

MMBT930

CASE 318-02/03, STYLE 6
SOT-23 (TO-236AA/AB)

GENERAL PURPOSE TRANSISTOR

NPN SILICON

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	45	Vdc
Collector-Base Voltage	V_{CBO}	45	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current — Continuous	I_C	30	mA

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
*Total Device Dissipation, $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	350 2.8	mW mW/ $^\circ\text{C}$
Storage Temperature	T_{stg}	150	$^\circ\text{C}$
*Thermal Resistance Junction to Ambient	$R_{\theta JA}$	357	$^\circ\text{C/W}$

*Package mounted on 99.5% alumina $10 \times 8 \times 0.6$ mm.

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage ($I_C = 10$ mA, $I_B = 0$)	$V_{(BR)CEO}$	45	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 10$ μA , $I_E = 0$)	$V_{(BR)CBO}$	45	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10$ μA , $I_C = 0$)	$V_{(BR)EBO}$	5.0	—	Vdc
Collector Cutoff Current ($V_{CE} = 5.0$ Vdc, $I_B = 0$)	I_{CEO}	—	10	nA
Collector Cutoff Current ($V_{CB} = 45$ Vdc, $I_E = 0$)	I_{CBO}	—	10	nA
Collector Cutoff Current ($V_{CE} = 45$ Vdc, $V_{BE} = 0$)	I_{CES}	—	10	nA
Emitter Cutoff Current ($V_{EB} = 5.0$ Vdc, $I_C = 0$)	I_{EBO}	—	10	nA
ON CHARACTERISTICS				
DC Current Gain ($I_C = 10$ μA , $V_{CE} = 5.0$ Vdc) ($I_C = 500$ μA , $V_{CE} = 5.0$ Vdc) ($I_C = 10$ mA, $V_{CE} = 5.0$ Vdc)	h_{FE}	100 150 —	300 — 600	—
Collector-Emitter Saturation Voltage ($I_C = 10$ mA, $I_B = 0.5$ mA)	$V_{CE(sat)}$	—	1.0	Vdc
Base-Emitter Saturation Voltage ($I_C = 10$ mA, $I_B = 0.5$ mA)	$V_{BE(sat)}$	0.6	1.0	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product ($I_C = 500$ μA , $V_{CE} = 5.0$ Vdc, $f = 30$ MHz)	f_T	30	—	MHz
Output Capacitance ($V_{CB} = 5.0$ Vdc, $I_E = 0$, $f = 1.0$ MHz)	C_{obo}	—	8.0	pF
Noise Figure ($I_C = 10$ μA , $V_{CE} = 5.0$ Vdc, $R_S = 10$ k Ω , $f = 10$ Hz to 15.7 kHz)	NF	—	3.0	dB