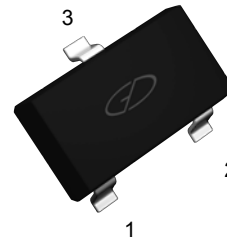


Features

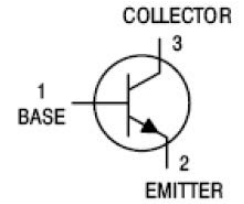
- High breakdown voltage.
- Complementary PNP type available (MMBTA55/MMBTA56)
- Low collector - emitter saturation voltage

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
		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		$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	142		$^{\circ}\text{C}/\text{W}$
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	μA
		$V_{CB}=80\text{V}, I_E=0$	MMBTA06	-	0.1	μA
Collector Cut-Off Current	I_{CEO}	$V_{CE}=60\text{V}, I_B=0$	MMBTA05	-	0.1	μA
		$V_{CE}=60\text{V}, I_B=0$	MMBTA06	-	0.1	μA
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

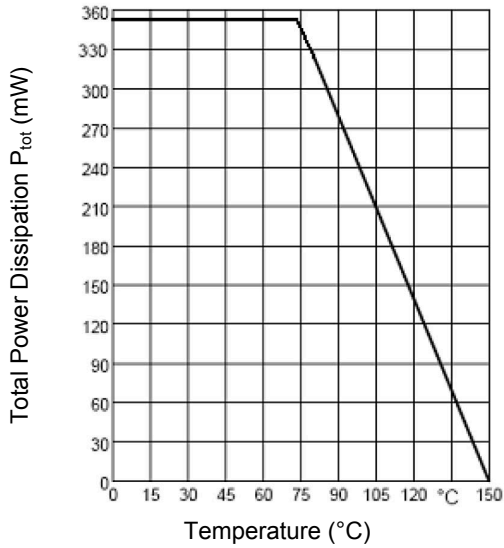


Figure 1. Derating Curve

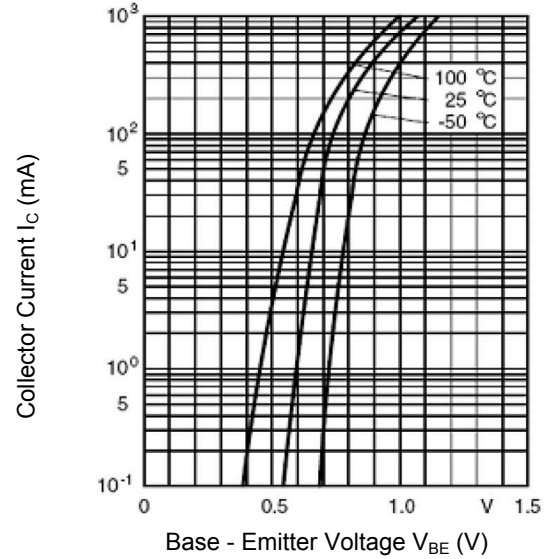


Figure 2. Collector Current vs. Base-Emitter Voltage
 $(V_{CE}=1V)$

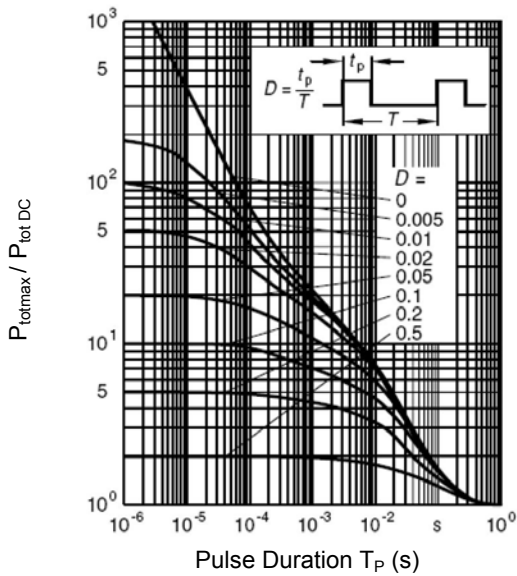


Figure 3. Permissible Pulse Load

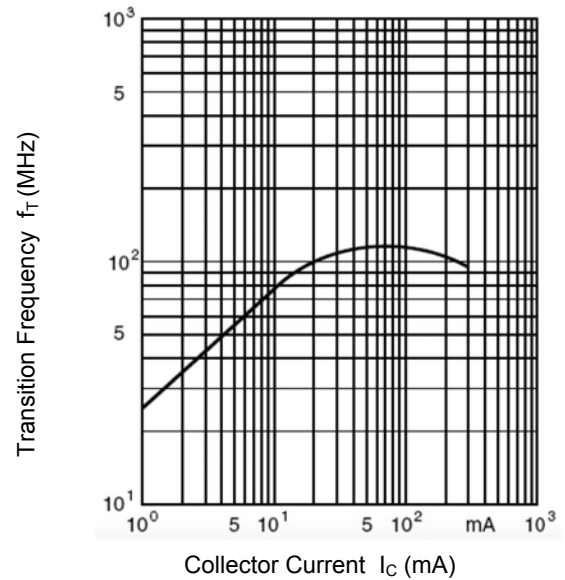


Figure 4. Transition Frequency $(V_{CE}=5V)$

Typical Characteristic Curves

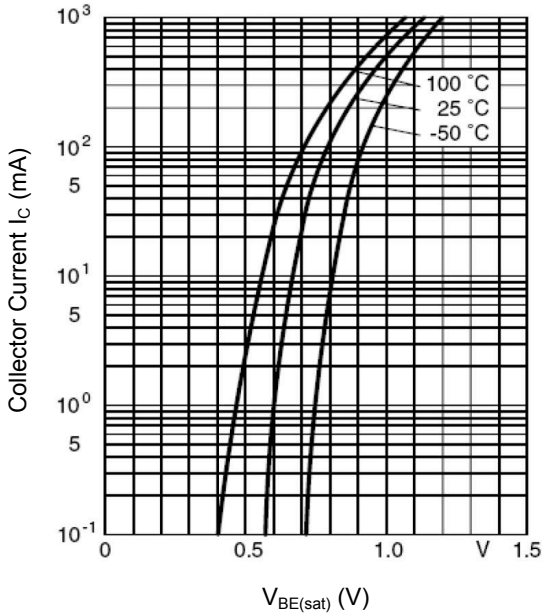


Figure 5. Base-Emitter Saturation Voltage

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

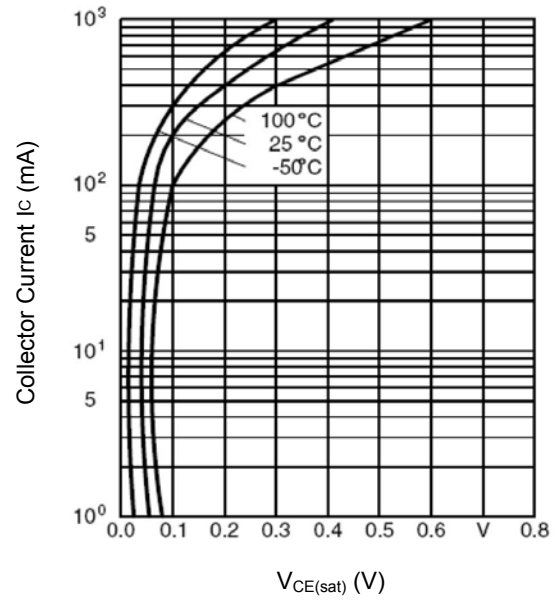


Figure 6. Collector-Emitter Saturation Voltage

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

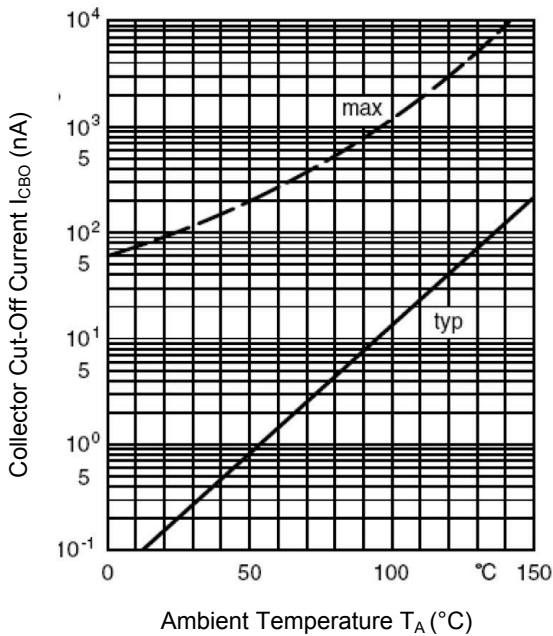


Figure 7. Collector Cutoff Current

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

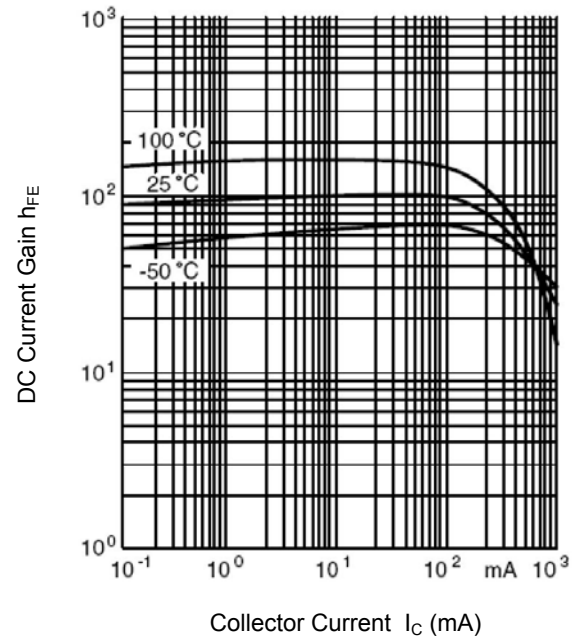
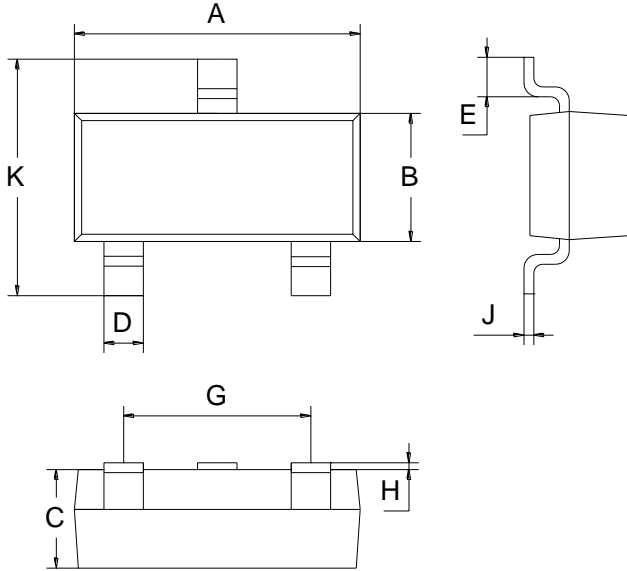


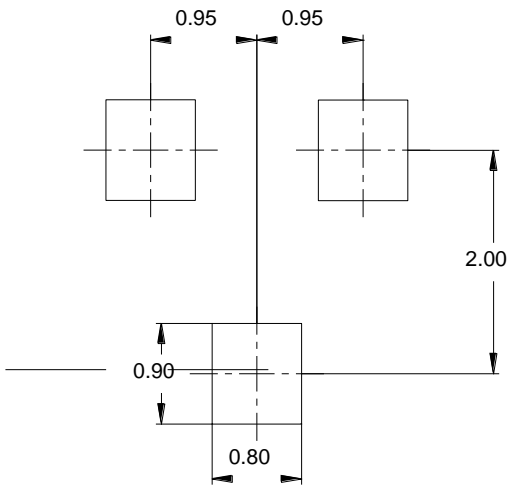
Figure 8. DC Current Gain $h_{FE} = f(I_C)$, $V_{CE} = 1V$

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