

MAXIMUM RATINGS

Rating	Symbol	Value		Unit
Collector-Emitter Voltage	V _{CEO}	15		Vdc
Collector-Base Voltage	V _{CBO}	40		Vdc
Emitter-Base Voltage	V _{EBO}	5.0		Vdc
Collector Current — Continuous	I _C	500		mAdc
		One Die	All Die Equal Power	
Total Device Dissipation @ T _A = 25°C MD2369,A,B MD2369,AF,BF MQ2369	P _D			mW
		550	600	
		350	400	
		400	600	
Derate above 25°C MD2369,A,B MD2369F,AF,BF MQ2369	P _D			mW/°C
		3.14	3.42	
		2.0	2.28	
		2.28	3.42	
Total Device Dissipation @ T _C = 25°C MD2369,A,B MD2369,AF,BF MQ2369	P _D			Watts
		1.4	2.0	
		0.7	1.4	
		0.7	2.8	
Derate above 25°C MD2369,A,B MD2369,AF,BF MQ2369	P _D			mW/°C
		8.0	11.4	
		4.0	80	
		4.0	16	
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	One Die	All Die Equal Power	Unit
Thermal Resistance, Junction to Case MD2369,A,B MD2369,AF,BF MQ2369	R _{θJC}			°C/W
		125	87.5	
		250	125	
		250	62.6	
Thermal Resistance, Junction to Ambient MD2369,A,B MD2369,AF,BF MQ2369	R _{θJA} (1)			°C/W
		319	292	
		500	438	
		438	292	
Coupling Factor MD2369,A,B MD2369,AF,BF MQ2369 (Q1-Q2) (Q1-Q3 or Q1-Q4)				%
		83	40	
		75	0	
		57	0	
		Junction to Ambient	Junction to Case	

(1) R_{θJA} is measured with the device soldered into a typical printed circuit board.

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

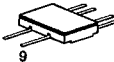
Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage(2) (I _C = 10 mAdc, I _B = 0)	V _{(BR)CEO}	15	—	—	Vdc
Collector-Base Breakdown Voltage (I _C = 10 μAdc, I _E = 0)	V _{(BR)CBO}	40	—	—	Vdc
Emitter-Base Breakdown Voltage (I _E = 10 μAdc, I _C = 0)	V _{(BR)EBO}	5.0	—	—	Vdc
Collector Cutoff Current (V _{CB} = 20 Vdc, I _E = 0) (V _{CB} = 20 Vdc, I _E = 0, T _A = +150°C)	I _{CBO}	—	—	0.03 30	μAdc
ON CHARACTERISTICS(2)					
DC Current Gain (I _C = 10 mAdc, V _{CE} = 1.0 Vdc) (I _C = 10 mAdc, V _{CE} = 1.0 Vdc, T _A = -55°C)	h _{FE}	40 20	95 —	140 —	—

**MD2369, A, B, AF, BF
MQ2369**

MD2369,A,B
CASE 654-07, STYLE 1
DUAL



MD2369,AF,BF
CASE 610A-04, STYLE 1
DUAL



MQ2369
CASE 607-04, STYLE 1
QUAD



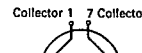
**GENERAL PURPOSE
TRANSISTORS**

NPN SILICON

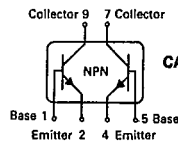
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PIN CONNECTION DIAGRAMS

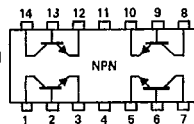
CASE 654-07, STYLE 1



CASE 610A-04, STYLE 1



CASE 607-04, STYLE 1



MD2369, A, B, AF, BF, MQ2369

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

Characteristic	Symbol	Min	Typ	Max	Unit
Collector-Emitter Saturation Voltage (I _C = 10 mA, I _B = 1.0 mA)	V _{CE(sat)}	—	—	0.25	Vdc
Base-Emitter Saturation Voltage (I _C = 10 mA, I _B = 1.0 mA)	V _{BE(sat)}	0.7	—	0.85	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product(2) (I _C = 10 mA, V _{CE} = 10 V, f = 100 MHz)	f _T	500	800	—	MHz
Output Capacitance (V _{CB} = 5.0 V, I _E = 0, f = 100 kHz)	C _{obo}	—	—	4.0	pF
Input Capacitance (V _{BE} = 1.0 V, I _C = 0, f = 100 MHz)	C _{ibo}	—	—	4.0	pF

SWITCHING CHARACTERISTICS

Storage Time (V _{CC} = 10 V, I _C = I _{B1} = I _{B2} = 10 mA)	t _s	—	—	13	ns
Turn-On Time (V _{CC} = 3.0 V, V _{BE(off)} = 1.5 V, I _C = 10 mA, I _{B1} = 3.0 mA)	t _{on}	—	—	15	ns
Turn-Off Time (V _{CC} = 3.0 V, I _C = 10 mA, I _{B1} = 3.0 mA, I _{B2} = 1.5 mA)	t _{off}	—	—	20	ns

MATCHING CHARACTERISTICS

DC Current Gain Ratio(3) (I _C = 3.0 mA, V _{CE} = 1.0 V)	MD2369A, MD2369AF MD2369B, MD2369BF	h _{FE1} /h _{FE2}	0.9 0.8	— —	1.0 1.0	—
Base-Emitter Voltage Differential (I _C = 3.0 mA, V _{CE} = 1.0 V)	MD2369A, MD2369AF MD2369B, MD2369BF	V _{BE1} - V _{BE2}	— —	— —	5.0 10	mVdc
Base-Emitter Voltage Differential Gradient (I _C = 3.0 mA, V _{CE} = 1.0 V, T _A = -55 to +125°C)	MD2369A, MD2369AF MD2369B, MD2369BF	$\frac{\Delta(V_{BE1} - V_{BE2})}{\Delta T_A}$	— —	— —	10 20	μV/°C

- (2) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
 (3) The lowest h_{FE} reading is taken as h_{FE1} for this test.

FIGURE 1 — STORAGE TIME TEST CIRCUIT

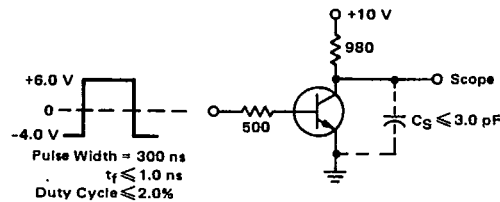


FIGURE 2 — TURN-ON TIME

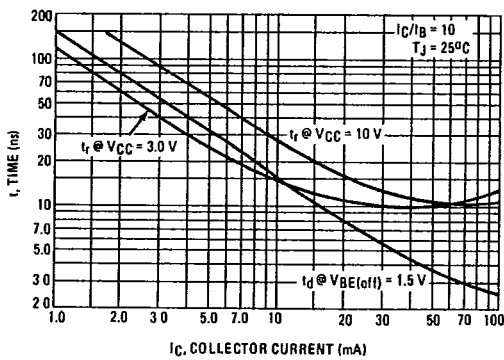


FIGURE 3 — TURN-OFF TIME

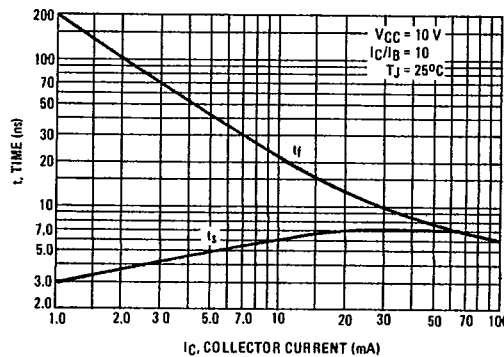


FIGURE 4 — TURN-ON TEST CIRCUIT

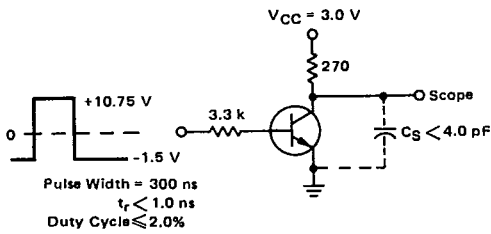
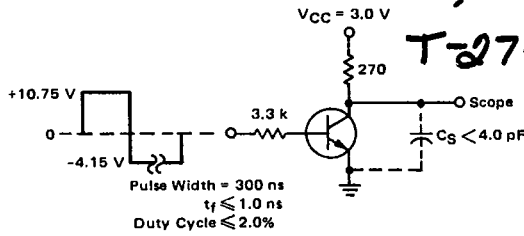


FIGURE 5 — TURN-OFF TEST CIRCUIT



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FIGURE 6 — CAPACITANCE

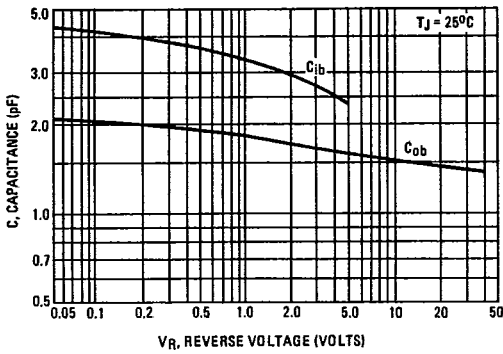
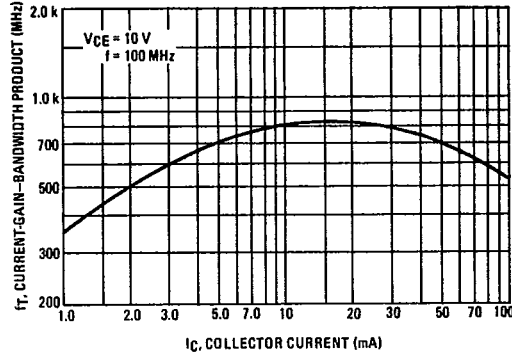


FIGURE 7 — CURRENT-GAIN — BANDWIDTH PRODUCT



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FIGURE 8 — DC CURRENT GAIN

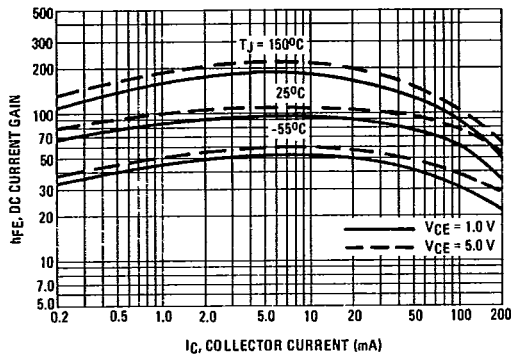


FIGURE 9 — "ON" VOLTAGES

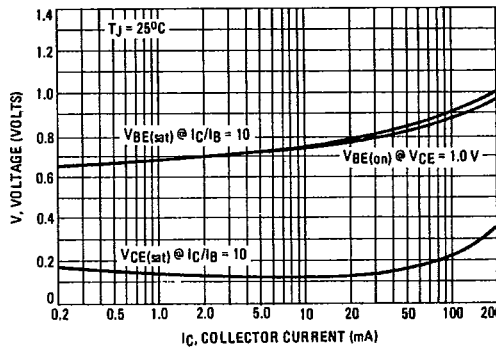


FIGURE 10 — COLLECTOR SATURATION REGION

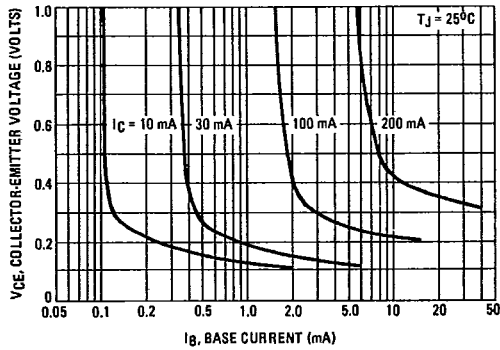


FIGURE 11 — TEMPERATURE COEFFICIENTS

