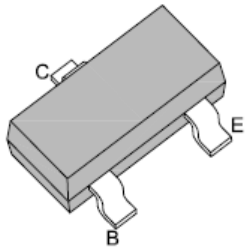
SMD General Purpose Transistor (NPN)



SOT-23

Features

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

Mechanical Data

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

Marking Information

	BC817-16	BC17-25	BC817-40
Marking Code	6A	6B	6C

Maximum Ratings *(T Ambient=25ºC unless noted otherwise)*

Symbol	Description	Value	Unit	Conditions
V_{CEO}	Collector-Emitter Voltage	45	V	
V_{CBO}	Collector-Base Voltage	50	V	
V_{EBO}	Emitter-Base Voltage	5.0	V	
I_C	Collector Current	500	mA	
P_D	Total Device Power Dissipation	225	mW	T_A=25 ˚C
		1.8	mW/°C	Derate above 25 ˚C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient (Note 1)	556	°C /W	
P_D	Total Device Power Dissipation, Alumina Substrate	300	mW	T_A=25 ˚C
		2.4	mW/°C	Derate above 25 ˚C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient (Note 2)	417	°C /W	
T_J, T_{STG}	Junction and Storage, Temperature Range	-55 to +150	°C	

Note: 1. FR-5 Board=25.4 x 19.05 x 1.58 mm (1.0 x 0.75 x 0.062 inches.)
2. Alumina Substrate=10.16 x 7.62 x 0.61 mm (0.4 x 0.3 x 0.024 inches.) 99.5% alumina.

Electrical Characteristics *($T_{Ambient}$=25°C unless noted otherwise)*

Off Characteristics

Symbol	Description	Min.	Max.	Unit	Conditions
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	45	-	V	I_C=10mA, I_B=0
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	50	-	V	I_C=10μA, V_{EB}=0
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	5.0	-	V	I_E=1μA, I_C=0
I_{CBO}	Collector Cut-off Current	-	100	nA	V_{CB}=20V
		-	5	mA	V_{CB}=20V, T_A=150°C

On Characteristics

Symbol	Description		Min.	Max.	Unit	Conditions
h_{FE}	D.C. Current Gain	BC817-16	100	250	-	V_{CE}=1V, I_C=100mA
			40	-		V_{CE}=1V, I_C=500mA
		BC817-25	160	400		V_{CE}=1V, I_C=100mA
			40	-		V_{CE}=1V, I_C=500mA
		BC817-40	250	600		V_{CE}=1V, I_C=100mA
			40	-		V_{CE}=1V, I_C=500mA
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage		-	0.7	V	I_C=500mA, I_B=50mA
$V_{BE(on)}$	Base-Emitter On Voltage		-	1.2	V	I_C=500mA, V_{CE}=1V

Small-signal Characteristics

Symbol	Description	Min.	Typ.	Unit	Conditions
f_T	Current Gain-Bandwidth Product	100	-	MHz	V_{CE}=5V, I_C=10mA, f=100MHz
C_{OBO}	Output Capacitance	-	10	pF	V_{CB}=10V, f=1.0MHz

Typical Characteristics Curves

Fig.1- DC Current Gain

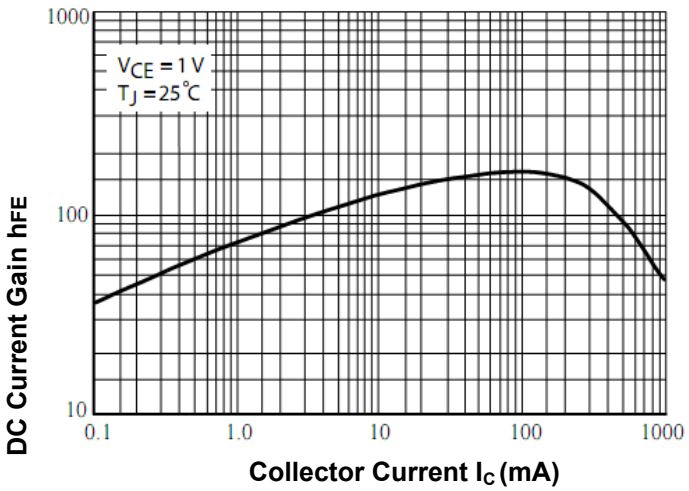


Fig.2- Saturation Region

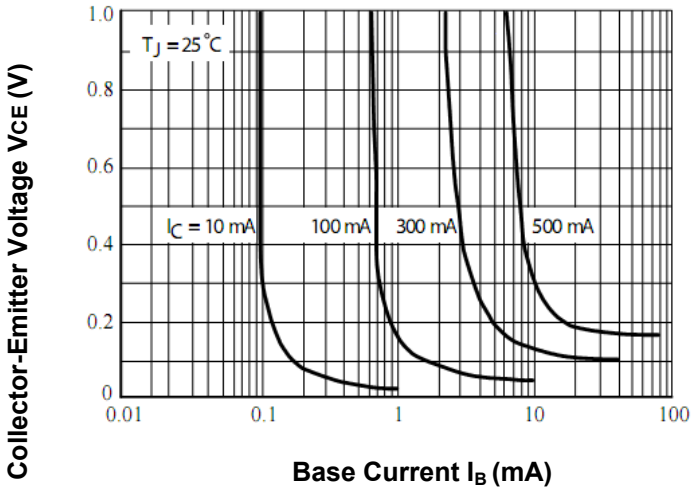


Fig.3- "On" Voltage

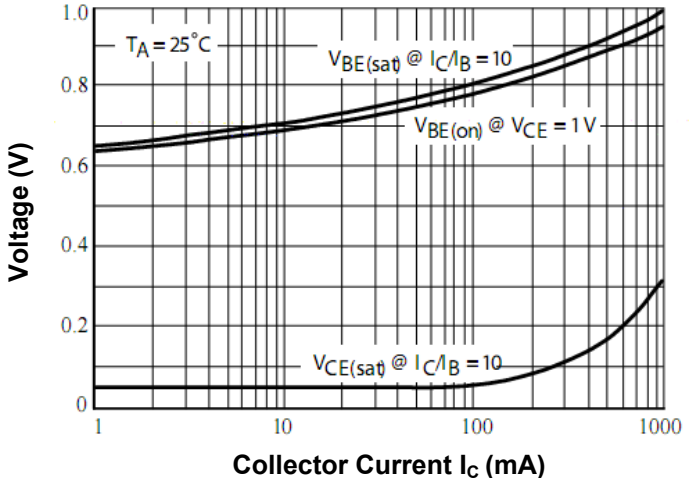


Fig.4- Temperature Coefficients

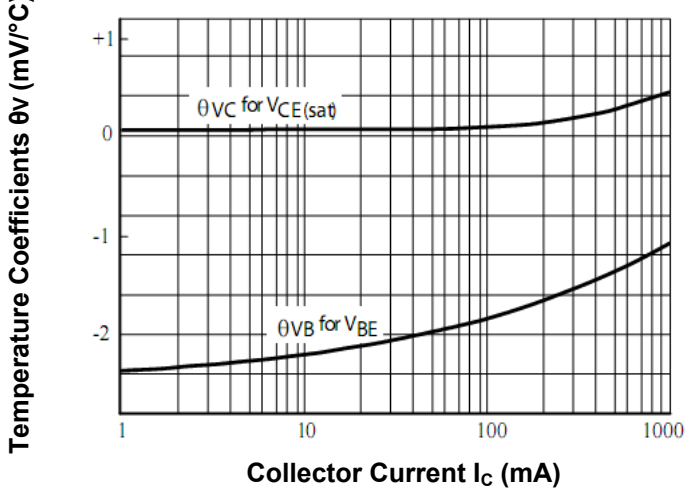
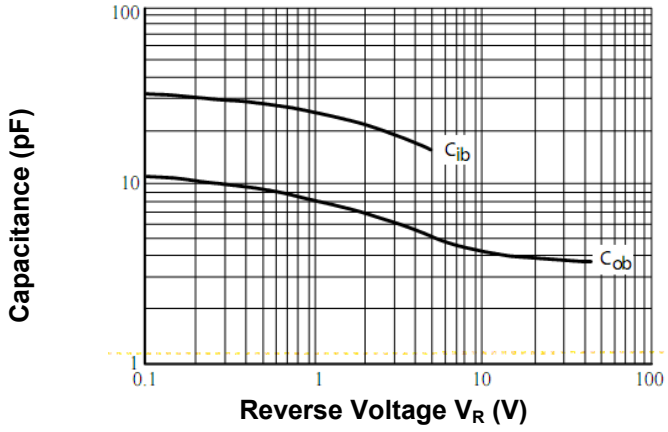
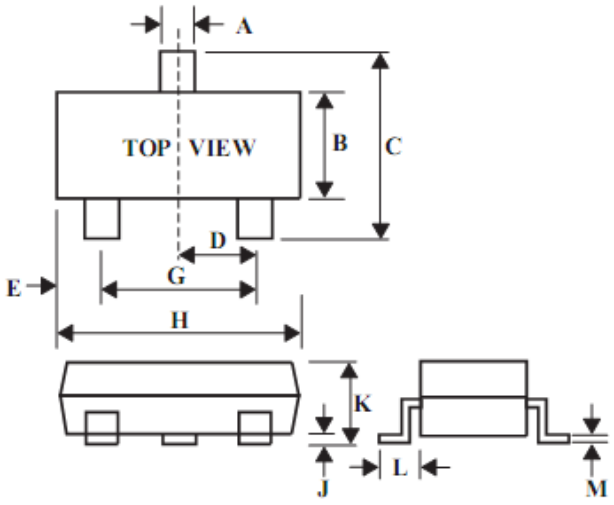


Fig.5- Capacitance



Dimensions in mm

SOT-23



SOT-23		
Dim	**Min**	**Max**
A	0.35	0.51
B	1.19	1.40
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	1.10
L	0.30	0.61
M	0.076	0.25