MMBTA63LT1G, MMBTA64LT1G, SMMBTA64LT1G

Darlington Transistors

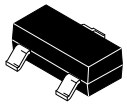
PNP Silicon

ON Semiconductor®

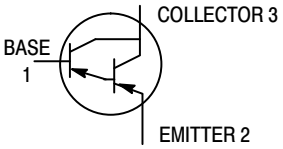
www.onsemi.com

Features

- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant



SOT−23 (TO−236)
CASE 318
STYLE 6



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

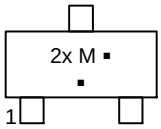
THERMAL CHARACTERISTICS

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

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

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.

MARKING DIAGRAM



2x = Device Code
x = U for MMBTA63LT1G
x = V for MMBTA64LT1G
SMMBTA64LT1G
M = Date Code*
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*Date Code orientation and/or overbar may vary depending upon manufacturing location.

ORDERING INFORMATION

Device	Package	Shipping†
MMBTA63LT1G	SOT−23 (Pb−Free)	3,000 / Tape & Reel
MMBTA64LT1G	SOT−23 (Pb−Free)	3,000 / Tape & Reel
SMMBTA64LT1G	SOT−23 (Pb−Free)	3,000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector−Emitter Breakdown Voltage (I_C = −100 μAdc)	$V_{(BR)CEO}$	−30	−	Vdc
Collector Cutoff Current (V_{CB} = −30 Vdc)	I_{CBO}	−	−100	nAdc
Emitter Cutoff Current (V_{EB} = −10 Vdc)	I_{EBO}	−	−100	nAdc
ON CHARACTERISTICS				
DC Current Gain (Note 3)	h_{FE}			−
(I_C = −10 mAdc, V_{CE} = −5.0 Vdc) MMBTA63		5,000	−	
(I_C = −10 mAdc, V_{CE} = −5.0 Vdc) MMBTA64, SMMBTA64		10,000	−	
(I_C = −100 mAdc, V_{CE} = −5.0 Vdc) MMBTA63		10,000	−	
(I_C = −100 mAdc, V_{CE} = −5.0 Vdc) MMBTA64, SMMBTA64		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 mAdc, V_{CE} = −5.0 Vdc, f = 100 MHz)	f_T	125	−	MHz

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

3. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

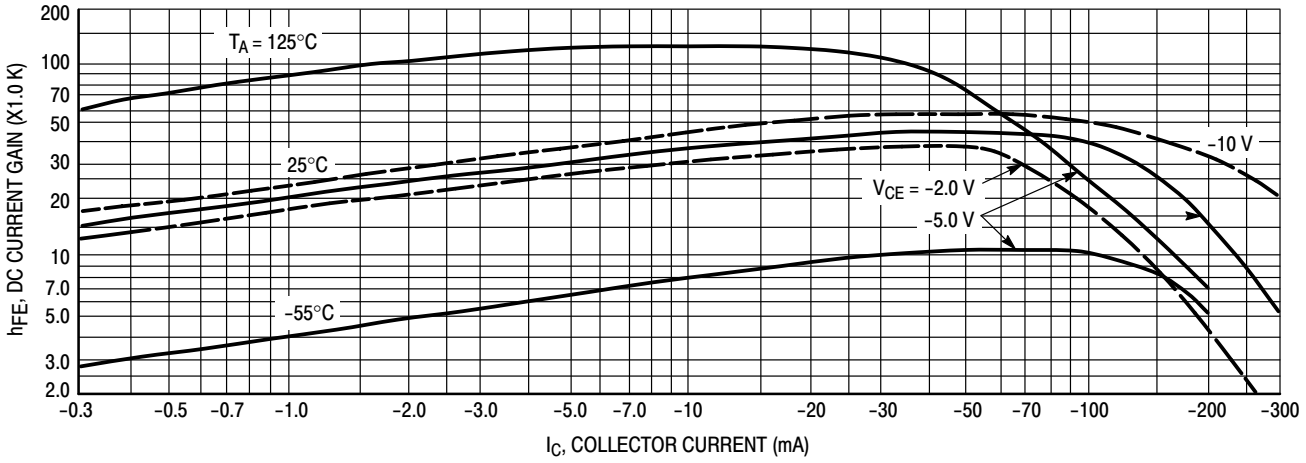


Figure 1. DC Current Gain

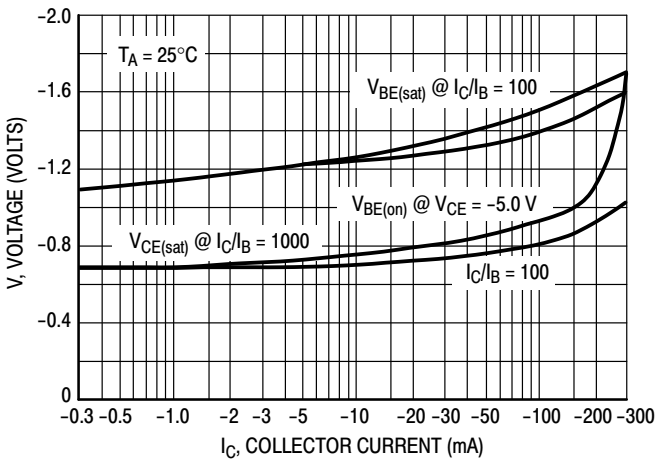


Figure 3. “On” Voltage

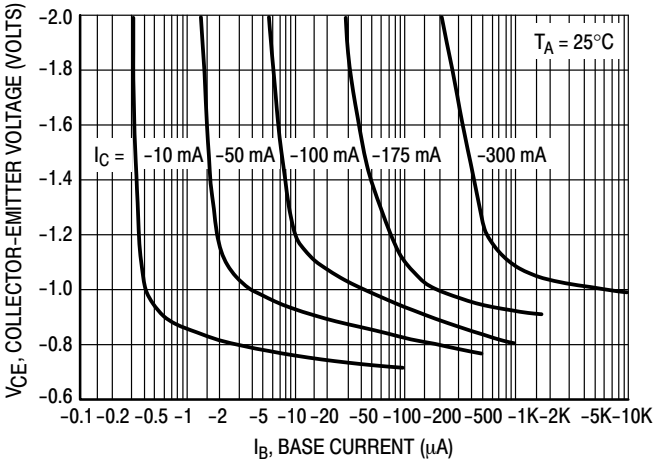


Figure 2. Collector Saturation Region

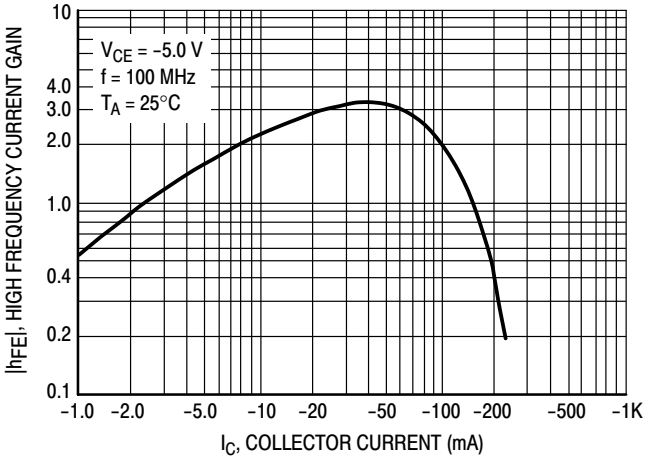


Figure 4. High Frequency Current Gain

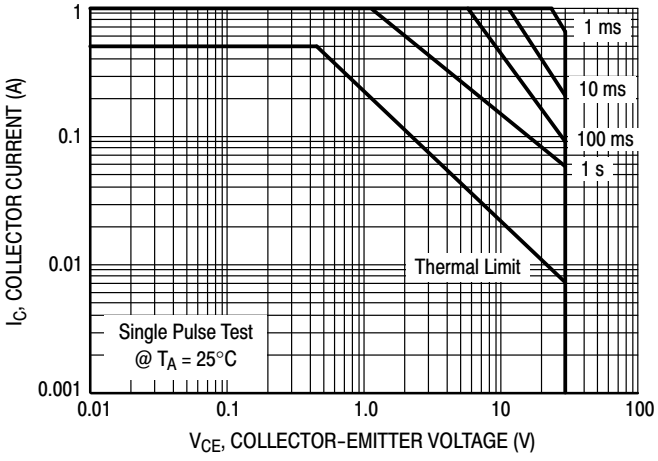
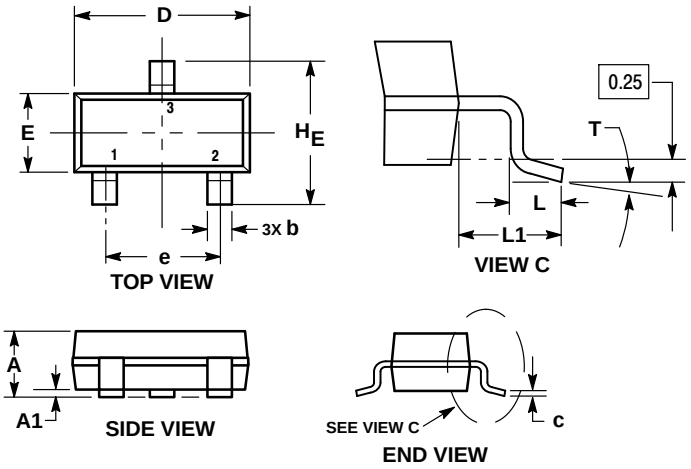


Figure 5. Safe Operating Area

PACKAGE DIMENSIONS

SOT−23 (TO−236)
CASE 318−08
ISSUE AR

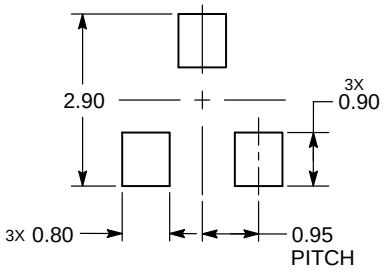


NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.039	0.044
A1	0.01	0.06	0.10	0.000	0.002	0.004
b	0.37	0.44	0.50	0.015	0.017	0.020
c	0.08	0.14	0.20	0.003	0.006	0.008
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.080
L	0.30	0.43	0.55	0.012	0.017	0.022
L1	0.35	0.54	0.69	0.014	0.021	0.027
H_E	2.10	2.40	2.64	0.083	0.094	0.104
T	0°	−−−	10°	0°	−−−	10°

STYLE 6:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

RECOMMENDED SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
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