



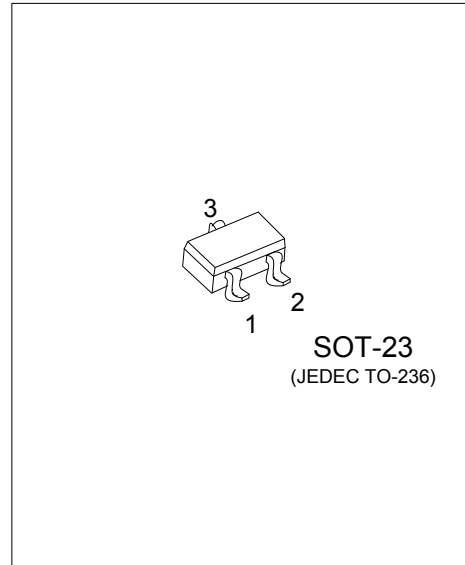
## MMBTA56

## PNP SILICON TRANSISTOR

### AMPLIFIER TRANSISTOR

#### FEATURES

- \* Collector-Emitter Voltage:  $V_{CE0} = -80V$
- \* Collector Dissipation:  $P_D = 350mW$



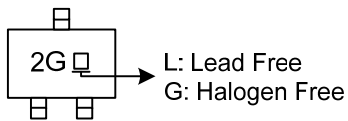
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
MMBTA56L-AE3-R	MMBTA56G-AE3-R	SOT-23	B	E	C	Tape Reel

Note: Pin Assignment: B: Base E: Emitter C: Collector

<p>MMBTA56G-AE3-R</p>	<p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AE3: SOT-23</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	$V_{CBO}$	-80	V
Collector-Emitter Voltage	$V_{CEO}$	-80	V
Emitter-Base Voltage	$V_{EBO}$	-4	V
Collector Current - Continuous	$I_C$	-500	mA
Total Device Dissipation (Note 2)	$P_D$	350	mW
Derate Above $25^\circ\text{C}$		2.8	mW/ $^\circ\text{C}$
Junction Temperature	$T_J$	+150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Device mounted on FR-4=1.6×1.6×0.06 in.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Thermal Resistance, Junction to Ambient	$\theta_{JA}$	357	$^\circ\text{C}/\text{W}$

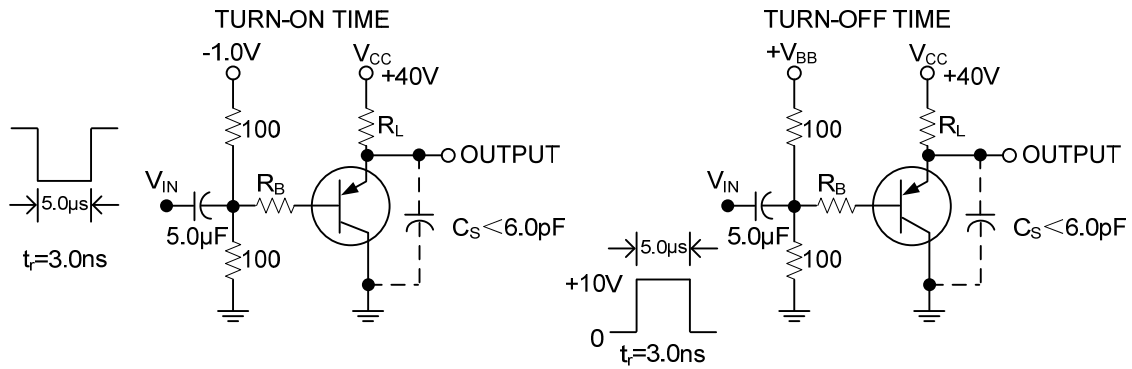
■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Collector-Emitter Breakdown Voltage (Note 1)	$BV_{CEO}$	$I_C = -1.0\text{mA}$ , $I_B = 0$	-80			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E = -100\mu\text{A}$ , $I_C = 0$	-4			V
Collector Cutoff Current	$I_{CES}$	$V_{CE} = -60\text{V}$ , $I_B = 0$			-0.1	$\mu\text{A}$
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = -80\text{V}$ , $I_E = 0$			-0.1	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>						
DC Current Gain	$h_{FE}$	$I_C = -10\text{mA}$ , $V_{CE} = -1\text{V}$	100			
		$I_C = -100\text{mA}$ , $V_{CE} = -1\text{V}$	100			
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = -100\text{mA}$ , $I_B = -10\text{mA}$			-0.25	V
Base-Emitter on Voltage	$V_{BE(ON)}$	$I_C = -100\text{mA}$ , $V_{CE} = -1\text{V}$			-1.2	V
<b>SMALL-SIGNAL CHARACTERISTICS</b>						
Current Gain Bandwidth Product (Note2)	$f_T$	$I_C = -10\text{mA}$ , $V_{CE} = -2\text{V}$ , $f = 100\text{MHz}$	100			MHz

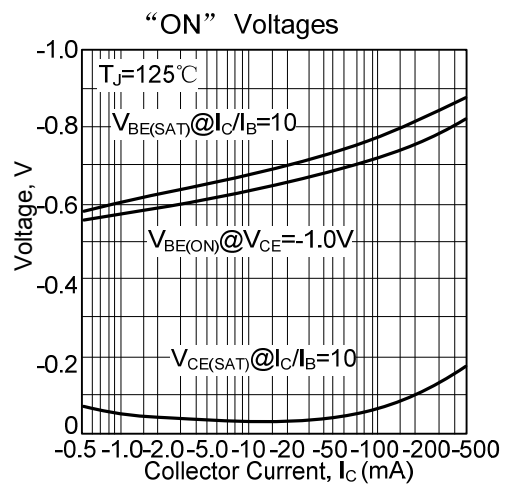
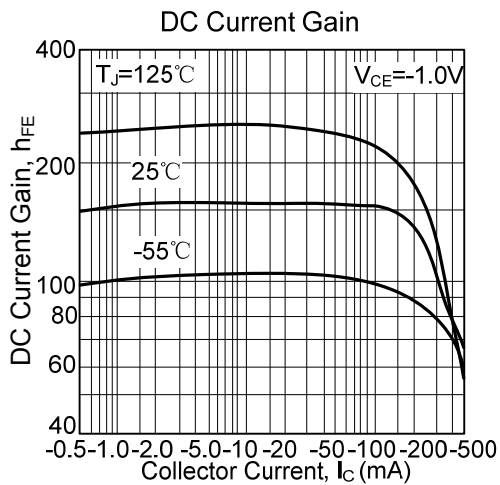
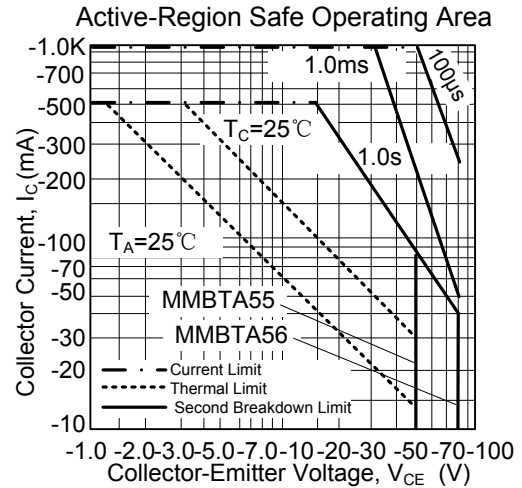
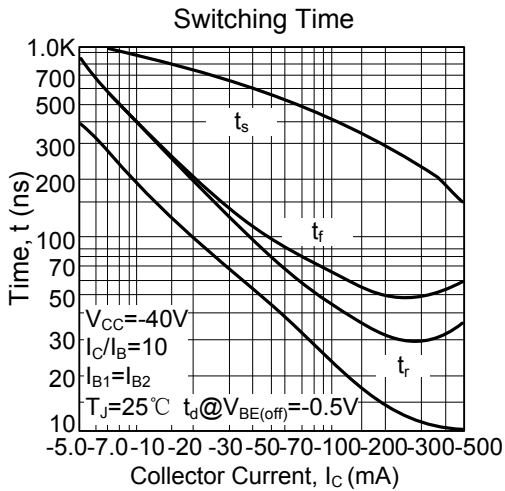
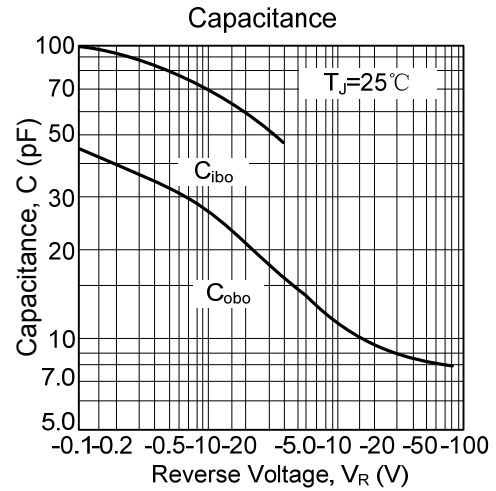
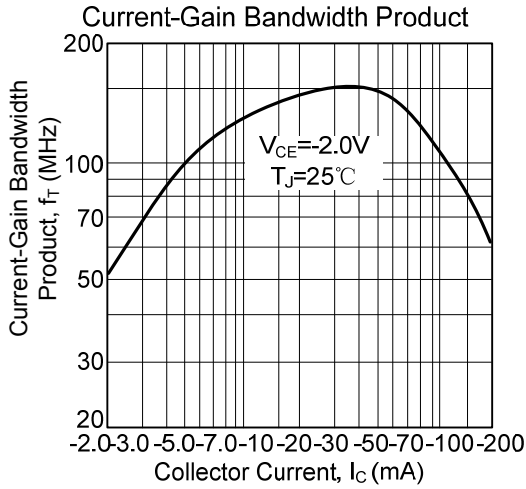
Notes: 1: Pulse test:  $PW \leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

2:  $f_T$  is defined as the frequency at which  $I_{hfe}$  extrapolates to unity.

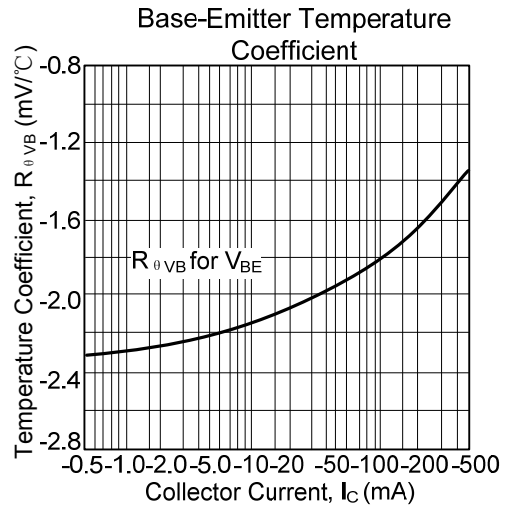
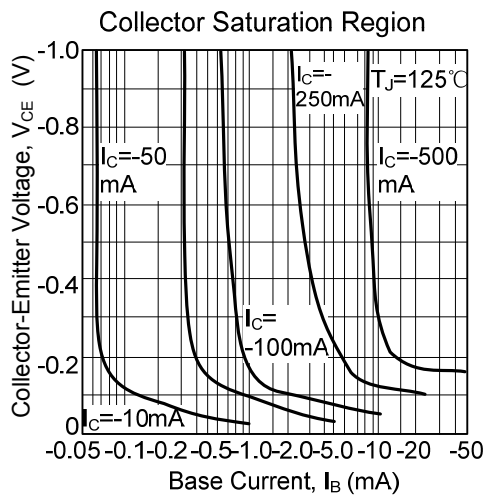
■ SWITCHING TIME TEST CIRCUITS



### TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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