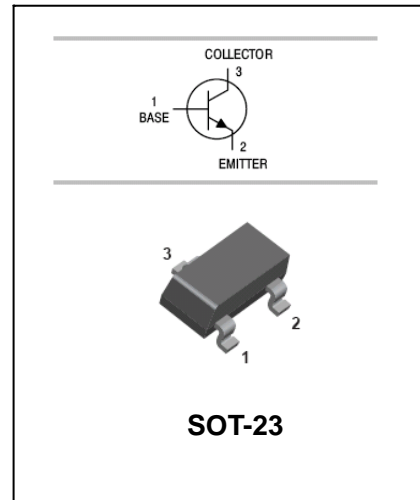


## NPN Transistors

### Features

- For general AF applications.
- High collector current.
- High current gain.
- Low collector-emitter saturation voltage.



Package Code

### Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

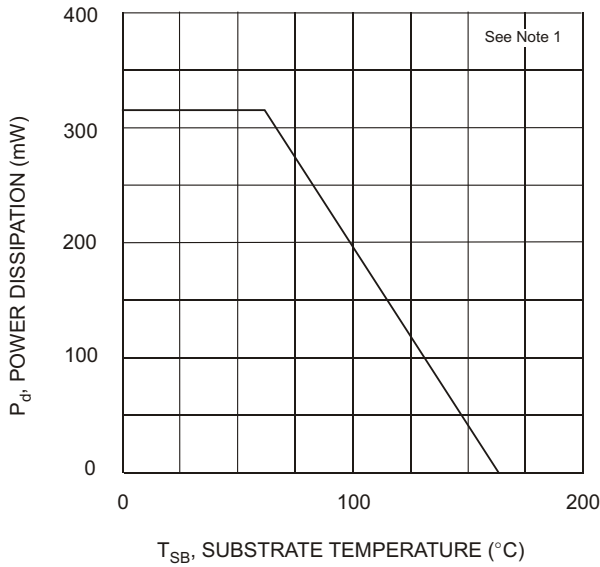
Parameter	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	50	V
Collector-emitter voltage	$V_{CEO}$	45	V
Emitter-base voltage	$V_{EBO}$	5	V
Collector current (DC)	$I_C$	500	mA
power dissipation	$P_D$	300	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-65 to +150	$^\circ\text{C}$

### Electrical Characteristics $T_a = 25^\circ\text{C}$

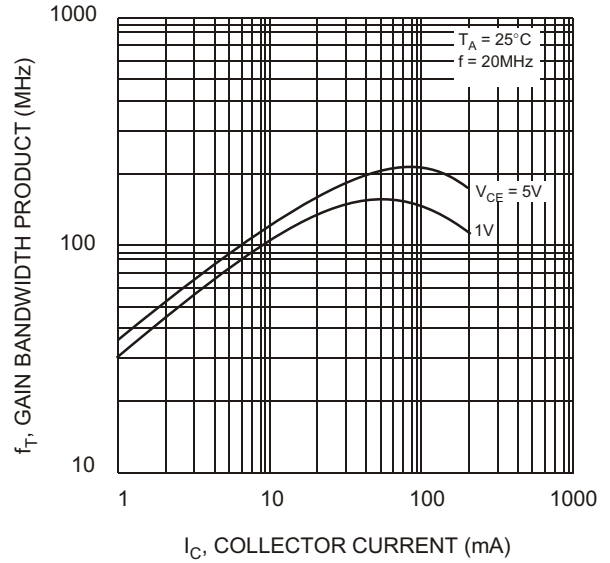
Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Collector-to-base breakdown voltage	$V_{CBO}$	$I_C = 10 \mu\text{A}, V_{BE} = 0$	50			V
Collector-to-emitter breakdown voltage	$V_{CEO}$	$I_C = 10 \text{mA}, I_B = 0$	45			V
Emitter-to-base breakdown voltage	$V_{EBO}$	$I_E = 1 \mu\text{A}, I_C = 0$	5			V
Collector cutoff current	$I_{CES}$	$V_{CB} = 45 \text{V}, V_{BE} = 0$			100	nA
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 4 \text{V}, I_C = 0$			100	nA
DC current gain *	$h_{FE}$	$I_C = 100 \text{mA}, V_{CE} = 1 \text{V}$	100		600	
		$I_C = 500 \text{mA}, V_{CE} = 1 \text{V}$	40			
Collector saturation voltage *	$V_{CE(sat)}$	$I_C = 500 \text{mA}, I_B = 50 \text{mA}$			0.7	V
Base emitter on voltage	$V_{BE}$	$V_{CE} = 1 \text{V}, I_C = 500 \text{mA}$			1.2	V
Output Capacitance	$C_{ob}$	$V_{CB} = 10 \text{V}, f = 1 \text{MHz}$		10		pF
Transition frequency	$f_T$	$I_C = 10 \text{mA}, V_{CE} = 5 \text{V}, f = 100 \text{MHz}$	100			MHz

### Marking

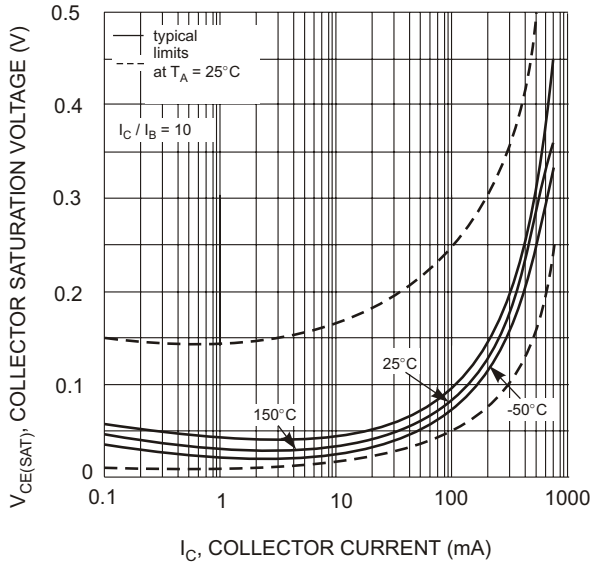
NO.	BC817-16	BC817-25	BC817-40	BC817
Marking	6A	6B	6C	6D
hFE	100~250	160~400	250~600	100~600



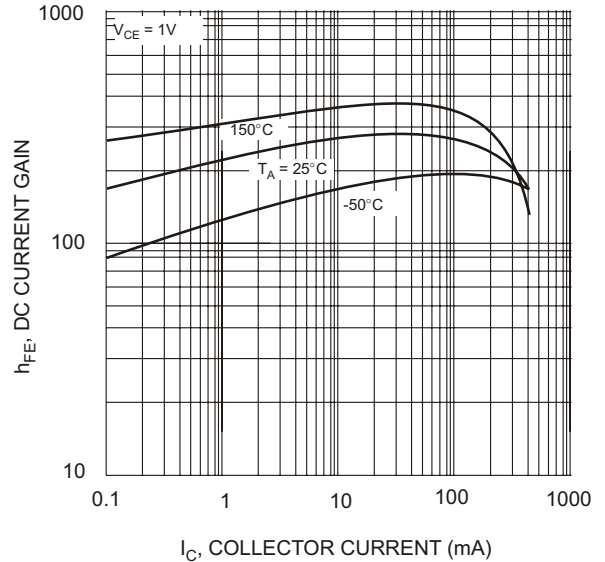
$T_{SB}$ , SUBSTRATE TEMPERATURE ( $^{\circ}C$ )  
Fig. 1, Power Derating Curve



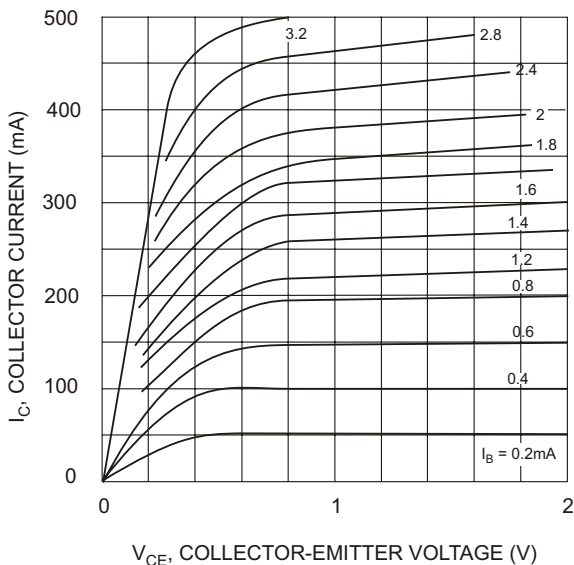
$I_C$ , COLLECTOR CURRENT (mA)  
Fig. 2, Gain-Bandwidth Product vs Collector Current



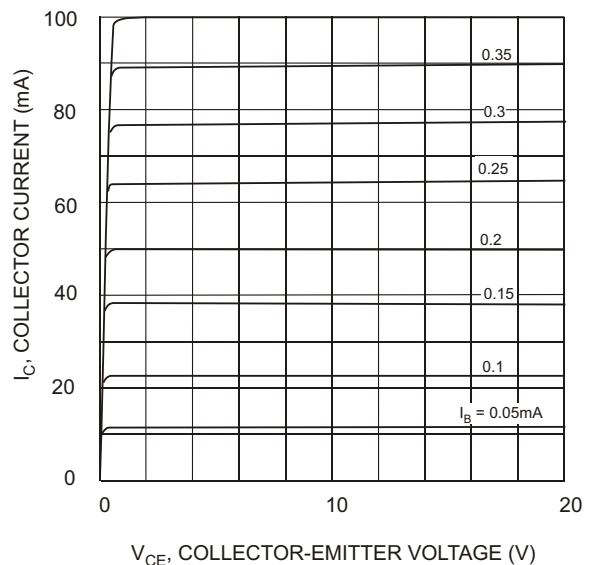
$I_C$ , COLLECTOR CURRENT (mA)  
Fig. 3, Collector Sat. Voltage vs Collector Current



$I_C$ , COLLECTOR CURRENT (mA)  
Fig. 4, DC Current Gain vs Collector Current



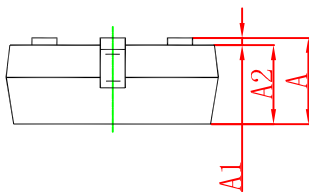
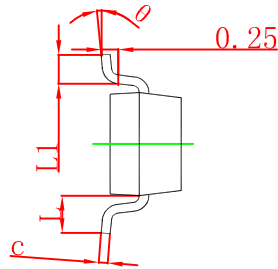
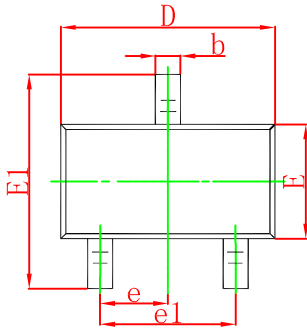
$V_{CE}$ , COLLECTOR-EMITTER VOLTAGE (V)  
Fig. 5, Typical Emitter-Collector Characteristics



$V_{CE}$ , COLLECTOR-EMITTER VOLTAGE (V)  
Fig. 6, Typical Emitter-Collector Characteristics

## Package Outline Dimensions (UNIT: mm)

### SOT-23



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
$\theta$	0°	8°	0°	8°

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