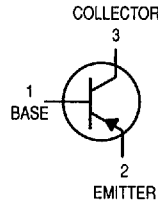


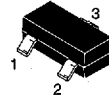
Driver Transistors

PNP Silicon



MMBTA55LT1
MMBTA56LT1*

*Motorola Preferred Device



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

MAXIMUM RATINGS

Rating	Symbol	MMBTA55	MMBTA56	Unit
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		mA

DEVICE MARKING

MMBTA55LT1 = 2H; MMBTA56LT1 = 2GM

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	$^\circ\text{C}/\text{W}$
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	$^\circ\text{C}/\text{W}$
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 ⁽³⁾ ($I_C = -1.0 \text{ mA}$, $I_B = 0$)	MMBTA55 MMBTA56	$V_{(BR)CEO}$	-60 -80	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = -100 \mu\text{A}$, $I_C = 0$)		$V_{(BR)EBO}$	-4.0	—	Vdc
Collector Cutoff Current ($V_{CE} = -60 \text{ Vdc}$, $I_B = 0$)		I_{CES}	—	-0.1	μA
Collector Cutoff Current ($V_{CB} = -60 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = -80 \text{ Vdc}$, $I_E = 0$)	MMBTA55 MMBTA56	I_{CBO}	— —	-0.1 -0.1	μA

ON CHARACTERISTICS

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

SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product ⁽⁴⁾ ($I_C = -100 \text{ mA}$, $V_{CE} = -1.0 \text{ Vdc}$, $f = 100 \text{ MHz}$)	f_T	50	—	MHz
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- FR-5 = $1.0 \times 0.75 \times 0.062 \text{ in.}$
- Alumina = $0.4 \times 0.3 \times 0.024 \text{ in.}$ 99.5% alumina.
- Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.
- f_T is defined as the frequency at which $|h_{FE}|$ extrapolates to unity.

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

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