

# MM4000 thru MM4003

CASE 79-02, STYLE 1  
TO-39 (TO-205AD)

GENERAL PURPOSE TRANSISTOR

PNP SILICON

Refer to 2N3494 for graphs for MM4000.\*

## MAXIMUM RATINGS

Rating	Symbol	MM4000	MM4001	MM4002	MM4003	Unit
Collector-Emitter Voltage	$V_{CE0}$	100	150	200	250	Vdc
Collector-Base Voltage	$V_{CBO}$	100	150	200	250	Vdc
Emitter-Base Voltage	$V_{EBO}$	4.0	4.0	4.0	4.0	Vdc
Collector Current — Continuous	$I_C$	100	500	500	500	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	0.6 3.42	1.0 5.71	1.0 5.71	1.0 5.71	Watt mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	3.0 17.2	5.0 28.6	5.0 28.6	5.0 28.6	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200				$^\circ\text{C}$

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

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Breakdown Voltage(1) ( $I_C = 10 \text{ mAdc}, I_E = 0$ )	$V_{(BR)CEO}$	100 150 200 250	—	Vdc
Collector-Base Breakdown Voltage ( $I_E = 0, I_C = 100 \mu\text{Adc}$ )	$V_{(BR)CBO}$	100 150 200 250	—	Vdc
Emitter-Base Breakdown Voltage ( $I_E = 100 \mu\text{Adc}, I_C = 0$ )	$V_{(BR)EBO}$	4.0	—	Vdc
Collector Cutoff Current ( $V_{CB} = 50 \text{ Vdc}, I_E = 0$ ) ( $V_{CB} = 75 \text{ Vdc}, I_E = 0$ ) ( $V_{CB} = 150 \text{ Vdc}, I_E = 0$ )	$I_{CBO}$	—	1.0 1.0 5.0	$\mu\text{Adc}$
<b>ON CHARACTERISTICS</b>				
DC Current Gain(1) ( $I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$ )	$h_{FE}$	20	—	—
Collector-Emitter Saturation Voltage(1) ( $I_C = 10 \text{ mAdc}, I_E = 1.0 \text{ mAdc}$ )	$V_{CE(sat)}$	—	0.6 5.0	Vdc
<b>SMALL-SIGNAL CHARACTERISTICS</b>				
Output Capacitance ( $V_{CB} = 20 \text{ Vdc}, I_E = 0, f = 100 \text{ kHz}$ )	$C_{obo}$	—	6.0 10 20	pF

(1) Pulse Test:  $PW \leq 300 \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

\*Refer to 2N3634 for graphs for MM4001.

Refer to 2N3743 for graphs for MM4002 and MM4003.