

Features

- Pin Compatible with FT111 Series Devices
- *Guaranteed* Max 0.5mV Input Offset Voltage
- *Guaranteed* Max 25nA Input Bias Current
- *Guaranteed* Max 3nA Input Offset Current
- *Guaranteed* Max 250ns Response Time
- *Guaranteed* Min 200,000 Voltage Gain
- 50mA Output Current Source or Sink
- $\pm 30V$ Differential Input Voltage
- Fully Specified for Single 5V Operation

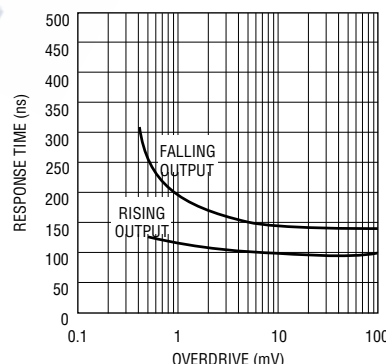
Applications

- SAR A/D Converters
- Voltage-to-Frequency Converters
- Precision RC Oscillator
- Peak Detector
- Motor Speed Control
- Pulse Generator
- Relay/Lamp Driver

Description

The FT1011 is a general purpose comparator with significantly better input characteristics than the FT111. Although pin compatible with the FT111, it offers four times lower bias current, six times lower offset voltage and five times higher voltage gain. Offset voltage drift, a previously unspecified parameter, is guaranteed at $15\mu V/^{\circ}C$. Additionally, the supply current is lower by a factor of two with no loss in speed. The FT1011 is several times faster than the FT111 when subjected to large overdrive conditions. It is also fully specified for DC parameters and response time when operating on a single 5V supply. These parametric improvements allow the FT1011 to be used in high accuracy (≥ 12 -bit) systems without trimming. In a 12-bit A/D application, for instance, using a 2mA DAC, the offset error introduced by the FT1011 is less than 0.5LSB. The FT1011 retains all the versatile features of the FT111, including single 3V to $\pm 18V$ supply operation, and a floating transistor output with 50mA source/sink capability. It can drive loads referenced to ground, negative supply or positive supply, and is specified up to 50V between V^- and the collector output. A differential input voltage up to the full supply voltage is allowed, even with $\pm 18V$ supplies, enabling the inputs to be clamped to the supplies with simple diode clamps.

Response Time vs Overdrive



Absolute Maximum Rating (Note 1)

Supply Voltage (Pin 8 to Pin 4)	36V	Input Voltage (Note 2)	Equal to Supplies
Output to Negative Supply (Pin 7 to Pin 4)		Output Short-Circuit Duration	10 sec
FT1011AC, FT1011C	40V	Operating Temperature Range (Note 3)	
FT1011AI, FT1011I	40V	FT1011AC, FT1011C	0°C to 70°C
FT1011AM, FT1011M	50V	FT1011AI, FT1011I	-40°C to 85°C
Ground to Negative Supply (Pin 1 to Pin 4)	30V	FT1011AM, FT1011M	-55°C to 125°C
Differential Input Voltage	±36V	Storage Temperature Range	-65°C to 150°C
Voltage at STROBE Pin (Pin 6 to Pin 8)	5V	Lead Temperature (Soldering, 10 sec)	300°C

Package/Order Information

<p>TOP VIEW</p> <p>H PACKAGE 8-LEAD TO-5 METAL CAN</p> <p>$T_{JMAX} = 150^{\circ}C, \theta_{JA} = 150^{\circ}C/W, \theta_{JC} = 45^{\circ}C/W$</p>	ORDER PART NUMBER	<p>TOP VIEW</p> <p>N8 PACKAGE 8-LEAD PDIP S8 PACKAGE 8-LEAD PLASTIC SO</p> <p>$T_{JMAX} = 150^{\circ}C, \theta_{JA} = 130^{\circ}C/W(N8)$ $T_{JMAX} = 150^{\circ}C, \theta_{JA} = 150^{\circ}C/W(S8)$</p>	ORDER PART NUMBER
	FT1011ACH FT1011CH FT1011AMH FT1011MH		FT1011ACN8 FT1011CN8 FT1011CS8 FT1011AIS8 FT1011IS8
			S8 PART MARKING
			1011 1011AI 1011I
			ORDER PART NUMBER
			FT1011ACJ8 FT1011AMJ8 FT1011CJ8 FT1011MJ8

Electrical Characteristics

The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at $T_A = 25^{\circ}C$.
 $V_S = \pm 15V, V_{CM} = 0V, R_S = 0\Omega, V_I = -15V$, output at pin 7 unless otherwise noted.

SYMBOL	PARAMETER	CONDITIONS	FT1011AC/AI/AM			FT1011C/I/M			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
V_{OS}	Input Offset Voltage	(Note 4)		0.3	0.5	0.6	1.5	mV	
	*Input Offset Voltage	$R_S \leq 50k$ (Note 5)	●		1.0		3.0	mV	
I_{OS}	*Input Offset Current	(Note 5)	●		0.75		2.0	mV	
			●		1.50		3.0	mV	
I_B	*Input Bias Current	(Note 5)	●	0.2	3	0.2	4	nA	
			●		5		6	nA	
I_B	Input Bias Current	(Note 4)		15	25	20	50	nA	
	*Input Bias Current	(Note 5)	●	20	35	25	65	nA	
			●		50		80	nA	

*Indicates parameters which are guaranteed for all supply voltages, including a single 5V supply. See Note 5.



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