



MMBTA05 / MMBTA06 / MMBTA55 / MMBTA56

NPN AND PNP HIGH VOLTAGE TRANSISTOR

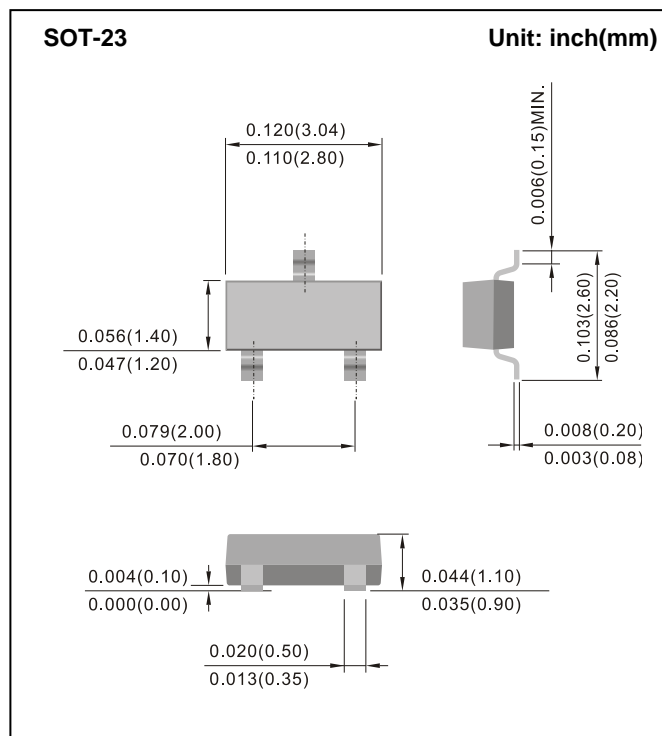
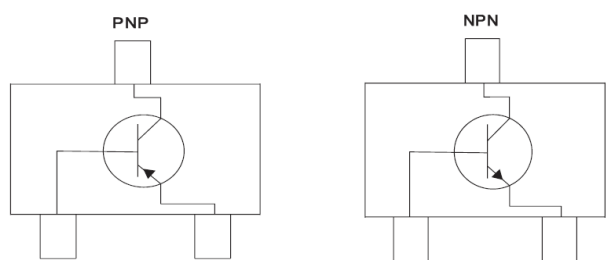
Voltage 60~80V **Power** 225mW

Features

- NPN and PNP silicon, planar design
- Collector current $I_C = 500\text{mA}$
- Lead free in compliance with EU RoHS2.0 (2011/65/EU & 2015/865/EU directive)
- Green molding compound as per IEC61249 Std.. (Halogen Free)

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	MMBTA55	MMBTA06	MMBTA56	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.



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Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	MIN.	MAX.	UNITS
OFF Characteristics				
Collector-Emitter Breakdown Voltage ($I_C=1.0\text{mA}$, $I_B=0$)	MMBTA05, MMBTA55 MMBAT06, MMBTA56	$V_{(BR)CEO}$	60 80	- - V
Emitter-Base Breakdown Voltage ($I_E=100\mu\text{A}$, $I_C=0$)		$V_{(BR)EBO}$	4	- V
Collector Cutoff Current ($V_{CE}=60\text{V}$, $I_B=0$)		I_{CES}	-	0.1 μA
Collector Cutoff Current ($V_{CB}=60\text{V}$, $I_E=0$)	MMBTA05, MMBTA55	I_{CBO}	-	0.1 μA
($V_{CB}=80\text{V}$, $I_E=0$)	MMBAT06, MMBTA56		-	0.1 μA
ON characteristics				
DC Current Gain ($I_C=10\text{mA}$, $V_{CE}=1\text{V}$)		f_{FE}	100	-
($I_C=100\text{mA}$, $V_{CE}=1\text{V}$)			100	-
Collector-Emitter Saturation Voltage ($I_C=100\text{mA}$, $I_B=10\text{mA}$)		$V_{CE(SAT)}$	-	0.25 V
Base-Emitter On Voltage ($I_C=100\text{mA}$, $V_{CE}=1\text{V}$)		$V_{BE(ON)}$	-	1.2 V
Small-signal characteristics				
Current-Gain-Bandwidth Product ($I_C=10\text{mA}$, $V_{CE}=2\text{V}$, $f=100\text{MHz}$)		f_T	100	- MHz



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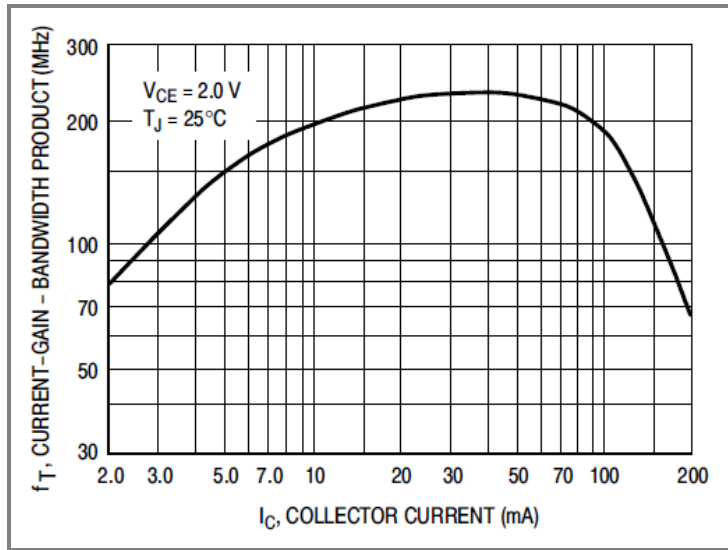


Fig.1 Current-Gain—Bandwidth Product

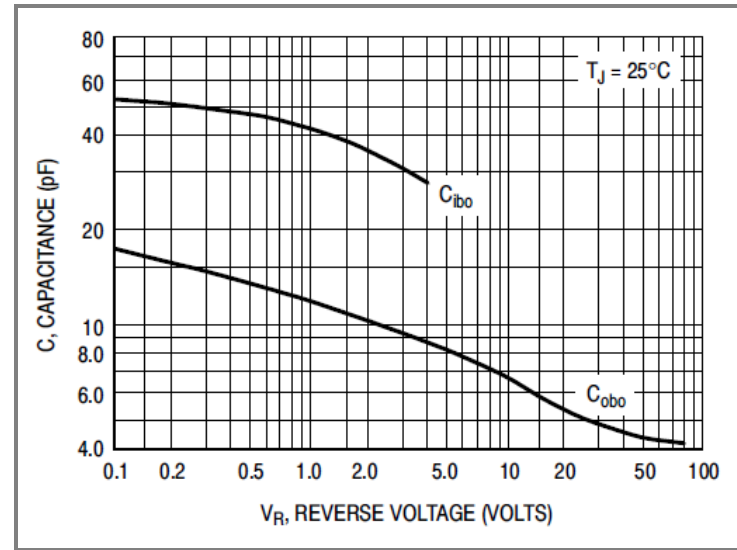


Fig.2 Capacitance

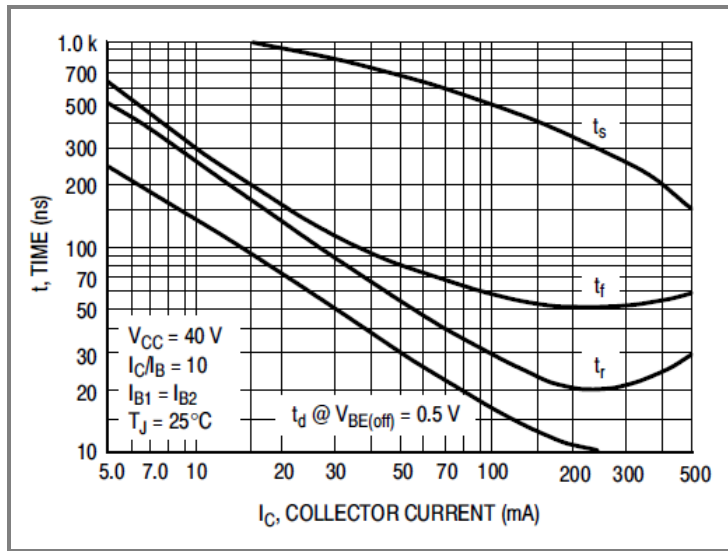


Fig.3 Switching Time

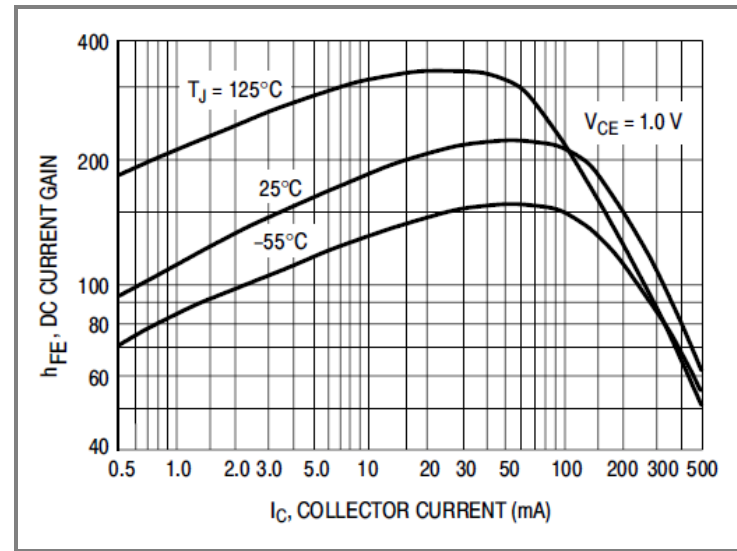


Fig.4 DC Current Gain

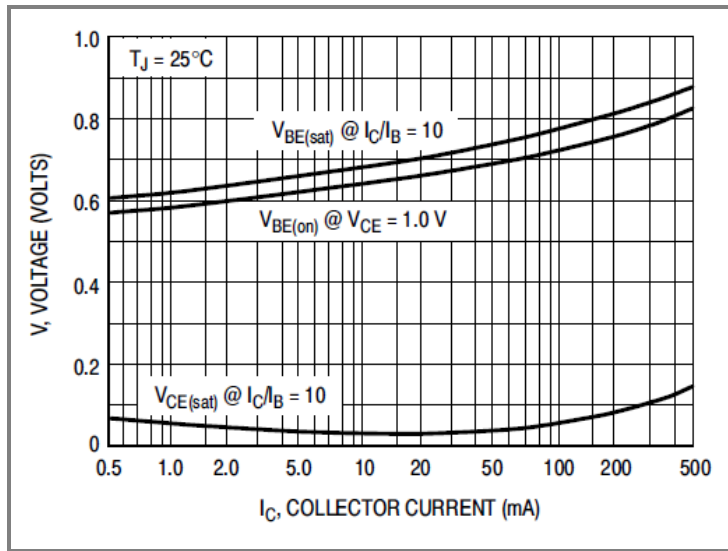


Fig.5 ON Voltages

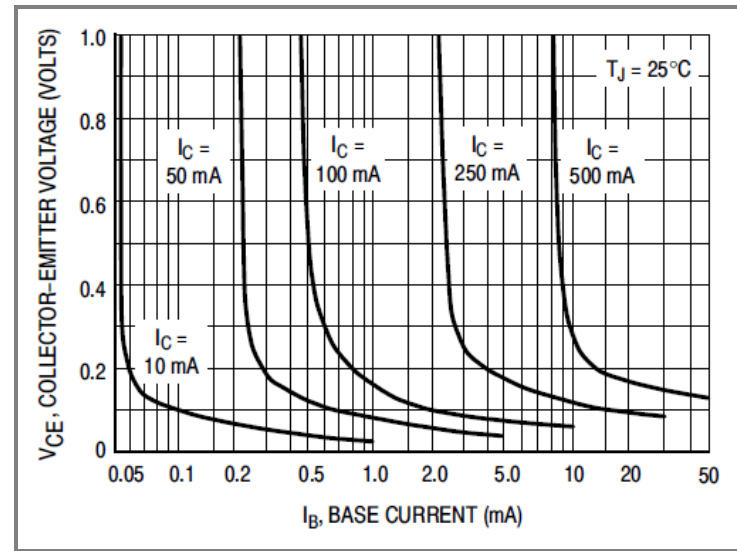


Fig.6 Collector Saturation Region



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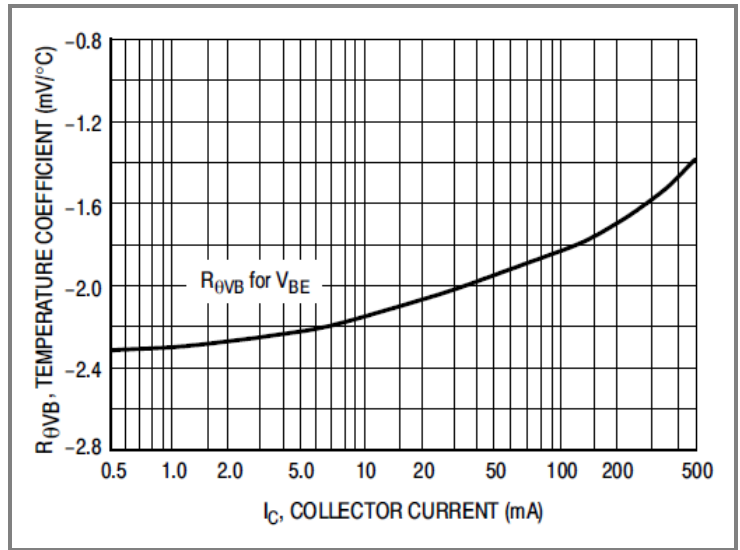


Fig.7 Base-Emitter Temperature Coefficient

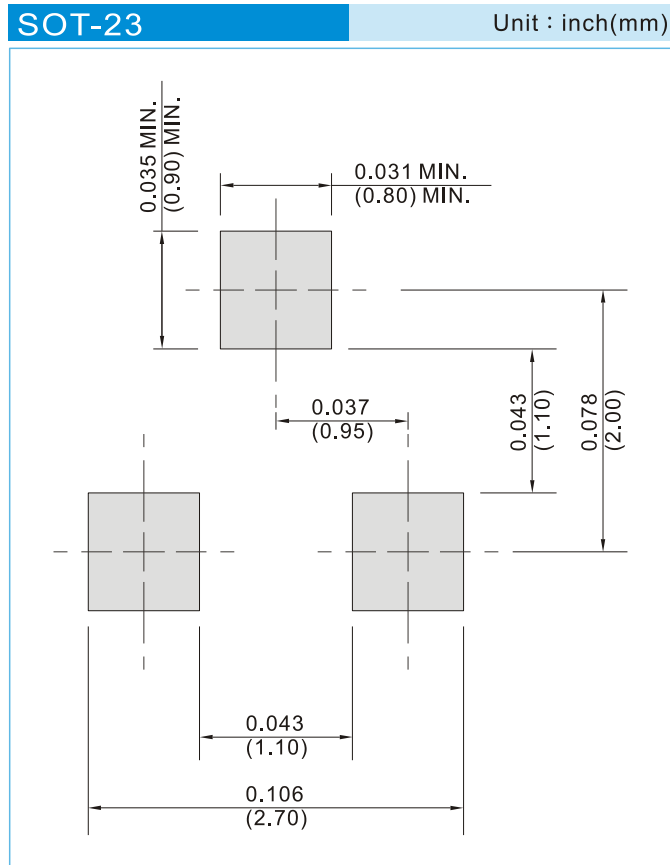


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Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type	Marking	Version
MMBTA05_R1_00001	SOT-23	3K / 7" Reel	B05	Halogen Free
MMBTA05_R2_00001	SOT-23	12K / 13" Reel	B05	Halogen Free

Mounting Pad Layout





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