

# MMBTA05-AU / MMBTA06-AU / MMBTA55-AU / MMBTA56-AU

## NPN AND PNP HIGH VOLTAGE TRANSISTOR

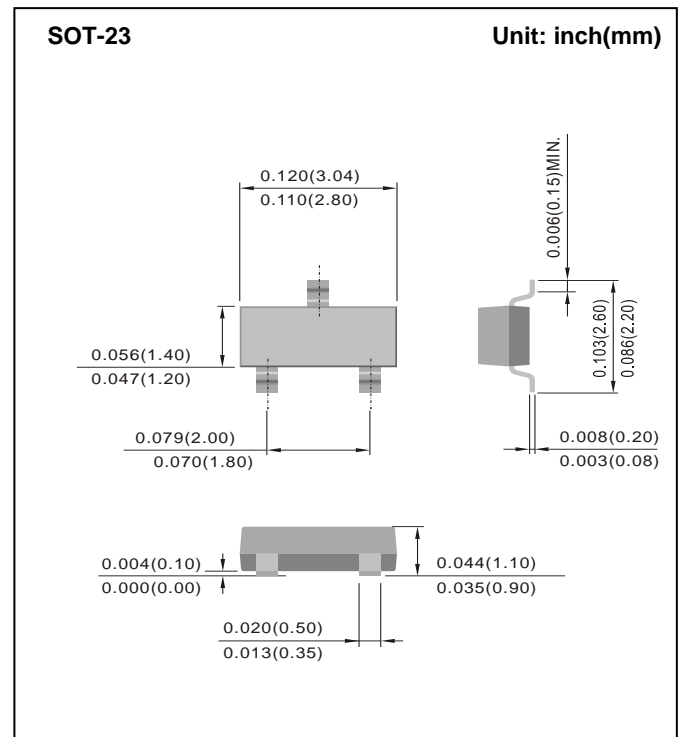
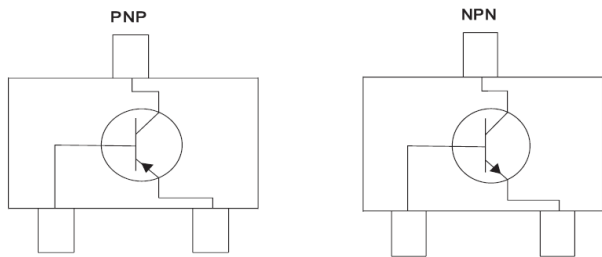
**Voltage** 60~80V **Power** 225mW

### Features

- NPN and PNP silicon, planar design
- Collector current  $I_C = 500\text{mA}$
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case: SOT-23 Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0084 grams



### Maximum Ratings and Thermal Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	MMBTA05-AU	MMBTA55-AU	MMBTA06-AU	MMBTA56-AU	UNIT
Marking		B05	B55	B06	B56	
Collector-Emitter Voltage	$V_{CEO}$	60		80		V
Collector-Base Voltage	$V_{CBO}$	60		80		V
Emitter-Base Voltage	$V_{EBO}$	4				V
Collector Current-Continuous	$I_C$	500				mA
Circuit Figure		NPN	PNP	NPN	PNP	

### Maximum Ratings and Thermal Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Total device dissipation FR-4 board (Note 1) $T_A=25^\circ\text{C}$	$P_D$	225	mW
derate above $25^\circ\text{C}$		1.8	mW/ $^\circ\text{C}$
Typical thermal resistance	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Total device dissipation alumina substrate (Note 2) $T_A=25^\circ\text{C}$	$P_D$	300	mW
derate above $25^\circ\text{C}$		2.4	mW/ $^\circ\text{C}$
Typical thermal resistance	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to 150	$^\circ\text{C}$

Note : 1. FR-4=70 x 60 x 1mm.

2. Alumina=0.4 x 0.3 x 0.024 in. 99.5 alumina.

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### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOL	MIN.	MAX.	UNIT
<b>OFF Characteristics</b>				
Collector-Emitter Breakdown Voltage (I <sub>C</sub> =1.0mA, I <sub>B</sub> =0)	MMBTA05-AU, MMBTA55-AU MMBTA06-AU, MMBTA56-AU	V <sub>(BR)CEO</sub>	60 80	- - V
Emitter-Base Breakdown Voltage (I <sub>E</sub> =100μA, I <sub>C</sub> =0)		V <sub>(BR)EBO</sub>	4	- V
Collector Cutoff Current (V <sub>CE</sub> =60V, I <sub>B</sub> =0)		I <sub>CES</sub>	-	0.1 μA
Collector Cutoff Current (V <sub>CB</sub> =60V, I <sub>E</sub> =0) (V <sub>CB</sub> =80V, I <sub>E</sub> =0)	MMBTA05-AU, MMBTA55-AU MMBTA06-AU, MMBTA56-AU	I <sub>CBO</sub>	- -	0.1 0.1 μA
<b>ON characteristics</b>				
DC Current Gain (I <sub>C</sub> =10mA, V <sub>CE</sub> =1V) (I <sub>C</sub> =100mA, V <sub>CE</sub> =1V)		h <sub>FE</sub>	100 100	- - -
Collector-Emitter Saturation Voltage (I <sub>C</sub> =100mA, I <sub>B</sub> =10mA)		V <sub>CE(SAT)</sub>	-	0.25 V
Base-Emitter On Voltage (I <sub>C</sub> =100mA, V <sub>CE</sub> =1V)		V <sub>BE(ON)</sub>	-	1.2 V
<b>Small-signal characteristics</b>				
Current-Gain-Bandwidth Product (I <sub>C</sub> =10mA, V <sub>CE</sub> =2V, f=100MHz)		f <sub>T</sub>	100	- MHz

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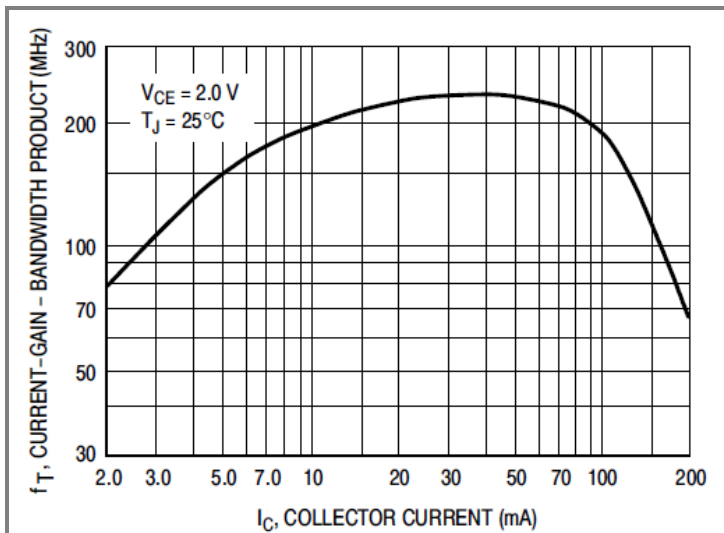


Fig.1 Current-Gain—Bandwidth Product

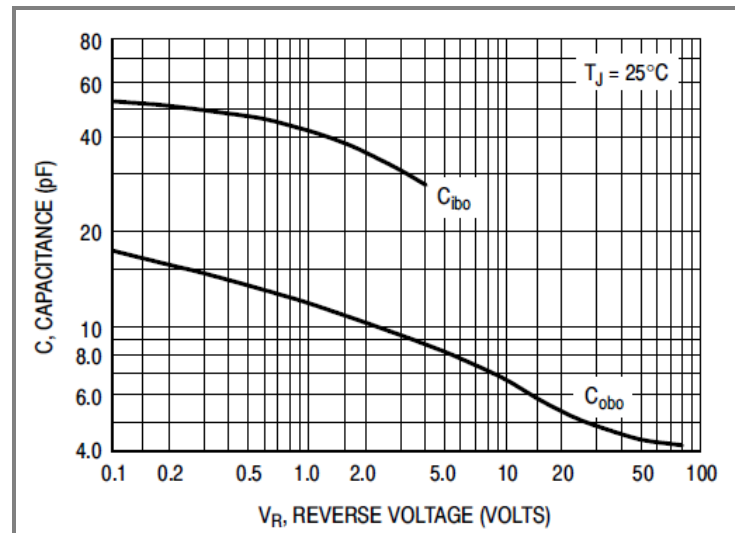


Fig.2 Capacitance

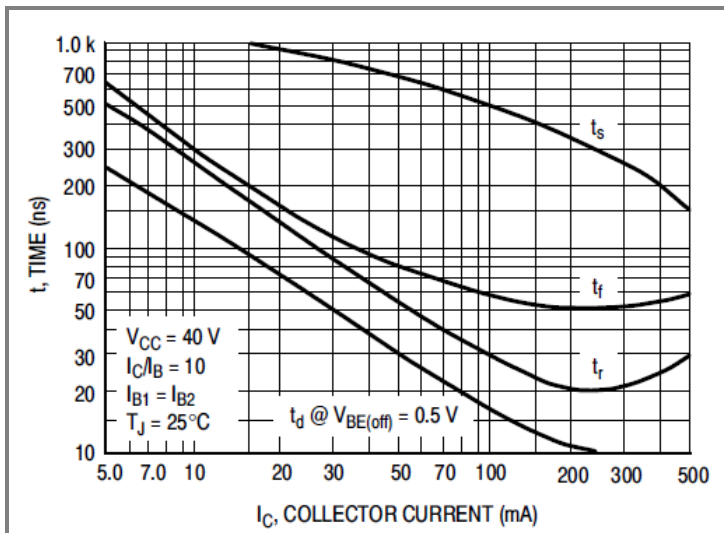


Fig.3 Switching Time

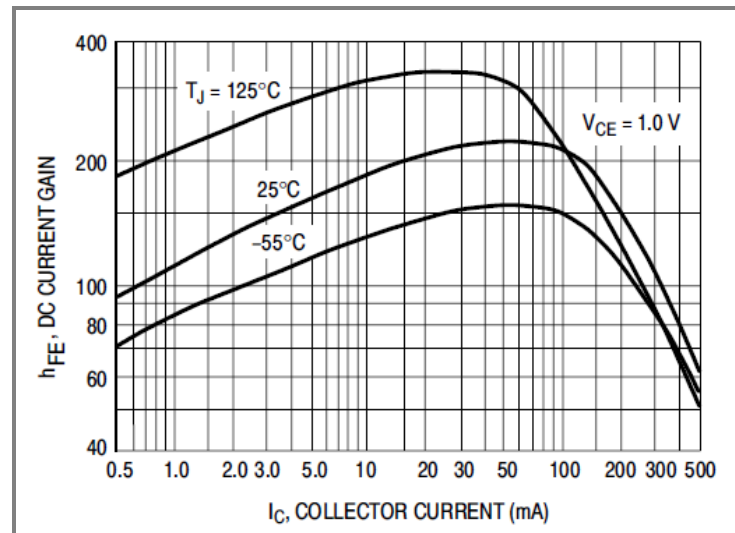


Fig.4 DC Current Gain

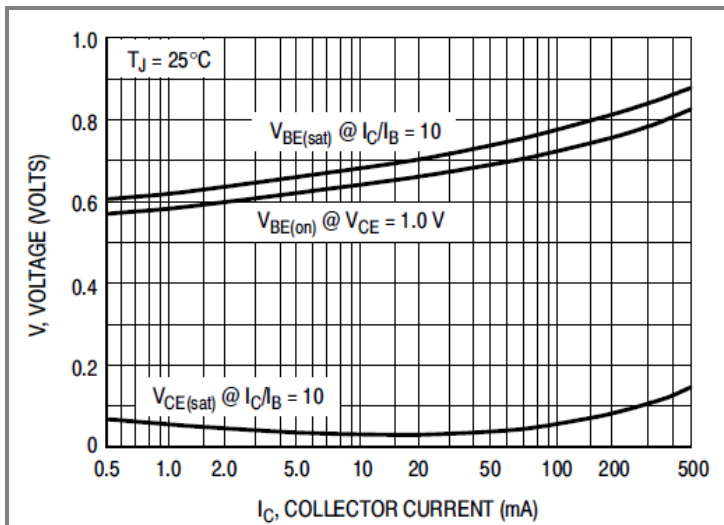


Fig.5 ON Voltages

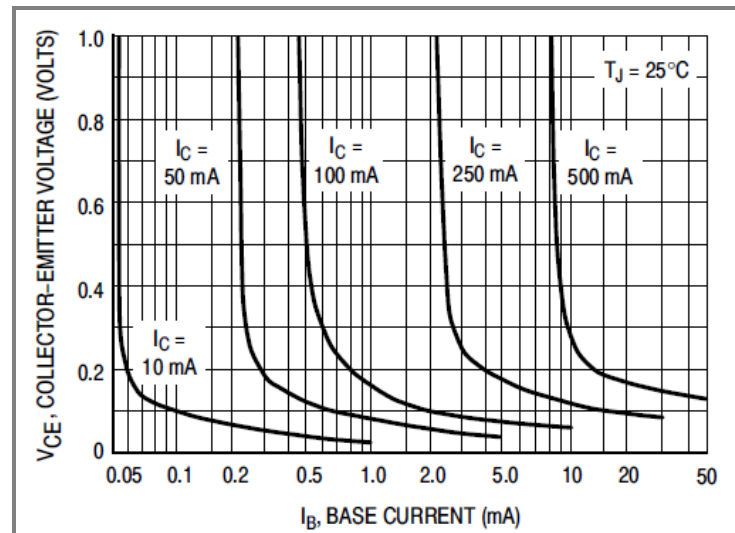


Fig.6 Collector Saturation Region

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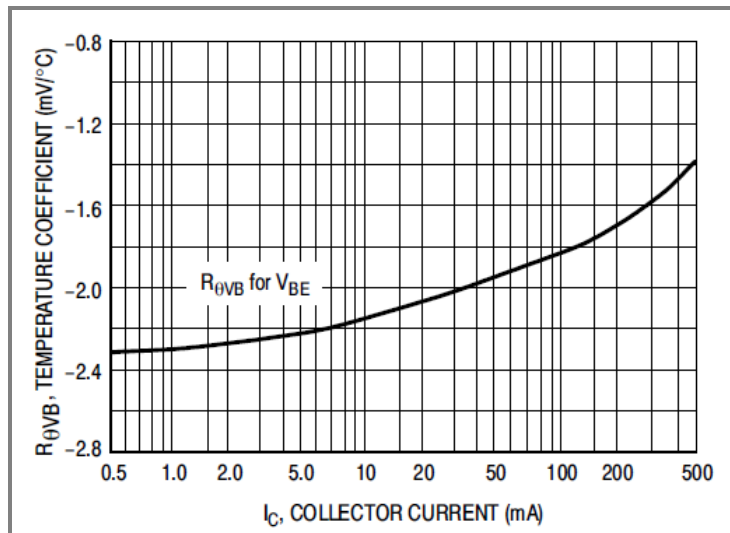


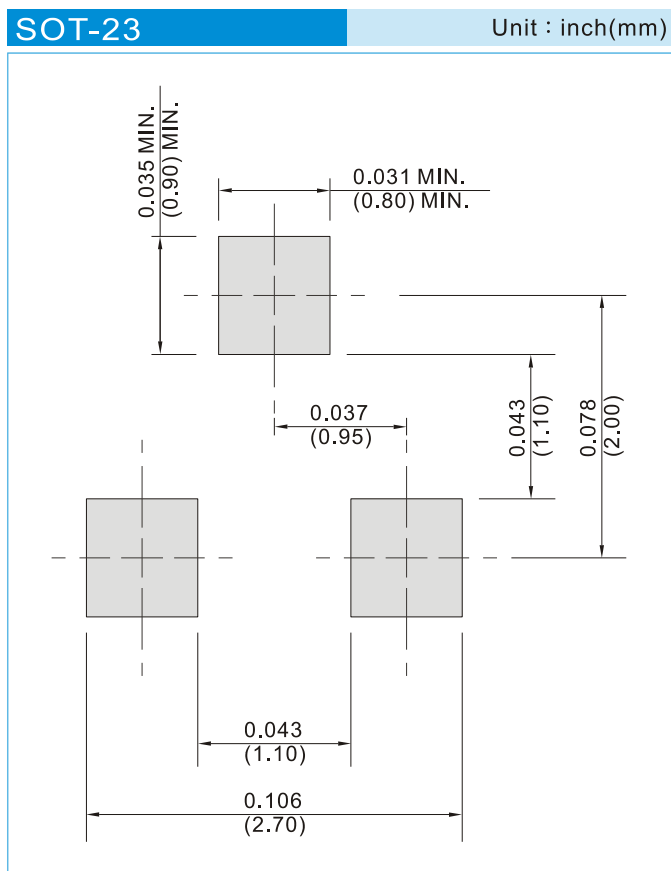
Fig.7 Base-Emitter Temperature Coefficient

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### Product and Packing Information

Part No.	Package Type	Packing Type	Marking
MMBTA05-AU	SOT-23	3K pcs / 7" reel	B05
MMBTA05-AU	SOT-23	12K pcs / 13" reel	B05
MMBTA55-AU	SOT-23	3K pcs / 7" reel	B55
MMBTA55-AU	SOT-23	12K pcs / 13" reel	B55
MMBTA06-AU	SOT-23	3K pcs / 7" reel	B06
MMBTA06-AU	SOT-23	12K pcs / 13" reel	B06
MMBTA56-AU	SOT-23	3K pcs / 7" reel	B56
MMBTA56-AU	SOT-23	12K pcs / 13" reel	B56

### Mounting Pad Layout



## MMBTA05-AU / MMBTA06-AU / MMBTA55-AU / MMBTA56-AU

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