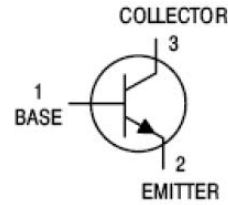
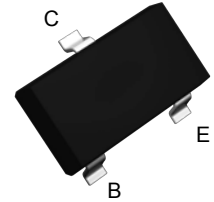


## Features

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



Schematic Diagram



SOT-23

## Applications

- Ideal for medium power amplification and switching.

## Absolute Maximum Ratings

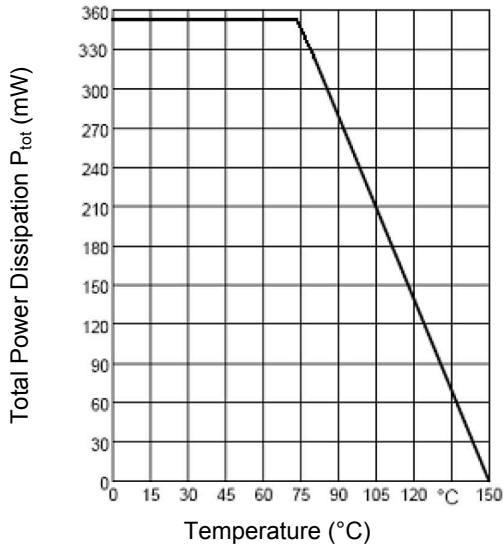
( $T_A=25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Max.		Unit
		MMBTA05	MMBTA06	
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	$R_{\theta JA}$	357		$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	142		$^\circ\text{C/W}$
Operation Junction Temperature Range	$T_J$	-55 To +150		$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 To +150		$^\circ\text{C}$

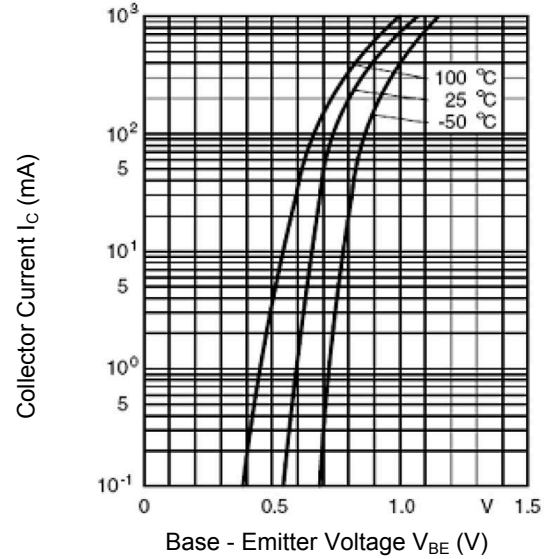
## Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

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

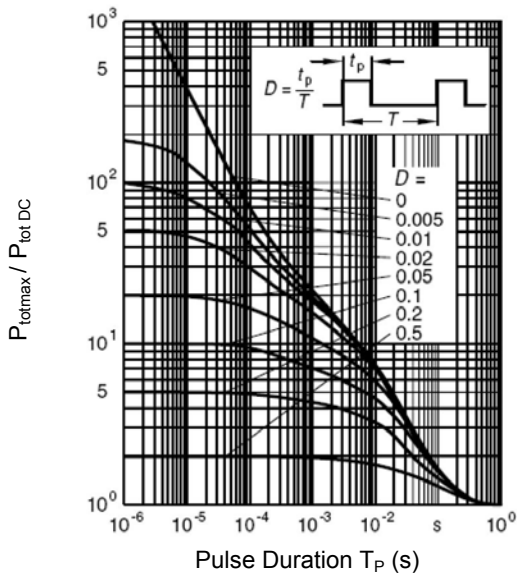
**Typical Characteristic Curves**



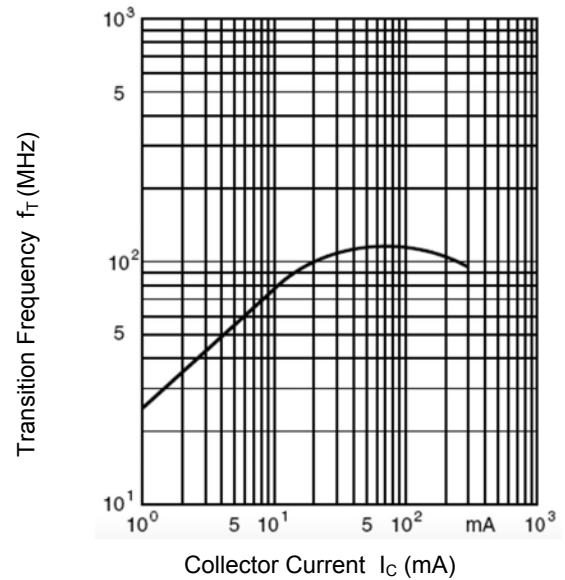
**Figure 1. Derating Curve**



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

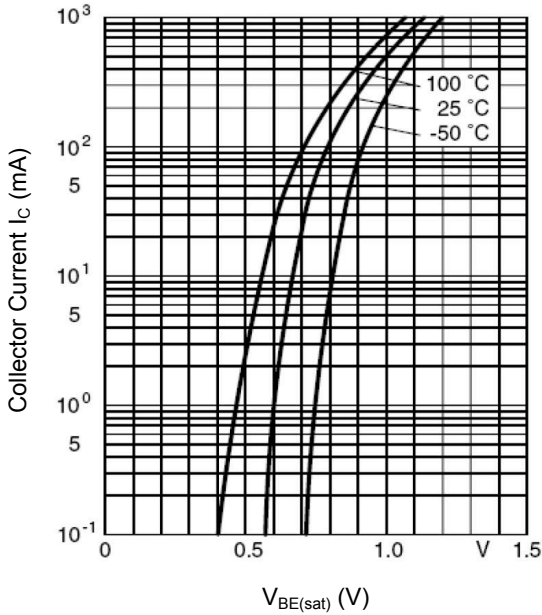


**Figure 3. Permissible Pulse Load**



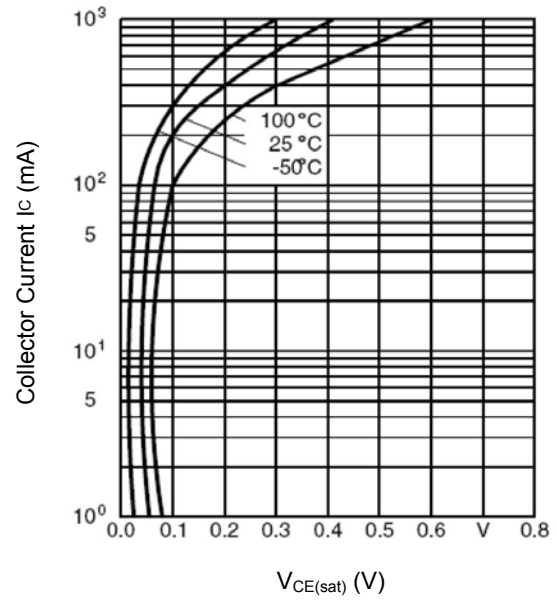
**Figure 4. Transition Frequency ( $V_{CE}=5V$ )**

**Typical Characteristic Curves**



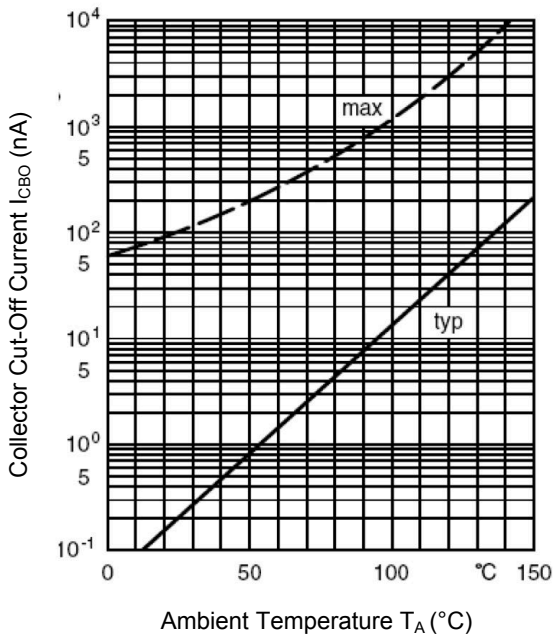
**Figure 5. Base-Emitter Saturation Voltage**

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



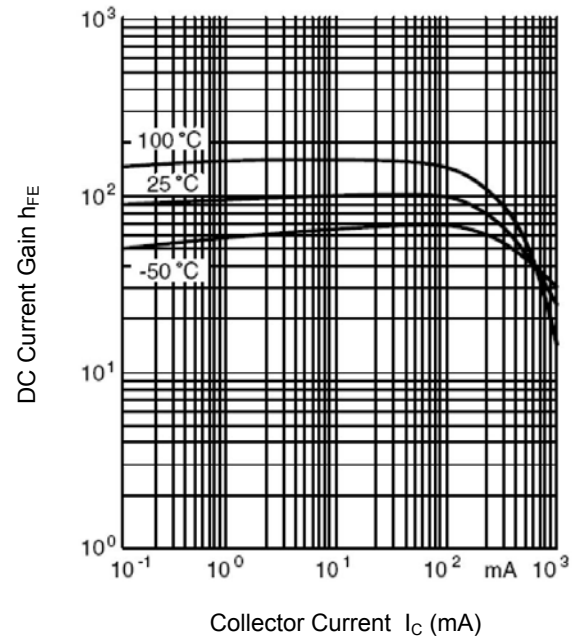
**Figure 6. Collector-Emitter Saturation Voltage**

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



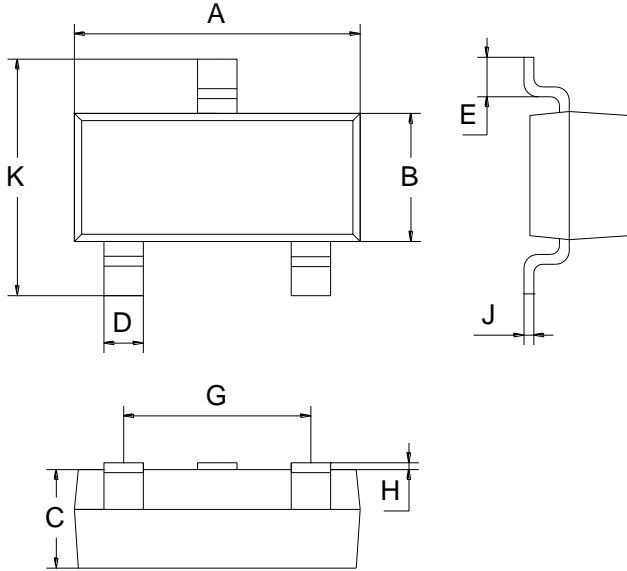
**Figure 7. Collector Cutoff Current**

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



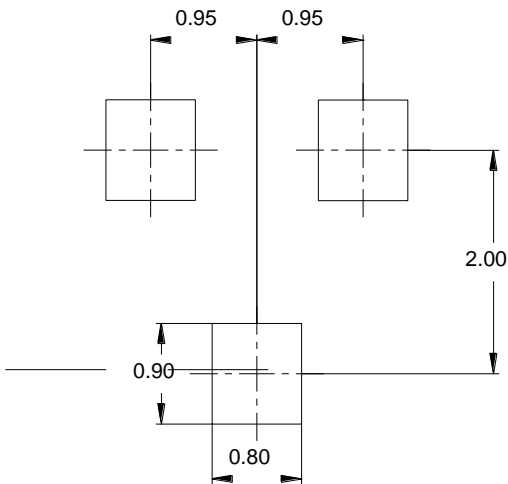
**Figure 8. DC Current Gain  $h_{FE} = f(I_C)$ ,  $V_{CE} = 1V$**

**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