

GSTMMBT3904J5F

NPN General Purpose Transistor

Product Description

This device is designed for a general-purpose application.

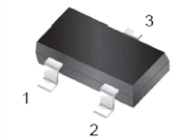
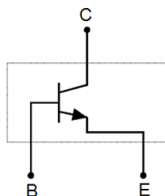
Features

- BV_{CEO} 40V
- Collector Current 200mA

Mechanical Data

- SOT-523. Package
- RoHS Compliant and Halogen Free

Package and Pin Assignment

SOT-523		Equivalent Circuit	
			
Pin	Description	Pin	Description
1	Base	3	Collector
2	Emitter		

Ordering and Marking Information

GS P/N	Package	Marking	Quantity / Reel
GSTMMBT3904J5F	SOT-523	1N	3,000 PCS
- Product Code: GSTMMBT3904 - Package Code: J5 for SOT-523 - Green Level: F for RoHS Compliant and Halogen Free			
Marking Information			
- Product Code: 1N			

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Symbol	Parameter	Value	Unit
V _{CB0}	Collector-Base Voltage	60	V
V _{CEO}	Collector-Emitter Voltage	40	V
V _{EBO}	Emitter-Base Voltage	6	V
I _C	Collector Current	200	mA
P _D	Power Dissipation ¹	150	mW
R _{θJA}	Thermal Resistance from Junction to Ambient ¹	833	°C/W
T _J	Junction Temperature	150	°C
T _{stg}	Storage Temperature	-55~+150	°C

NOTE:

1. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

Electrical Characteristics (T_A=25°C unless otherwise specified)

Symbol	Description	Conditions	Min	Max	Unit
V _{(BR)CBO}	Collector-Base Breakdown Voltage	I _C =10μA, I _E =0	60		V
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage	I _C =1mA, I _B =0	40		V
V _{(BR)EBO}	Emitter-Base Breakdown Voltage	I _E =10μA, I _C =0	6		V
I _{CBO}	Collector Cut-Off Current	V _{CB} =60V, I _E =0		100	nA
I _{CEX}	Collector Cut-Off Current	V _{CE} =30V, V _{EB (off)} =3V		50	nA
I _{EBO}	Emitter Cut-off Current	V _{EB} =5V, I _C =0		100	nA
h _{FE}	DC Current Gain	V _{CE} =1V, I _C =100μA	40	-	-
		V _{CE} =1V, I _C =1mA	70	-	-
		V _{CE} =1V, I _C =10mA	100	300	-
		V _{CE} =1V, I _C =50mA	60	-	-
		V _{CE} =1V, I _C =100mA	30	-	-
V _{CE(sat)}	Collector-Emitter Saturation Voltage	I _C =10mA, I _B =1mA		0.2	V
		I _C =50mA, I _B =5mA		0.3	V
V _{BE(sat)}	Base-Emitter Saturation Voltage	I _C =10mA, I _B =1mA	0.65	0.85	V
		I _C =50mA, I _B =5mA		0.95	V
f _T	Transition Frequency	V _{CE} =20V, I _C =10mA, f=100MHz	300		MHz
C _{ob}	Output Capacitance	V _{CB} =5V, I _E =0, f=1MHz		4	pF
C _{ib}	Input Capacitance	V _{EB} =0.5V, I _C =0, f=1MHz		8	pF

t_d	Delay Time	$V_{CC}=3V, V_{BE(off)}=-0.5V,$	35	nS
t_r	Rise Time	$I_C=10mA, I_{B1}=1mA$	35	nS
t_s	Storage Time	$V_{CC}=3V, I_C=10mA,$	200	nS
t_f	Fall Time	$I_{B1}=I_{B2}=1mA$	50	nS

Typical Performance Characteristics

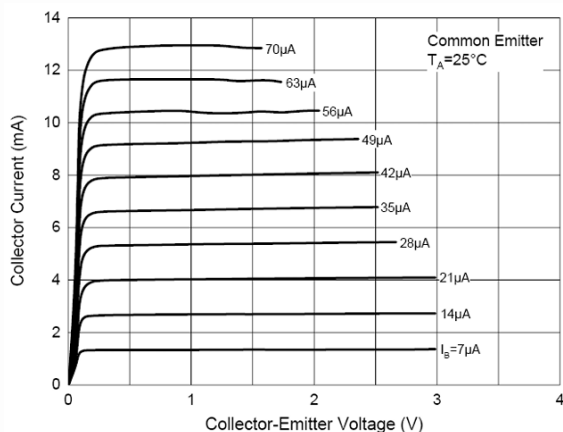


Figure 1. Static Characteristics

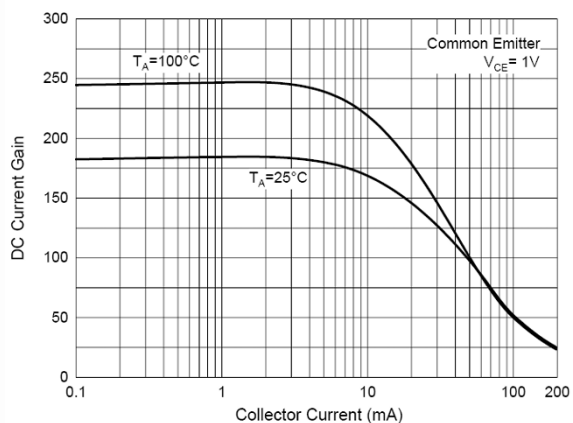


Figure 2. DC Current Gain Characteristics

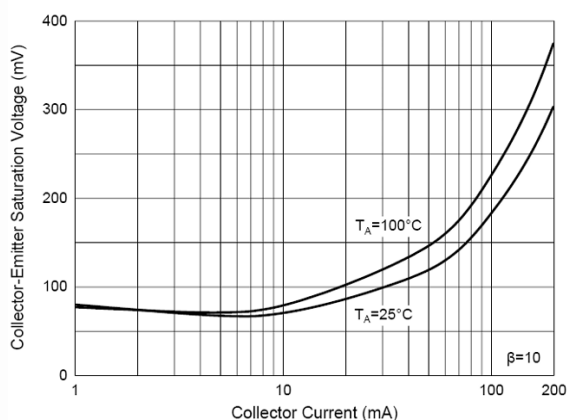


Figure 3. $V_{CE(SAT)}$ Characteristics

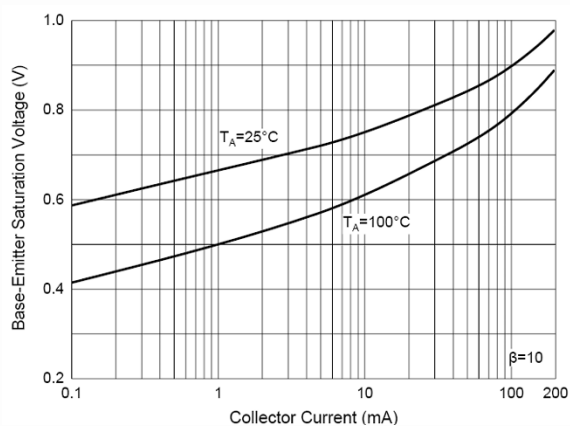


Figure 4. $V_{BE(SAT)}$ Characteristics

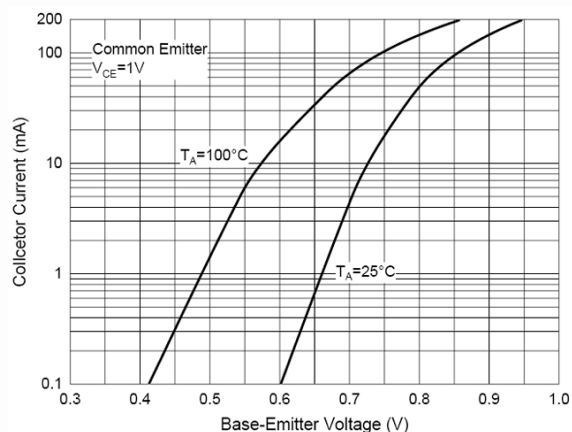


Figure 5. V_{BE} Characteristics

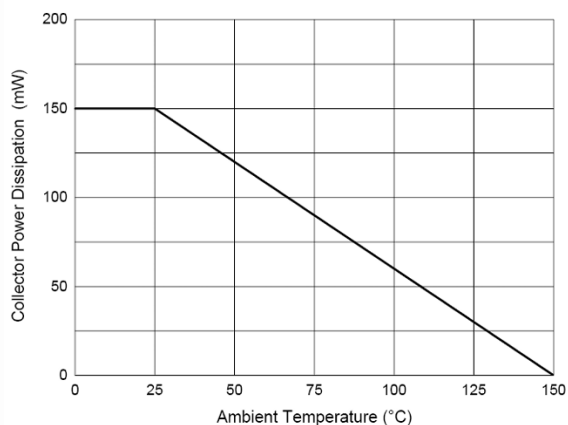
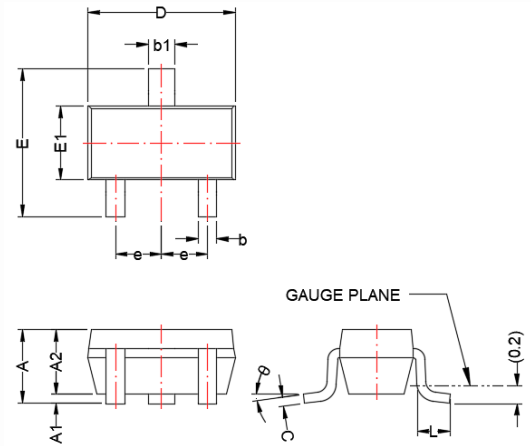


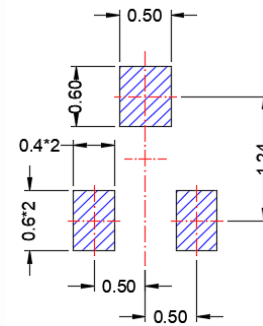
Figure 6. Power Derating Curve

SOT-523

Package Dimension



Recommended Land Pattern



Unit: mm

Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.60	0.95	0.024	0.037
A1	0.00	0.10	0.000	0.004
A2	0.60	0.85	0.024	0.033
b	0.15	0.30	0.006	0.012
b1	0.25	0.40	0.010	0.016
c	0.08	0.25	0.003	0.010
D	1.40	1.80	0.055	0.071
E	1.40	1.80	0.055	0.071
E1	0.70	0.90	0.028	0.035
e	0.50 BSC		0.020 BSC	
L	0.26	0.46	0.010	0.018
θ	0°	8°	0°	8°

NOTE:

Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

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