MMBTA55LT1, MMBTA56LT1

MMBTA56LT1 is a Preferred Device

Driver Transistors

PNP Silicon

ON Semiconductor®

http://onsemi.com

Features

- Pb−Free Package is Available

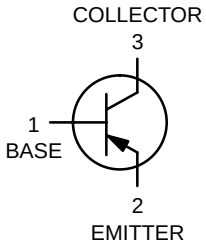
MAXIMUM RATINGS

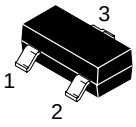
Rating	Symbol	Value	Unit
Collector−Emitter Voltage MMBTA55 MMBTA56	V_{CEO}	 −60 −80	Vdc
Collector−Base Voltage MMBTA55 MMBTA56	V_{CBO}	 −60 −80	Vdc
Emitter−Base Voltage	V_{EBO}	−4.0	Vdc
Collector Current − Continuous	I_C	−500	mAdc

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

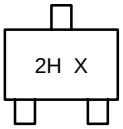
1. FR−5 = 1.0 × 0.75 × 0.062 in.
2. Alumina = 0.4 × 0.3 × 0.024 in. 99.5% alumina.



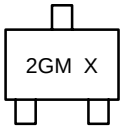


SOT−23
CASE 318
STYLE 6

MARKING DIAGRAMS



MMBTA55LT1



MMBTA56LT1

2H, 2GM = Specific Device Code
X = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
MMBTA55LT1	SOT−23	3000/Tape & Reel
MMBTA55LT3	SOT−23	10,000/Tape & Reel
MMBTA56LT1	SOT−23	3000/Tape & Reel
MMBTA56LT1G	SOT−23 (Pb−Free)	3000/Tape & Reel
MMBTA56LT3	SOT−23	10,000/Tape & Reel

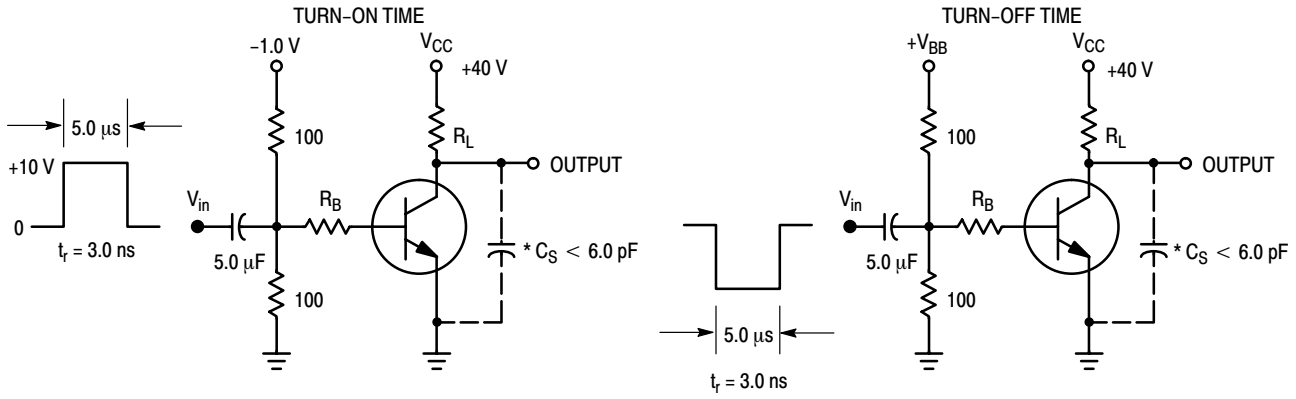
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

Preferred devices are recommended choices for future use and best overall value.

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector−Emitter Breakdown Voltage (Note 3) (I_C = −1.0 mAdc, I_B = 0)	MMBTA55 MMBTA56	$V_{(BR)CEO}$	 −60 −80	 − −	Vdc
Emitter−Base Breakdown Voltage (I_E = −100 μAdc, I_C = 0)		$V_{(BR)EBO}$	−4.0	−	Vdc
Collector Cutoff Current (V_{CE} = −60 Vdc, I_B = 0)		I_{CES}	−	−0.1	μAdc
Collector Cutoff Current (V_{CB} = −60 Vdc, I_E = 0) (V_{CB} = −80 Vdc, I_E = 0)	 MMBTA55 MMBTA56	I_{CBO}	 − −	 −0.1 −0.1	μAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = −10 mAdc, V_{CE} = −1.0 Vdc) (I_C = −100 mAdc, V_{CE} = −1.0 Vdc)		h_{FE}	 100 100	 − −	−
Collector−Emitter Saturation Voltage (I_C = −100 mAdc, I_B = −10 mAdc)		$V_{CE(sat)}$	−	−0.25	Vdc
Base−Emitter On Voltage (I_C = −100 mAdc, V_{CE} = −1.0 Vdc)		$V_{BE(on)}$	−	−1.2	Vdc
SMALL−SIGNAL CHARACTERISTICS					
Current−Gain − Bandwidth Product (Note 4) (I_C = −100 mAdc, V_{CE} = −1.0 Vdc, f = 100 MHz)		f_T	50	−	MHz

3. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
4. f_T is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.



*Total Shunt Capacitance of Test Jig and Connectors
For PNP Test Circuits, Reverse All Voltage Polarities

Figure 1. Switching Time Test Circuits

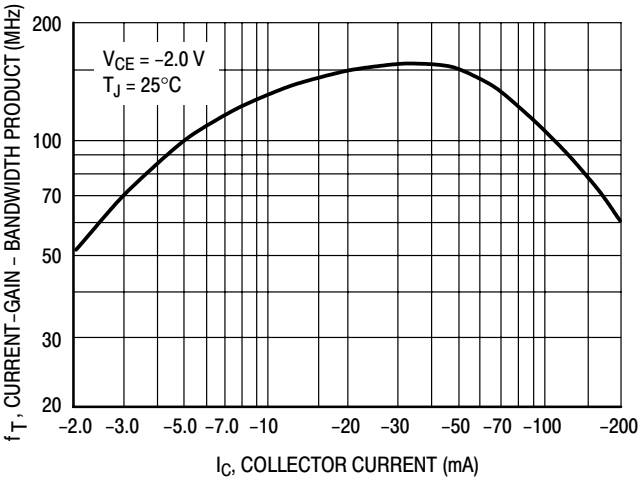


Figure 2. Current−Gain — Bandwidth Product

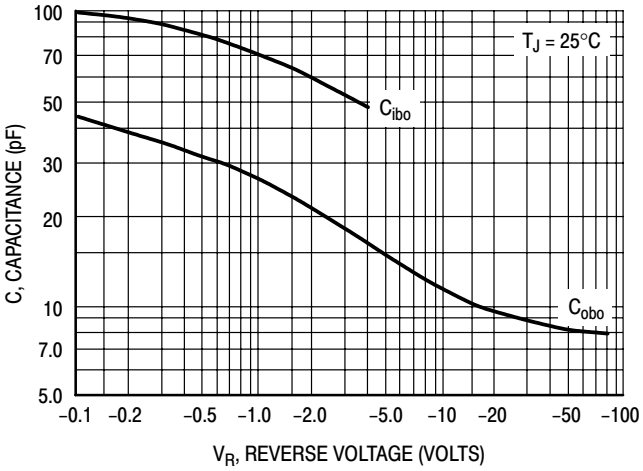


Figure 3. Capacitance

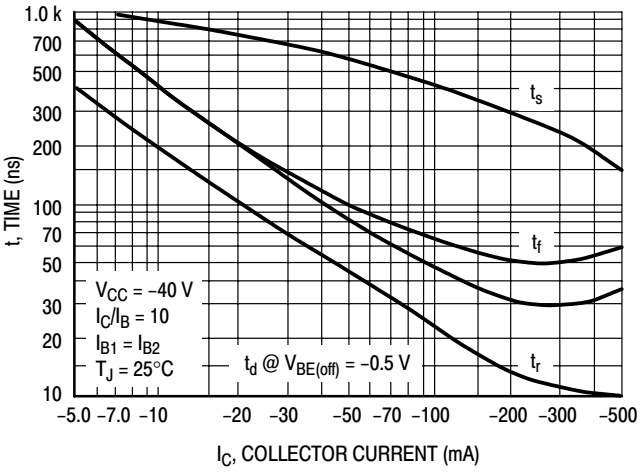


Figure 4. Switching Time

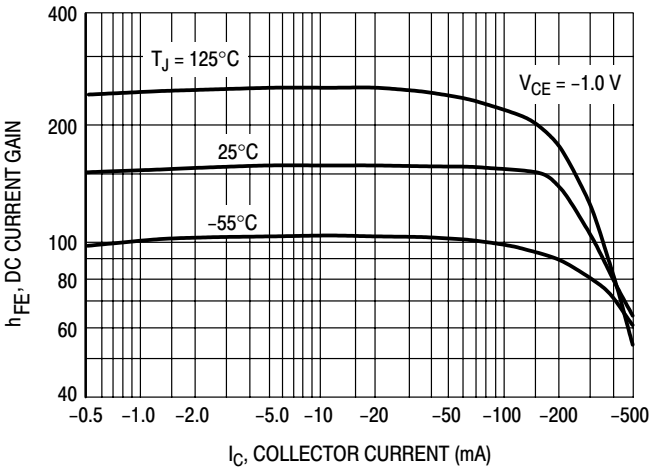


Figure 5. DC Current Gain

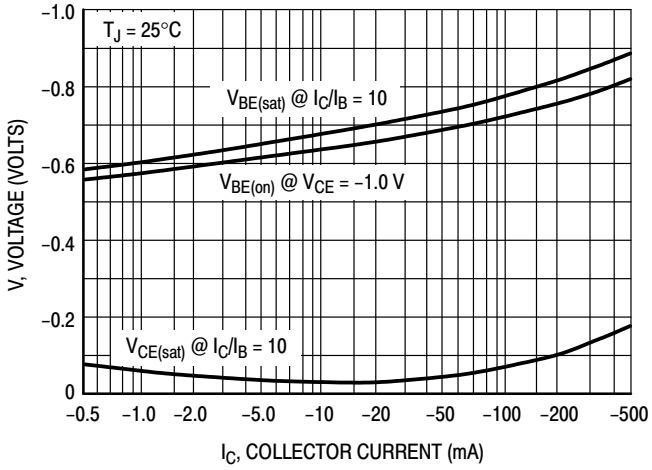


Figure 6. “ON” Voltages

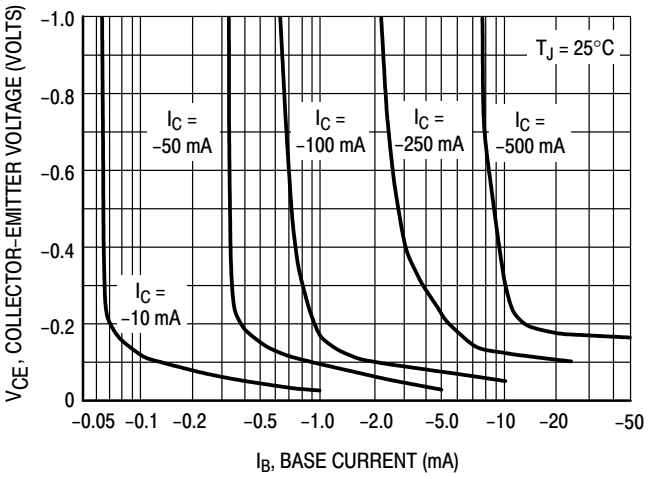


Figure 7. Collector Saturation Region

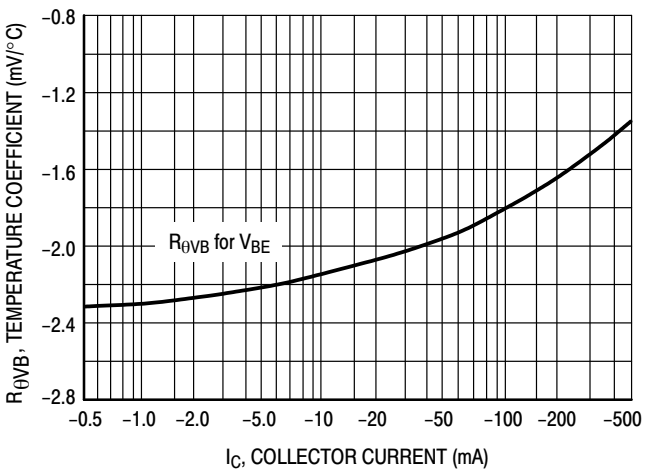
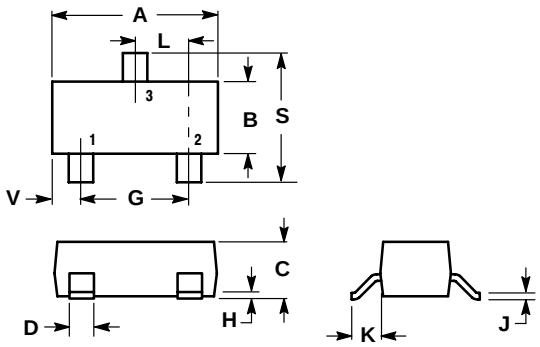


Figure 8. Base−Emitter Temperature Coefficient

PACKAGE DIMENSIONS

SOT−23 (TO−236)
CASE 318−08
ISSUE AH

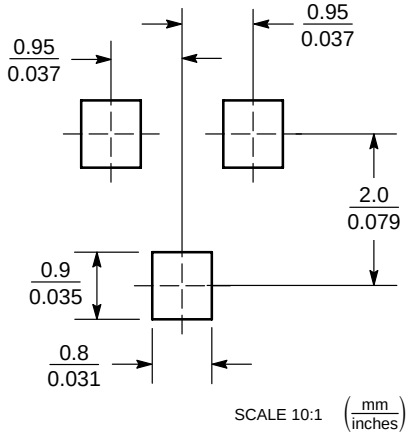


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318−03 AND −07 OBSOLETE, NEW STANDARD 318−08.

	INCHES		MILLIMETERS	
DIM	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

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

SOLDERING FOOTPRINT*



SOT−23

*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
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

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Japan: ON Semiconductor, Japan Customer Focus Center
2−9−1 Kamimeguro, Meguro−ku, Tokyo, Japan 153−0051
Phone: 81−3−5773−3850

ON Semiconductor Website: http://onsemi.com

Order Literature: http://www.onsemi.com/litorder

For additional information, please contact your local Sales Representative.

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