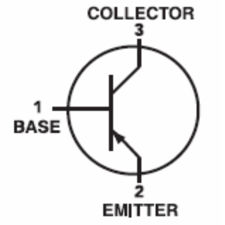
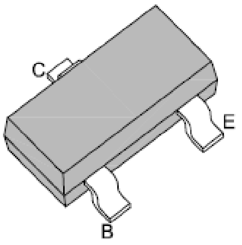
SMD General Purpose Transistor (PNP)

Features

- PNP Silicon Epitaxial Planar Transistor for Switching and Amplifier Applications
- RoHS compliance





SOT-23

Mechanical Data

Case:	SOT-23, Plastic Package
Terminals:	Solderable per MIL-STD-202G, Method 208
Weight:	0.008 gram

Maximum Ratings *($T_{Ambient}$=25ºC unless noted otherwise)*

Symbol	Description	MMBTA55	MMBTA56	Unit
	Marking Code	2H/B55	2GM/B56	
V_{CEO}	Collector-Emitter Voltage	-60	-80	V
V_{CBO}	Collector-Base Voltage	-60	-80	V
V_{EBO}	Emitter-Base Voltage	-4.0		V
I_C	Collector Current-Continuous	-500		mA

Thermal Characteristics

Symbol	Description	MMBTA55	MMBTA56	Unit
P_{tot}	Total Device Dissipation FR-5 Board, (Note 1) T_A= 25°C	225		mW
	Derate above 25°C	1.8		mW/° C
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	556		° C/W
P_{tot}	Total Device Dissipation Alumina Substrate, (Note 2) T_A= 25°C,	300		mW
	Derate above 25°C	2.4		mW/° C
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	417		° C/W
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to +150		° C

Electrical Characteristics *(T $_{Ambient}$=25ºC unless noted otherwise)*

Off Characteristics

Symbol	Description	MMBTA55		MMBTA56		Unit	Conditions
		Min.	Max.	Min.	Max.		
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage (Note 3)	-60	-	-80	-	V	I_C=-1mA, I_B=0
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	-60	-	-80	-	V	I_C=-100μA, I_E=0
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	-4.0	-	-4.0	-	V	I_E=-100μA, I_C=0
I_{CES}	Collector-Emitter Cut-off Current	-	-0.1	-	-0.1	μA	V_{CE}=-60V, I_B=0
I_{CBO}	Collector-Base Cut-off Current	-	-0.1	-	-0.1	μA	
		V_{CB}=-60V, I_E=0		V_{CB}=-80V, I_E=0			

On Characteristics

Symbol	Description	MMBTA55		MMBTA56		Unit	Conditions
		Min.	Max.	Min.	Max.		
h_{FE}	D.C. Current Gain	-100	-	-100	-		V_{CE}=-1V, I_C=-10mA
		-100	-	-100	-		V_{CE}=-1V, I_C=-100mA
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	-	-0.25	-	-0.25	V	I_C=-100mA, I_B=-10mA
$V_{BE(on)}$	Base-Emitter On Voltage	-	-1.2	-	-1.2	V	I_C=-100mA, V_{CE}=-1V

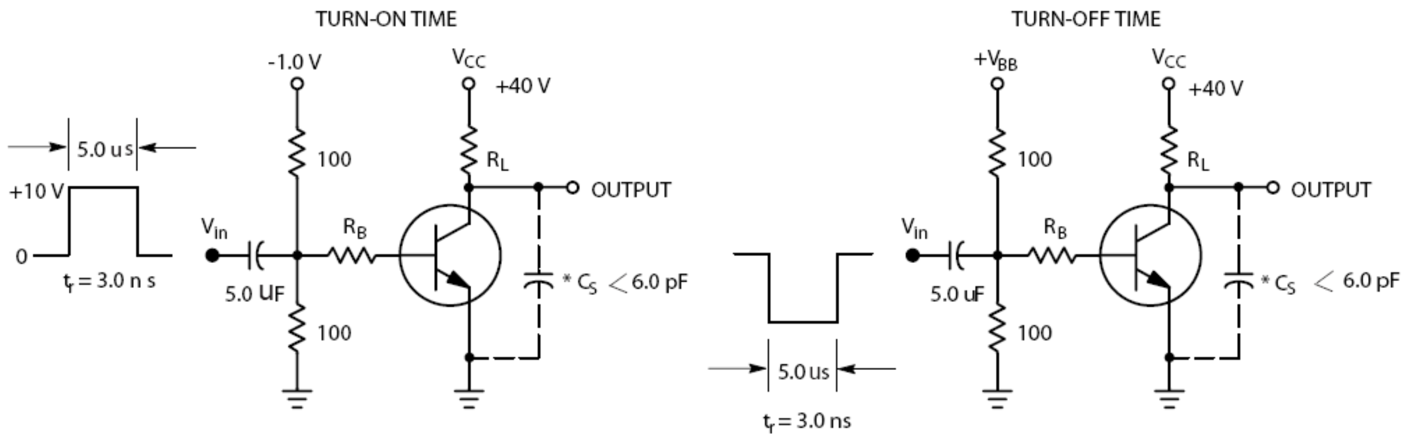
Small − Signal Characteristics

Symbol	Description	MMBTA55		MMBTA56		Unit	Conditions
		Min.	Max.	Min.	Max.		
f_T	Current Gain-Bandwidth Product	50	-	50	-	MHz	V_{CE}=-1V, I_C=-100mA, f=100MHz

Note: 1. FR-5=1.0x0.75x0.062 in.
2. Alumina=0.4x0.3x0.024 in, 99.5% alumina.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%.
4. f_T is defined as the frequency at which hfee x trapolates to unity.

Typical Characteristics Curves

Fig.1-Switching Time Test Circuits



*Total Shunt Capacitance of Test Jig and Connectors
For PNP Test Circuits, Reverse All Voltage Polarities

Fig.2- Current-Gain- Bandwidth Product

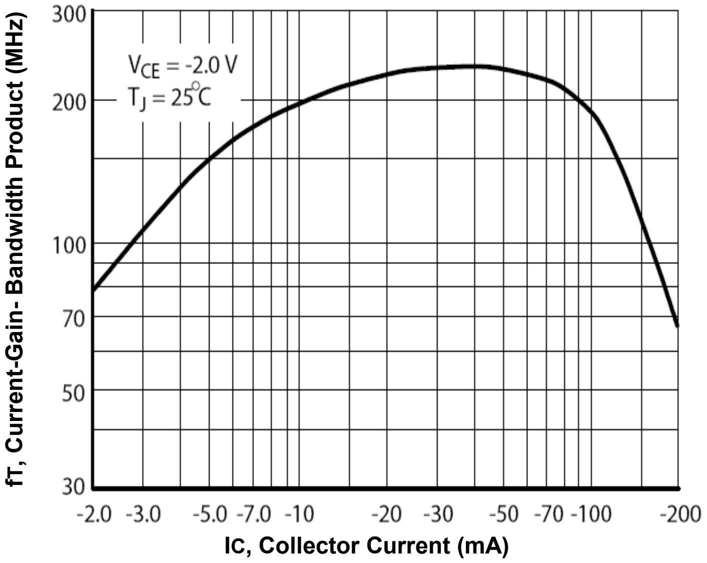


Fig.3- Capacitance

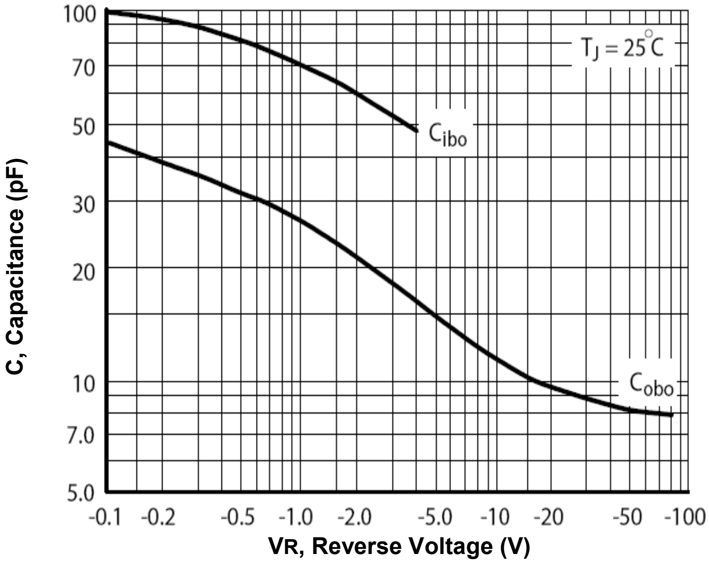


Fig.4- Switching Time

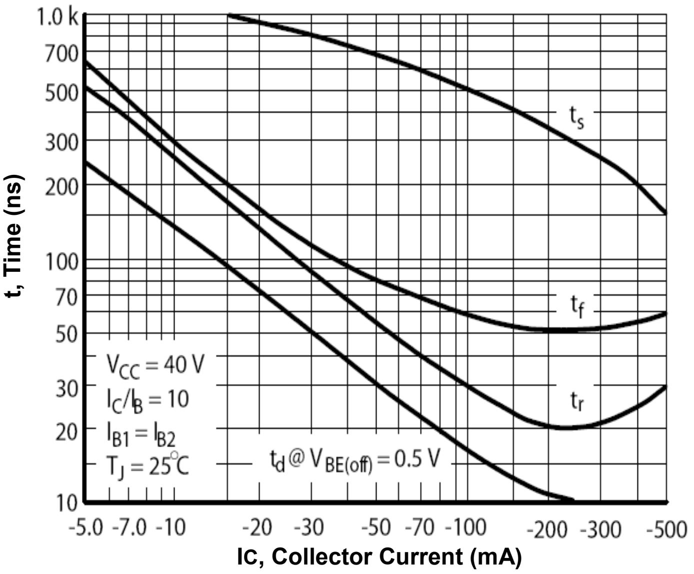


Fig.5- DC Current Gain

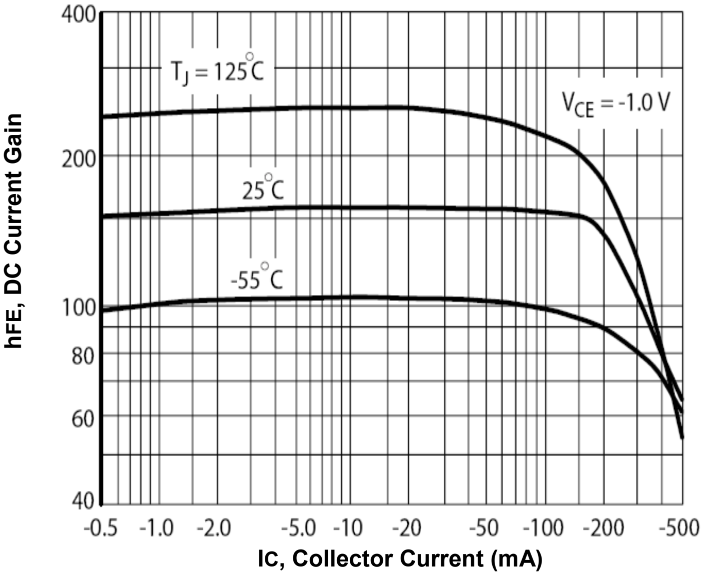


Fig.6- “ON” Voltages

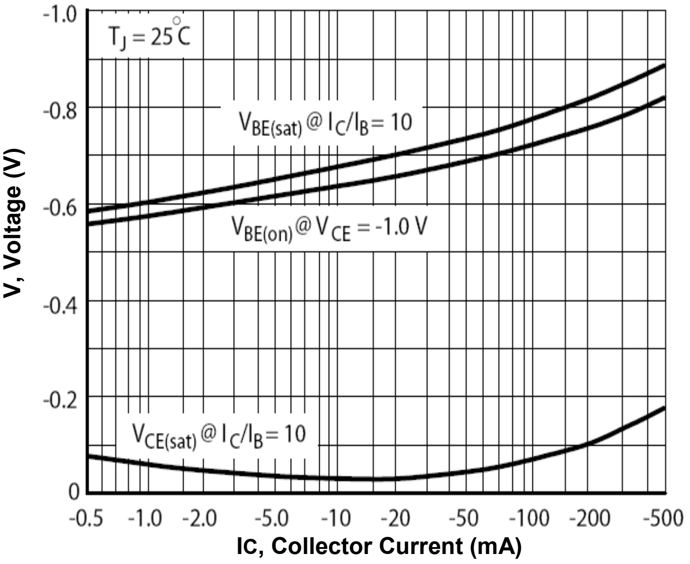


Fig.7- Collector Saturation Region

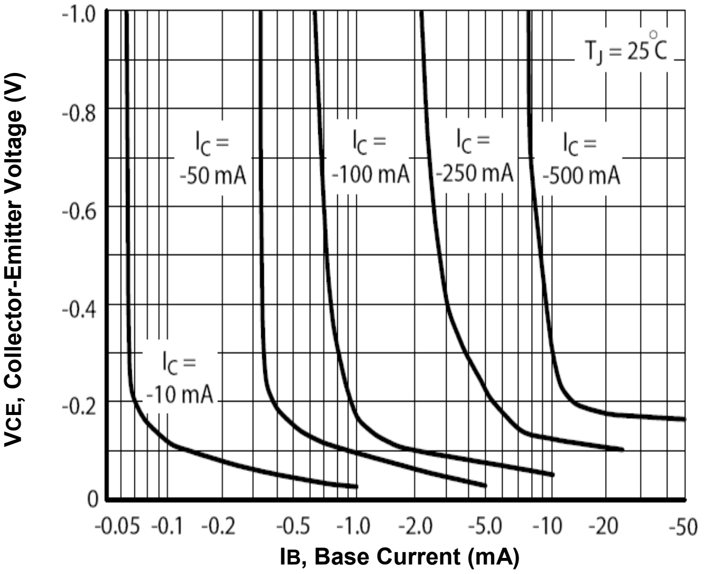
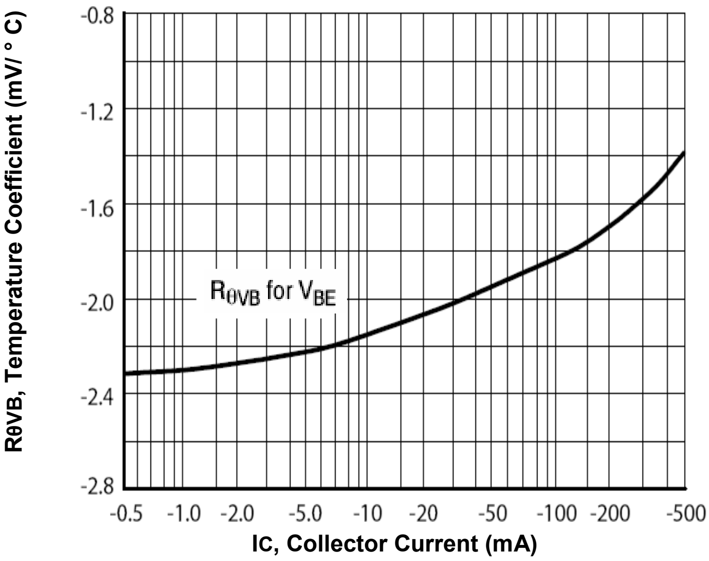
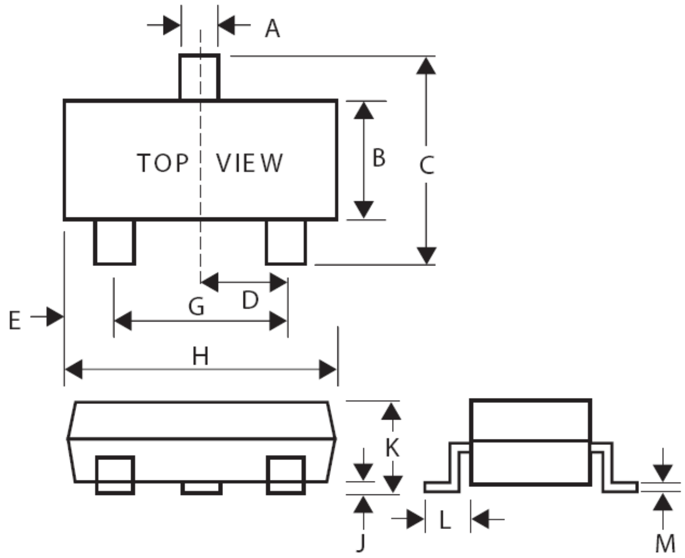


Fig.8- Base–Emitter Temperature Coefficient



Dimensions in mm

SOT-23



Dim	Min	Max
A	0.35	0.51
B	1.19	1.80
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.60
L	0.30	0.61
M	0.076	0.25

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