

6367255 MOTOROLA SC (DIODES/OPTO)

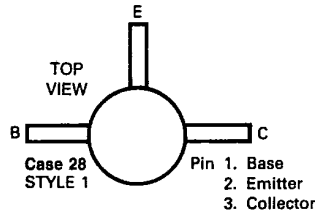
34C 38226 D

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 $25^\circ\text{C}$	$P_D$	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
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#### OFF CHARACTERISTICS

$BV_{CEO}$	$I_C = 1.0 \text{ mAdc}, I_B = 0$	40	—	—	Vdc
$BV_{CBO}$	$I_C = 10 \mu\text{Adc}, I_E = 0$	60	—	—	Vdc
$BV_{EBO}$	$I_E = 10 \mu\text{Adc}, I_C = 0$	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

$h_{FE}$	$I_C = 100 \mu\text{Adc}, V_{CE} = 1.0 \text{ Vdc}$	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

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MICRO-T (continued)

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## 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

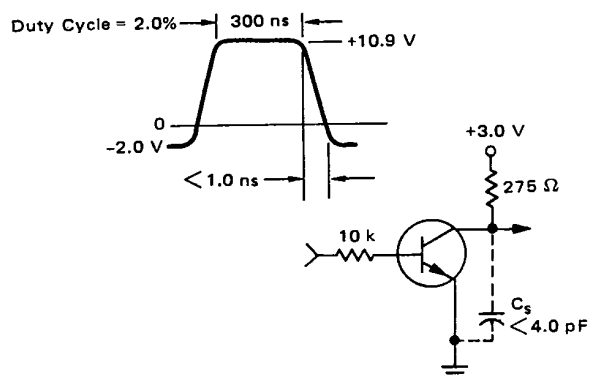


FIGURE 2 — TURN-OFF TIME

