

### PNP Silicon

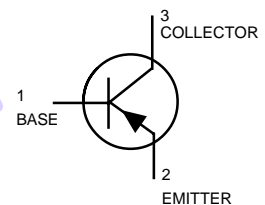
- We declare that the material of product compliance with RoHS requirements.  
**Pb-Free package is available**  
 RoHS product for packing code suffix "G"  
 Halogen free product for packing code suffix "H"

#### MAXIMUM RATINGS

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



SOT-23



#### THERMAL CHARACTERISTICS

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

#### DEVICE MARKING

MMBTA55LT1= 2H ; MMBTA56LT1= 2GM

#### 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 (3) ( $I_C = -1.0 \text{ mAdc}, I_B = 0$ )	$V_{(BR)CEO}$			Vdc
	MMBTA55	-60	—	
	MMBTA56	-80	—	
Emitter–Base Breakdown Voltage ( $I_E = -100 \mu\text{Adc}, I_C = 0$ )	$V_{(BR)EBO}$	-4.0	—	Vdc
Collector Cutoff Current ( $V_{CE} = -60\text{Vdc}, I_B = 0$ )	$I_{CEO}$	—	-0.1	$\mu\text{Adc}$
Collector Cutoff Current ( $V_{CB} = -60\text{Vdc}, I_E = 0$ )	$I_{CBO}$	—	-0.1	$\mu\text{Adc}$
	MMBTA55	—	-0.1	
	MMBTA56	—	-0.1	

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  $\leq 2.0\%$ .

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

Characteristic	Symbol	Min	Max	Unit
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#### ON CHARACTERISTICS

DC Current Gain ( $I_C = -10\text{ mAdc}$ , $V_{CE} = -1.0\text{ Vdc}$ ) ( $I_C = -100\text{ mAdc}$ , $V_{CE} = -1.0\text{ Vdc}$ )	$h_{FE}$	100	—	—
Collector–Emitter Saturation Voltage ( $I_C = -100\text{ mAdc}$ , $I_B = -10\text{ mAdc}$ )	$V_{CE(sat)}$	—	-0.25	Vdc
Base–Emitter On Voltage ( $I_C = -100\text{ mAdc}$ , $V_{CE} = -1.0\text{ Vdc}$ )	$V_{BE(on)}$	—	-1.2	Vdc

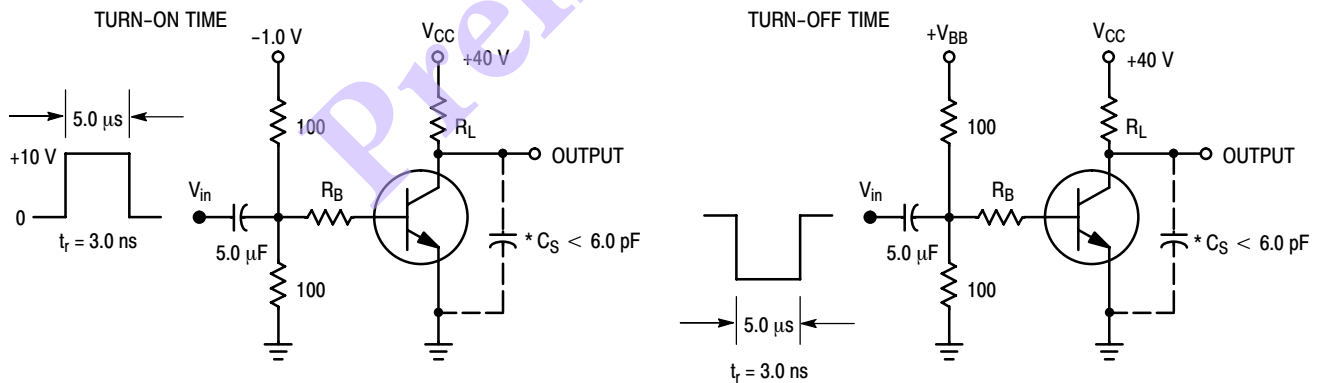
#### SMALL-SIGNAL CHARACTERISTICS

Current –Gain–Bandwidth Product(4) ( $V_{CE} = -1.0\text{ Vdc}$ , $I_C = -100\text{ mAdc}$ , $f = 100\text{ MHz}$ )	$f_T$	50	—	MHz
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4.  $f_T$  is defined as the frequency at which  $|h_{fe}|$  extrapolates to unity.

#### ORDERING INFORMATION

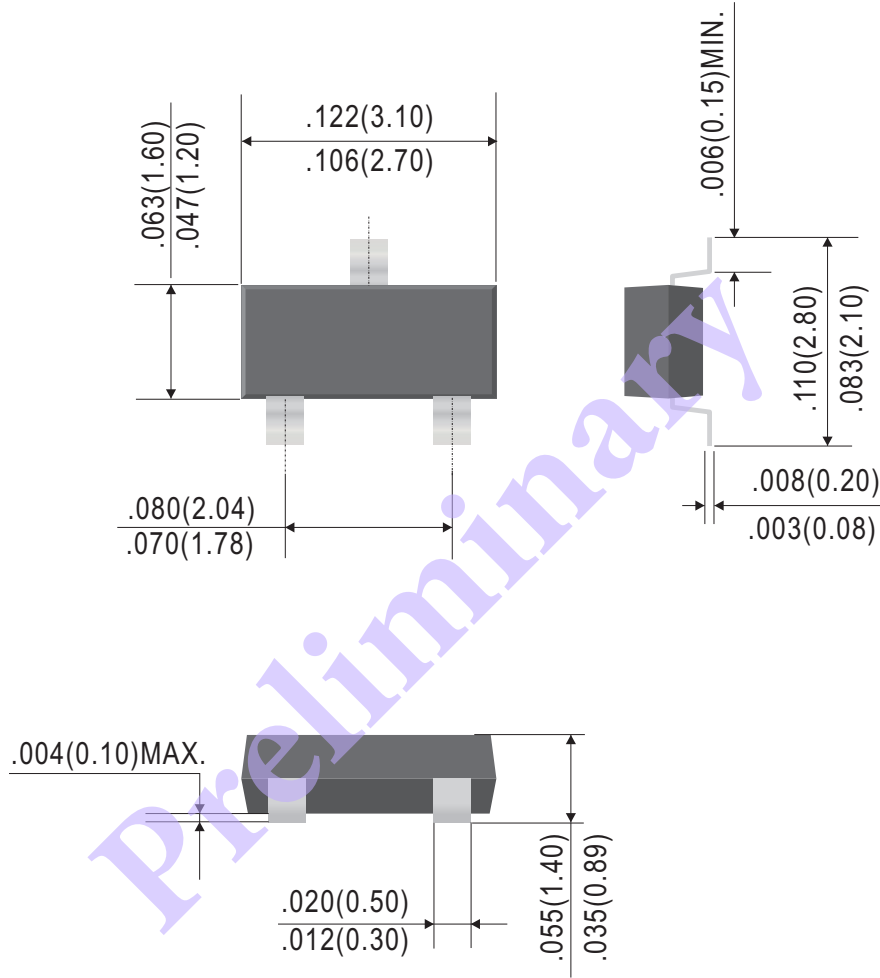
Device	Marking	Shipping
MMBTA55LT1	2H	3000/Tape & Reel
MMBTA56LT1	2GM	3000/Tape & Reel



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

Figure 1. Switching Time Test Circuits

**SOT-23**



Dimensions in inches and (millimeters)

