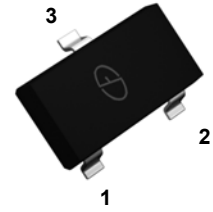


## Features

- High collector current
- SOT-323 plastic package
- For General AF Applications
- High Current Gain
- Low Collector-Emitter Saturation Voltage



SOT-323

1. BASE
2. EMITTER
3. COLLECTOR

## Absolute Maximum Ratings

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

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	$V_{\text{CBO}}$	50	V
Collector-Emitter Voltage	$V_{\text{CEO}}$	45	V
Emitter-Base Voltage	$V_{\text{EBO}}$	5.0	V
Collector Current - Continuous	$I_{\text{C}}$	0.5	A
Collector Power Dissipation	$P_{\text{C}}$	0.2	W
Thermal Resistance from Junction to Ambient	$R_{\theta\text{JA}}$	625	$^{\circ}\text{C/W}$
Junction Temperature	$T_{\text{J}}$	-55 to +150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{\text{STG}}$	-55 to +150	$^{\circ}\text{C}$

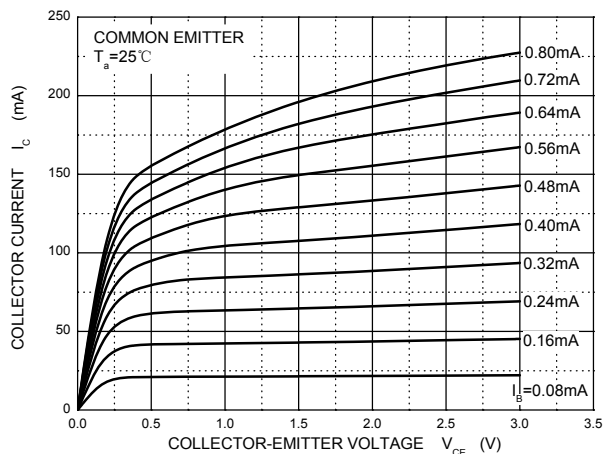
## $h_{\text{FE}(1)}$ Classifications

$h_{\text{FE}}$ Classifications Symbol	GSBC817-16W	GSBC817-25W	GSBC817-40W
$h_{\text{FE}}$ Range	100 to 250	160 to 400	250 to 600
Marking	6A	6B	6C

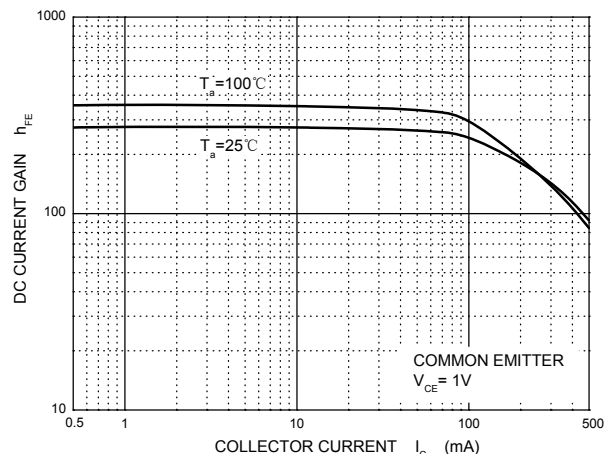
**Electrical Characteristics** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}, I_E=0$	50	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=10\text{mA}, I_B=0$	45	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1\mu\text{A}, I_C=0$	5	-	-	V
Collector Cut-off Current	$I_{CBO}$	$V_{CB}=20\text{V}, I_E=0$	-	-	0.1	$\mu\text{A}$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB}=5\text{V}, I_C=0$	-	-	0.1	$\mu\text{A}$
DC Current Gain	$h_{FE(1)}$	$V_{CE}=1\text{V}, I_C=100\text{mA}$	100	-	600	
	$h_{FE(2)}$	$V_{CE}=1\text{V}, I_C=500\text{mA}$	40	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=500\text{mA}, I_B=50\text{mA}$	-	-	0.7	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=500\text{mA}, I_B=50\text{mA}$	-	-	1.2	V
Base-Emitter Voltage	$V_{BE(ON)}$	$V_{CE}=1\text{V}, I_C=500\text{mA}$	-	-	1.2	V
Transition Frequency	$f_T$	$V_{CE}=5\text{V}, I_C=10\text{mA}, f=100\text{MHz}$	100	-	-	MHz
Collector Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}, f=1\text{MHz}$	-	-	5	pF

**Typical Characteristic Curves** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

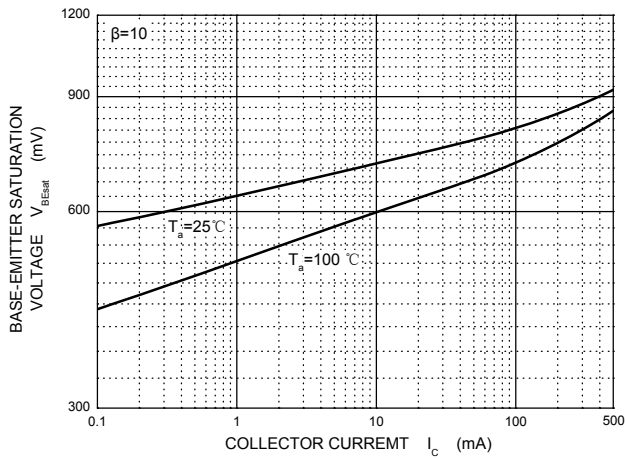


Static Characteristic

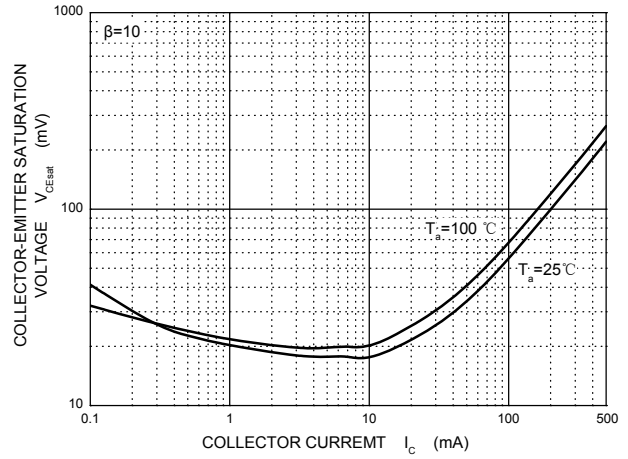


$h_{FE}$  —  $I_C$

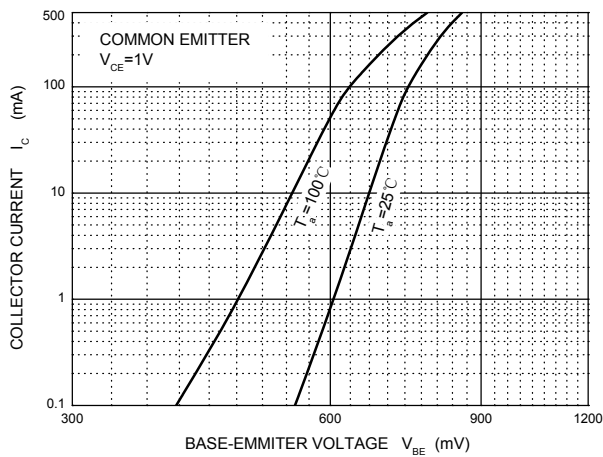
**Typical Characteristic Curves** ( $T_A=25^\circ\text{C}$  unless otherwise specified)



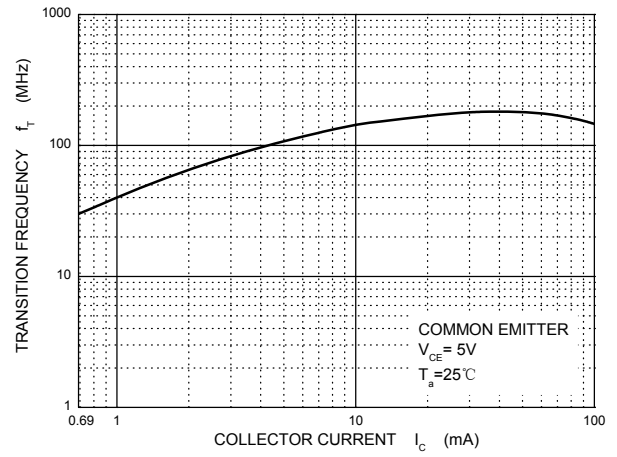
$V_{BEsat}$  —  $I_c$



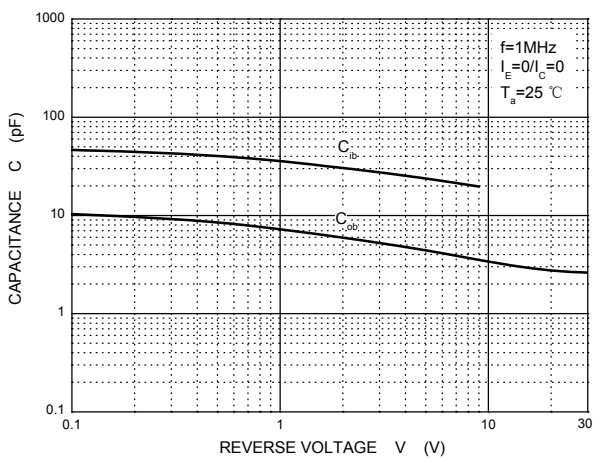
$V_{CEsat}$  —  $I_c$



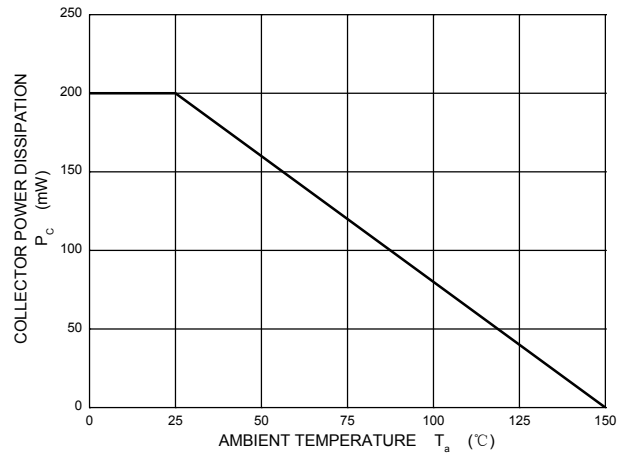
$I_c$  —  $V_{BE}$



$f_T$  —  $I_c$

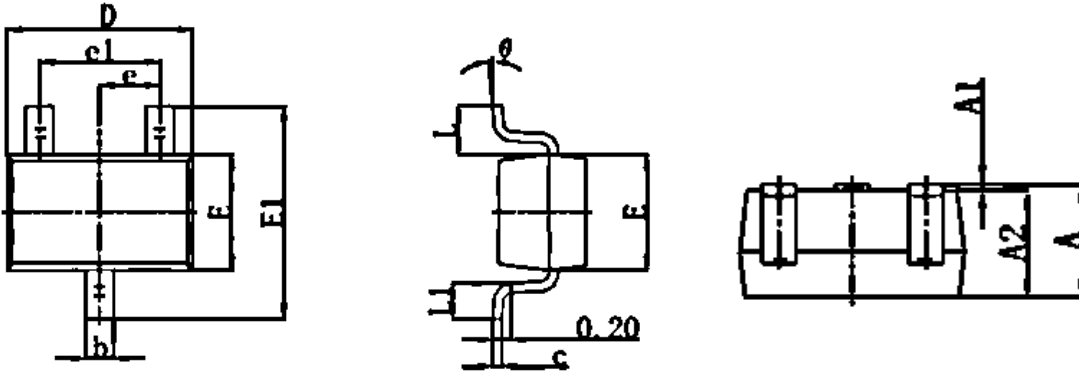


$C_{ob}/C_{ib}$  —  $V_{CB}/V_{EB}$



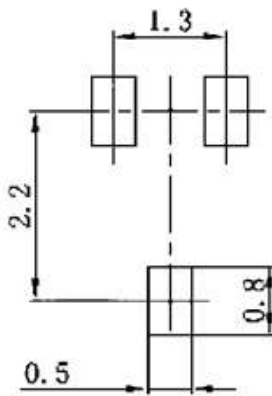
$P_c$  —  $T_a$

**Package Outline Dimensions (SOT-323)**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.400	0.006	0.016
c	0.080	0.250	0.003	0.010
D	1.800	2.200	0.071	0.087
E	1.150	1.350	0.045	0.053
E1	2.100	2.450	0.083	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
		0.460	0.010	0.018
θ	0°	8°	0°	8°

**Recommended Pad Layout**



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05\text{mm}$ .
  3. The pad layout is for reference purposes only.