.32mA	-48.27mA	-0.10A
3.40	-76.52mA	-48.87mA	-0.10A
3.50	-76.71mA	-56.48mA	-0.10A
3.60	-76.89mA	-0.15A	-0.10A
3.70	-77.09mA	-0.95A	-0.10A
3.80	-77.56mA	-2.71A	-0.10A
3.90	-79.54mA	-4.50A	-0.10A
4.00	-90.56mA	-6.29A	-0.10A
4.10	-0.31A	-8.09A	-0.11A
4.20	-1.88A	-9.88A	-0.11A
4.30	-3.93A	-11.66A	-0.12A
4.50	-8.04A	-15.24A	-1.17A
4.70	-12.14A	-18.83A	-5.43A
4.90	-16.25A	-22.41A	-9.69A
5.10	-20.36A	-25.99A	-13.95A
5.30	-24.46A	-29.57A	-18.21A
5.50	-28.57A	-33.15A	-22.48A
5.70	-32.68A	-36.73A	-26.74A
5.90	-36.78A	-40.31A	-31.00A
6.10	-40.89A	-43.89A	-35.27A
6.60	-51.16A	-52.84A	-45.93A

|
[GND_clamp]

voltage	I(typ)	I(min)	I(max)
-5.00	-85.90A	-77.84A	-88.40A
-4.80	-81.80A	-74.26A	-84.14A
-4.60	-77.70A	-70.68A	-79.88A
-4.40	-73.60A	-67.10A	-75.62A
-4.20	-69.50A	-63.52A	-71.36A
-4.00	-65.40A	-59.94A	-67.10A
-3.80	-61.30A	-56.36A	-62.84A
-3.60	-57.20A	-52.78A	-58.58A
-3.40	-53.10A	-49.20A	-54.32A
-3.20	-49.00A	-45.62A	-50.06A
-3.00	-44.90A	-42.04A	-45.80A
-2.80	-40.80A	-38.46A	-41.54A
-2.60	-36.69A	-34.89A	-37.28A
-2.40	-32.59A	-31.31A	-33.02A
-2.20	-28.49A	-27.73A	-28.76A

-2.00	-24.38A	-24.15A	-24.50A
-1.80	-20.28A	-20.57A	-20.24A
-1.60	-16.17A	-16.99A	-15.97A
-1.40	-12.06A	-13.40A	-11.71A
-1.20	-7.96A	-9.83A	-7.45A
-1.00	-3.86A	-6.25A	-3.19A
-0.80	-0.23A	-2.66A	-70.76mA
-0.60	-2.22mA	-0.10A	-5.90mA
-0.40	-89.20uA	-0.52mA	-0.26mA
0.20	-27.89uA	-14.67uA	-42.88uA
-0.00	-62.88nA	-63.80nA	-74.38nA
0.20	18.73uA	7.33uA	32.30uA
0.40	29.21uA	10.27uA	54.14uA
0.60	32.51uA	10.69uA	65.81uA
0.80	33.09uA	10.80uA	69.35uA
1.00	33.31uA	10.87uA	70.19uA
1.20	33.46uA	10.93uA	70.56uA
1.40	33.58uA	10.98uA	70.81uA
1.60	33.69uA	11.03uA	71.00uA
1.80	33.78uA	11.08uA	71.17uA
2.00	33.87uA	11.12uA	71.33uA
2.20	33.96uA	11.14uA	71.47uA
2.40	34.01uA	11.15uA	71.62uA
2.60	34.03uA	11.16uA	71.76uA
2.80	34.04uA	11.17uA	71.84uA
3.00	34.05uA	11.18uA	71.86uA
3.20	34.06uA	11.57uA	71.88uA
3.40	34.08uA	10.87uA	71.90uA
3.60	34.10uA	10.17uA	71.92uA
3.80	34.12uA	9.47uA	71.94uA
4.00	34.14uA	8.77uA	71.96uA
4.20	34.16uA	8.07uA	71.98uA
4.40	34.18uA	7.37uA	72.00uA
4.60	34.20uA	6.67uA	72.02uA
4.80	34.22uA	5.97uA	72.04uA
5.00	34.24uA	5.27uA	72.06uA

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[POWER_clamp]

voltage	I(typ)	I(min)	I(max)
-5.00	48.54uA	16.29uA	95.93uA
-4.90	48.21uA	16.17uA	95.42uA
-4.80	47.88uA	16.05uA	94.91uA
-4.70	47.55uA	15.93uA	94.40uA

-4.60	47.22uA	15.81uA	93.89uA
-4.50	46.89uA	15.69uA	93.38uA
-4.40	46.56uA	15.57uA	92.87uA
-4.30	46.23uA	15.45uA	92.36uA
-4.20	45.90uA	15.33uA	91.85uA
-4.10	45.57uA	15.21uA	91.34uA
-4.00	45.24uA	15.09uA	90.83uA
-3.90	44.91uA	14.97uA	90.32uA
-3.80	44.58uA	14.85uA	89.81uA
-3.70	44.25uA	14.73uA	89.30uA
-3.60	43.92uA	14.61uA	88.79uA
-3.50	43.59uA	14.49uA	88.28uA
-3.40	43.26uA	14.37uA	87.77uA
-3.30	42.93uA	14.25uA	87.26uA
-3.20	42.60uA	14.13uA	86.75uA
-3.10	42.27uA	14.01uA	86.24uA
-3.00	41.94uA	13.89uA	85.73uA
-2.90	41.61uA	13.77uA	85.22uA
-2.80	41.28uA	13.65uA	84.71uA
-2.70	40.95uA	13.53uA	84.20uA
-2.60	40.62uA	13.41uA	83.69uA
2.50	40.29uA	13.29uA	83.18uA
-2.40	39.96uA	13.17uA	82.67uA
-2.30	39.63uA	13.05uA	82.16uA
-2.20	39.30uA	12.93uA	81.65uA
-2.10	38.97uA	12.81uA	81.14uA
-2.00	38.64uA	12.69uA	80.63uA
-1.90	38.31uA	12.57uA	80.12uA
-1.80	37.98uA	12.45uA	79.61uA
-1.70	37.65uA	12.33uA	79.10uA
-1.60	37.32uA	12.22uA	78.59uA
-1.50	36.99uA	12.11uA	78.08uA
-1.40	36.68uA	12.02uA	77.57uA
-1.30	36.39uA	11.92uA	77.06uA
-1.20	36.12uA	11.84uA	76.55uA
-1.10	35.87uA	11.76uA	76.04uA
-1.00	35.63uA	11.69uA	75.53uA
-0.90	35.42uA	11.63uA	75.06uA
-0.80	35.23uA	11.58uA	74.64uA
-0.70	35.06uA	11.53uA	4.25uA
-0.60	34.91uA	11.48uA	73.90uA
-0.50	34.78uA	11.44uA	73.58uA
-0.40	34.66uA	11.41uA	73.31uA
-0.30	34.56uA	11.38uA	73.07uA

-0.20	34.48uA	11.36uA	72.87uA
-0.10	34.41uA	11.34uA	72.69uA
0.00	34.35uA	11.32uA	72.55uA

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[Ramp]

variable	typ	min	max
dV/dt_r	1.43/2.06n	1.08/2.82n	1.66/1.86n
dV/dt_f	1.39/2.80n	0.98/4.41n	1.61/2.52n

R_load = 50.00

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[Rising Waveform]

R_fixture = 50.00

V_fixture = 0.000

V_fixture_min = 0.000

V_fixture_max = 0.000

L_fixture = 0.000H

C_fixture = 0.000F

time	V(typ)	V(min)	V(max)
0.000S	0.71uV	0.94uV	0.68uV
0.20nS	0.48uV	0.81uV	0.000V
0.40nS	-6.07uV	-1.89uV	12.38uV
0.60nS	-0.29mV	-5.66uV	-3.13mV
0.80nS	-3.39mV	26.90uV	-6.39mV
1.00nS	-4.34mV	-5.17uV	43.34mV
1.20nS	25.79mV	-0.87mV	0.11V
1.40nS	62.40mV	-3.65mV	0.15V
1.60nS	0.11V	-7.89mV	0.21V
1.80nS	0.16V	0.71mV	0.28V
2.00nS	0.22V	29.71mV	0.37V
2.20nS	0.28V	65.63mV	0.46V
2.40nS	0.37V	0.10V	0.59V
2.60nS	0.48V	0.15V	0.71V
2.80nS	0.63V	0.22V	0.92V
3.00nS	0.79V	0.28V	1.12V
3.20nS	0.90V	0.34V	1.28V
3.40nS	1.07V	0.43V	1.49V
3.60nS	1.24V	0.53V	1.70V
3.80nS	1.39V	0.63V	1.89V
4.00nS	1.55V	0.74V	2.07V
4.20nS	1.71V	0.86V	2.24V
4.40nS	1.84V	0.97V	2.37V
4.60nS	1.90V	1.03V	2.44V
4.80nS	1.96V	1.09V	2.50V

5.00nS	2.03V	1.16V	2.54V
5.20nS	2.08V	1.22V	2.59V
5.40nS	2.13V	1.29V	2.62V
5.60nS	2.18V	1.36V	2.65V
5.80nS	2.20V	1.39V	2.66V
6.00nS	2.22V	1.43V	2.67V
6.20nS	2.24V	1.47V	2.68V
6.40nS	2.26V	1.51V	2.69V
6.60nS	2.27V	1.54V	2.70V
6.80nS	2.29V	1.57V	2.71V
7.00nS	2.30V	1.60V	2.72V
7.20nS	2.31V	1.63V	2.72V
7.40nS	2.32V	1.66V	2.73V
7.60nS	2.33V	1.68V	2.74V
7.80nS	2.34V	1.69V	2.74V
8.00nS	2.34V	1.70V	2.74V
8.20nS	2.35V	1.72V	2.75V
8.40nS	2.35V	1.73V	2.75V
8.60nS	2.36V	1.74V	2.75V
8.80nS	2.36V	1.75V	2.76V
9.00nS	2.36V	1.76V	2.76V
9.20nS	2.37V	1.77V	2.76V
9.40nS	2.37V	1.78V	2.76V
9.60nS	2.38V	1.79V	2.77V
9.80nS	2.38V	1.80V	2.77V
10.00nS	2.38V	1.80V	2.77V

|

[Rising Waveform]
R_fixture = 50.00
V_fixture = 3.30
V_fixture_min = 3.00
V_fixture_max = 3.60
L_fixture = 0.000H
C_fixture = 0.000F

time	V(typ)	V(min)	V(max)
0.000S	0.98V	1.34V	0.92V
0.20nS	0.98V	1.34V	0.92V
0.40nS	0.98V	1.34V	0.92V
0.60nS	0.98V	1.34V	0.92V
0.80nS	0.99V	1.34V	0.94V
1.00nS	1.05V	1.34V	1.07V
1.20nS	1.18V	1.34V	1.24V
1.40nS	1.31V	1.36V	1.37V

1.60nS	1.49V	1.44V	1.55V
1.80nS	1.69V	1.57V	1.76V
2.00nS	1.92V	1.73V	2.02V
2.20nS	2.18V	1.92V	2.33V
2.40nS	2.46V	2.11V	2.62V
2.60nS	2.73V	2.32V	2.91V
2.80nS	2.97V	2.55V	3.20V
3.00nS	3.09V	2.69V	3.33V
3.20nS	3.15V	2.76V	3.39V
3.40nS	3.20V	2.86V	3.44V
3.60nS	3.24V	2.92V	3.50V
3.80nS	3.26V	2.95V	3.53V
4.00nS	3.28V	2.98V	3.55V
4.20nS	3.29V	2.99V	3.57V
4.40nS	3.29V	2.99V	3.59V
4.60nS	3.30V	3.00V	3.59V
4.80nS	3.30V	3.00V	3.59V
5.00nS	3.30V	3.00V	3.60V
5.20nS	3.30V	3.00V	3.60V
5.40nS	3.30V	3.00V	3.60V
5.60nS	3.30V	3.00V	3.60V
5.80nS	3.30V	3.00V	3.60V
6.00nS	3.30V	3.00V	3.60V
6.20nS	3.30V	3.00V	3.60V
6.40nS	3.30V	3.00V	3.60V
6.60nS	3.30V	3.00V	3.60V
6.80nS	3.30V	3.00V	3.60V
7.00nS	3.30V	3.00V	3.60V
7.20nS	3.30V	3.00V	3.60V
7.40nS	3.30V	3.00V	3.60V
7.60nS	3.30V	3.00V	3.60V
7.80nS	3.30V	3.00V	3.60V
8.00nS	3.30V	3.00V	3.60V
8.20nS	3.30V	3.00V	3.60V
8.40nS	3.30V	3.00V	3.60V
8.60nS	3.30V	3.00V	3.60V
8.80nS	3.30V	3.00V	3.60V
9.00nS	3.30V	3.00V	3.60V
9.20nS	3.30V	3.00V	3.60V
9.40nS	3.30V	3.00V	3.60V
9.60nS	3.30V	3.00V	3.60V
9.80nS	3.30V	3.00V	3.60V
10.00nS	3.30V	3.00V	3.60V

|

[Falling Waveform]
R_fixture = 50.00
V_fixture = 0.000
V_fixture_min = 0.000
V_fixture_max = 0.000
L_fixture = 0.000H
C_fixture = 0.000F

time	V(typ)	V(min)	V(max)
0.000S	2.41V	1.87V	2.79V
0.20nS	2.41V	1.87V	2.79V
0.40nS	2.41V	1.87V	2.79V
0.60nS	2.41V	1.87V	2.76V
0.80nS	2.37V	1.87V	2.62V
1.00nS	2.24V	1.86V	2.44V
1.20nS	2.07V	1.85V	2.25V
1.40nS	1.94V	1.82V	2.10V
1.60nS	1.76V	1.75V	1.85V
1.80nS	1.54V	1.65V	1.55V
2.00nS	1.28V	1.51V	1.23V
2.20nS	1.01V	1.36V	0.96V
2.40nS	0.78V	1.18V	0.77V
2.60nS	0.61V	0.99V	0.63V
2.80nS	0.46V	0.76V	0.51V
3.00nS	0.37V	0.59V	0.43V
3.20nS	0.33V	0.49V	0.37V
3.40nS	0.26V	0.39V	0.32V
3.60nS	0.21V	0.31V	0.27V
3.80nS	0.17V	0.25V	0.22V
4.00nS	0.14V	0.19V	0.19V
4.20nS	0.10V	0.15V	0.14V
4.40nS	73.29mV	0.10V	0.11V
4.60nS	60.19mV	87.46mV	93.57mV
4.80nS	48.89mV	70.67mV	8.29mV
5.00nS	34.23mV	50.83mV	61.98mV
5.20nS	24.65mV	38.23mV	46.06mV
5.40nS	14.47mV	23.57mV	32.51mV
5.60nS	8.10mV	14.65mV	20.47mV
5.80nS	5.49mV	9.93mV	15.65mV
6.00nS	3.06mV	6.30mV	11.70mV
6.20nS	1.82mV	4.27mV	6.64mV
6.40nS	1.09mV	2.24mV	4.15mV
6.60nS	0.61mV	1.46mV	2.31mV
6.80nS	0.54mV	1.08mV	1.05mV

7.00nS	0.47mV	0.78mV	0.76mV
7.20nS	0.42mV	0.69mV	0.48mV
7.40nS	0.35mV	0.59mV	0.37mV
7.60nS	0.31mV	0.52mV	0.31mV
7.80nS	0.29mV	0.48mV	0.29mV
8.00nS	0.27mV	0.45mV	0.26mV
8.20nS	0.24mV	0.40mV	0.24mV
8.40nS	0.20mV	0.35mV	0.21mV
8.60nS	0.18mV	0.32mV	0.18mV
8.80nS	0.18mV	0.31mV	0.16mV
9.00nS	0.17mV	0.28mV	0.16mV
9.20nS	0.15mV	0.24mV	0.15mV
9.40nS	0.12mV	0.20mV	0.12mV
9.60nS	0.10mV	0.19mV	93.74uV
9.80nS	0.11mV	0.20mV	90.71uV
10.00nS	0.11mV	0.17mV	97.83uV

|
[Falling Waveform]
R_fixture = 50.00
V_fixture = 3.30
V_fixture_min = 3.00
V_fixture_max = 3.60
L_fixture = 0.000H
C_fixture = 0.000F

time	V(typ)	V(min)	V(max)
0.000S	3.30V	3.00V	3.60V
0.20nS	3.30V	3.00V	3.60V
0.40nS	3.30V	3.00V	3.60V
0.60nS	3.30V	3.00V	3.59V
0.80nS	3.30V	3.00V	3.52V
1.00nS	3.25V	3.00V	3.43V
1.20nS	3.17V	3.00V	3.34V
1.40nS	3.12V	3.00V	3.27V
1.60nS	3.05V	3.00V	3.17V
1.80nS	2.97V	2.97V	3.06V
2.00nS	2.87V	2.92V	2.95V
2.20nS	2.78V	2.87V	2.83V
2.40nS	2.68V	2.82V	2.70V
2.60nS	2.58V	2.76V	2.58V
2.80nS	2.45V	2.69V	2.43V
3.00nS	2.34V	2.62V	2.30V
3.20nS	2.26V	2.57V	2.21V
3.40nS	2.17V	2.50V	2.07V

3.60nS	2.07V	2.44V	1.91V
3.80nS	1.98V	2.38V	1.76V
4.00nS	1.89V	2.32V	1.62V
4.20nS	1.76V	2.25V	1.49V
4.40nS	1.63V	2.18V	1.37V
4.60nS	1.55V	2.15V	1.32V
4.80nS	1.48V	2.11V	1.27V
5.00nS	1.40V	2.06V	1.21V
5.20nS	1.32V	2.01V	1.16V
5.40nS	1.25V	1.96V	1.10V
5.60nS	1.19V	1.92V	1.06V
5.80nS	1.15V	1.89V	1.04V
6.00nS	1.13V	1.87V	1.02V
6.20nS	1.10V	1.84V	1.00V
6.40nS	1.07V	1.81V	0.98V
6.60nS	1.05V	1.78V	0.96V
6.80nS	1.03V	1.75V	0.95V
7.00nS	1.02V	1.72V	0.94V
7.20nS	1.01V	1.70V	0.93V
7.40nS	1.00V	1.67V	0.93V
7.60nS	1.00V	1.64V	0.92V
7.80nS	1.00V	1.62V	0.92V
8.00nS	1.00V	1.60V	0.92V
8.20nS	0.99V	1.57V	0.92V
8.40nS	0.99V	1.53V	0.92V
8.60nS	0.99V	1.50V	0.92V
8.80nS	0.99V	1.47V	0.92V
9.00nS	0.99V	1.44V	0.92V
9.20nS	0.99V	1.42V	0.92V
9.40nS	0.99V	1.40V	0.92V
9.60nS	0.99V	1.38V	0.92V
9.80nS	0.99V	1.37V	0.92V
10.00nS	0.99V	1.36V	0.92V

```
|
| End [Model] prd16dgz
|
|********************************************************************
|                        Model prd24dgz
|********************************************************************
|
[Model]          prd24dgz
Model_type       I/O
Polarity         Non-Inverting
Enable           Active-Low
```

Vinl = 0.80V
Vinh = 2.00V
Vmeas = 1.50V
Cref = 50.00pF
Rref = 1.00M
Vref = 0.000V

C_comp	4.15pF	3.73pF	4.56pF
|			
|			
[Temperature Range]	25.00	0.12k	0.000
[Pullup Reference]	3.30V	3.00V	3.60V
[Pulldown Reference]	0.000V	0.000V	0.000V
[POWER Clamp Reference]	5.00V	4.50V	5.50V
[GND Clamp Reference]	0.000V	0.000V	0.000V

[Pulldown]

| voltage	I(typ)	I(min)	I(max)
|			
-3.30	-10.00mA	0.000A	0.000A
-3.10	0.000A	0.000A	-10.00mA
-2.90	0.000A	0.000A	0.000A
-2.70	0.000A	0.000A	0.000A
-2.50	0.000A	0.000A	0.000A
-2.30	0.000A	0.000A	-10.00mA
-2.10	-10.00mA	0.000A	-10.00mA
-1.90	-10.00mA	0.000A	-10.00mA
-1.70	-10.00mA	-10.00mA	-10.00mA
-1.50	-10.00mA	-10.00mA	-20.00mA
-1.00	-19.00mA	-10.00mA	-23.00mA
-0.90	-21.00mA	-10.00mA	-26.00mA
-0.80	-41.70mA	-11.00mA	-55.33mA
-0.70	-50.61mA	-14.60mA	-55.12mA
-0.60	-46.07mA	-25.10mA	-50.21mA
-0.50	-39.45mA	-26.37mA	-43.90mA
-0.40	-32.03mA	-22.06mA	-36.08mA
-0.30	-24.29mA	-16.63mA	-27.48mA
-0.20	-16.36mA	-11.11mA	-18.57mA
-0.10	-8.26mA	-5.55mA	-9.40mA
-0.00	3.80nA	7.33nA	12.06nA
0.10	8.11mA	5.36mA	9.30mA
0.20	15.76mA	10.37mA	18.18mA
0.30	22.98mA	15.05mA	26.64mA
0.40	29.76mA	19.40mA	34.69mA
0.50	36.11mA	23.42mA	42.32mA
0.60	42.04mA	27.12mA	49.54mA

0.70	47.55mA	30.50mA	56.36mA
0.80	52.66mA	33.58mA	62.78mA
0.90	57.35mA	36.36mA	68.80mA
1.00	61.65mA	38.84mA	74.42mA
1.10	65.55mA	41.04mA	79.65mA
1.20	69.06mA	42.96mA	84.48mA
1.30	72.19mA	44.61mA	88.92mA
1.40	74.94mA	45.99mA	92.97mA
1.50	77.32mA	47.12mA	96.63mA
1.60	79.33mA	48.01mA	99.91mA
1.70	80.95mA	48.68mA	0.10A
1.80	82.19mA	49.17mA	0.11A
1.90	83.09mA	49.54mA	0.11A
2.00	83.74mA	49.83mA	0.11A
2.10	84.23mA	50.06mA	0.11A
2.20	84.62mA	50.25mA	0.11A
2.30	84.93mA	50.42mA	0.11A
2.40	85.20mA	50.57mA	0.11A
2.50	85.44mA	50.70mA	0.11A
2.60	85.65mA	50.82mA	0.11A
2.70	85.84mA	50.93mA	0.11A
2.80	86.01mA	51.03mA	0.11A
2.90	86.18mA	51.13mA	0.11A
3.00	86.33mA	51.22mA	0.11A
3.10	86.48mA	51.31mA	0.11A
3.20	86.62mA	51.40mA	0.11A
3.30	86.75mA	51.50mA	0.11A
3.40	86.89mA	51.73mA	0.12A
3.50	87.06mA	52.32mA	0.12A
3.60	87.16mA	53.14mA	0.12A
3.70	87.30mA	54.02mA	0.12A
3.80	87.47mA	54.48mA	0.12A
3.90	87.77mA	52.16mA	0.12A
4.00	88.66mA	52.28mA	0.12A
4.10	90.00mA	52.42mA	0.12A
4.20	91.34mA	52.58mA	0.12A
4.30	89.39mA	52.77mA	0.12A
4.50	89.66mA	53.24mA	0.12A
4.70	90.64mA	53.86mA	0.12A
4.90	91.94mA	54.68mA	0.12A
5.10	93.66mA	55.73mA	0.12A
5.30	95.77mA	57.03mA	0.13A
5.50	98.33mA	58.59mA	0.13A
5.70	0.10A	60.44mA	0.13A

5.90	0.10A	62.55mA	0.14A
6.10	0.11A	64.93mA	0.14A
6.60	0.12A	71.83mA	0.15A

|
[Pullup]

voltage	I(typ)	I(min)	I(max)
-3.30	0.22A	0.16A	0.25A
-3.10	0.21A	0.16A	0.24A
-2.90	0.20A	0.15A	0.23A
-2.70	0.19A	0.14A	0.22A
-2.50	0.18A	0.14A	0.21A
-2.30	0.17A	0.13A	0.20A
-2.10	0.16A	0.12A	0.19A
-1.90	0.15A	0.11A	0.17A
-1.70	0.14A	0.10A	0.16A
-1.50	0.12A	90.15mA	0.14A
-1.00	92.80mA	62.50mA	0.11A
-0.90	84.30mA	57.02mA	97.94mA
-0.80	75.06mA	54.41mA	87.24mA
-0.70	65.63mA	47.70mA	76.50mA
-0.60	56.31mA	40.65mA	66.14mA
-0.50	47.22mA	33.53mA	55.68mA
-0.40	38.00mA	26.51mA	44.96mA
-0.30	28.62mA	19.71mA	34.00mA
-0.20	19.12mA	13.04mA	22.83mA
-0.10	9.57mA	6.46mA	11.50mA
0.00	34.08uA	11.19uA	71.92uA
0.10	-9.20mA	-6.16mA	-11.08mA
0.20	-17.92mA	-11.98mA	-21.68mA
0.30	-26.12mA	-17.45mA	-31.71mA
0.40	-33.83mA	-22.56mA	-41.21mA
0.50	-41.04mA	-27.33mA	-50.17mA
0.60	-47.76mA	-31.76mA	-58.60mA
0.70	-54.01mA	-35.85mA	-66.51mA
0.80	-59.78mA	-39.61mA	-73.91mA
0.90	-65.10mA	-43.04mA	-80.81mA
1.00	-69.96mA	-46.14mA	-87.22mA
1.10	-74.37mA	-48.91mA	-93.14mA
1.20	-78.35mA	-51.37mA	-98.58mA
1.30	-81.89mA	-53.51mA	-0.10A
1.40	-85.01mA	-55.34mA	-0.11A
1.50	-87.72mA	-56.87mA	-0.11A
1.60	-90.01mA	-58.11mA	-0.12A

1.70	-91.93mA	-59.08mA	-0.12A
1.80	-93.48mA	-59.83mA	-0.12A
1.90	-94.74mA	-60.42mA	-0.12A
2.00	-95.77mA	-60.91mA	-0.13A
2.10	-96.63mA	-61.34mA	-0.13A
2.20	-97.36mA	-61.71mA	-0.13A
2.30	-97.99mA	-62.05mA	-0.13A
2.40	-98.55mA	-62.36mA	-0.13A
2.50	-99.04mA	-62.64mA	-0.13A
2.60	-99.49mA	-62.90mA	-0.13A
2.70	-99.89mA	-63.14mA	-0.13A
2.80	-0.10A	-63.36mA	-0.13A
2.90	-0.10A	-63.57mA	-0.13A
3.00	-0.10A	-63.78mA	-0.13A
3.10	-0.10A	-63.97mA	-0.14A
3.20	-0.10A	-64.15mA	-0.14A
3.30	-0.10A	-64.35mA	-0.14A
3.40	-0.10A	-64.99mA	-0.14A
3.50	-0.10A	-72.69mA	-0.14A
3.60	-0.10A	-0.17A	-0.14A
3.70	-0.10A	-0.97A	-0.14A
3.80	-0.10A	-2.72A	-0.14A
3.90	-0.11A	-4.50A	-0.14A
4.00	-0.12A	-6.28A	-0.14A
4.10	-0.34A	-8.06A	-0.14A
4.20	-1.90A	-9.85A	-0.14A
4.30	-3.94A	-11.62A	-0.15A
4.50	-8.02A	-15.19A	-1.21A
4.70	-12.10A	-18.75A	-5.43A
4.90	-16.18A	-22.31A	-9.67A
5.10	-20.27A	-25.88A	-13.90A
5.30	-24.35A	-29.44A	-18.14A
5.50	-28.43A	-33.00A	-22.38A
5.70	-32.51A	-36.56A	-26.62A
5.90	-36.60A	-40.13A	-30.86A
6.10	-40.68A	-43.69A	-35.09A
6.60	-50.89A	-52.59A	-45.69A

|
[GND_clamp]

voltage	I(typ)	I(min)	I(max)
-5.00	-85.26A	-77.43A	-87.91A
-4.80	-81.20A	-73.87A	-83.67A
-4.60	-77.14A	-70.31A	-79.43A

-4.40	-73.08A	-66.75A	-75.19A
-4.20	-69.02A	-63.19A	-70.95A
-4.00	-64.96A	-59.63A	-66.71A
-3.80	-60.90A	-56.07A	-62.47A
-3.60	-56.84A	-52.51A	-58.23A
-3.40	-52.78A	-48.95A	-53.99A
-3.20	-48.72A	-45.39A	-49.75A
-3.00	-44.64A	-41.83A	-45.52A
-2.80	-40.56A	-38.27A	-41.29A
-2.60	-36.48A	-34.71A	-37.05A
-2.40	-32.40A	-31.15A	-32.82A
-2.20	-28.32A	-27.59A	-28.58A
-2.00	-24.24A	-24.03A	-24.35A
-1.80	-20.16A	-20.47A	-20.11A
-1.60	-16.08A	-16.90A	-15.88A
-1.40	-12.00A	-13.34A	-11.64A
-1.20	-7.92A	-9.78A	-7.41A
-1.00	-3.84A	-6.22A	-3.18A
-0.80	-0.23A	-2.66A	-71.67mA
-0.60	-2.33mA	-0.10A	-6.23mA
-0.40	-91.55uA	-0.52mA	-0.28mA
-0.20	-27.91uA	-14.70uA	-42.94uA
-0.00	-75.80nA	-77.03nA	-90.19nA
0.20	18.72uA	7.32uA	32.29uA
0.40	29.20uA	10.26uA	54.13uA
0.60	32.50uA	10.68uA	65.79uA
0.80	33.08uA	10.79uA	69.34uA
1.00	33.30uA	10.86uA	70.18uA
1.20	33.45uA	10.92uA	70.55uA
1.40	33.57uA	10.98uA	70.80uA
1.60	33.68uA	11.03uA	71.00uA
1.80	33.78uA	11.07uA	71.16uA
2.00	33.87uA	11.11uA	71.32uA
2.20	33.96uA	11.14uA	71.47uA
2.40	34.01uA	11.15uA	71.61uA
2.60	34.03uA	11.16uA	71.76uA
2.80	34.04uA	11.17uA	71.84uA
3.00	34.05uA	11.18uA	71.86uA
3.20	34.06uA	11.75uA	71.88uA
3.40	34.08uA	10.69uA	71.90uA
3.60	34.10uA	9.63uA	71.92uA
3.80	34.12uA	8.57uA	71.94uA
4.00	34.14uA	7.51uA	71.96uA
4.20	34.16uA	6.45uA	71.98uA

4.40	34.18uA	5.39uA	72.00uA
4.60	34.20uA	4.33uA	72.02uA
4.80	34.22uA	3.27uA	72.04uA
5.00	34.24uA	2.21uA	72.06uA

|

[POWER_clamp]

voltage	I(typ)	I(min)	I(max)
-5.00	48.55uA	16.31uA	95.55uA
-4.90	48.22uA	16.19uA	95.05uA
-4.80	47.89uA	16.07uA	94.55uA
-4.70	47.56uA	15.95uA	94.05uA
-4.60	47.23uA	15.83uA	93.55uA
-4.50	46.90uA	15.71uA	93.05uA
-4.40	46.57uA	15.59uA	92.55uA
-4.30	46.24uA	15.47uA	92.05uA
-4.20	45.91uA	15.35uA	91.55uA
-4.10	45.58uA	15.23uA	91.05uA
-4.00	45.25uA	15.11uA	90.55uA
-3.90	44.92uA	14.99uA	90.05uA
-3.80	44.59uA	14.87uA	89.55uA
-3.70	44.26uA	14.75uA	89.05uA
-3.60	43.93uA	14.63uA	88.55uA
-3.50	43.60uA	14.51uA	88.05uA
-3.40	43.27uA	14.39uA	87.55uA
-3.30	42.94uA	14.27uA	87.05uA
-3.20	42.61uA	14.15uA	86.55uA
-3.10	42.28uA	14.03uA	86.05uA
-3.00	41.95uA	13.91uA	85.55uA
-2.90	41.62uA	13.79uA	85.05uA
-2.80	41.29uA	13.67uA	84.55uA
-2.70	40.96uA	13.55uA	84.05uA
-2.60	40.63uA	13.43uA	83.55uA
-2.50	40.30uA	13.31uA	83.05uA
-2.40	39.97uA	13.19uA	82.55uA
-2.30	39.64uA	13.07uA	82.05uA
-2.20	39.31uA	12.95uA	81.55uA
-2.10	38.98uA	12.83uA	81.05uA
-2.00	38.65uA	12.71uA	80.55uA
-1.90	38.32uA	12.59uA	80.05uA
-1.80	37.99uA	12.47uA	79.55uA
-1.70	37.66uA	12.35uA	79.05uA
-1.60	37.33uA	12.23uA	78.55uA
-1.50	37.00uA	12.13uA	78.05uA

-1.40	36.69uA	12.03uA	77.55uA
-1.30	36.40uA	11.94uA	77.05uA
-1.20	36.13uA	11.85uA	76.55uA
-1.10	35.88uA	11.78uA	76.05uA
-1.00	35.64uA	11.71uA	75.55uA
-0.90	35.43uA	11.64uA	75.08uA
-0.80	35.24uA	11.59uA	74.65uA
-0.70	35.07uA	11.54uA	74.26uA
-0.60	34.92uA	11.49uA	73.91uA
-0.50	34.79uA	11.45uA	73.60uA
-0.40	34.67uA	11.42uA	73.32uA
-0.30	34.57uA	11.39uA	73.08uA
-0.20	34.49uA	11.37uA	72.88uA
-0.10	34.42uA	11.35uA	72.70uA
0.00	34.36uA	11.33uA	72.56uA

|

[Ramp]

variable	typ	min	max
dV/dt_r	1.54/2.22n	1.20/2.88n	1.77/2.15n
dV/dt_f	1.52/3.16n	1.15/4.46n	1.73/3.00n

R_load = 50.00

|

[Rising Waveform]

R_fixture = 50.00

V_fixture = 0.000

V_fixture_min = 0.000

V_fixture_max = 0.000

L_fixture = 0.000H

C_fixture = 0.000F

time	V(typ)	V(min)	V(max)
0.000S	0.70uV	0.92uV	0.68uV
0.20nS	0.45uV	0.77uV	0.000V
0.40nS	-5.49uV	-1.76uV	16.07uV
0.60nS	-0.25mV	-4.97uV	-2.66mV
0.80nS	-2.88mV	24.27uV	-5.55mV
1.00nS	-3.85mV	-5.54uV	32.40mV
1.20nS	18.80mV	-0.76mV	80.52mV
1.40nS	45.63mV	-3.09mV	0.11V
1.60nS	80.05mV	-6.58mV	0.16V
1.80nS	0.11V	-0.18mV	0.21V
2.00nS	0.16V	21.52mV	0.27V
2.20nS	0.20V	48.21mV	0.33V
2.40nS	0.26V	76.15mV	0.41V

2.60nS	0.32V	0.11V	0.48V
2.80nS	0.41V	0.16V	0.61V
3.00nS	0.51V	0.19V	0.73V
3.20nS	0.58V	0.24V	0.82V
3.40nS	0.71V	0.30V	0.97V
3.60nS	0.85V	0.36V	1.16V
3.80nS	1.00V	0.45V	1.35V
4.00nS	1.17V	0.54V	1.55V
4.20nS	1.38V	0.67V	1.80V
4.40nS	1.57V	0.80V	2.03V
4.60nS	1.68V	0.88V	2.15V
4.80nS	1.78V	0.96V	2.26V
5.00nS	1.91V	1.06V	2.39V
5.20nS	2.01V	1.15V	2.51V
5.40nS	2.13V	1.25V	2.61V
5.60nS	2.22V	1.34V	2.70V
5.80nS	2.27V	1.40V	2.74V
6.00nS	2.31V	1.44V	2.77V
6.20nS	2.35V	1.50V	2.80V
6.40nS	2.38V	1.56V	2.82V
6.60nS	2.41V	1.61V	2.84V
6.80nS	2.43V	1.66V	2.86V
7.00nS	2.45V	1.70V	2.87V
7.20nS	2.46V	1.74V	2.88V
7.40nS	2.48V	1.78V	2.89V
7.60nS	2.49V	1.82V	2.90V
7.80nS	2.50V	1.84V	2.91V
8.00nS	2.51V	1.86V	2.91V
8.20nS	2.52V	1.88V	2.92V
8.40nS	2.52V	1.90V	2.92V
8.60nS	2.53V	1.92V	2.92V
8.80nS	2.54V	1.93V	2.93V
9.00nS	2.54V	1.95V	2.93V
9.20nS	2.55V	1.96V	2.94V
9.40nS	2.55V	1.97V	2.94V
9.60nS	2.56V	1.98V	2.94V
9.80nS	2.56V	2.00V	2.95V
10.00nS	2.57V	2.00V	2.95V

|

[Rising Waveform]
R_fixture = 50.00
V_fixture = 3.30
V_fixture_min = 3.00
V_fixture_max = 3.60

L_fixture = 0.000H
C_fixture = 0.000F

time	V(typ)	V(min)	V(max)
0.000S	0.76V	1.03V	0.72V
0.20nS	0.76V	1.03V	0.72V
0.40nS	0.76V	1.03V	0.72V
0.60nS	0.76V	1.03V	0.72V
0.80nS	0.77V	1.03V	0.73V
1.00nS	0.81V	1.03V	0.82V
1.20nS	0.90V	1.03V	0.93V
1.40nS	0.98V	1.04V	1.01V
1.60nS	1.09V	1.11V	1.13V
1.80nS	1.22V	1.20V	1.26V
2.00nS	1.35V	1.32V	1.42V
2.20nS	1.51V	1.45V	1.58V
2.40nS	1.69V	1.59V	1.78V
2.60nS	1.91V	1.74V	2.02V
2.80nS	2.22V	1.96V	2.36V
3.00nS	2.47V	2.16V	2.63V
3.20nS	2.65V	2.31V	2.82V
3.40nS	2.85V	2.49V	3.03V
3.60nS	2.97V	2.62V	3.17V
3.80nS	3.08V	2.73V	3.30V
4.00nS	3.14V	2.83V	3.36V
4.20nS	3.19V	2.89V	3.42V
4.40nS	3.23V	2.94V	3.47V
4.60nS	3.25V	2.95V	3.50V
4.80nS	3.27V	2.97V	3.52V
5.00nS	3.28V	2.98V	3.54V
5.20nS	3.29V	2.99V	3.56V
5.40nS	3.29V	2.99V	3.57V
5.60nS	3.30V	3.00V	3.58V
5.80nS	3.30V	3.00V	3.59V
6.00nS	3.30V	3.00V	3.59V
6.20nS	3.30V	3.00V	3.59V
6.40nS	3.30V	3.00V	3.60V
6.60nS	3.30V	3.00V	3.60V
6.80nS	3.30V	3.00V	3.60V
7.00nS	3.30V	3.00V	3.60V
7.20nS	3.30V	3.00V	3.60V
7.40nS	3.30V	3.00V	3.60V
7.60nS	3.30V	3.00V	3.60V
7.80nS	3.30V	3.00V	3.60V

8.00nS	3.30V	3.00V	3.60V
8.20nS	3.30V	3.00V	3.60V
8.40nS	3.30V	3.00V	3.60V
8.60nS	3.30V	3.00V	3.60V
8.80nS	3.30V	3.00V	3.60V
9.00nS	3.30V	3.00V	3.60V
9.20nS	3.30V	3.00V	3.60V
9.40nS	3.30V	3.00V	3.60V
9.60nS	3.30V	3.00V	3.60V
9.80nS	3.30V	3.00V	3.60V
10.00nS	3.30V	3.00V	3.60V

|

[Falling Waveform]
R_fixture = 50.00
V_fixture = 0.000
V_fixture_min = 0.000
V_fixture_max = 0.000
L_fixture = 0.000H
C_fixture = 0.000F

time	V(typ)	V(min)	V(max)
0.000S	2.62V	2.12V	2.99V
0.20nS	2.62V	2.12V	2.99V
0.40nS	2.62V	2.12V	2.99V
0.60nS	2.62V	2.12V	2.96V
0.80nS	2.60V	2.12V	2.85V
1.00nS	2.50V	2.12V	2.72V
1.20nS	2.38V	2.11V	2.59V
1.40nS	2.29V	2.09V	2.50V
1.60nS	2.17V	2.04V	2.36V
1.80nS	2.04V	1.96V	2.20V
2.00nS	1.89V	1.85V	2.00V
2.20nS	1.71V	1.74V	1.76V
2.40nS	1.51V	1.63V	1.49V
2.60nS	1.27V	1.50V	1.23V
2.80nS	0.99V	1.33V	0.98V
3.00nS	0.81V	1.17V	0.83V
3.20nS	0.71V	1.04V	0.75V
3.40nS	0.59V	0.87V	0.66V
3.60nS	0.51V	0.72V	0.57V
3.80nS	0.44V	0.59V	0.50V
4.00nS	0.37V	0.49V	0.45V
4.20nS	0.31V	0.40V	0.38V
4.40nS	0.26V	0.33V	0.32V

4.60nS	0.23V	0.28V	0.29V
4.80nS	0.20V	0.25V	0.26V
5.00nS	0.17V	0.21V	0.23V
5.20nS	0.15V	0.18V	0.20V
5.40nS	0.12V	0.14V	0.17V
5.60nS	92.71mV	0.11V	0.14V
5.80nS	79.46mV	96.17mV	0.12V
6.00nS	67.17mV	83.01mV	0.11V
6.20nS	54.74mV	65.86mV	89.82mV
6.40nS	42.77mV	53.06mV	75.55mV
6.60nS	33.26mV	41.31mV	61.63mV
6.80nS	25.46mV	31.29mV	50.25mV
7.00nS	18.21mV	23.99mV	40.51mV
7.20nS	13.43mV	16.92mV	31.37mV
7.40nS	8.06mV	11.32mV	23.11mV
7.60nS	4.81mV	6.46mV	15.54mV
7.80nS	3.27mV	4.82mV	12.49mV
8.00nS	1.98mV	3.62mV	9.63mV
8.20nS	1.32mV	2.10mV	6.17mV
8.40nS	0.78mV	1.45mV	4.24mV
8.60nS	0.50mV	1.01mV	2.46mV
8.80nS	0.42mV	0.70mV	1.45mV
9.00nS	0.34mV	0.61mV	0.94mV
9.20nS	0.30mV	0.51mV	0.50mV
9.40nS	0.27mV	0.45mV	0.38mV
9.60nS	0.24mV	0.40mV	0.28mV
9.80nS	0.21mV	0.35mV	0.23mV
10.00nS	0.22mV	0.32mV	0.21mV

|
[Falling Waveform]
R_fixture = 50.00
V_fixture = 3.30
V_fixture_min = 3.00
V_fixture_max = 3.60
L_fixture = 0.000H
C_fixture = 0.000F

time	V(typ)	V(min)	V(max)
0.000S	3.30V	3.00V	3.60V
0.20nS	3.30V	3.00V	3.60V
0.40nS	3.30V	3.00V	3.60V
0.60nS	3.30V	3.00V	3.59V
0.80nS	3.30V	3.00V	3.52V
1.00nS	3.25V	3.00V	3.44V

1.20nS	3.18V	3.00V	3.37V
1.40nS	3.14V	3.00V	3.32V
1.60nS	3.09V	3.00V	3.24V
1.80nS	3.03V	2.97V	3.16V
2.00nS	2.96V	2.92V	3.07V
2.20nS	2.88V	2.88V	2.98V
2.40nS	2.80V	2.84V	2.88V
2.60nS	2.72V	2.80V	2.78V
2.80nS	2.61V	2.74V	2.65V
3.00nS	2.51V	2.68V	2.55V
3.20nS	2.44V	2.64V	2.47V
3.40nS	2.34V	2.58V	2.35V
3.60nS	2.25V	2.52V	2.23V
3.80nS	2.15V	2.46V	2.09V
4.00nS	2.06V	2.39V	1.93V
4.20nS	1.93V	2.32V	1.75V
4.40nS	1.81V	2.24V	1.58V
4.60nS	1.73V	2.20V	1.50V
4.80nS	1.65V	2.15V	1.43V
5.00nS	1.54V	2.09V	1.34V
5.20nS	1.44V	2.04V	1.26V
5.40nS	1.32V	1.97V	1.18V
5.60nS	1.23V	1.91V	1.11V
5.80nS	1.18V	1.87V	1.07V
6.00nS	1.13V	1.84V	1.04V
6.20nS	1.08V	1.79V	1.00V
6.40nS	1.04V	1.75V	0.96V
6.60nS	1.00V	1.71V	0.92V
6.80nS	0.96V	1.67V	0.89V
7.00nS	0.93V	1.63V	0.87V
7.20nS	0.90V	1.59V	0.84V
7.40nS	0.87V	1.54V	0.82V
7.60nS	0.85V	1.48V	0.80V
7.80nS	0.83V	1.44V	0.78V
8.00nS	0.82V	1.40V	0.78V
8.20nS	0.81V	1.35V	0.76V
8.40nS	0.80V	1.31V	0.75V
8.60nS	0.79V	1.27V	0.75V
8.80nS	0.78V	1.23V	0.74V
9.00nS	0.78V	1.20V	0.73V
9.20nS	0.78V	1.17V	0.73V
9.40nS	0.77V	1.15V	0.73V
9.60nS	0.77V	1.12V	0.72V
9.80nS	0.77V	1.10V	0.72V

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  10.00nS       0.77V           1.09V           0.72V
|
| End [Model] prd24dgz
|
|*****************************************************************************
|                          Model prt24dgz
|*****************************************************************************
|
[Model]          prt24dgz
Model_type       3-state
Polarity         Non-Inverting
Enable           Active-Low
Vmeas =   1.50V
Cref =  50.00pF
Rref =   1.00M
Vref =  0.000V
C_comp                          4.09pF          3.68pF          4.50pF
|
|
[Temperature Range]              25.00           0.12k           0.000
[Pullup Reference]              3.30V           3.00V           3.60V
[Pulldown Reference]            0.000V          0.000V          0.000V
[POWER Clamp Reference]         5.00V           4.50V           5.50V
[GND Clamp Reference]           0.000V          0.000V          0.000V
[Pulldown]
| voltage       I(typ)          I(min)          I(max)
|
  -3.30         -10.00mA        0.000A          0.000A
  -3.10         0.000A          0.000A          -10.00mA
  -2.90         0.000A          0.000A          0.000A
  -2.70         0.000A          0.000A          0.000A
  -2.50         0.000A          0.000A          0.000A
  -2.30         0.000A          0.000A          -10.00mA
  -2.10         -10.00mA        0.000A          -10.00mA
  -1.90         -10.00mA        0.000A          -10.00mA
  -1.70         -10.00mA        -10.00mA        -10.00mA
  -1.50         -10.00mA        -10.00mA        -20.00mA
  -1.00         -20.00mA        -10.00mA        -23.00mA
  -0.90         -21.00mA        -10.00mA        -26.00mA
  -0.80         -41.70mA        -12.00mA        -55.37mA
  -0.70         -50.60mA        -14.60mA        -55.11mA
  -0.60         -46.07mA        -25.10mA        -50.21mA
  -0.50         -39.45mA        -26.38mA        -43.90mA
  -0.40         -32.03mA        -22.06mA        -36.09mA
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-0.30	-24.30mA	-16.63mA	-27.49mA
-0.20	-16.36mA	-11.10mA	-18.57mA
-0.10	-8.26mA	-5.55mA	-9.40mA
-0.00	3.97nA	7.41nA	12.45nA
0.10	8.11mA	5.36mA	9.30mA
0.20	15.76mA	10.38mA	18.18mA
0.30	22.98mA	15.05mA	26.64mA
0.40	29.76mA	19.40mA	34.68mA
0.50	36.11mA	23.42mA	42.32mA
0.60	42.04mA	27.11mA	49.54mA
0.70	47.55mA	30.50mA	56.36mA
0.80	52.65mA	33.58mA	62.78mA
0.90	57.35mA	36.36mA	68.80mA
1.00	61.64mA	38.84mA	74.42mA
1.10	65.54mA	41.04mA	79.65mA
1.20	69.06mA	42.96mA	84.48mA
1.30	72.18mA	44.61mA	88.92mA
1.40	74.93mA	45.99mA	92.97mA
1.50	77.31mA	47.12mA	96.63mA
1.60	79.32mA	48.01mA	99.91mA
1.70	80.95mA	48.68mA	0.10A
1.80	82.19mA	49.17mA	0.11A
1.90	83.08mA	49.54mA	0.11A
2.00	83.74mA	49.82mA	0.11A
2.10	84.23mA	50.06mA	0.11A
2.20	84.61mA	50.25mA	0.11A
2.30	84.93mA	50.42mA	0.11A
2.40	85.20mA	50.57mA	0.11A
2.50	85.43mA	50.70mA	0.11A
2.60	85.64mA	50.82mA	0.11A
2.70	85.83mA	50.93mA	0.11A
2.80	86.01mA	51.03mA	0.11A
2.90	86.17mA	51.13mA	0.11A
3.00	86.32mA	51.22mA	0.11A
3.10	86.47mA	51.31mA	0.11A
3.20	86.61mA	51.40mA	0.11A
3.30	86.75mA	51.50mA	0.11A
3.40	86.88mA	51.73mA	0.12A
3.50	87.01mA	52.32mA	0.12A
3.60	87.15mA	53.14mA	0.12A
3.70	87.30mA	54.01mA	0.12A
3.80	87.47mA	54.42mA	0.12A
3.90	87.77mA	52.16mA	0.12A
4.00	88.66mA	52.28mA	0.12A

4.10	90.00mA	52.42mA	0.12A
4.20	91.29mA	52.58mA	0.12A
4.30	89.03mA	52.77mA	0.12A
4.50	89.65mA	53.24mA	0.12A
4.70	90.63mA	53.86mA	0.12A
4.90	91.94mA	54.68mA	0.12A
5.10	93.62mA	55.72mA	0.12A
5.30	95.73mA	57.02mA	0.13A
5.50	98.29mA	58.58mA	0.13A
5.70	0.10A	60.42mA	0.13A
5.90	0.10A	62.54mA	0.14A
6.10	0.11A	64.92mA	0.14A
6.60	0.12A	71.81mA	0.15A

|
[Pullup]

voltage	I(typ)	I(min)	I(max)
-3.30	0.22A	0.16A	0.25A
-3.10	0.21A	0.16A	0.24A
-2.90	0.20A	0.15A	0.23A
-2.70	0.19A	0.14A	0.22A
-2.50	0.18A	0.14A	0.21A
-2.30	0.17A	0.13A	0.20A
-2.10	0.16A	0.12A	0.18A
-1.90	0.15A	0.11A	0.17A
-1.70	0.14A	0.10A	0.16A
-1.50	0.12A	90.13mA	0.14A
-1.00	92.59mA	62.48mA	0.11A
-0.90	84.26mA	56.95mA	97.88mA
-0.80	75.03mA	54.36mA	87.19mA
-0.70	65.60mA	47.69mA	76.45mA
-0.60	56.28mA	40.63mA	66.08mA
-0.50	47.19mA	33.52mA	55.62mA
-0.40	37.96mA	26.49mA	44.89mA
-0.30	28.58mA	19.70mA	33.93mA
-0.20	19.09mA	13.03mA	22.76mA
-0.10	9.54mA	6.45mA	11.43mA
0.00	0.17uA	0.16uA	0.19uA
0.10	-9.23mA	-6.17mA	-11.15mA
0.20	-17.95mA	-11.99mA	-21.75mA
0.30	-26.16mA	-17.46mA	-31.79mA
0.40	-33.86mA	-22.57mA	-41.28mA
0.50	-41.07mA	-27.35mA	-50.24mA
0.60	-47.79mA	-31.77mA	-58.67mA

0.70	-54.04mA	-35.86mA	-66.58mA
0.80	-59.82mA	-39.62mA	-73.98mA
0.90	-65.13mA	-43.05mA	-80.88mA
1.00	-69.99mA	-46.15mA	-87.29mA
1.10	-74.41mA	-48.92mA	-93.21mA
1.20	-78.38mA	-51.38mA	-98.65mA
1.30	-81.93mA	-53.52mA	-0.10A
1.40	-85.05mA	-55.36mA	-0.11A
1.50	-87.75mA	-56.88mA	-0.11A
1.60	-90.05mA	-58.12mA	-0.12A
1.70	-91.96mA	-59.09mA	-0.12A
1.80	-93.52mA	-59.84mA	-0.12A
1.90	-94.78mA	-60.43mA	-0.12A
2.00	-95.80mA	-60.92mA	-0.13A
2.10	-96.66mA	-61.35mA	-0.13A
2.20	-97.39mA	-61.72mA	-0.13A
2.30	-98.03mA	-62.06mA	-0.13A
2.40	-98.58mA	-62.37mA	-0.13A
2.50	-99.08mA	-62.65mA	-0.13A
2.60	-99.52mA	-62.91mA	-0.13A
2.70	-99.92mA	-63.15mA	-0.13A
2.80	-0.10A	-63.37mA	-0.13A
2.90	-0.10A	-63.58mA	-0.13A
3.00	-0.10A	-63.78mA	-0.13A
3.10	-0.10A	-63.96mA	-0.14A
3.20	-0.10A	-64.14mA	-0.14A
3.30	-0.10A	-64.33mA	-0.14A
3.40	-0.10A	-64.95mA	-0.14A
3.50	-0.10A	-72.61mA	-0.14A
3.60	-0.10A	-0.17A	-0.14A
3.70	-0.10A	-0.97A	-0.14A
3.80	-0.10A	-2.72A	-0.14A
3.90	-0.11A	-4.50A	-0.14A
4.00	-0.12A	-6.28A	-0.14A
4.10	-0.34A	-8.06A	-0.14A
4.20	-1.90A	-9.85A	-0.14A
4.30	-3.94A	-11.62A	-0.15A
4.50	-8.02A	-15.19A	-1.20A
4.70	-12.10A	-18.75A	-5.43A
4.90	-16.18A	-22.31A	-9.67A
5.10	-20.27A	-25.88A	-13.90A
5.30	-24.35A	-29.44A	-18.14A
5.50	-28.43A	-33.00A	-22.38A
5.70	-32.51A	-36.56A	-26.62A

5.90	-36.60A	-40.13A	-30.86A
6.10	-40.68A	-43.69A	-35.09A
6.60	-50.89A	-52.59A	-45.69A

|
[GND_clamp]

voltage	I(typ)	I(min)	I(max)
-3.30	-50.75A	-47.17A	-51.87A
-3.20	-48.72A	-45.39A	-49.75A
-3.10	-46.68A	-43.61A	-47.63A
-3.00	-44.64A	-41.83A	-45.52A
-2.90	-42.60A	-40.05A	-43.40A
-2.80	-40.56A	-38.27A	-41.29A
-2.70	-38.52A	-36.49A	-39.17A
-2.60	-36.48A	-34.71A	-37.05A
-2.50	-34.44A	-32.93A	-34.94A
-2.40	-32.40A	-31.15A	-32.82A
-2.30	-30.36A	-29.37A	-30.70A
-2.20	-28.32A	-27.59A	-28.58A
-2.10	-26.28A	-25.81A	-26.47A
-2.00	-24.24A	-24.03A	-24.35A
-1.90	-22.20A	-22.25A	-22.23A
-1.80	-20.16A	-20.47A	-20.11A
-1.70	-18.12A	-18.68A	-18.00A
-1.60	-16.08A	-16.90A	-15.88A
-1.50	-14.04A	-15.12A	-13.76A
-1.40	-12.00A	-13.34A	-11.64A
-1.30	-9.96A	-11.56A	-9.53A
-1.20	-7.92A	-9.78A	-7.41A
-1.10	-5.88A	-8.00A	-5.29A
-1.00	-3.84A	-6.22A	-3.18A
-0.90	-1.80A	-4.44A	-1.07A
-0.80	-0.23A	-2.65A	-71.53mA
-0.70	-13.26mA	-0.90A	-13.93mA
-0.60	-2.23mA	-0.10A	-6.08mA
-0.50	-0.34mA	-7.99mA	-1.62mA
-0.40	-28.68uA	-0.48mA	-0.18mA
-0.30	-1.65uA	-27.22uA	-10.18uA
-0.20	-0.15uA	-1.61uA	-0.42uA
-0.10	-86.50nA	-0.17uA	-0.11uA
-0.00	-76.61nA	-77.36nA	-91.73nA
0.10	-68.52nA	-64.82nA	-83.30nA
0.20	-60.47nA	-56.49nA	-75.01nA
0.30	-52.43nA	-48.39nA	-66.73nA

0.40	-44.39nA	-40.30nA	-58.46nA
0.50	-36.35nA	-32.21nA	-50.19nA
0.60	-28.31nA	-24.12nA	-41.93nA
0.70	-20.27nA	-16.03nA	-33.68nA
0.80	-12.24nA	-7.94nA	-25.42nA
0.90	-4.20nA	0.15nA	-17.17nA
1.00	3.83nA	8.23nA	-8.92nA
1.10	11.86nA	16.32nA	-0.67nA
1.20	19.89nA	24.41nA	7.58nA
1.30	27.92nA	32.50nA	15.84nA
1.40	35.95nA	40.59nA	24.10nA
1.50	43.98nA	48.68nA	32.36nA
1.60	52.00nA	56.77nA	40.64nA
1.70	60.02nA	64.85nA	48.92nA
1.80	68.04nA	72.94nA	57.21nA
1.90	76.05nA	81.03nA	65.52nA
2.00	84.05nA	89.12nA	73.85nA
2.10	92.04nA	97.20nA	82.20nA
2.20	100.00nA	0.11uA	90.59nA
2.30	0.11uA	0.11uA	99.01nA
2.40	0.12uA	0.12uA	0.11uA
2.50	0.12uA	0.12uA	0.12uA
2.60	0.13uA	0.13uA	0.12uA
2.70	0.13uA	0.13uA	0.13uA
2.80	0.14uA	0.13uA	0.14uA
2.90	0.14uA	0.14uA	0.15uA
3.00	0.15uA	0.15uA	0.15uA
3.10	0.15uA	0.17uA	0.16uA
3.20	0.15uA	0.56uA	0.16uA
3.30	0.16uA	0.19uA	0.17uA

|

[POWER_clamp]

voltage	I(typ)	I(min)	I(max)
-3.30	0.37uA	0.37uA	0.40uA
-3.20	0.37uA	0.36uA	0.39uA
-3.10	0.36uA	0.36uA	0.39uA
-3.00	0.35uA	0.35uA	0.38uA
-2.90	0.35uA	0.34uA	0.37uA
-2.80	0.34uA	0.34uA	0.37uA
-2.70	0.33uA	0.33uA	0.36uA
-2.60	0.33uA	0.33uA	0.36uA
-2.50	0.32uA	0.32uA	0.35uA
-2.40	0.32uA	0.31uA	0.34uA

-2.30	0.31uA	0.31uA	0.34uA
-2.20	0.30uA	0.30uA	0.33uA
-2.10	0.30uA	0.29uA	0.32uA
-2.00	0.29uA	0.29uA	0.32uA
-1.90	0.28uA	0.28uA	0.31uA
-1.80	0.28uA	0.28uA	0.30uA
-1.70	0.27uA	0.27uA	0.30uA
-1.60	0.27uA	0.26uA	0.29uA
-1.50	0.26uA	0.26uA	0.29uA
-1.40	0.25uA	0.25uA	0.28uA
-1.30	0.25uA	0.25uA	0.27uA
-1.20	0.24uA	0.24uA	0.27uA
-1.10	0.24uA	0.23uA	0.26uA
-1.00	0.23uA	0.23uA	0.25uA
-0.90	0.22uA	0.22uA	0.25uA
-0.80	0.22uA	0.22uA	0.24uA
-0.70	0.21uA	0.21uA	0.24uA
-0.60	0.21uA	0.20uA	0.23uA
-0.50	0.20uA	0.20uA	0.22uA
-0.40	0.20uA	0.19uA	0.22uA
-0.30	0.19uA	0.19uA	0.21uA
-0.20	0.48mA	0.56uA	0.72uA
-0.10	0.16uA	0.17uA	0.18uA
0.00	0.16uA	0.15uA	0.18uA

|
[Ramp]

variable	typ	min	max
dV/dt_r	1.54/2.19n	1.20/2.87n	1.77/2.14n
dV/dt_f	1.52/3.15n	1.15/4.45n	1.73/3.01n

R_load = 50.00
|
[Rising Waveform]
R_fixture = 50.00
V_fixture = 0.000
V_fixture_min = 0.000
V_fixture_max = 0.000
L_fixture = 0.000H
C_fixture = 0.000F

time	V(typ)	V(min)	V(max)
0.000S	0.70uV	0.93uV	0.69uV
0.20nS	0.46uV	0.77uV	0.000V
0.40nS	-5.77uV	-1.75uV	11.67uV

0.60nS	-0.27mV	-5.10uV	-2.79mV
0.80nS	-2.96mV	26.03uV	-6.12mV
1.00nS	-3.62mV	-5.61uV	32.64mV
1.20nS	19.35mV	-0.80mV	81.12mV
1.40nS	46.31mV	-3.19mV	0.11V
1.60nS	79.98mV	-6.88mV	0.16V
1.80nS	0.12V	-0.22mV	0.21V
2.00nS	0.16V	21.89mV	0.27V
2.20nS	0.20V	48.68mV	0.33V
2.40nS	0.26V	76.62mV	0.41V
2.60nS	0.32V	0.11V	0.49V
2.80nS	0.42V	0.16V	0.61V
3.00nS	0.51V	0.20V	0.73V
3.20nS	0.58V	0.24V	0.82V
3.40nS	0.71V	0.30V	0.99V
3.60nS	0.85V	0.36V	1.17V
3.80nS	1.01V	0.45V	1.36V
4.00nS	1.18V	0.54V	1.56V
4.20nS	1.38V	0.67V	1.81V
4.40nS	1.57V	0.81V	2.03V
4.60nS	1.69V	0.89V	2.16V
4.80nS	1.79V	0.96V	2.27V
5.00nS	1.91V	1.06V	2.40V
5.20nS	2.03V	1.15V	2.52V
5.40nS	2.14V	1.26V	2.61V
5.60nS	2.24V	1.35V	2.70V
5.80nS	2.28V	1.40V	2.74V
6.00nS	2.31V	1.45V	2.77V
6.20nS	2.36V	1.51V	2.80V
6.40nS	2.39V	1.56V	2.83V
6.60nS	2.41V	1.61V	2.85V
6.80nS	2.43V	1.66V	2.86V
7.00nS	2.45V	1.70V	2.87V
7.20nS	2.46V	1.74V	2.88V
7.40nS	2.48V	1.78V	2.89V
7.60nS	2.49V	1.82V	2.90V
7.80nS	2.50V	1.84V	2.91V
8.00nS	2.51V	1.86V	2.91V
8.20nS	2.52V	1.88V	2.92V
8.40nS	2.52V	1.90V	2.92V
8.60nS	2.53V	1.92V	2.93V
8.80nS	2.54V	1.93V	2.93V
9.00nS	.54V	1.95V	2.93V
9.20nS	2.55V	1.96V	2.94V

9.40nS	2.55V	1.97V	2.94V
9.60nS	2.56V	1.99V	2.94V
9.80nS	2.56V	2.00V	2.95V
10.00nS	2.57V	2.00V	2.95V

|
[Rising Waveform]
R_fixture = 50.00
V_fixture = 3.30
V_fixture_min = 3.00
V_fixture_max = 3.60
L_fixture = 0.000H
C_fixture = 0.000F

time	V(typ)	V(min)	V(max)
0.000S	0.76V	1.03V	0.72V
0.20nS	0.76V	1.03V	0.72V
0.40nS	0.76V	1.03V	0.72V
0.60nS	0.76V	1.03V	0.72V
0.80nS	0.77V	1.03V	0.73V
1.00nS	0.81V	1.03V	0.82V
1.20nS	0.90V	1.03V	0.93V
1.40nS	0.98V	1.04V	1.02V
1.60nS	1.10V	1.11V	1.13V
1.80nS	1.22V	1.21V	1.26V
2.00nS	1.36V	1.33V	1.42V
2.20nS	1.53V	1.46V	1.58V
2.40nS	1.72V	1.60V	1.80V
2.60nS	1.93V	1.75V	2.04V
2.80nS	2.23V	1.97V	2.36V
3.00nS	2.48V	2.16V	2.62V
3.20nS	2.66V	2.30V	2.82V
3.40nS	2.85V	2.49V	3.04V
3.60nS	2.97V	2.63V	3.19V
3.80nS	3.09V	2.73V	3.29V
4.00nS	3.14V	2.83V	3.36V
4.20nS	3.19V	2.89V	3.42V
4.40nS	3.23V	2.94V	3.47V
4.60nS	3.25V	2.96V	3.50V
4.80nS	3.27V	2.97V	3.52V
5.00nS	3.28V	2.98V	3.54V
5.20nS	.29V	2.99V	3.56V
5.40nS	3.29V	2.99V	3.57V
5.60nS	3.30V	3.00V	3.58V
5.80nS	3.30V	3.00V	3.59V

6.00nS	3.30V	3.00V	3.59V
6.20nS	3.30V	3.00V	3.60V
6.40nS	3.30V	3.00V	3.60V
6.60nS	3.30V	3.00V	3.60V
6.80nS	3.30V	3.00V	3.60V
7.00nS	3.30V	3.00V	3.60V
7.20nS	3.30V	3.00V	3.60V
7.40nS	3.30V	3.00V	3.60V
7.60nS	3.30V	3.00V	3.60V
7.80nS	3.30V	3.00V	3.60V
8.00nS	3.30V	3.00V	3.60V
8.20nS	3.30V	3.00V	3.60V
8.40nS	3.30V	3.00V	3.60V
8.60nS	3.30V	3.00V	3.60V
8.80nS	3.30V	3.00V	3.60V
9.00nS	3.30V	3.00V	3.60V
9.20nS	3.30V	3.00V	3.60V
9.40nS	3.30V	3.00V	3.60V
9.60nS	3.30V	3.00V	3.60V
9.80nS	3.30V	3.00V	3.60V
10.00nS	3.30V	3.00V	3.60V

|

[Falling Waveform]

R_fixture = 50.00

V_fixture = 0.000

V_fixture_min = 0.000

V_fixture_max = 0.000

L_fixture = 0.000H

C_fixture = 0.000F

time	V(typ)	V(min)	V(max)
0.000S	2.62V	2.12V	2.99V
0.20nS	2.62V	2.12V	2.99V
0.40nS	2.62V	2.12V	2.99V
0.60nS	2.62V	2.12V	2.96V
0.80nS	2.60V	2.12V	2.85V
1.00nS	2.50V	2.12V	2.72V
1.20nS	2.37V	2.11V	2.59V
1.40nS	2.29V	2.09V	2.50V
1.60nS	2.17V	2.04V	2.36V
1.80nS	2.04V	1.96V	2.20V
2.00nS	1.89V	1.85V	2.00V
2.20nS	1.71V	1.74V	1.75V
2.40nS	1.50V	1.63V	1.48V

2.60nS	1.28V	1.50V	1.24V
2.80nS	1.01V	1.33V	1.01V
3.00nS	0.82V	1.17V	0.82V
3.20nS	0.72V	1.04V	0.75V
3.40nS	0.61V	0.87V	0.65V
3.60nS	0.51V	0.72V	0.57V
3.80nS	0.44V	0.60V	0.50V
4.00nS	0.38V	0.49V	0.44V
4.20nS	0.32V	0.40V	0.38V
4.40nS	0.26V	0.32V	0.32V
4.60nS	0.23V	0.28V	0.29V
4.80nS	0.21V	0.25V	0.26V
5.00nS	0.17V	0.21V	0.23V
5.20nS	0.15V	0.18V	0.20V
5.40nS	0.12V	0.14V	0.17V
5.60nS	93.14mV	0.11V	0.14V
5.80nS	80.86mV	94.78mV	0.12V
6.00nS	68.57mV	80.67mV	0.11V
6.20nS	55.24mV	65.96mV	90.13mV
6.40nS	43.92mV	51.39mV	74.96mV
6.60nS	33.33mV	40.71mV	61.03mV
6.80nS	25.91mV	31.19mV	50.31mV
7.00nS	18.81mV	22.83mV	39.65mV
7.20nS	13.52mV	17.13mV	31.61mV
7.40nS	8.40mV	10.61mV	22.62mV
7.60nS	4.73mV	6.73mV	15.75mV
7.80nS	3.46mV	4.67mV	12.43mV
8.00nS	2.19mV	3.16mV	9.14mV
8.20nS	1.26mV	2.23mV	6.37mV
8.40nS	0.84mV	1.32mV	4.12mV
8.60nS	0.49mV	0.95mV	2.29mV
8.80nS	0.41mV	0.74mV	1.55mV
9.00nS	0.35mV	0.58mV	0.81mV
9.20nS	0.31mV	0.51mV	0.53mV
9.40nS	0.28mV	0.45mV	0.39mV
9.60nS	0.24mV	0.40mV	0.27mV
9.80nS	0.22mV	0.36mV	0.24mV
10.00nS	0.20mV	0.32mV	0.21mV

|

[Falling Waveform]
R_fixture = 50.00
V_fixture = 3.30
V_fixture_min = 3.00
V_fixture_max = 3.60

L_fixture = 0.000H
C_fixture = 0.000F

| time | V(typ) | V(min) | V(max)
|

0.000S	3.30V	3.00V	3.60V
0.20nS	3.30V	3.00V	3.60V
0.40nS	3.30V	3.00V	3.60V
0.60nS	3.30V	3.00V	3.59V
0.80nS	3.30V	3.00V	3.52V
1.00nS	3.25V	3.00V	3.44V
1.20nS	3.18V	3.00V	3.37V
1.40nS	3.14V	3.00V	3.32V
1.60nS	3.09V	3.00V	3.24V
1.80nS	3.03V	2.97V	3.16V
2.00nS	2.96V	2.92V	3.07V
2.20nS	2.88V	2.88V	2.98V
2.40nS	2.80V	2.84V	2.88V
2.60nS	2.72V	2.80V	2.77V
2.80nS	2.60V	2.74V	2.64V
3.00nS	2.51V	2.68V	2.54V
3.20nS	2.44V	2.64V	2.46V
3.40nS	2.34V	2.58V	2.34V
3.60nS	2.25V	2.52V	2.22V
3.80nS	2.15V	2.46V	2.08V
4.00nS	2.05V	2.39V	1.92V
4.20nS	1.93V	2.32V	1.74V
4.40nS	1.81V	2.24V	1.58V
4.60nS	1.73V	2.19V	1.50V
4.80nS	1.65V	2.15V	1.42V
5.00nS	1.53V	2.09V	1.34V
5.20nS	1.43V	2.04V	1.26V
5.40nS	1.32V	1.97V	1.18V
5.60nS	1.22V	1.91V	1.11V
5.80nS	1.18V	1.87V	1.07V
6.00nS	1.13V	1.84V	1.03V
6.20nS	1.08V	1.79V	0.99V
6.40nS	1.03V	1.75V	0.95V
6.60nS	0.99V	1.70V	0.92V
6.80nS	0.96V	1.66V	0.89V
7.00nS	0.93V	1.63V	0.87V
7.20nS	0.90V	1.59V	0.84V
7.40nS	0.87V	1.53V	0.82V
7.60nS	0.84V	1.47V	0.80V
7.80nS	0.83V	1.44V	0.78V

8.00nS	0.82V	1.40V	0.78V
8.20nS	0.81V	1.35V	0.76V
8.40nS	0.80V	1.30V	0.75V
8.60nS	0.79V	1.26V	0.75V
8.80nS	0.78V	1.23V	0.74V
9.00nS	0.78V	1.19V	0.73V
9.20nS	0.78V	1.17V	0.73V
9.40nS	0.77V	1.14V	0.73V
9.60nS	0.77V	1.12V	0.72V
9.80nS	0.77V	1.10V	0.72V
10.00nS	0.77V	1.08V	0.72V

|
| End [Model] prt24dgz
|
|***
| Model pdusdgz
|***
|
[Model] pdusdgz
Model_type Input
Polarity Non-Inverting
Vinl = 0.000V
Vinh = 3.30V

C_comp	5.00pF	5.00pF	5.00pF

|
|

[Temperature Range]	25.00	0.12k	0.000
[Pullup Reference]	3.30V	3.00V	3.60V
[Pulldown Reference]	0.000V	0.000V	0.000V
[POWER Clamp Reference]	5.00V	4.50V	5.50V
[GND Clamp Reference]	0.000V	0.000V	0.000V

[GND_clamp]

voltage	I(typ)	I(min)	I(max)
-5.00	-64.63A	-59.13A	-66.41A
-4.80	-61.55A	-56.41A	-63.21A
-4.60	-58.47A	-53.69A	-60.01A
-4.40	-55.39A	-50.97A	-56.81A
-4.20	-52.31A	-48.25A	-53.61A
-4.00	-49.23A	-45.53A	-50.41A
-3.80	-46.15A	-42.81A	-47.21A
-3.60	-43.07A	-40.09A	-44.01A
-3.40	-39.99A	-37.37A	-40.81A
-3.20	-36.91A	-34.65A	-37.61A

-3.00	-33.82A	-31.94A	-34.41A
-2.80	-30.73A	-29.22A	-31.22A
-2.60	-27.64A	-26.51A	-28.02A
-2.40	-24.56A	-23.79A	-24.82A
-2.20	-21.47A	-21.08A	-21.62A
-2.00	-18.38A	-18.36A	-18.42A
-1.80	-15.29A	-15.64A	-15.22A
-1.60	-12.20A	-12.93A	-12.03A
-1.40	-9.12A	-10.21A	-8.83A
-1.20	-6.03A	-7.50A	-5.63A
-1.00	-2.94A	-4.78A	-2.43A
-0.80	-0.20A	-2.07A	-64.17mA
-0.60	-1.85mA	-96.40mA	-4.85mA
-0.40	-83.24uA	-0.50mA	-0.23mA
-0.20	-60.52uA	-36.82uA	-86.29uA
-0.00	-60.40uA	-35.33uA	-85.95uA
0.20	-60.32uA	-35.27uA	-85.85uA
0.40	-60.23uA	-35.20uA	-85.73uA
0.60	-60.11uA	-35.13uA	-85.57uA
0.80	-59.96uA	-35.03uA	-85.37uA
1.00	-59.74uA	-34.91uA	-85.08uA
1.20	-59.32uA	-34.50uA	-84.56uA
1.40	-58.35uA	-33.59uA	-83.44uA
1.60	-56.47uA	-31.92uA	-81.36uA
1.80	-53.57uA	-29.25uA	-78.20uA
2.00	-49.55uA	-7.60uA	-73.89uA
2.20	-43.70uA	-16.78nA	-68.43uA
2.40	-3.73uA	0.10uA	-61.70uA
2.60	0.10uA	0.11uA	-51.99uA
2.80	0.12uA	0.12uA	-2.43uA
3.00	0.13uA	0.13uA	0.13uA
3.20	0.14uA	0.20uA	0.14uA
3.40	0.15uA	0.15uA	0.15uA
3.60	0.16uA	96.30nA	0.16uA
3.80	0.17uA	43.50nA	0.17uA
4.00	0.18uA	-9.30nA	0.18uA
4.20	0.18uA	62.10nA	0.19uA
4.40	0.19uA	-0.11uA	0.20uA
4.60	0.20uA	-0.17uA	0.21uA
4.80	0.21uA	-0.22uA	0.22uA
5.00	0.22uA	-0.27uA	0.23uA

|

[POWER_clamp]

voltage	I(typ)	I(min)	I(max)

|

-5.00	0.61uA	0.59uA	0.65uA
-4.90	0.60uA	0.58uA	0.65uA
-4.80	0.59uA	0.58uA	0.64uA
-4.70	0.59uA	0.57uA	0.63uA
-4.60	0.58uA	0.56uA	0.63uA
-4.50	0.57uA	0.56uA	0.62uA
-4.40	0.56uA	0.55uA	0.61uA
-4.30	0.56uA	0.54uA	0.60uA
-4.20	0.55uA	0.54uA	0.60uA
-4.10	0.54uA	0.53uA	0.59uA
-4.00	0.54uA	0.52uA	0.58uA
-3.90	0.53uA	0.52uA	0.58uA
-3.80	0.52uA	0.51uA	0.57uA
-3.70	0.52uA	0.50uA	0.56uA
-3.60	0.51uA	0.50uA	0.56uA
-3.50	0.50uA	0.49uA	0.55uA
-3.40	0.50uA	0.48uA	0.54uA
-3.30	0.49uA	0.48uA	0.53uA
-3.20	0.48uA	0.47uA	0.53uA
-3.10	0.48uA	0.46uA	0.52uA
-3.00	0.47uA	0.46uA	0.51uA
-2.90	0.46uA	0.45uA	0.51uA
-2.80	0.46uA	0.44uA	0.50uA
-2.70	0.45uA	0.44uA	0.49uA
-2.60	0.44uA	0.43uA	0.49uA
-2.50	0.44uA	0.42uA	0.48uA
-2.40	0.43uA	0.41uA	0.47uA
-2.30	0.42uA	0.41uA	0.46uA
-2.20	0.42uA	0.40uA	0.46uA
-2.10	0.41uA	0.39uA	0.45uA
-2.00	0.40uA	0.39uA	0.44uA
-1.90	0.39uA	0.38uA	0.44uA
-1.80	0.39uA	0.37uA	0.43uA
-1.70	0.38uA	0.37uA	0.42uA
-1.60	0.37uA	0.36uA	0.42uA
-1.50	0.37uA	0.35uA	0.41uA
-1.40	0.36uA	0.35uA	0.40uA
-1.30	0.35uA	0.34uA	0.39uA
-1.20	0.35uA	0.33uA	0.39uA
-1.10	0.34uA	0.33uA	0.38uA
-1.00	0.33uA	0.32uA	0.37uA
-0.90	0.33uA	0.31uA	0.37uA
-0.80	0.32uA	0.31uA	0.36uA

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  -0.70          0.31uA          0.30uA          0.35uA
  -0.60          0.31uA          0.29uA          0.35uA
  -0.50          0.30uA          0.29uA          0.34uA
  -0.40          0.29uA          0.28uA          0.33uA
  -0.30          0.29uA          0.27uA          0.32uA
  -0.20          0.28uA          0.27uA          0.32uA
  -0.10          0.27uA          0.26uA          0.31uA
  0.00           0.27uA          0.25uA          0.30uA
|
| End [Model] pdusdgz
|
|*****************************************************************************
|                          Model pdddgz
|*****************************************************************************
|
[Model]          pdddgz
Model_type       Input
Polarity         Non-Inverting
Vinl =  0.000V
Vinh =   3.30V
C_comp                          5.00pF          5.00pF          5.00pF
|
|
[Temperature Range]             25.00           0.12k           0.000
[Pullup Reference]              3.30V           3.00V           3.60V
[Pulldown Reference]            0.000V          0.000V          0.000V
[POWER Clamp Reference]         5.00V           4.50V           5.50V
[GND Clamp Reference] \         0.000V          0.000V          0.000V
[GND_clamp]
| voltage         I(typ)          I(min)          I(max)
|
  -5.00          -64.63A         -59.13A         -66.41A
  -4.80          -61.55A         -56.41A         -63.21A
  -4.60          -58.47A         -53.69A         -60.01A
  -4.40          -55.39A         -50.97A         -56.81A
  -4.20          -52.31A         -48.25A         -53.61A
  -4.00          -49.23A         -45.53A         -50.41A
  -3.80          -46.15A         -42.81A         -47.21A
  -3.60          -43.07A         -40.09A         -44.01A
  -3.40          -39.99A         -37.37A         -40.81A
  -3.20          -36.91A         -34.65A         -37.61A
  -3.00          -33.82A         -31.94A         -34.41A
  -2.80          -30.73A         -29.22A         -31.22A
  -2.60          -27.64A         -26.51A         -28.02A
```

-2.40	-24.56A	-23.79A	-24.82A
-2.20	-21.47A	-21.08A	-21.62A
-2.00	-18.38A	-18.36A	-18.42A
-1.80	-15.29A	-15.64A	-15.22A
-1.60	-12.20A	-12.93A	-12.03A
-1.40	-9.12A	-10.21A	-8.83A
-1.20	-6.03A	-7.50A	-5.63A
-1.00	-2.94A	-4.78A	-2.43A
-0.80	-0.20A	-2.07A	-64.21mA
-0.60	-1.89mA	-96.41mA	-4.91mA
-0.40	-85.69uA	-0.50mA	-0.24mA
-0.20	-27.91uA	-14.61uA	-42.88uA
-0.00	-87.50nA	-88.83nA	-0.10uA
0.20	18.71uA	7.31uA	32.27uA
0.40	29.18uA	10.24uA	54.12uA
0.60	32.49uA	10.66uA	65.78uA
0.80	33.06uA	10.78uA	69.33uA
1.00	33.29uA	10.85uA	70.16uA
1.20	33.44uA	10.91uA	70.54uA
1.40	33.56uA	10.96uA	70.78uA
1.60	33.66uA	11.01uA	70.98uA
1.80	33.76uA	11.06uA	71.15uA
2.00	33.85uA	11.10uA	71.30uA
2.20	33.94uA	11.12uA	71.44uA
2.40	33.99uA	11.13uA	71.59uA
2.60	34.01uA	11.14uA	71.74uA
2.80	34.02uA	11.15uA	71.82uA
3.00	34.03uA	11.16uA	71.84uA
3.20	34.04uA	11.25uA	71.85uA
3.40	34.06uA	11.17uA	71.87uA
3.60	34.08uA	11.09uA	71.89uA
3.80	34.10uA	11.01uA	71.91uA
4.00	34.12uA	10.93uA	71.93uA
4.20	34.14uA	10.85uA	71.95uA
4.40	34.16uA	10.77uA	71.97uA
4.60	34.18uA	10.69uA	71.99uA
4.80	34.20uA	10.61uA	72.01uA
5.00	34.22uA	10.53uA	72.03uA

|

[POWER_clamp]

voltage	I(typ)	I(min)	I(max)
-5.00	48.19uA	16.29uA	95.53uA
-4.90	47.87uA	16.17uA	95.03uA

-4.80	47.55uA	16.05uA	94.53uA
-4.70	47.23uA	15.93uA	94.03uA
-4.60	46.91uA	15.81uA	93.53uA
-4.50	46.59uA	15.69uA	93.03uA
-4.40	46.27uA	15.57uA	92.53uA
-4.30	45.95uA	15.45uA	92.03uA
-4.20	45.63uA	15.33uA	91.53uA
-4.10	45.31uA	15.21uA	91.03uA
-4.00	44.99uA	15.09uA	90.53uA
-3.90	44.67uA	14.97uA	90.03uA
-3.80	44.35uA	14.85uA	89.53uA
-3.70	44.03uA	14.73uA	89.03uA
-3.60	43.71uA	14.61uA	88.53uA
-3.50	43.39uA	14.49uA	88.03uA
-3.40	43.07uA	14.37uA	87.53uA
-3.30	42.75uA	14.25uA	87.03uA
-3.20	42.43uA	14.13uA	86.53uA
-3.10	42.11uA	14.01uA	86.03uA
-3.00	41.79uA	13.89uA	85.53uA
-2.90	41.47uA	13.77uA	85.03uA
-2.80	41.15uA	13.65uA	84.53uA
-2.70	40.83uA	13.53uA	84.03uA
-2.60	40.51uA	13.41uA	83.53uA
-2.50	40.19uA	13.29uA	83.03uA
-2.40	39.87uA	13.17uA	82.53uA
-2.30	39.55uA	13.05uA	82.03uA
-2.20	39.23uA	12.93uA	81.53uA
-2.10	38.91uA	12.81uA	81.03uA
-2.00	38.59uA	12.69uA	80.53uA
-1.90	38.27uA	12.57uA	80.03uA
-1.80	37.95uA	12.45uA	79.53uA
-1.70	37.63uA	12.33uA	79.03uA
-1.60	37.31uA	12.22uA	78.53uA
-1.50	36.99uA	12.11uA	78.03uA
-1.40	36.68uA	12.01uA	77.53uA
-1.30	36.38uA	11.92uA	77.03uA
-1.20	36.11uA	11.84uA	76.53uA
-1.10	35.86uA	11.76uA	76.03uA
-1.00	35.63uA	11.69uA	75.53uA
-0.90	35.41uA	11.63uA	75.06uA
-0.80	35.22uA	11.57uA	74.63uA
-0.70	35.05uA	11.52uA	74.24uA
-0.60	34.90uA	11.48uA	73.89uA
-0.50	34.77uA	11.44uA	73.58uA

-0.40	34.65uA	11.41uA	73.30uA
-0.30	34.55uA	11.38uA	73.06uA
-0.20	34.47uA	11.35uA	72.86uA
-0.10	34.40uA	11.33uA	72.68uA
0.00	34.34uA	11.31uA	72.54uA

|
| End [Model] pdddgz
|
|*****
| Model pdudgz
|*****
|
[Model] pdudgz
Model_type Input
Polarity Non-Inverting
Vinl = 0.000V
Vinh = 3.30V
C_comp 5.00pF 5.00pF 5.00pF
|
|
[Temperature Range] 25.00 0.12k 0.000
[Pullup Reference] 3.30V 3.00V 3.60V
[Pulldown Reference] 0.000V 0.000V 0.000V
[POWER Clamp Reference] 5.00V 4.50V 5.50V
[GND Clamp Reference] 0.000V 0.000V 0.000V
[GND_clamp]

voltage	I(typ)	I(min)	I(max)
-5.00	-64.63A	-59.13A	-66.41A
-4.80	-61.55A	-56.41A	-63.21A
-4.60	-58.47A	-53.69A	-60.01A
-4.40	-55.39A	-50.97A	-56.81A
-4.20	-52.31A	-48.25A	-53.61A
-4.00	-49.23A	-45.53A	-50.41A
-3.80	-46.15A	-42.81A	-47.21A
-3.60	-43.07A	-40.09A	-44.01A
-3.40	-39.99A	-37.37A	-40.81A
-3.20	-36.91A	-34.65A	-37.61A
-3.00	-33.82A	-31.94A	-34.41A
-2.80	-30.73A	-29.22A	-31.22A
-2.60	-27.64A	-26.51A	-28.02A
-2.40	-24.56A	-23.79A	-24.82A
-2.20	-21.47A	-21.08A	-21.62A
-2.00	-18.38A	-18.36A	-18.42A
-1.80	-15.29A	-15.64A	-15.22A
-1.60	-12.20A	-12.93A	-12.03A

-1.40	-9.12A	-10.21A	-8.83A
-1.20	-6.03A	-7.50A	-5.63A
-1.00	-2.94A	-4.78A	-2.43A
-0.80	-0.20A	-2.07A	-64.17mA
-0.60	-1.85mA	-96.40mA	-4.85mA
-0.40	-83.24uA	-0.50mA	-0.23mA
-0.20	-60.52uA	-36.82uA	-86.29uA
-0.00	-60.40uA	-35.33uA	-85.95uA
0.20	-60.32uA	-35.27uA	-85.85uA
0.40	-60.23uA	-35.20uA	-85.73uA
0.60	-60.11uA	-35.13uA	-85.57uA
0.80	-59.96uA	-35.03uA	-85.37uA
1.00	-59.74uA	-34.87uA	-85.08uA
1.20	-59.32uA	-34.50uA	-84.56uA
1.40	-58.35uA	-33.59uA	-83.44uA
1.60	-56.47uA	-31.92uA	-81.36uA
1.80	-53.57uA	-29.25uA	-78.20uA
2.00	-49.55uA	-7.60uA	-73.89uA
2.20	-43.70uA	-16.78nA	-68.43uA
2.40	-3.73uA	0.10uA	61.70uA
2.60	0.10uA	0.11uA	51.99uA
2.80	0.12uA	0.12uA	-2.43uA
3.00	0.13uA	0.13uA	0.13uA
3.20	0.14uA	0.20uA	0.14uA
3.40	0.15uA	0.15uA	0.15uA
3.60	0.16uA	96.30nA	0.16uA
3.80	0.17uA	43.50nA	0.17uA
4.00	0.18uA	-9.30nA	0.18uA
4.20	0.18uA	62.10nA	0.19uA
4.40	0.19uA	-0.11uA	0.20uA
4.60	0.20uA	-0.17uA	0.21uA
4.80	0.21uA	-0.22uA	0.22uA
5.00	0.22uA	-0.27uA	0.23uA

|

[POWER_clamp]

voltage	I(typ)	I(min)	I(max)
-5.00	0.61uA	0.59uA	0.65uA
-4.90	0.60uA	0.58uA	0.65uA
-4.80	0.59uA	0.58uA	0.64uA
-4.70	0.59uA	0.57uA	0.63uA
-4.60	0.58uA	0.56uA	0.63uA
-4.50	0.57uA	0.56uA	0.62uA
-4.40	0.56uA	0.55uA	0.61uA

-4.30	0.56uA	0.54uA	0.60uA
-4.20	0.55uA	0.54uA	0.60uA
-4.10	0.54uA	0.53uA	0.59uA
-4.00	0.54uA	0.52uA	0.58uA
-3.90	0.53uA	0.52uA	0.58uA
-3.80	0.52uA	0.51uA	0.57uA
-3.70	0.52uA	0.50uA	0.56uA
-3.60	0.51uA	0.50uA	0.56uA
-3.50	0.50uA	0.49uA	0.55uA
-3.40	0.50uA	0.48uA	0.54uA
-3.30	0.49uA	0.48uA	0.53uA
-3.20	0.48uA	0.47uA	0.53uA
-3.10	0.48uA	0.46uA	0.52uA
-3.00	0.47uA	0.46uA	0.51uA
-2.90	0.46uA	0.45uA	0.51uA
-2.80	0.46uA	0.44uA	0.50uA
-2.70	0.45uA	0.44uA	0.49uA
-2.60	0.44uA	0.43uA	0.49uA
-2.50	0.44uA	0.42uA	0.48uA
-2.40	0.43uA	0.41uA	0.47uA
-2.30	0.42uA	0.41uA	0.46uA
-2.20	0.42uA	0.40uA	0.46uA
-2.10	0.41uA	0.39uA	0.45uA
-2.00	0.40uA	0.39uA	0.44uA
-1.90	0.39uA	0.38uA	0.44uA
-1.80	0.39uA	0.37uA	0.43uA
-1.70	0.38uA	0.37uA	0.42uA
-1.60	0.37uA	0.36uA	0.42uA
-1.50	0.37uA	0.35uA	0.41uA
-1.40	0.36uA	0.35uA	0.40uA
-1.30	0.35uA	0.34uA	0.39uA
-1.20	0.35uA	0.33uA	0.39uA
-1.10	0.34uA	0.33uA	0.38uA
-1.00	0.33uA	0.32uA	0.37uA
-0.90	0.33uA	0.31uA	0.37uA
-0.80	0.32uA	0.31uA	0.36uA
-0.70	0.31uA	0.30uA	0.35uA
-0.60	0.31uA	0.29uA	0.35uA
-0.50	0.30uA	0.29uA	0.34uA
-0.40	0.29uA	0.28uA	0.33uA
-0.30	0.29uA	0.27uA	0.32uA
-0.20	0.28uA	0.27uA	0.32uA
-0.10	0.27uA	0.26uA	0.31uA
0.00	0.27uA	0.25uA	0.30uA

```
|
| End [Model] pdudgz
|
|*****************************************************************************
|                          Model pdidgz
|*****************************************************************************
|
[Model]          pdidgz
Model_type       Input
Polarity         Non-Inverting
Vinl =  0.000V
Vinh =   3.30V
C_comp                          5.00pF          5.00pF          5.00pF
|
|
[Temperature Range]             25.00           0.12k           0.000
[Pullup Reference]              3.30V           3.00V           3.60V
[Pulldown Reference]            0.000V          0.000V          0.000V
[POWER Clamp Reference]         5.00V           4.50V           5.50V
[GND Clamp Reference]           0.000V          0.000V          0.000V
[GND_clamp]
| voltage        I(typ)          I(min)          I(max)
|
  -5.00          -64.63A         -59.13A         -66.41A
  -4.80           -61.55A         -56.41A         -63.21A
  -4.60           -58.47A         -53.69A         -60.01A
  -4.40           -55.39A         -50.97A         -56.81A
  -4.20           -52.31A         -48.25A         -53.61A
   -4.00          -49.23A         -45.53A         -50.41A
   -3.80          -46.15A         -42.81A         -47.21A
  -3.60           -43.07A         -40.09A         -44.01A
  -3.40           -39.99A         -37.37A         -40.81A
  -3.20           -36.91A         -34.65A         -37.61A
  -3.00           -33.82A         -31.94A         -34.41A
  -2.80           -30.73A         -29.22A         -31.22A
  -2.60           -27.64A         -26.51A         -28.02A
  -2.40           -24.56A         -23.79A         -24.82A
  -2.20           -21.47A         -21.08A         -21.62A
  -2.00           -18.38A         -18.36A         -18.42A
  -1.80           -15.29A         -15.64A         -15.22A
  -1.60           -12.20A         -12.93A         -12.03A
  -1.40           -9.12A          -10.21A         -8.83A
   -1.20          -6.03A          -7.50A          -5.63A
  -1.00           -2.94A          -4.78A          -2.43A
```

-0.80	-0.20A	-2.07A	-64.14mA
-0.60	-1.79mA	-96.39mA	-4.77mA
-0.40	-22.83uA	-0.47mA	-0.14mA
-0.20	-0.15uA	-1.56uA	-0.37uA
-0.00	-88.71nA	-89.34nA	-0.11uA
0.20	-72.38nA	-68.50nA	-88.30nA
0.40	-56.11nA	-52.12nA	-71.55nA
0.60	-39.84nA	-35.76nA	-54.82nA
0.80	-23.57nA	-19.40nA	-38.12nA
1.00	-7.31nA	-3.04nA	-21.42nA
1.20	8.94nA	13.32nA	-4.73nA
1.40	25.19nA	29.68nA	11.97nA
1.60	41.42nA	46.03nA	28.68nA
1.80	57.64nA	62.39nA	45.42nA
2.00	73.83nA	78.74nA	62.20nA
2.20	89.95nA	94.86nA	79.06nA
2.40	0.11uA	0.11uA	96.02nA
2.60	0.12uA	0.12uA	0.11uA
2.80	0.13uA	0.13uA	0.13uA
3.00	0.14uA	0.14uA	0.14uA
3.20	0.15uA	0.21uA	0.15uA
3.40	0.15uA	0.15uA	0.16uA
3.60	0.16uA	0.10uA	0.17uA
3.80	0.17uA	47.20nA	0.18uA
4.00	0.18uA	-5.80nA	0.18uA
4.20	0.20uA	-0.11uA	0.20uA
4.60	0.20uA	-0.16uA	0.21uA
4.80	0.21uA	-0.22uA	0.22uA
5.00	0.22uA	-0.27uA	0.23uA

|

[POWER_clamp]

voltage	I(typ)	I(min)	I(max)
-5.00	0.60uA	0.59uA	0.65uA
-4.90	0.60uA	0.58uA	0.64uA
-4.80	0.59uA	0.58uA	0.64uA
-4.70	0.58uA	0.57uA	0.63uA
-4.60	0.58uA	0.56uA	0.62uA
-4.50	0.57uA	0.56uA	0.62uA
-4.40	0.56uA	0.55uA	0.61uA
-4.30	0.56uA	0.54uA	0.60uA
-4.20	0.55uA	0.54uA	0.59uA
-4.10	0.54uA	0.53uA	0.59uA
-4.00	0.54uA	0.52uA	0.58uA

-3.90	0.53uA	0.52uA	0.57uA
-3.80	0.52uA	0.51uA	0.57uA
-3.70	0.52uA	0.50uA	0.56uA
-3.60	0.51uA	0.50uA	0.55uA
-3.50	0.50uA	0.49uA	0.55uA
-3.40	0.49uA	0.48uA	0.54uA
-3.30	0.49uA	0.48uA	0.53uA
-3.20	0.48uA	0.47uA	0.53uA
-3.10	0.47uA	0.46uA	0.52uA
-3.00	0.47uA	0.46uA	0.51uA
-2.90	0.46uA	0.45uA	0.51uA
-2.80	0.45uA	0.44uA	0.50uA
-2.70	0.45uA	0.43uA	0.49uA
-2.60	0.44uA	0.43uA	0.48uA
-2.50	0.43uA	0.42uA	0.48uA
-2.40	0.43uA	0.41uA	0.47uA
-2.30	0.42uA	0.41uA	0.46uA
-2.20	0.41uA	0.40uA	0.46uA
-2.10	0.41uA	0.39uA	0.45uA
-2.00	0.40uA	0.39uA	0.44uA
-1.90	0.39uA	0.38uA	0.44uA
-1.80	0.39uA	0.37uA	0.43uA
-1.70	0.38uA	0.37uA	0.42uA
-1.60	0.37uA	0.36uA	0.42uA
-1.50	0.37uA	0.35uA	0.41uA
-1.40	0.36uA	0.35uA	0.40uA
-1.30	0.35uA	0.34uA	0.39uA
-1.20	0.35uA	0.33uA	0.39uA
-1.10	0.34uA	0.33uA	0.38uA
-1.00	0.33uA	0.32uA	0.37uA
-0.90	0.33uA	0.31uA	0.37uA
-0.80	0.32uA	0.31uA	0.36uA
-0.70	0.31uA	0.30uA	0.35uA
-0.60	0.31uA	0.29uA	0.35uA
-0.50	0.30uA	0.29uA	0.34uA
-0.40	0.29uA	0.28uA	0.33uA
-0.30	0.29uA	0.27uA	0.33uA
-0.20	0.28uA	0.27uA	0.32uA
-0.10	0.28uA	0.26uA	0.31uA
0.00	0.27uA	0.26uA	0.31uA

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| End [Model] pdidgz

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