



Darlington Transistors

PNP Silicon

We declare that the material of product compliance with RoHS requirements.

MAXIMUM RATINGS

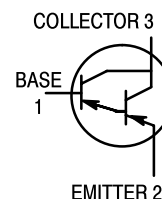
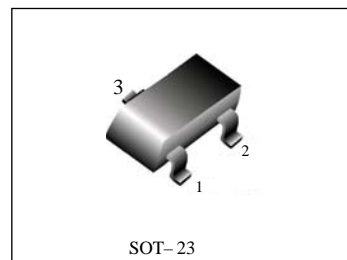
Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CES}	–30	Vdc
Collector–Base Voltage	V_{CBO}	–30	Vdc
Emitter–Base Voltage	V_{EBO}	–10	Vdc
Collector Current – Continuous	I_C	–500	mAdc

DEVICE MARKING

MMBTA64 = 2V

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR–5 Board,(1) $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	225	mW
		1.8	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C/W}$
Total Device Dissipation Alumina Substrate,(2) $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	300	mW
		2.4	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Junction and Storage Temperature	T_J, T_{stg}	–55 to +150	$^\circ\text{C}$



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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ($I_C = -100 \mu\text{Adc}$)	$V_{(BR)CEO}$	–30	–	Vdc
Collector Cutoff Current ($V_{CB} = -30 \text{ Vdc}$)	I_{CBO}	–	–100	nAdc
Emitter Cutoff Current ($V_{EB} = -10 \text{ Vdc}$)	I_{EBO}	–	–100	nAdc

ON CHARACTERISTICS

DC Current Gain ⁽³⁾ ($I_C = -10 \text{ mAdc}, V_{CE} = -5.0 \text{ Vdc}$) ($I_C = -10 \text{ mAdc}, V_{CE} = -5.0 \text{ Vdc}$) ($I_C = -100 \text{ mAdc}, V_{CE} = -5.0 \text{ Vdc}$) ($I_C = -100 \text{ mAdc}, V_{CE} = -5.0 \text{ Vdc}$)	MMBTA63 MMBTA64 MMBTA63 MMBTA64	h_{FE}	5,000 10,000 10,000 20,000	– – – –	–
Collector–Emitter Saturation Voltage ($I_C = -100 \text{ mAdc}, I_B = -0.1 \text{ mAdc}$)		$V_{CE(sat)}$	–	–1.5	Vdc
Base–Emitter On Voltage ($I_C = -100 \text{ mAdc}, V_{CE} = -5.0 \text{ Vdc}$)		$V_{BE(on)}$	–	–2.0	Vdc

SMALL–SIGNAL CHARACTERISTICS

Current–Gain – Bandwidth Product ($I_C = -10 \text{ mAdc}, V_{CE} = -5.0 \text{ Vdc}, f = 100 \text{ MHz}$)	f_T	125	–	MHz
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- FR–5 = 1.0 x 0.75 x 0.062 in.
- Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.
- Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.



MMBTA64

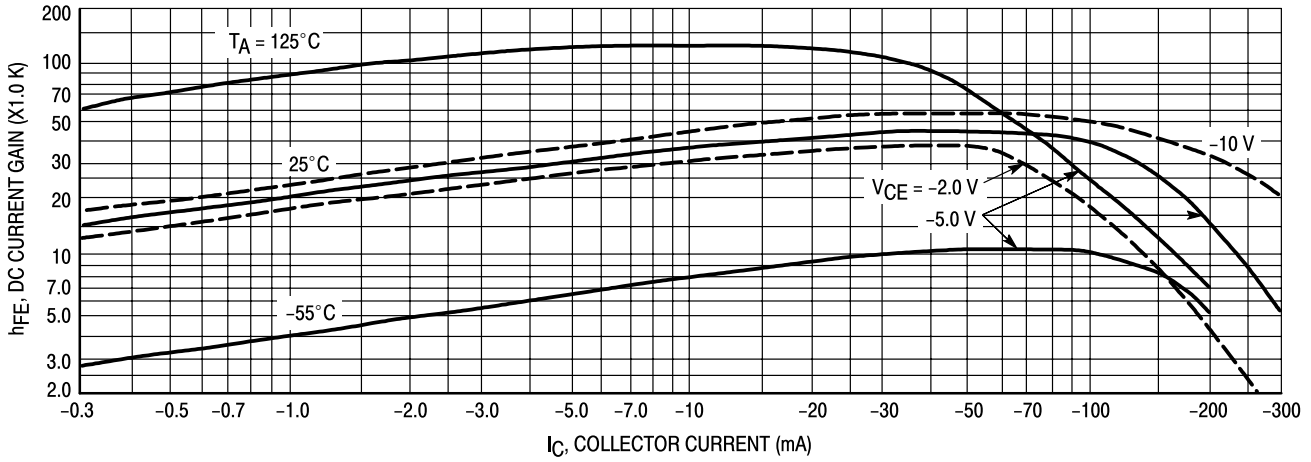


Figure 1. DC Current Gain

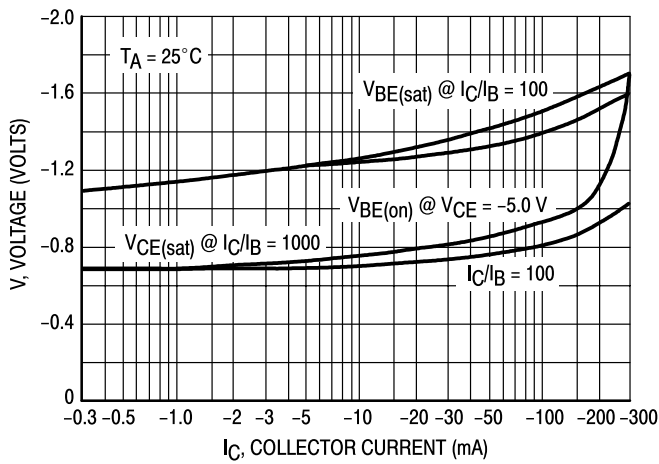


Figure 3. "On" Voltage

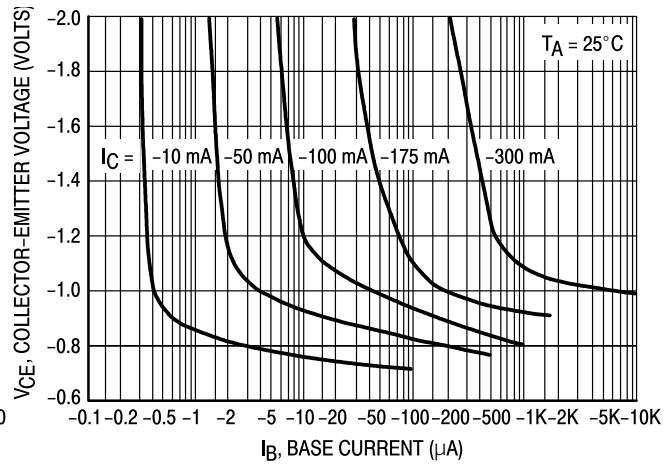


Figure 2. Collector Saturation Region

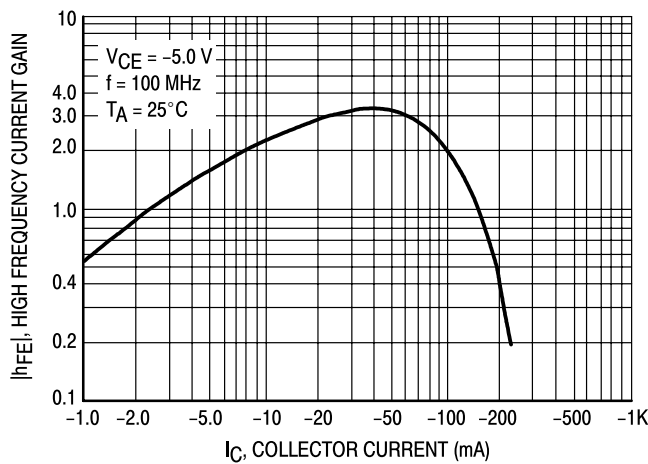
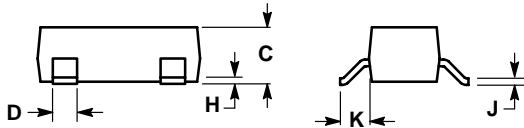
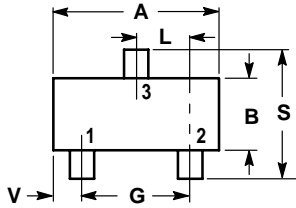


Figure 4. High Frequency Current Gain

SOT-23

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

