



**THE DATASHEET OF
MMBTA05_R1_00001**



MMBTA05 / MMBTA06 / MMBTA55 / MMBTA56

NPN AND PNP HIGH VOLTAGE TRANSISTOR

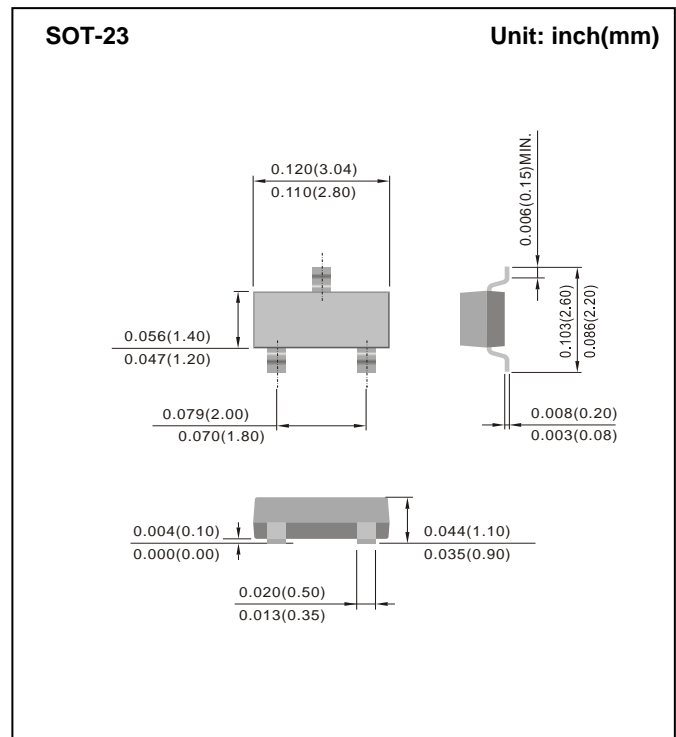
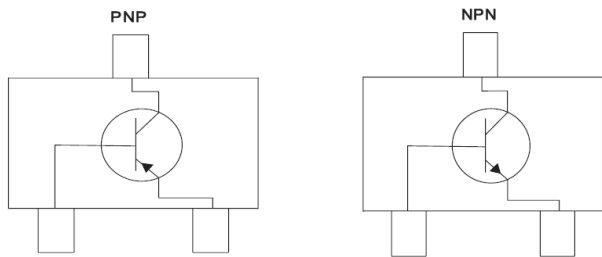
Voltage 60~80V **Power** 225mW

Features

- NPN and PNP silicon, planar design
- Collector current $I_C = 500\text{mA}$
- 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	MMBTA55	MMBTA06	MMBTA56	UNITS
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	$^\circ\text{C}$

NOTES : 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_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, MMBTA55 MMBAT06, MMBTA56	V _{(BR)CEO}	60 80	- - V
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, MMBTA55	I _{CBO}	-	0.1 μA
(V _{CB} =80V, I _E =0)	MMBAT06, MMBTA56		-	0.1 μA
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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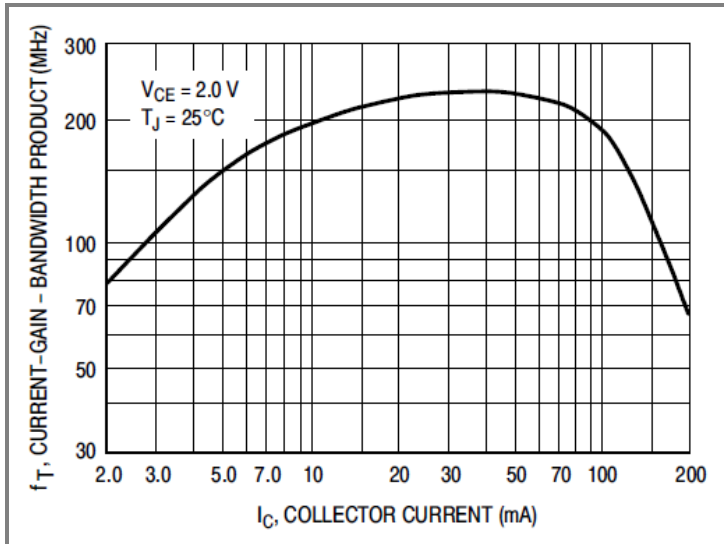


Fig.1 Current-Gain—Bandwidth Product

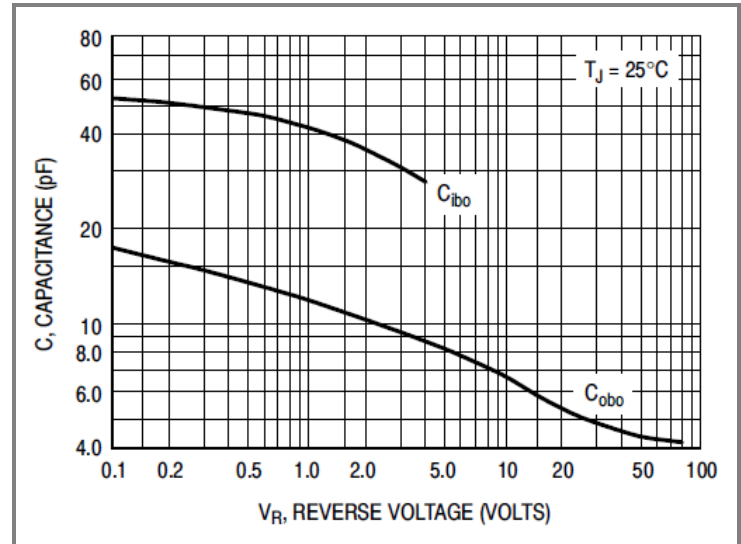


Fig.2 Capacitance

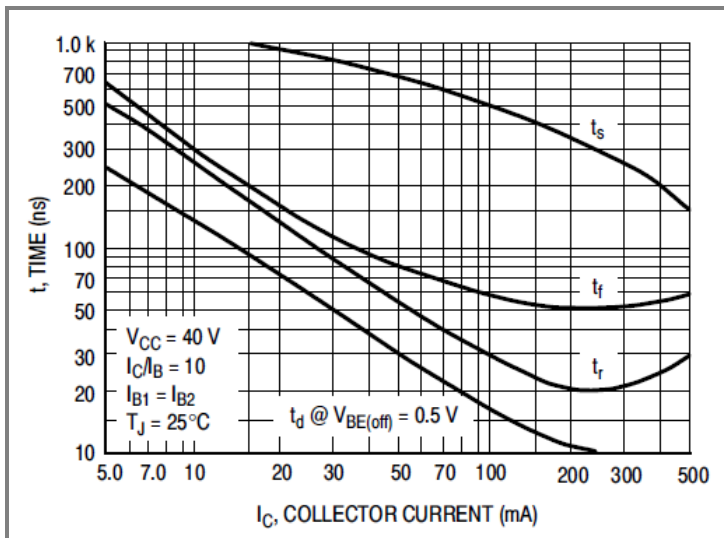


Fig.3 Switching Time

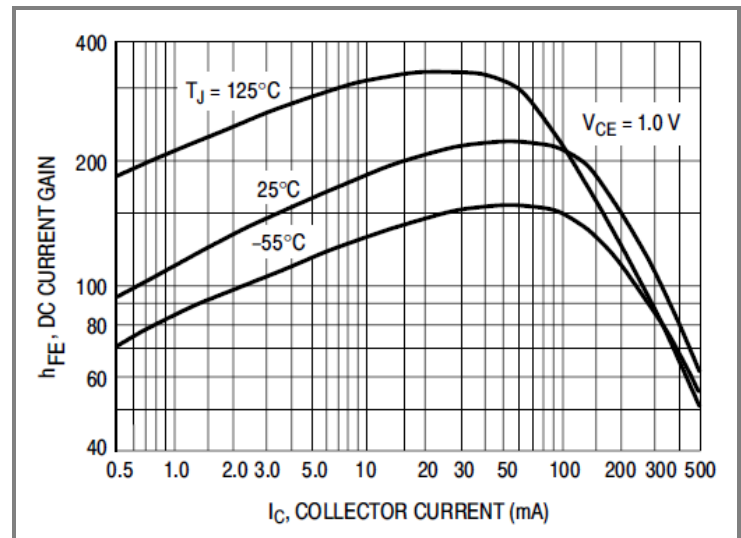


Fig.4 DC Current Gain

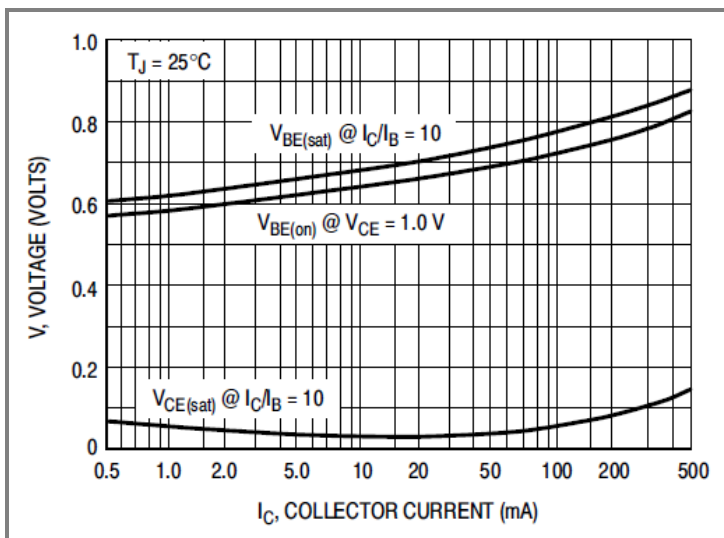


Fig.5 ON Voltages

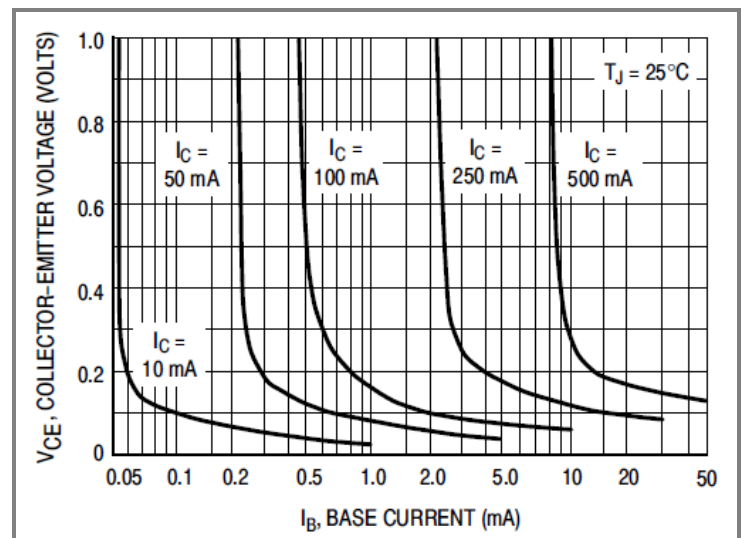


Fig.6 Collector Saturation Region

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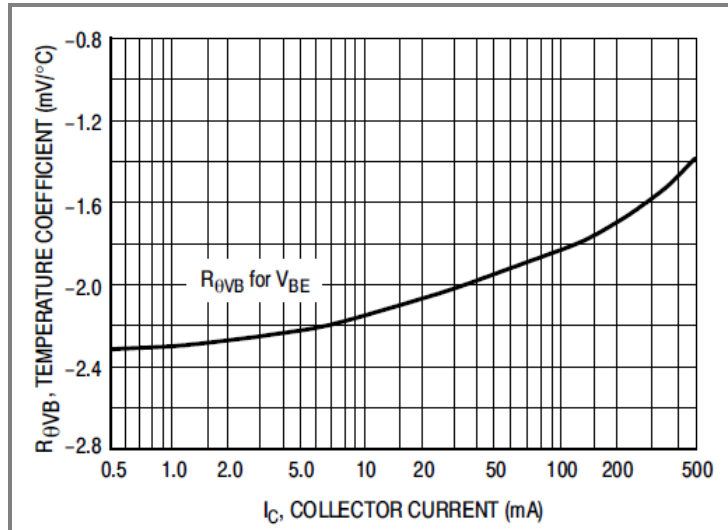


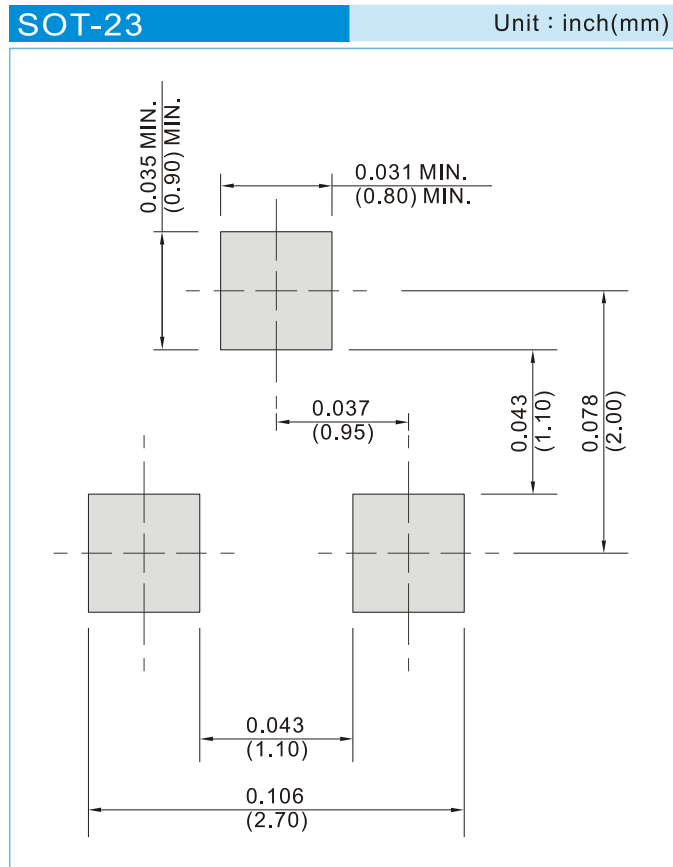
Fig.7 Base-Emitter Temperature Coefficient

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Product and Packing Information

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

Mounting Pad Layout




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