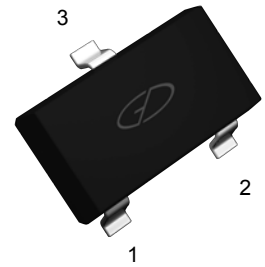


## Features

- High breakdown voltage
- Low collector-emitter saturation voltage

1. BASE
2. EMITTER
3. COLLECTOR



SOT-23

## Absolute Maximum Ratings

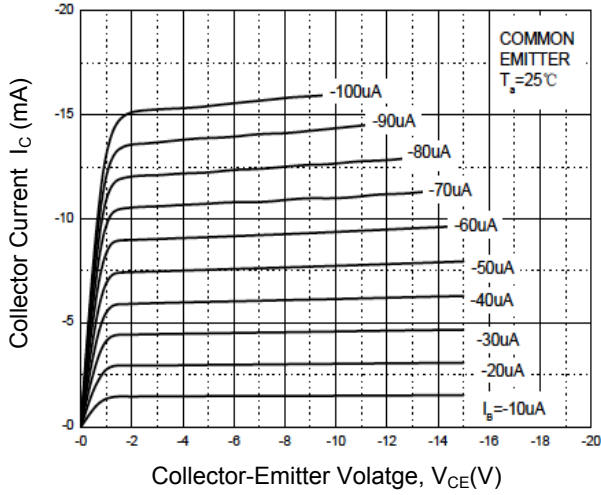
( $T_A=25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Max.	Unit
Collector-Base Voltage	$V_{CBO}$	-400	V
Collector-Emitter Voltage	$V_{CEO}$	-400	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Collector Current-Continuous	$I_C$	-200	mA
Collector Current-Pulsed	$I_{CM}$	-300	mA
Collector Power Dissipation	$P_C$	350	mW
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	357	$^\circ\text{C}/\text{W}$
Operation Junction Temperature Range	$T_J$	-55 To +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 To +150	$^\circ\text{C}$

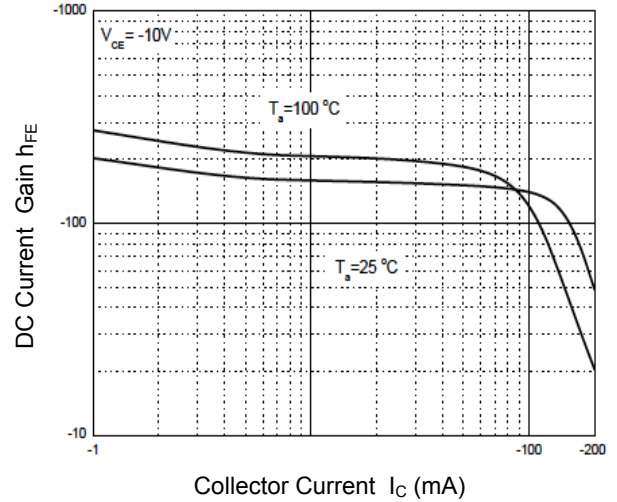
## Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-100\mu\text{A}, I_E=0$	-400	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-1\text{mA}, I_B=0$	-400	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-100\mu\text{A}, I_C=0$	-5	-	-	V
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=-400\text{V}, I_E=0$	-	-	-0.1	$\mu\text{A}$
	$I_{CEO}$	$V_{CE}=-400\text{V}, I_B=0$	-	-	-5	$\mu\text{A}$
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB}=-4\text{V}, I_C=0$	-	-	-0.1	$\mu\text{A}$
DC Current Gain	$h_{FE(1)}$	$V_{CE}=-10\text{V}, I_C=-10\text{mA}$	80	-	300	-
	$h_{FE(2)}$	$V_{CE}=-10\text{V}, I_C=-1\text{mA}$	70	-	-	-
	$h_{FE(3)}$	$V_{CE}=-10\text{V}, I_C=-100\text{mA}$	40	-	-	-
	$h_{FE(4)}$	$V_{CE}=-10\text{V}, I_C=-50\text{mA}$	40	-	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=-10\text{mA}, I_B=-1\text{mA}$	-	-	-0.2	V
	$V_{CE(sat)2}$	$I_C=-50\text{mA}, I_B=-5\text{mA}$	-	-	-0.3	
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-10\text{mA}, I_B=-1\text{mA}$	-	-	-0.75	V
Transition Frequency	$f_T$	$V_{CE}=-20\text{V}, I_C=-10\text{mA}, f=30\text{MHz}$	50	-	-	MHz

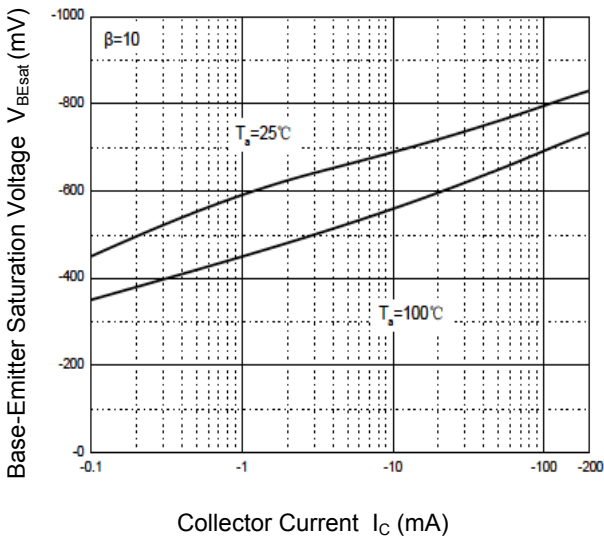
**Typical Characteristic Curves**



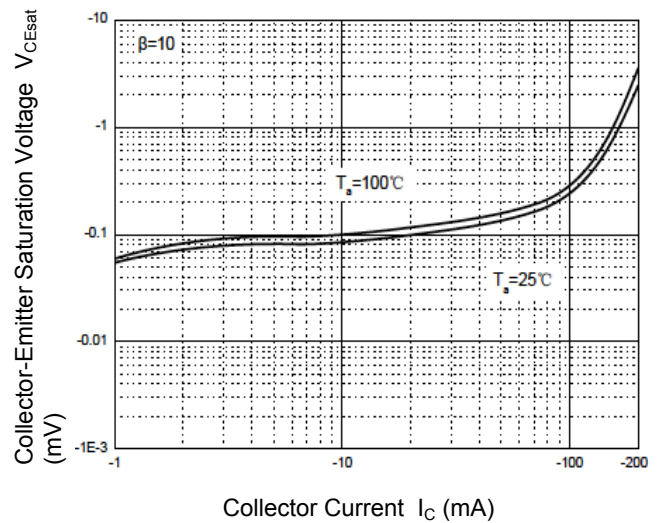
**Figure 1. Static Characteristic**



**Figure 2. DC Current Gain vs Collector Current**

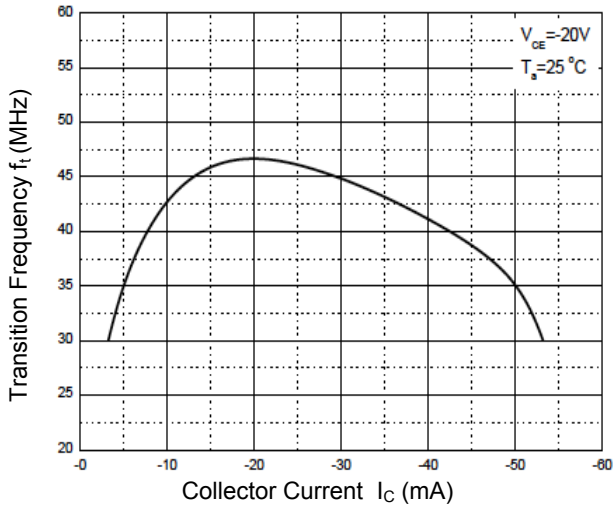


**Figure 3 Base-Emitter Saturation Voltage vs. Collector Current**

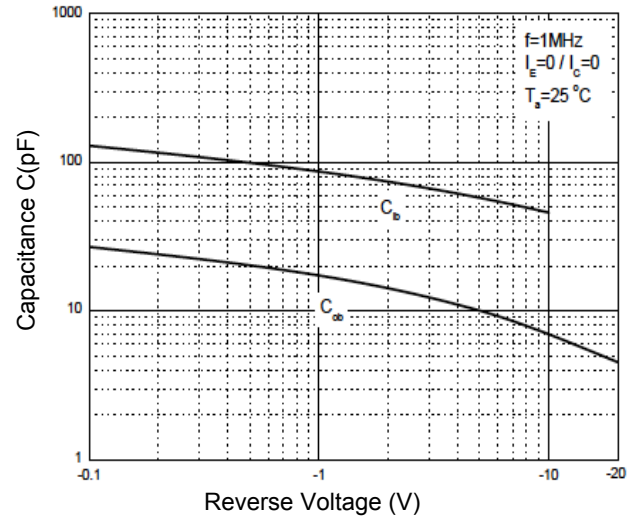


**Figure 4. Collector-Emitter Saturation Voltage vs. Collector Current**

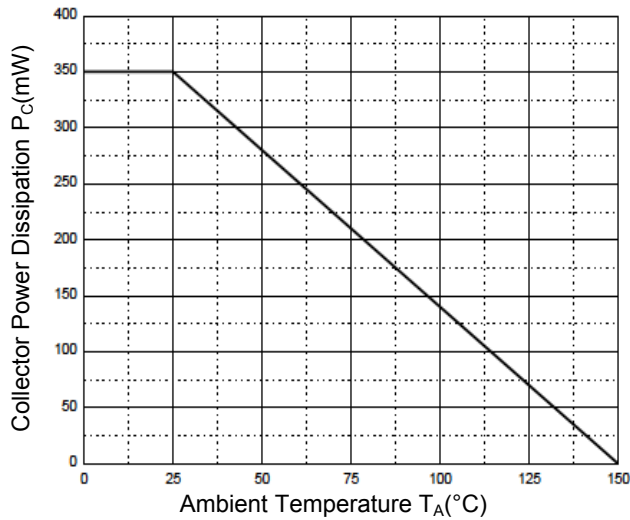
**Typical Characteristic Curves**



**Figure 5. Transition Frequency vs. Collector Current**

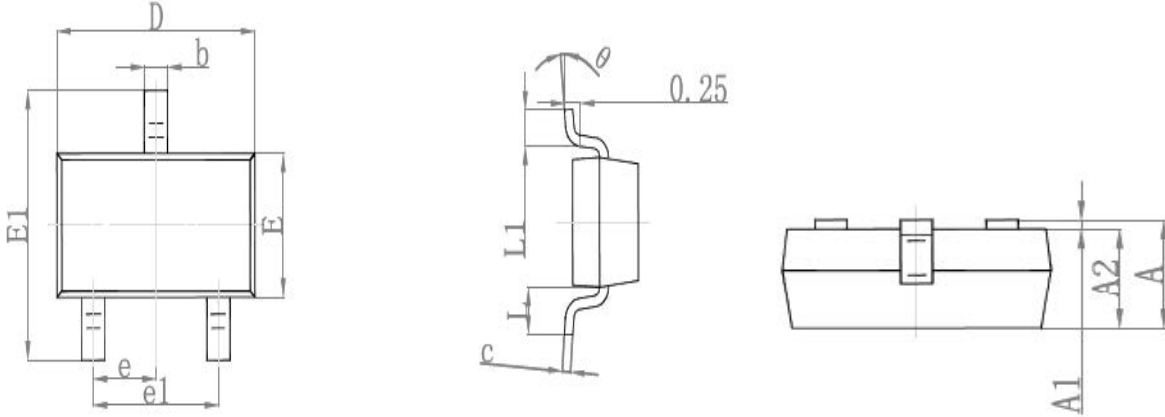


**Figure 6. Capacitance Characteristics**



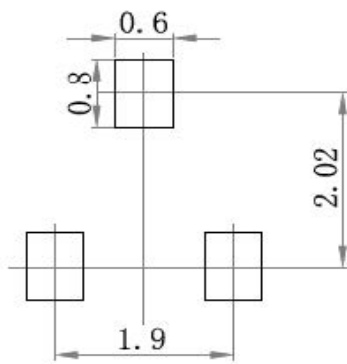
**Figure 7. Power Dissipation vs. Ambient Temperature**

**Package Outline Dimensions (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
θ	0°	8°	0°	8°

**Recommended Pad Layout**



Note:  
 1. Controlling dimension: in millimeters.  
 2. General tolerance: ± 0.05mm.  
 3. The pad layout is for reference purposes only.

**Ordering Information**

Device	Package	Marking	Quantity	HSF Status
GSMMBTA94	SOT-23	4D	3,000pcs / Reel	RoHS Compliant