

6367255 MOTOROLA SC (DIODES/OPTO)

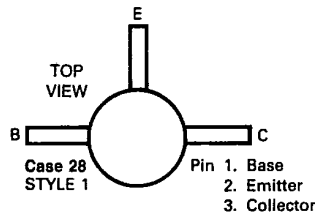
34C 38226 D

MICRO-T (continued)

7-31-17

MMT3903,04 — NPN

GENERAL PURPOSE TRANSISTORS



- designed for general purpose switching and amplifier applications and for complementary circuitry with PNP type MMT3905 and MMT3906 where high-density packaging is required.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	40	Vdc
Collector-Base Voltage	V_{CB}	60	Vdc
Emitter-Base Voltage	V_{EB}	6.0	Vdc
Collector-Current — Continuous	I_C	200	mAdc
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	250 2.0	mW mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	0.50	$^\circ\text{C}/\text{mW}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Test Conditions	Min	Typ	Max	Unit
-----------	-----------------	-----	-----	-----	------

OFF CHARACTERISTICS

BV_{CEO}	$I_C = 1.0 \text{ mAdc}, I_B = 0$	40	—	—	Vdc
BV_{CBO}	$I_C = 10 \text{ } \mu\text{Adc}, I_E = 0$	60	—	—	Vdc
BV_{EBO}	$I_E = 10 \text{ } \mu\text{Adc}, I_C = 0$	6.0	—	—	Vdc
I_{CBO}	$V_{CB} = 40 \text{ Vdc}, I_E = 0$	—	—	50	nAdc
I_{EBO}	$V_{EB} = 4.0 \text{ Vdc}, I_C = 0$	—	—	50	nAdc

ON CHARACTERISTICS

h_{FE}	$I_C = 100 \text{ } \mu\text{Adc}, V_{CE} = 1.0 \text{ Vdc}$	MMT3903 MMT3904	20 40	— —	— —	—
	$I_C = 1.0 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$	MMT3903 MMT3904	35 70	— —	— —	
	$I_C = 10 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$	MMT3903 MMT3904	50 100	— —	150 300	
$V_{CE(sat)}$	$I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}$		—	—	0.2	Vdc
$V_{BE(sat)}$	$I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}$		—	—	0.85	Vdc

continued

6367255 MOTOROLA SC (DIODES/OPTO)

34C 38227 D

MICRO-T (continued)

MMT3903,04 (continued)

T-31-17

SMALL-SIGNAL CHARACTERISTICS

f_T	$I_C = 10 \text{ mA dc}$, $V_{CE} = 20 \text{ V dc}$, $f = 100 \text{ MHz}$	MMT3903 MMT3904	250 300	— —	— —	MHz
C_{ob}	$V_{CB} = 5.0 \text{ V dc}$, $I_E = 0$, $f = 100 \text{ kHz}$		—	—	4.0	pF
C_{ib}	$V_{EB} = 0.5 \text{ V dc}$, $I_C = 0$, $f = 100 \text{ kHz}$		—	—	8.0	pF
NF	$I_C = 100 \text{ } \mu\text{A dc}$, $V_{CE} = 5.0 \text{ V dc}$, $R_S = 1.0 \text{ k}\Omega$ Noise Bandwidth — $f = 10 \text{ Hz to } 15.7 \text{ kHz}$		—	3.0	—	dB

SWITCHING TIME TEST CIRCUITS

FIGURE 1 — TURN-ON TIME

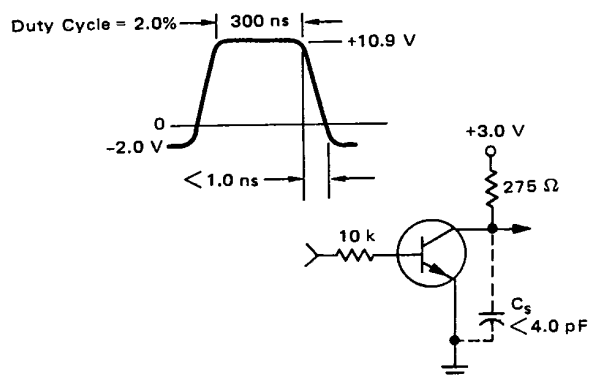


FIGURE 2 — TURN-OFF TIME

