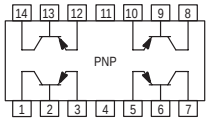
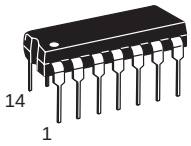
Quad Memory Driver Transistor

PNP Silicon



MPQ3762



CASE 646–06, STYLE 1
TO–116

MAXIMUM RATINGS

Rating	Symbol	Value		Unit
Collector–Emitter Voltage	V_{CEO}	–40		Vdc
Collector–Base Voltage	V_{CBO}	–40		Vdc
Emitter–Base Voltage	V_{EBO}	–5.0		Vdc
Collector Current — Continuous	I_C	–1.5		Adc
		Each Transistor	**Four Transistors Equal Power**	
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	 750 5.98	 1700 13.6	 mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	 1.25 10	 3.2 25.6	 Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–55 to +150		°C

THERMAL CHARACTERISTICS

Characteristic		Junction to Case	Junction to Ambient	Unit
Thermal Resistance(1)	Each Die Effective, 4 Die	100 39	167 73.5	°C/W °C/W
Coupling Factors	Q1–Q4 or Q2–Q3 Q1–Q2 or Q3–Q4	46 5.0	56 10	% %

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage(2) (I_C = –10 mAdc, I_B = 0)	$V_{(BR)CEO}$	–40	—	—	Vdc
Collector–Base Breakdown Voltage (I_C = –10 μAdc, I_E = 0)	$V_{(BR)CBO}$	–40	—	—	Vdc
Emitter–Base Breakdown Voltage (I_E = –10 μAdc, I_C = 0)	$V_{(BR)EBO}$	–5.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = –30 Vdc, I_E = 0)	I_{CBO}	—	—	–100	nAdc
Emitter Cutoff Current (V_{EB} = –3.0 Vdc, I_C = 0)	I_{EBO}	—	—	–100	nAdc

1. $R_{\theta JA}$ is measured with the device soldered into a typical printed circuit board.
2. Pulse Test: Pulse Width ≤ 300 μs; Duty Cycle ≤ 2.0%.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS(2)					
DC Current Gain	h_{FE}				—
(I_C = –150 mAdc, V_{CE} = –1.0 Vdc)		35	70	—	
(I_C = –500 mAdc, V_{CE} = –2.0 Vdc)		30	65	—	
(I_C = –1.0 Adc, V_{CE} = –2.0 Vdc)		20	35	—	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$				Vdc
(I_C = –500 mAdc, I_B = –50 mAdc)		—	–0.3	–0.55	
(I_C = –1.0 Adc, I_B = –100 mAdc)		—	–0.6	–0.9	
Base–Emitter Saturation Voltage	$V_{BE(sat)}$				Vdc
(I_C = –500 mAdc, I_B = –50 mAdc)		—	–0.9	–1.25	
(I_C = –1.0 Adc, I_B = –100 mAdc)		—	–1.0	–1.4	
SMALL–SIGNAL CHARACTERISTICS					
Current–Gain — Bandwidth Product(2) (I_C = –50 mAdc, V_{CE} = –10 Vdc, f = 100 MHz)	f_T	150	275	—	MHz
Output Capacitance (V_{CB} = –10 Vdc, I_E = 0, f = 1.0 MHz)	C_{obo}	—	9.0	15	pF
Input Capacitance (V_{EB} = –0.5 Vdc, I_C = 0, f = 1.0 MHz)	C_{ibo}	—	55	80	pF
SWITCHING CHARACTERISTICS					
Turn–On Time (V_{CC} = –30 Vdc, I_C = –1.0 Adc, I_{B1} = –100 mAdc, $V_{BE(off)}$ = 2.0 Vdc)	t_{on}	—	—	50	ns
Turn–Off Time (V_{CC} = –30 Vdc, I_C = –1.0 Adc, I_{B1} = I_{B2} = –100 mAdc)	t_{off}	—	—	120	ns

2. Pulse Test: Pulse Width $\leq$ 300 μs; Duty Cycle $\leq$ 2.0%.

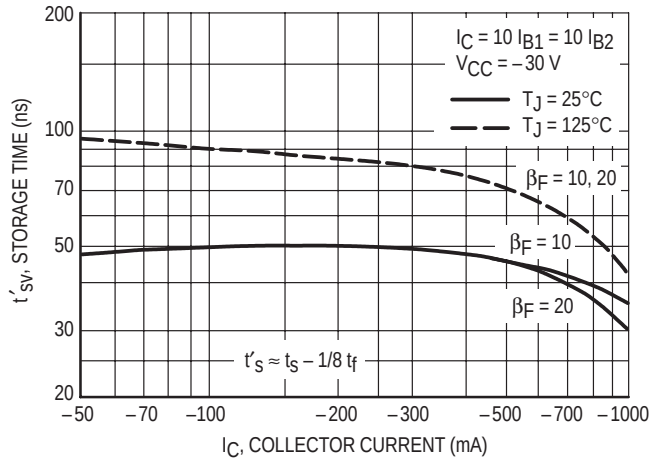


Figure 1. Storage Time Variation with Temperature

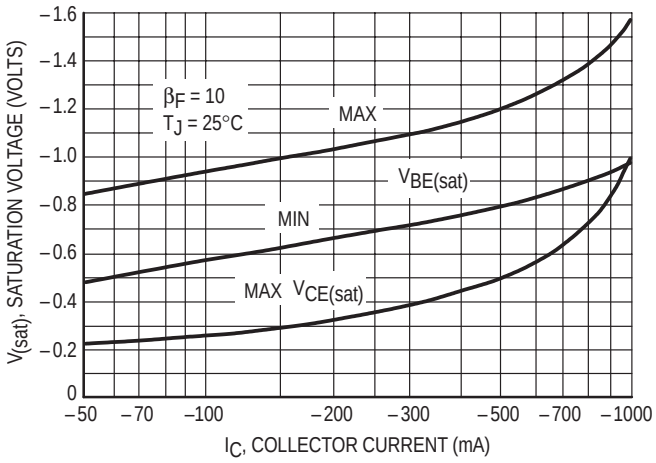


Figure 2. Limits of Saturation Voltage

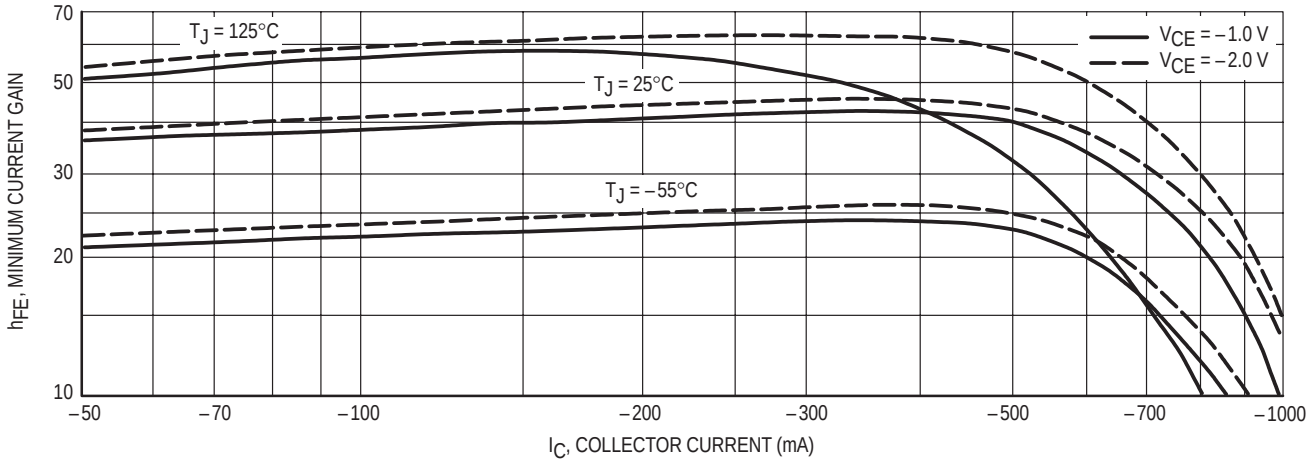


Figure 3. Minimum Current Gain Characteristics