



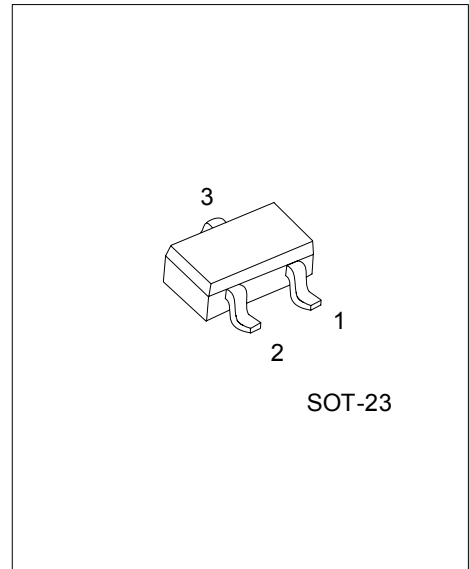
# MMBTA56

PNP SILICON TRANSISTOR

## AMPLIFIER TRANSISTOR

### FEATURES

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



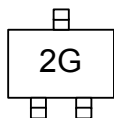
\*Pb-free plating product number: MMBTA56L

### ORDERING INFORMATION

Order Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
MMBTA56-AE3-R	MMBTA56L-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) L: Lead Free Plating, Blank: Pb/Sn</p>
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### MARKING



■ ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25 )

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	V <sub>CBO</sub>	-80	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-80	V
Emitter-Base Voltage	V <sub>EBO</sub>	-4	V
Collector Current - Continuous	I <sub>C</sub>	-500	mA
Total Device Dissipation(Note 1)	P <sub>D</sub>	350	mW
Derate Above 25		2.8	mW/
Junction Temperature	T <sub>J</sub>	+150	
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	

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	θ <sub>JA</sub>	357	/W

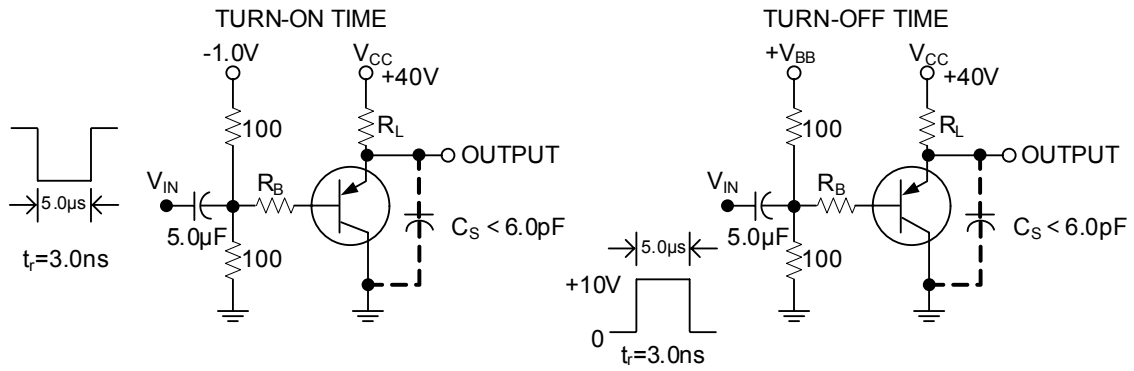
■ ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25 , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Collector-Emitter Breakdown Voltage (Note 1)	BV <sub>CEO</sub>	I <sub>C</sub> =-1.0mA, I <sub>B</sub> =0	-80			V
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	I <sub>E</sub> =-100μA, I <sub>C</sub> =0	-4			V
Collector Cutoff Current	I <sub>CES</sub>	V <sub>CE</sub> =-60V, I <sub>B</sub> =0			-0.1	μA
Collector Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> =-80V, I <sub>E</sub> =0			-0.1	μA
<b>ON CHARACTERISTICS</b>						
DC Current Gain	h <sub>FE</sub>	I <sub>C</sub> =-10mA, V <sub>CE</sub> =-1V I <sub>C</sub> =-100mA, V <sub>CE</sub> =-1V	100 100			
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	I <sub>C</sub> =-100mA, I <sub>B</sub> =-10mA			-0.25	V
Base-Emitter on Voltage	V <sub>BE(ON)</sub>	I <sub>C</sub> =-100mA, V <sub>CE</sub> =-1V			-1.2	V
<b>SMALL-SIGNAL CHARACTERISTICS</b>						
Current Gain Bandwidth Product (Note2)	f <sub>T</sub>	I <sub>C</sub> =-10mA, V <sub>CE</sub> =-2V, f=100MHz	100			MHz

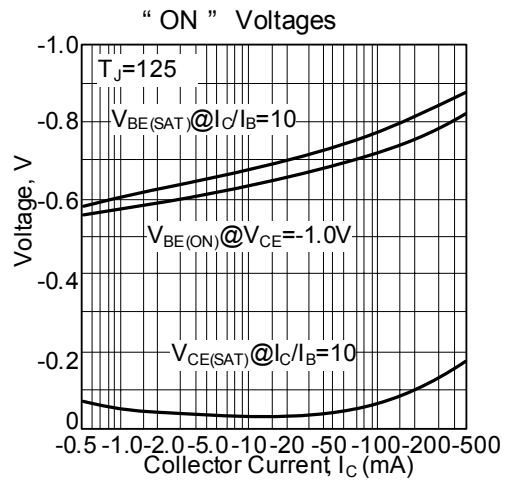
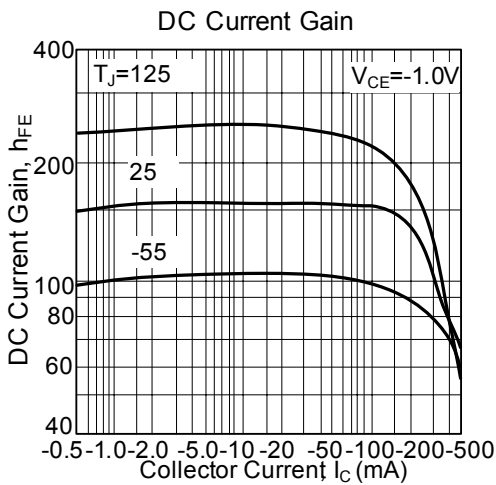
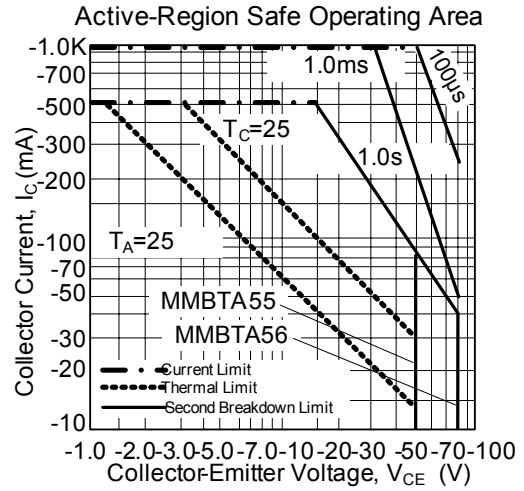
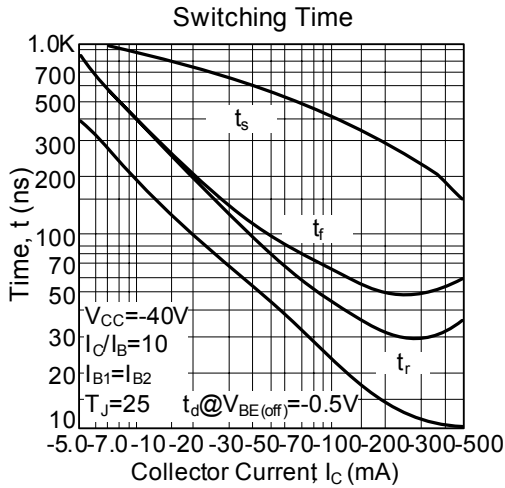
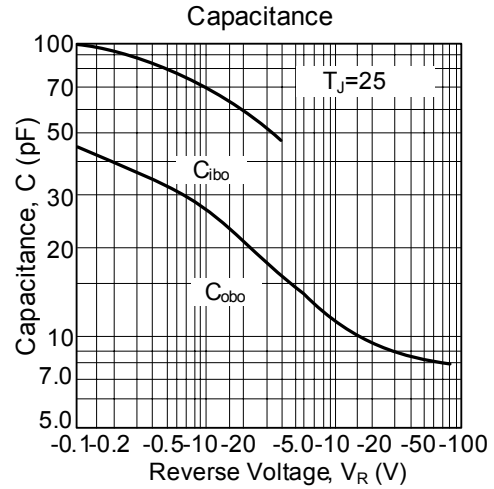
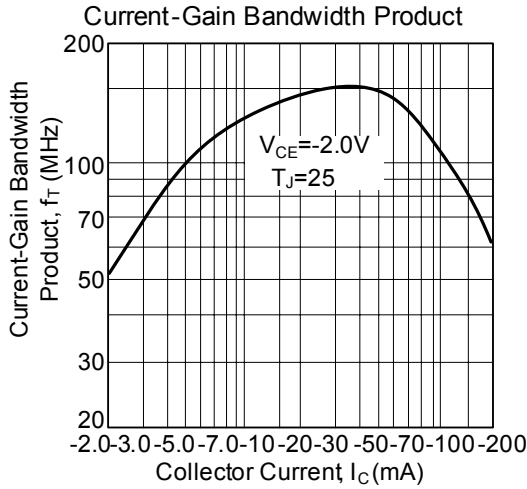
Note 1: Pulse test: PW≤300μs, Duty Cycle≤2%

- 2: f<sub>T</sub> is defined as the frequency at which I<sub>hfe</sub> extrapolates to unity.

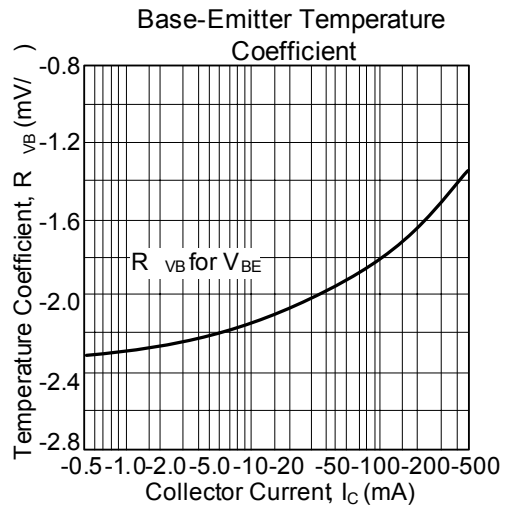
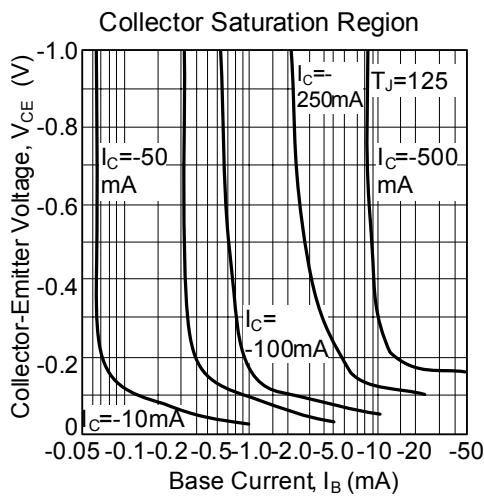
## SWITCHING TIME TEST CIRCUITS



### TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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