

Darlington Transistors

PNP Silicon

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

LMBTA63LT1G
LMBTA64LT1G

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

LMBTA63LT1G = 2U; LMBTA64LT1G = 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 mAdc, V _{CE} = −5.0 Vdc) (I _C = −10 mAdc, V _{CE} = −5.0 Vdc) (I _C = −100 mAdc, V _{CE} = −5.0 Vdc) (I _C = −100 mAdc, V _{CE} = −5.0 Vdc)	LMBTA63LT1G LMBTA64LT1G LMBTA63LT1G LMBTA64LT1G	h _{FE}	5,000 10,000 10,000 20,000	– – – –	–
Collector–Emitter Saturation Voltage (I _C = −100 mAdc, I _B = −0.1 mAdc)		V _{CE(sat)}	–	−1.5	Vdc
Base–Emitter On Voltage (I _C = −100 mAdc, V _{CE} = −5.0 Vdc)		V _{BE(on)}	–	−2.0	Vdc

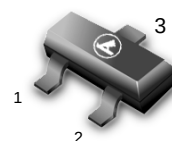
SMALL–SIGNAL CHARACTERISTICS

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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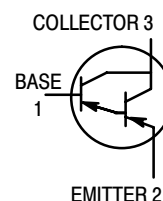
1. FR–5 = 1.0 x 0.75 x 0.062 in.

2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

3. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.



CASE 318–08, STYLE 6
SOT–23 (TO–236AB)



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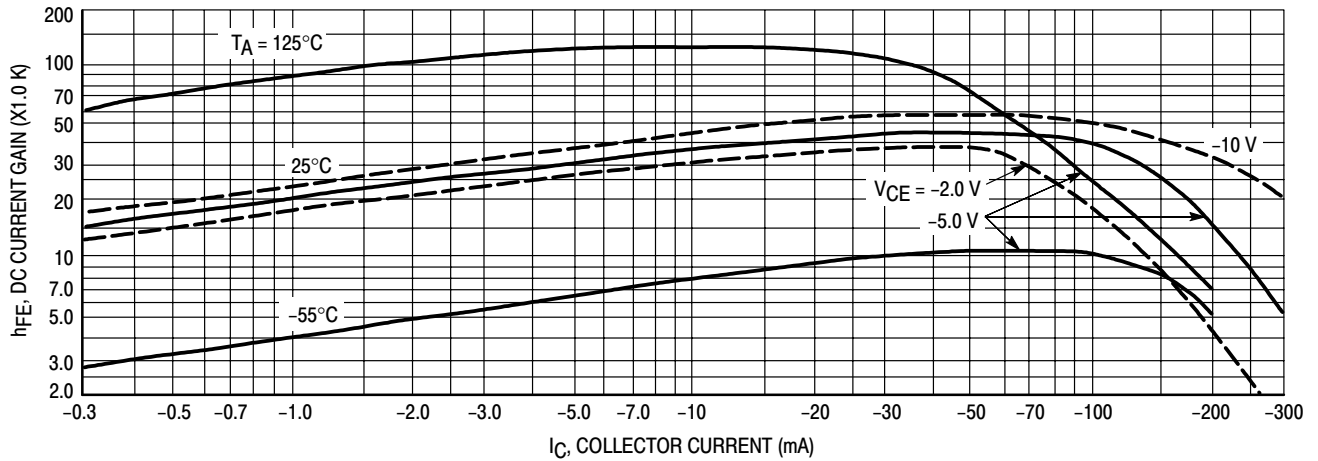


Figure 1. DC Current Gain

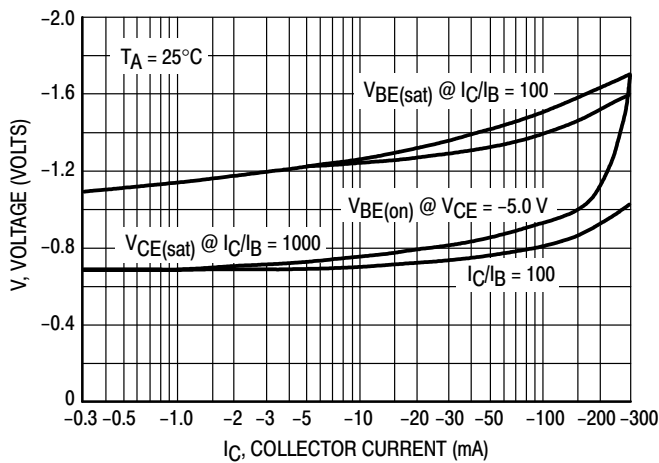


Figure 3. "On" Voltage

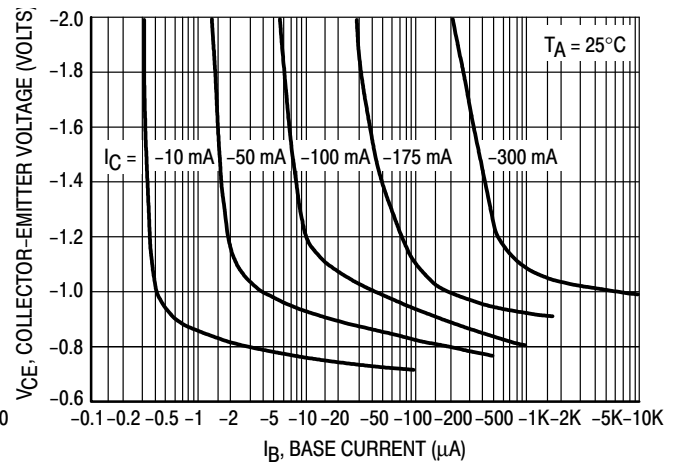


Figure 2. Collector Saturation Region

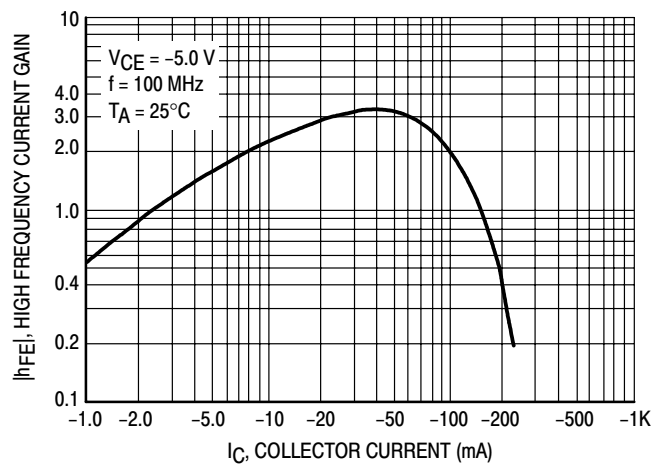
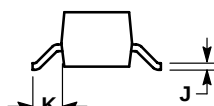
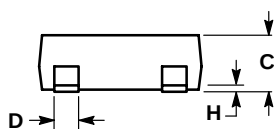
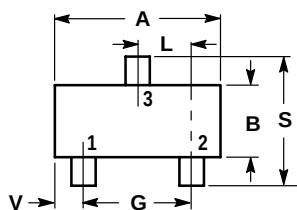


Figure 4. High Frequency Current Gain

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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

