

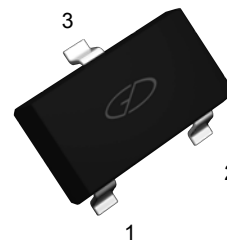
MMBTA05 / MMBTA06 NPN Transistor

Features

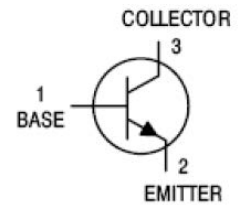
- High breakdown voltage.
- Complementary PNP type available (MMBTA55/MMBTA56)
- Low collector - emitter saturation voltage

Applications

- Ideal for medium power amplification and switching.



SOT-23



Schematic Diagram

1. BASE
2. EMITTER
3. COLLECTOR

Absolute Maximum Ratings

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

Parameter	Symbol	Max.		Unit
Collector-Base Voltage	V _{CBO}	MMBTA05	60	V
		MMBTA06	80	V
Collector-Emitter Voltage	V _{CEO}	MMBTA05	60	V
		MMBTA06	80	V
Emitter-Base Voltage	V _{EBO}	4		V
Collector Current-Continuous	I _C	0.5		A
Base Current	I _B	0.2		A
Collector Power Dissipation	P _C	350		mW
Thermal Resistance, Junction to Ambient	R _{BJA}	357		°C/W
Thermal Resistance, Junction to Case	R _{BJC}	142		°C/W
Operation Junction Temperature Range	T _J	-55 To +150		°C
Storage Temperature Range	T _{STG}	-55 To +150		°C

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

Parameter	Symbol	Conditions		Min.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=100\mu A, I_E=0$	MMBTA05	60	-	V
			MMBTA06	80	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, I_B=0$	MMBTA05	60	-	V
			MMBTA06	80	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$		4	-	V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=60V, I_E=0$	MMBTA05	-	0.1	μA
		$V_{CB}=80V, I_E=0$	MMBTA06	-	0.1	μA
Collector Cut-Off Current	I_{CEO}	$V_{CE}=60V, I_B=0$	MMBTA05	-	0.1	μA
		$V_{CE}=60V, I_B=0$	MMBTA06	-	0.1	μA
DC Current Gain	h_{FE}	$V_{CE}=1V, I_C=10mA$		100	-	-
		$V_{CE}=1V, I_C=100mA$		100	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=100mA, I_B=10mA$		-	0.25	V
Base-Emitter Voltage	$V_{BE(ON)}$	$I_C=100mA, V_{CE}=1.0V$		-	1.2	V
Transition Frequency	f_T	$V_{CE}=5V, I_C=20mA, f=20MHz$		100	-	MHz

Typical Characteristic Curves

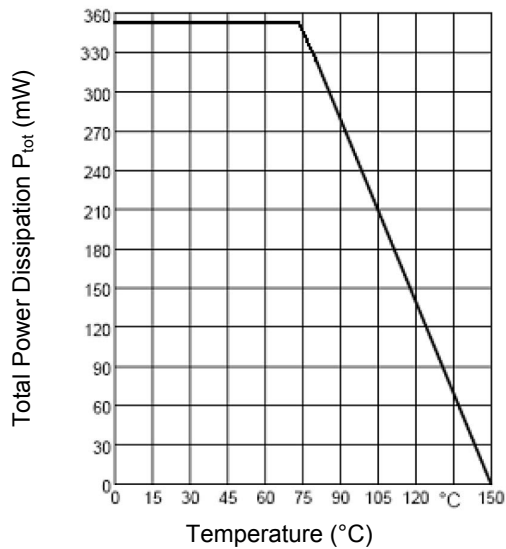


Figure 1. Derating Curve

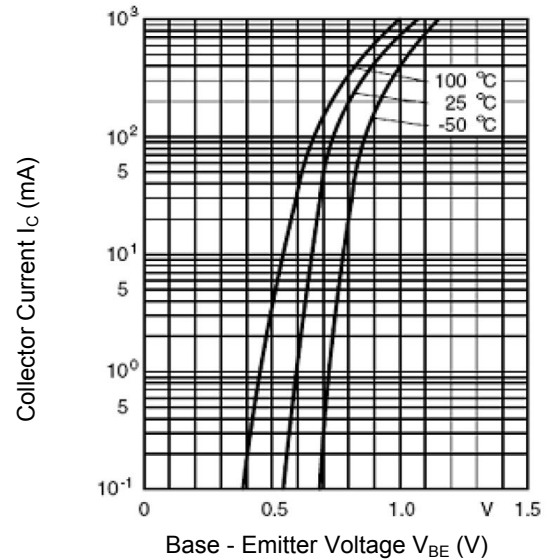


Figure 2. Collector Current vs. Base-Emitter Voltage ($V_{CE}=1V$)

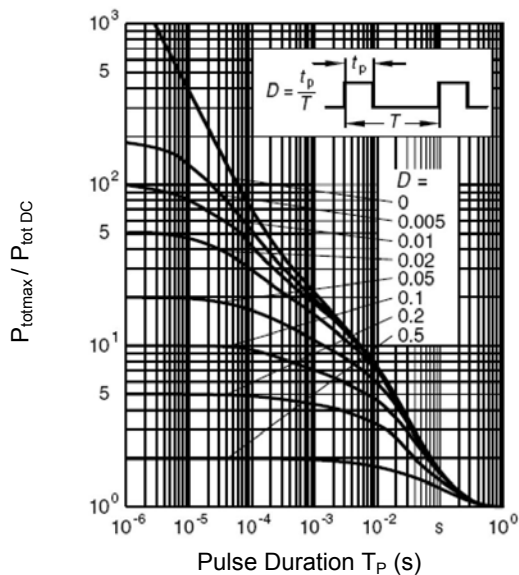


Figure 3. Permissible Pulse Load

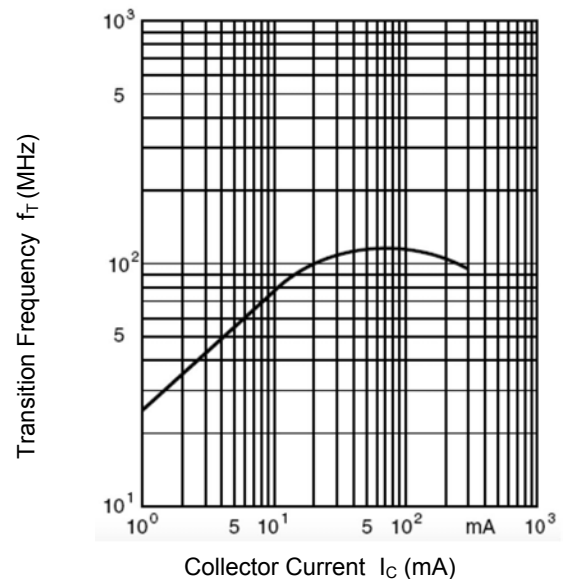


Figure 4. Transition Frequency ($V_{CE}=5V$)

Typical Characteristic Curves

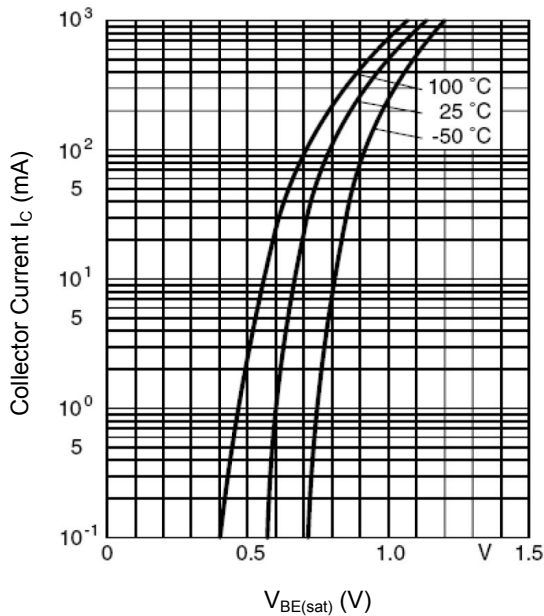


Figure 5. Base-Emitter Saturation Voltage

$$I_C = f(V_{BE(sat)}), h_{FE} = 10$$

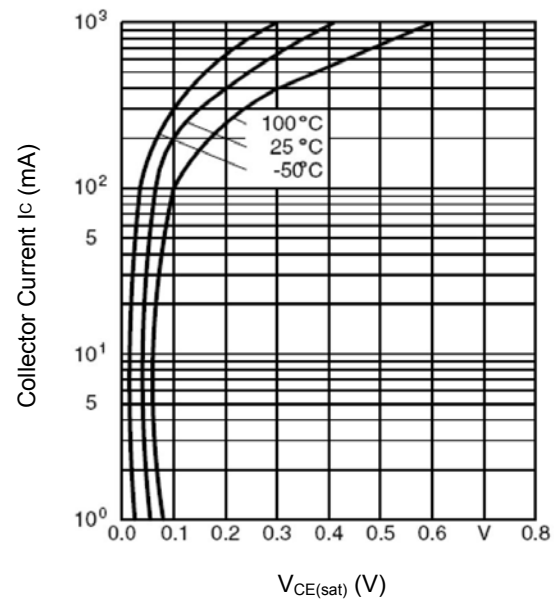


Figure 6. Collector-Emitter Saturation Voltage

$$I_C = f(V_{CE(sat)}), h_{FE} = 10$$

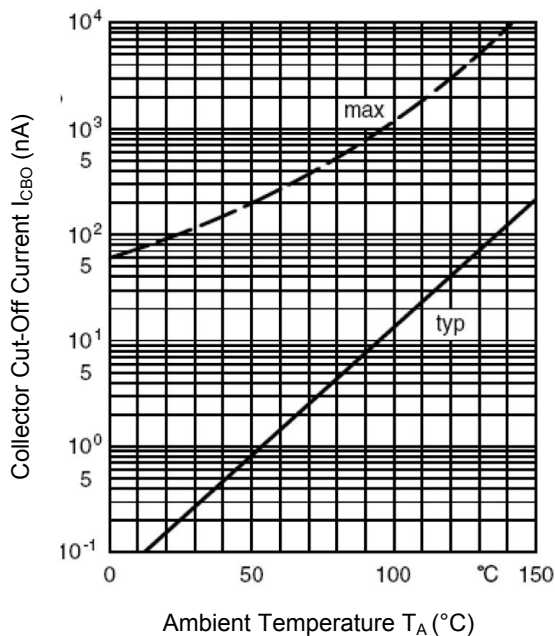


Figure 7. Collector Cutoff Current

$$I_{CBO} = f(T_A), V_{CB} = 80V$$

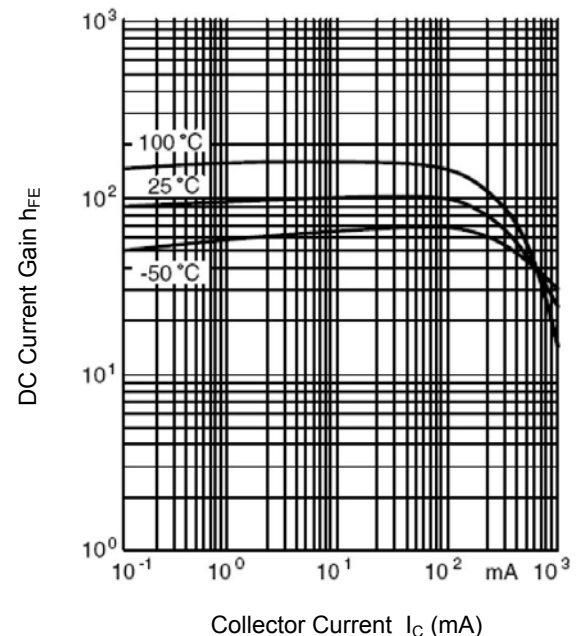
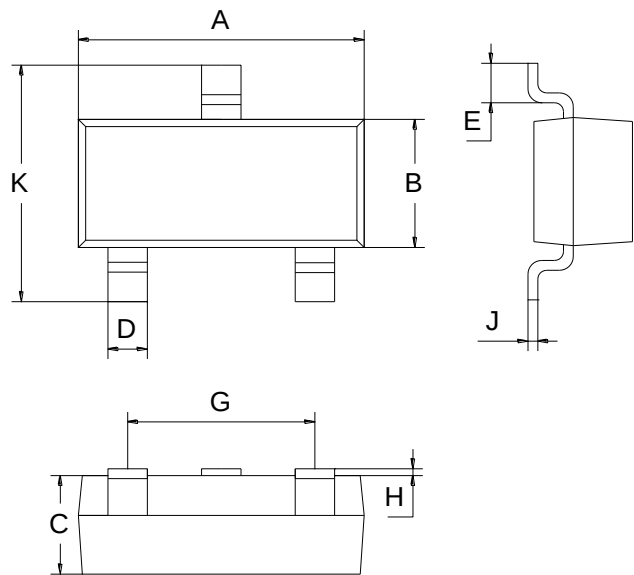


Figure 8. DC Current Gain $h_{FE} = f(I_C)$, $V_{CE} = 1V$

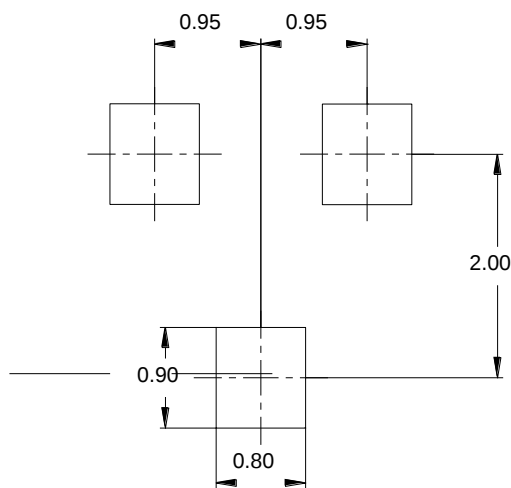
MMBTA05 / MMBTA06
NPN Transistor

Package Outline Dimensions (SOT-23)



Symbol	Dimensions in Millimeters	
	Min	Max
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60

Suggested Pad Layout



Unit: mm