



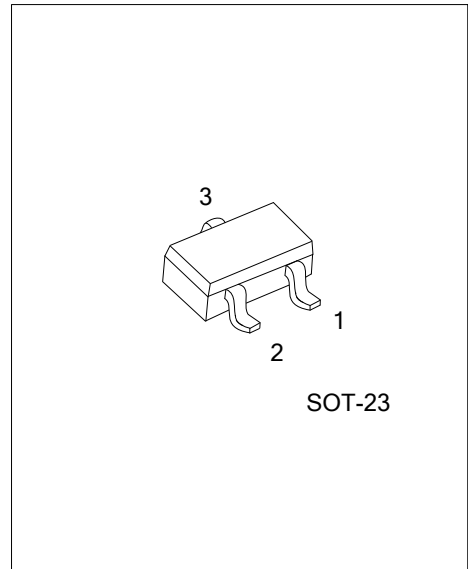
# MMBTA56

## PNP SILICON TRANSISTOR

### AMPLIFIER TRANSISTOR

#### ■ FEATURES

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

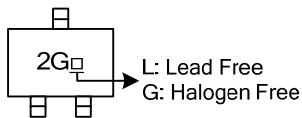


#### ■ ORDERING INFORMATION

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

<p>MMBTA56L-AE3-R</p> <p>(1)Packing Type (2)Package Type (3)Lead Plating</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23 (3) G: Halogen Free, L: Lead Free</p>
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#### ■ MARKING



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

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 1)	$P_D$	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	$^{\circ}\text{C}$

Note 1. Device mounted on FR-4=1.6×1.6×0.06 in

2. 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.

■ THERMAL DATA

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

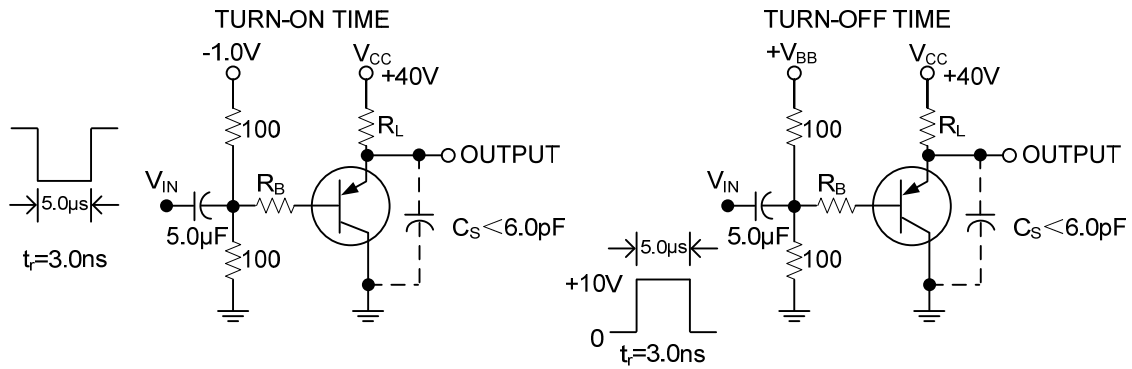
■ ELECTRICAL CHARACTERISTICS ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

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	$h_{FE}$	$I_C=-10\text{mA}, V_{CE}=-1\text{V}$ $I_C=-100\text{mA}, V_{CE}=-1\text{V}$	100 100			
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

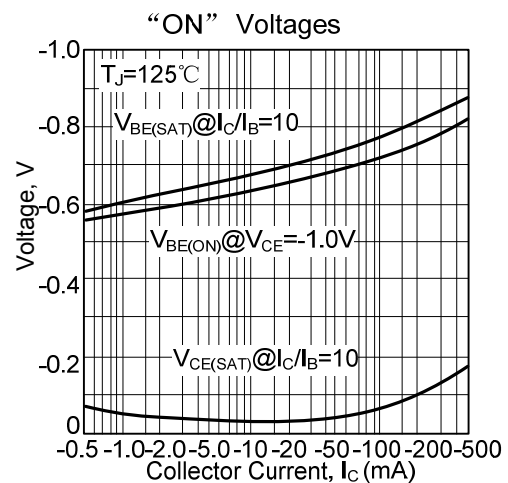
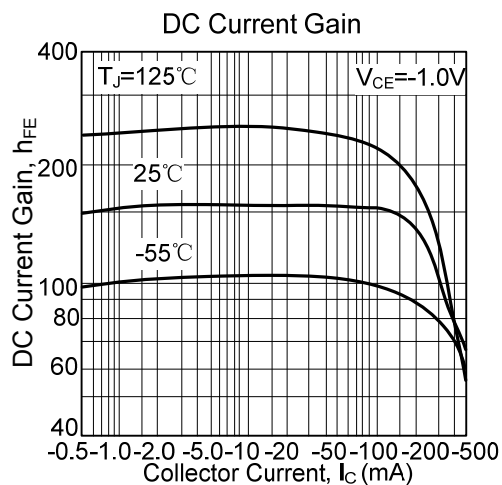
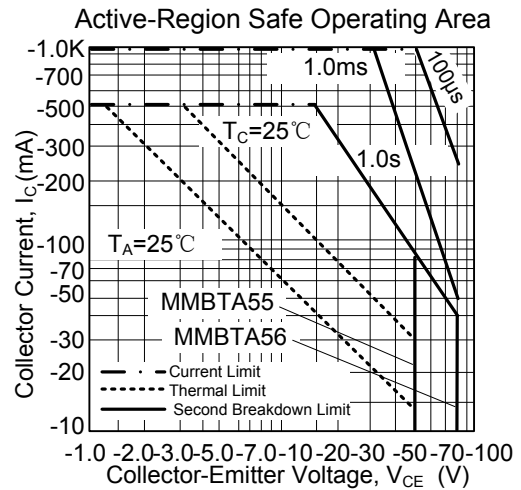
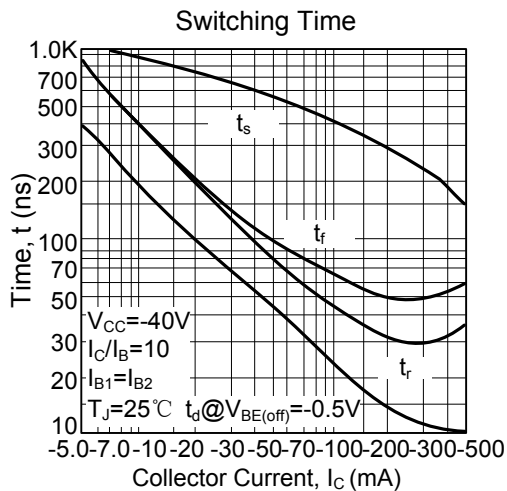
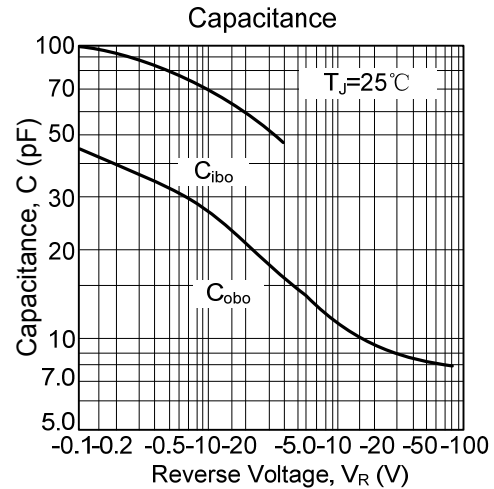
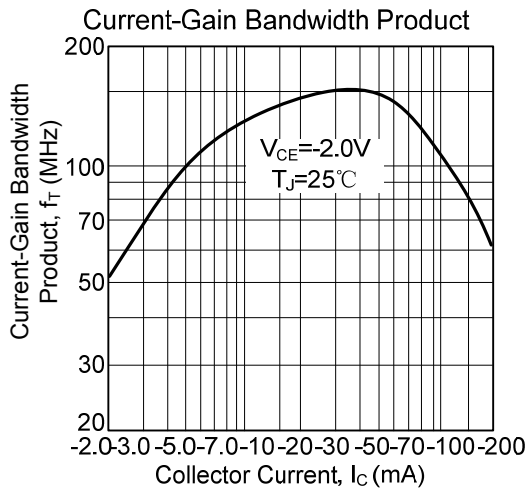
Note 1: Pulse test:  $PW \leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$

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

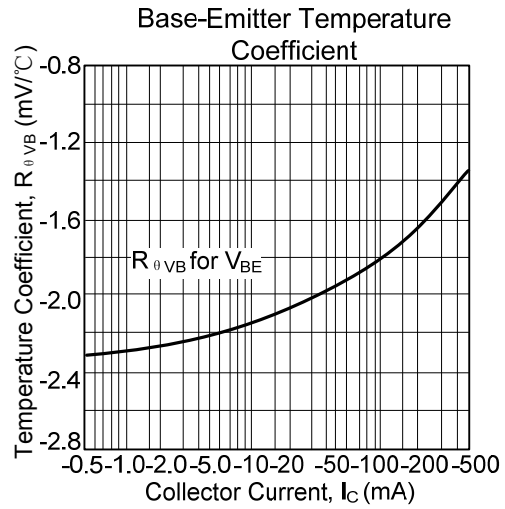
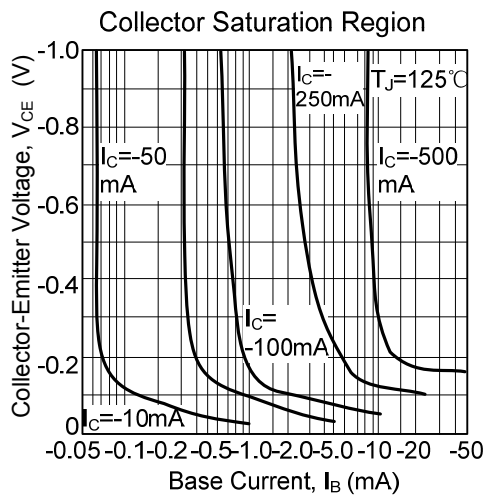
## SWITCHING TIME TEST CIRCUITS



## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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