GSTMMBT2222AF

NPN General Purpose Transistor

Product Description

Collector-Emitter Voltage 40V
Collector Current 600mA

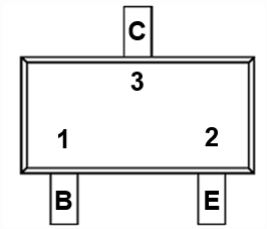
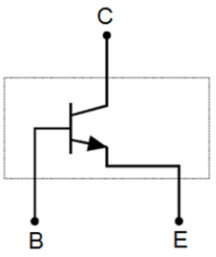
Features

- Ideal for Low-Power Amplification and Switching
- RoHS Compliant and Halogen Free

Mechanical Data

- Case : SOT-23 Package
- Epoxy meets UL 94 V-0 Flammability Rating

Package and Pin Assignment

SOT-23	Equivalent Circuit
	

Pin	Description
1	BASE
2	EMITTER
3	COLLECTOR

Ordering and Marking Information

Ordering Information			
Part Number	**Package**	**Marking Code**	**Quantity/Reel**
GSTMMBT2222AF	SOT-23	1P	3,000 PCS

GSTMMBT2222AF

- **Product Code:** GSTMMBT2222A
- **Green Level:** **F** for RoHS Compliant and Halogen Free

Marking Information

1P

- **Product Code:** 1P

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

Symbol	Parameter	Rating	Unit
V_{CBO}	Collector-Base Voltage	75	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6.0	V
I_C	Collector Current	600	mA
P_C	Collector Power Dissipation	300	mW
$R_{\Theta JA}$	Thermal Resistance From Junction To Ambient	417	℃/W
T_J	Junction Temperature	150	℃
T_{STG}	Storage Temperature	-55 to +150	℃

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

Symbol	Description	Conditions	Min	Max	Unit
V_{CEO}	Collector-Emitter Breakdown Voltage	I_C= 10mA, I_B= 0	40		V
V_{CBO}	Collector-Base Breakdown Voltage	I_C= 10μA, I_E= 0	75		V
V_{EBO}	Emitter-Base Breakdown Voltage	I_E= 10μA, I_C = 0	6		V
I_{CBO}	Collector Cutoff Current	V_{CB} = 60V, I_E = 0		10	nA
I_{CEX}	Collector Cutoff Current	V_{CE} = 40V, V_{BE}= 3V		10	nA
h_{FE}	DC Current Gain	I_C = 0.1mA, V_{CE}= 10V	35		
		I_C = 1.0mA, V_{CE} = 10V	50		
		I_C = 10mA, V_{CE} = 10V	75		
		I_C = 150mA, V_{CE} = 10V	100	300	
		I_C = 500mA, V_{CE} = 10V	40		
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	I_C = 150mA, I_B= 15mA		0.3	V
		I_C = 500mA, I_B = 50mA		1.0	V
$V_{BE(SAT)}$	Base-Emitter Saturation Voltage	I_C = 150mA, I_B = 15mA	0.6	1.2	V
		I_C = 500mA, I_B = 50mA		2.0	V
f_T	Current Gain-Bandwidth Product	I_C= 20mA, V_{CE}= 20V,f=100MHz	300		MHZ
Cobo	Output Capacitance	V_{CB} = 10V, I_E= 0, f=1MHz		8	pF
Cibo	Input Capacitance	V_{EB} = 0.5V, I_C= 0, f=1MHz		25	pF

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

Switching Characteristic					
Symbol	**Description**	**Conditions**	**Min**	**Max**	**Unit**
t_d	Delay Time	V_{CC} = 30V,I_C= 150mA, V_{BE} = 0.5V, I_{B1}= 15mA		10	ns
t_r	Rise Time			25	ns
t_s	Storage Time	V_{CC} = 30V,I_C= 150mA, I_{B1}= I_{B2}= 15mA		225	ns
t_f	Fall Time			60	ns

Typical Characteristics

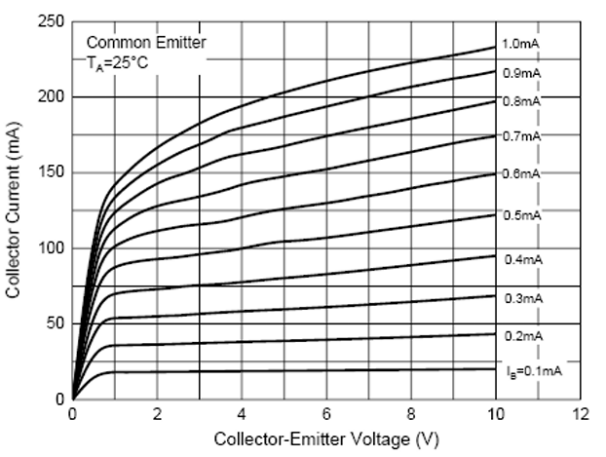


Figure 1. Static Characteristic

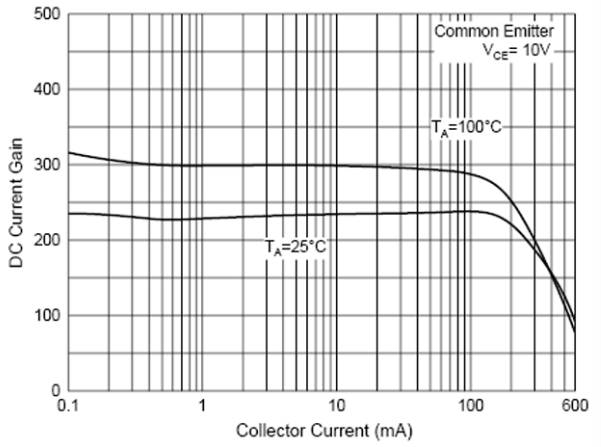


Figure 2. DC Current Gain Characteristics

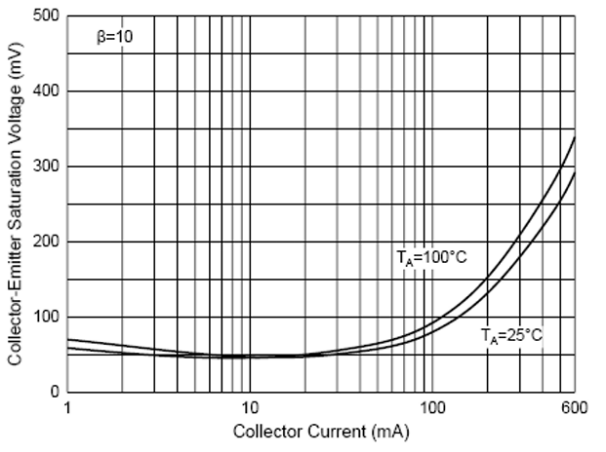


Figure 3. Collector-Emitter Saturation Voltage

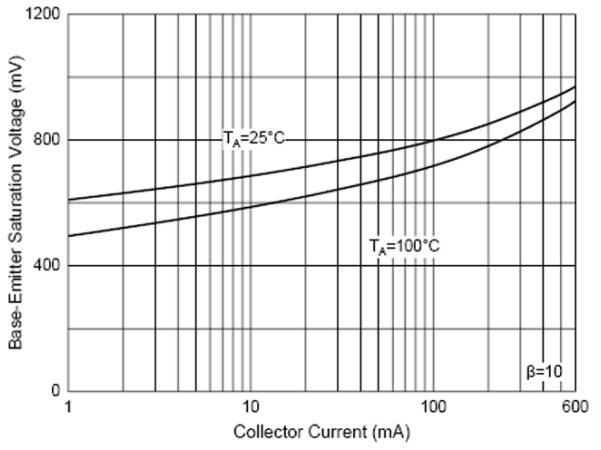


Figure 4. Base-Emitter Saturation Voltage

Typical Characteristics (Continue)

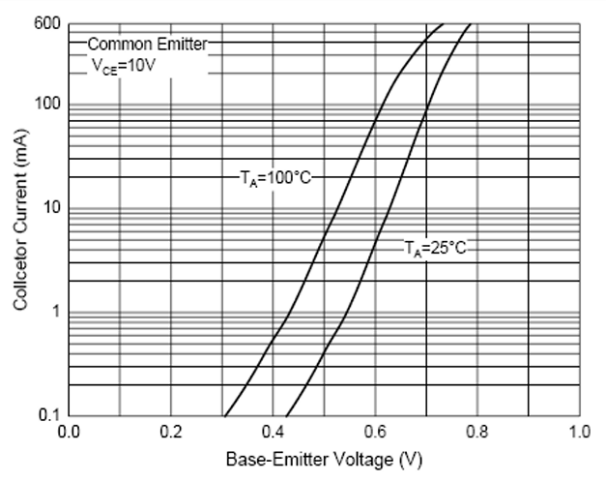
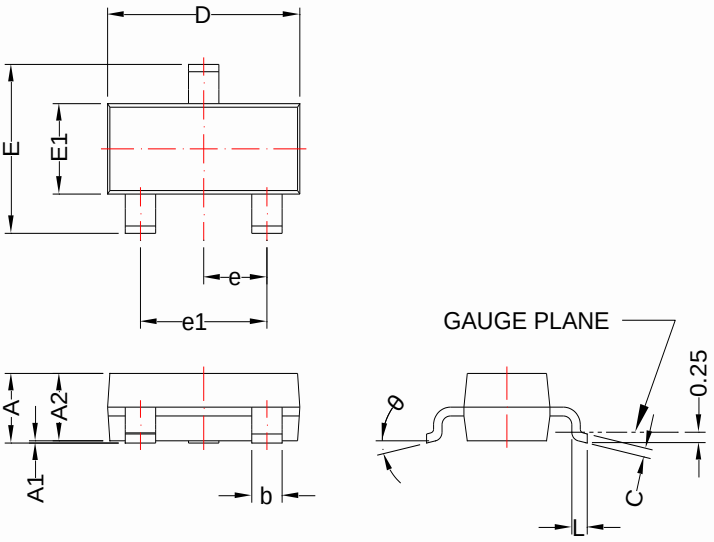


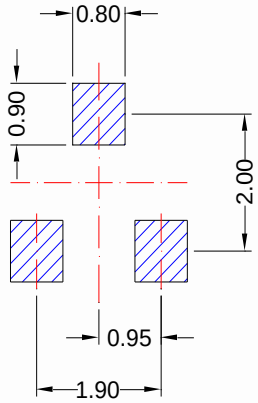
Figure 5. Base-Emitter Voltage Characteristics

SOT-23

Package Dimension



Recommended Land Pattern



(Unit: mm)

Dimensions

SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.75	1.17	0.030	0.046
A1	0.01	0.15	0.000	0.006
A2	0.70	1.02	0.028	0.040
b	0.30	0.50	0.012	0.020
c	0.08	0.20	0.003	0.008
D	2.80	3.04	0.110	0.120
E	2.10	2.64	0.083	0.104
E1	1.20	1.40	0.047	0.055
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0.075 BSC	
L	0.3	0.6	0.012	0.024
θ	0°	8°	0°	8°

NOTE:
Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusions.

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