



**THE DATASHEET OF
MMBTA56-AU_R1_000A1**





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

NPN AND PNP HIGH VOLTAGE TRANSISTOR

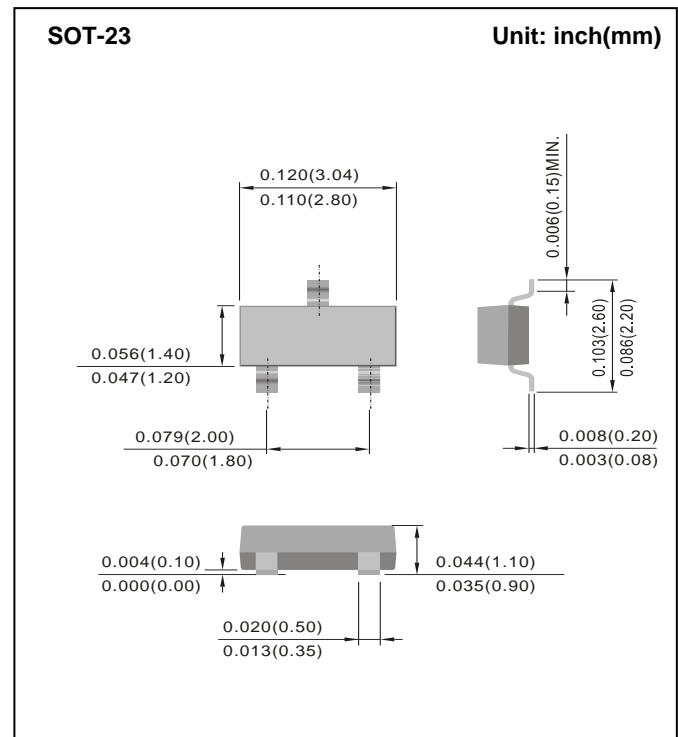
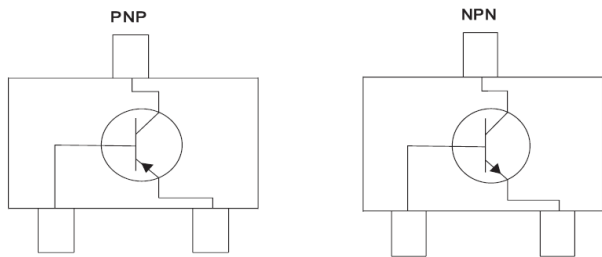
Voltage 60~80V **Power** 225mW

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: 0.0003 ounces, 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	UNITS
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.	UNITS
Total device dissipation FR-4 board (Note 1) $T_A=25^\circ\text{C}$	P_D	225	mW
derate above 25°C		1.8	mW/ $^\circ\text{C}$
Typical thermal resistance	$R_{\theta JA}$	556	$^\circ\text{C/W}$
Total device dissipation alumina substrate (Note 2) $T_A=25^\circ\text{C}$	P_D	300	mW
derate above 25°C		2.4	mW/ $^\circ\text{C}$
Typical thermal resistance	$R_{\theta JA}$	417	$^\circ\text{C/W}$
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.



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

Electrical Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	MIN.	MAX.	UNITS	
OFF Characteristics					
Collector-Emitter Breakdown Voltage (I _C =1.0mA, I _B =0)	MMBTA05-AU, MMBTA55-AU MMBAT06-AU, MMBTA56-AU	V _{(BR)CEO}	60	-	V
			80	-	
Emitter-Base Breakdown Voltage (I _E =100μA, I _C =0)		V _{(BR)EBO}	4	-	V
Collector Cutoff Current (V _{CE} =60V, I _B =0)		I _{CES}	-	0.1	μA
Collector Cutoff Current (V _{CB} =60V, I _E =0)	MMBTA05-AU, MMBTA55-AU MMBAT06-AU, MMBTA56-AU	I _{CBO}	-	0.1	μA
(V _{CB} =80V, I _E =0)			-	0.1	
ON characteristics					
DC Current Gain (I _C =10mA, V _{CE} =1V)		h _{FE}	100	-	-
(I _C =100mA, V _{CE} =1V)			100	-	
Collector-Emitter Saturation Voltage (I _C =100mA, I _B =10mA)		V _{CE(SAT)}	-	0.25	V
Base-Emitter On Voltage (I _C =100mA, V _{CE} =1V)		V _{BE(ON)}	-	1.2	V
Small-signal characteristics					
Current-Gain-Bandwidth Product (I _C =10mA, V _{CE} =2V, f=100MHz)		f _T	100	-	MHz



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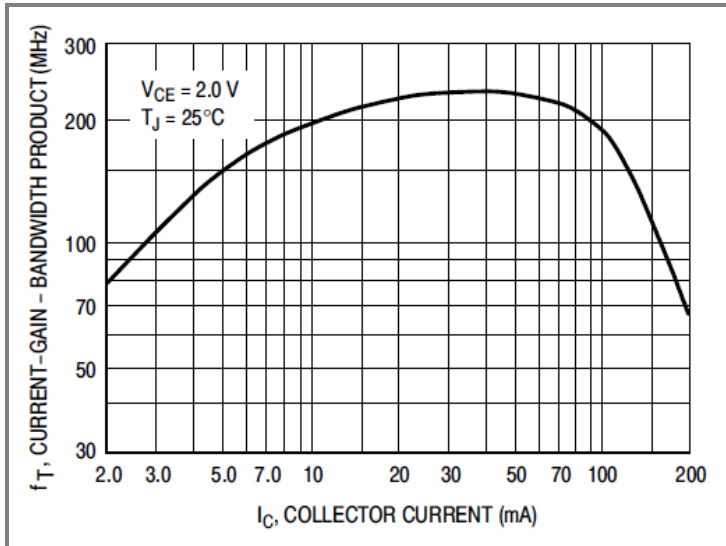


Fig.1 Current-Gain—Bandwidth Product

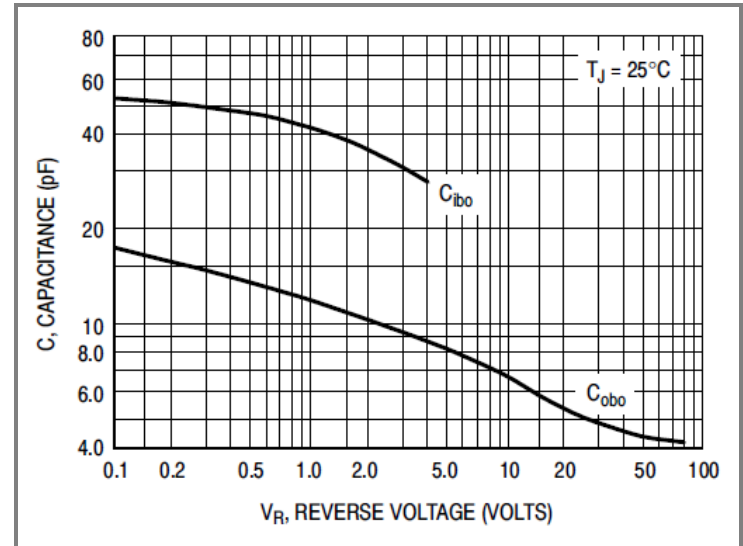


Fig.2 Capacitance

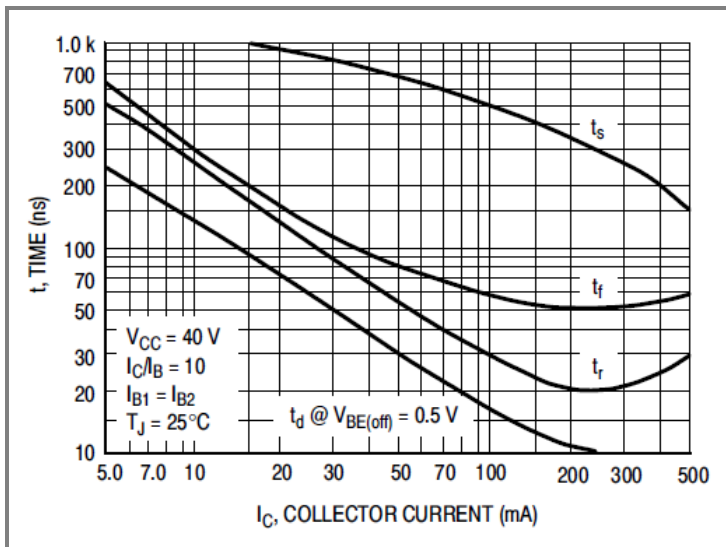


Fig.3 Switching Time

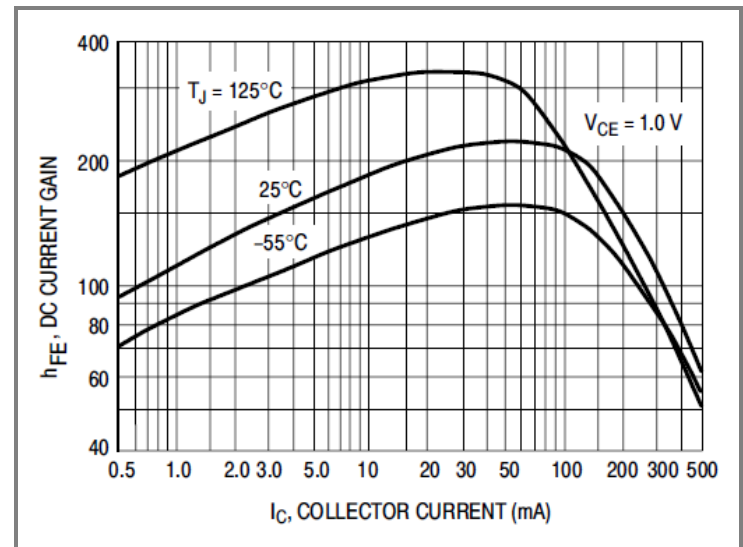


Fig.4 DC Current Gain

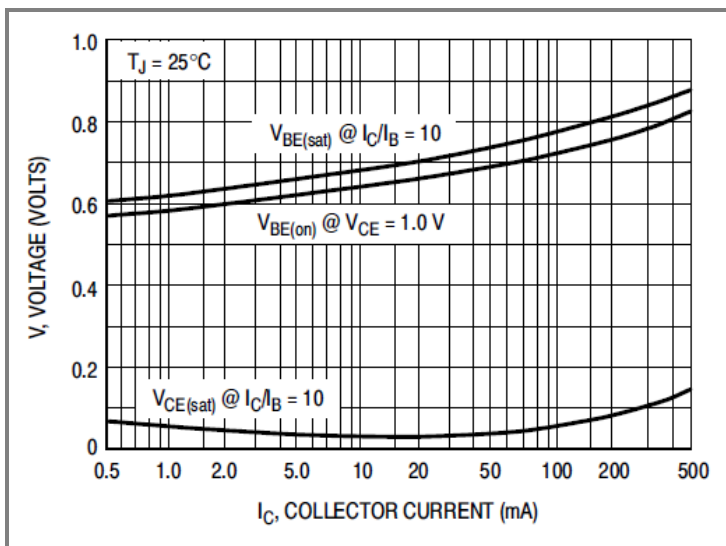


Fig.5 ON Voltages

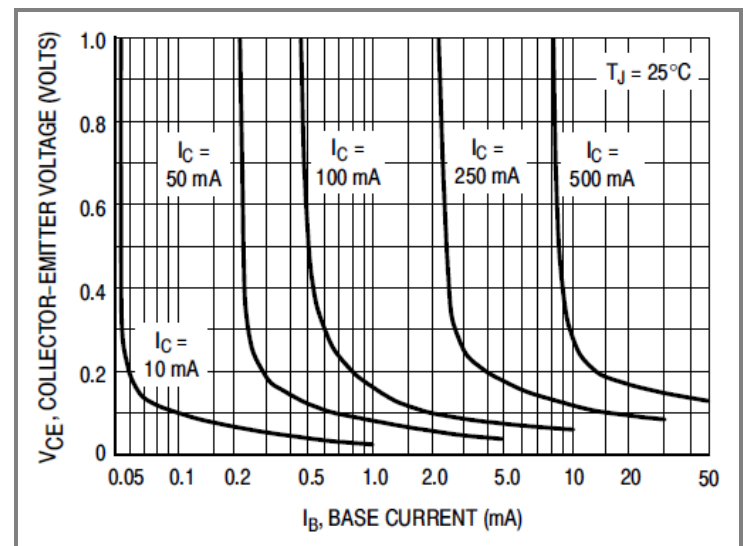


Fig.6 Collector Saturation Region



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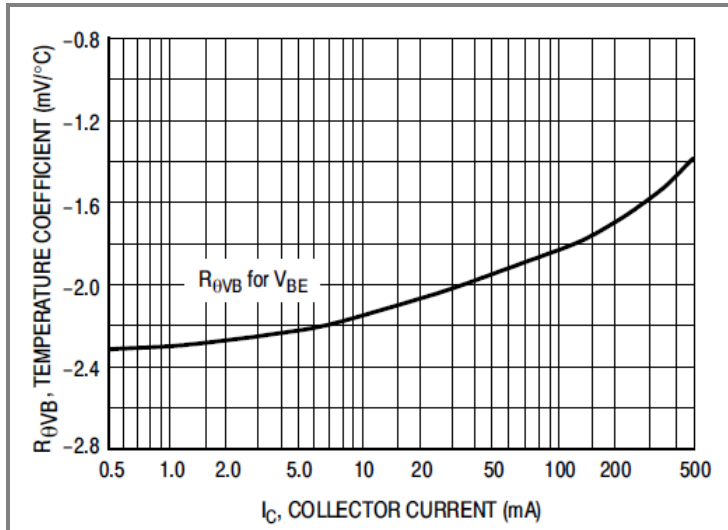


Fig.7 Base-Emitter Temperature Coefficient

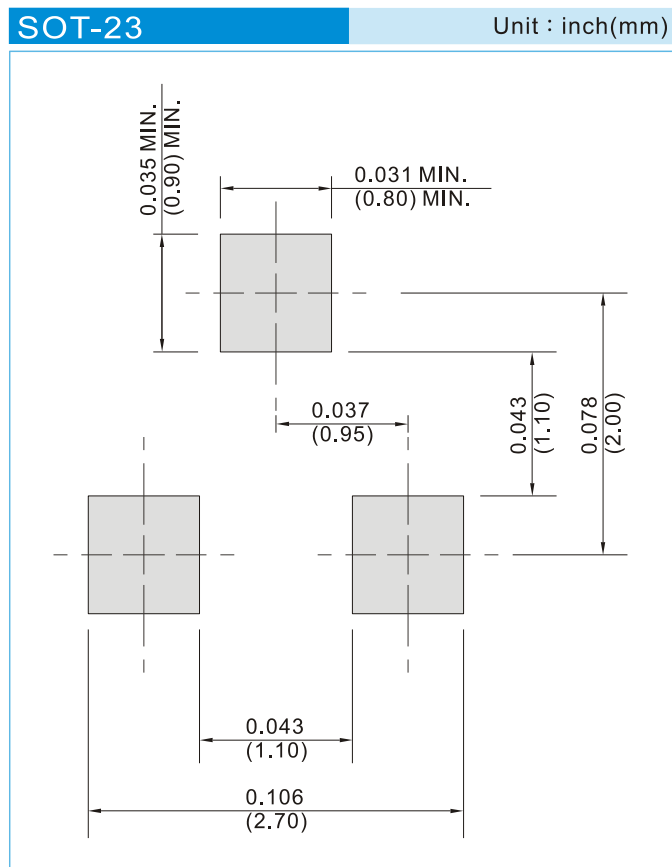


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Part No. Packing Code Version

Part No. Packing Code	Package Type	Packing Type	Marking	Version
MMBTA05-AU_R1_000A1	SOT-23	3K / 7" Reel	B05	Halogen free RoHS compliant
MMBTA05-AU_R2_000A1	SOT-23	12K / 13" Reel	B05	Halogen free RoHS compliant

Mounting Pad Layout





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