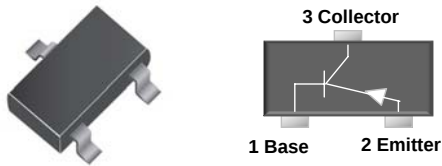


Small Signal Diode



Features

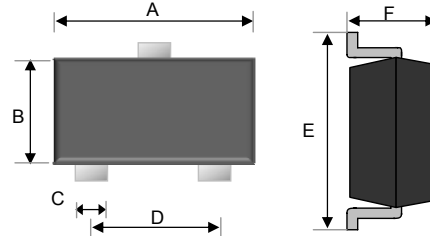
- ✧ Epitaxial planar die construction
- ✧ Surface device type mounting
- ✧ Moisture sensitivity level 1
- ✧ Matte Tin(Sn) lead finish with Nickel(Ni) underplate
- ✧ Pb free version and RoHS compliant
- ✧ Green compound (Halogen free) with suffix "G" on packing code and prefix "G" on date code

Mechanical Data

- ✧ Case : SOT- 23 small outline plastic package
- ✧ Terminal: Matte tin plated, lead free., solderable per MIL-STD-202, Method 208 guaranteed
- ✧ High temperature soldering guaranteed: 260°C/10s
- ✧ Weight : 0.008gram (approximately)

MMBTA42/MMBTA43 350mW, NPN Small Signal Transistor

SOT-23

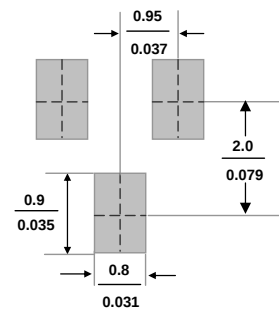


Dimensions	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	2.80	3.00	0.110	0.118
B	1.20	1.40	0.047	0.055
C	0.30	0.50	0.012	0.020
D	1.80	2.00	0.071	0.079
E	2.25	2.55	0.089	0.100
F	0.90	1.20	0.035	0.043

Ordering Information

Package	Part No.	Packing
SOT-23	MMBTA42	3K / 7" Reel
SOT-23	MMBTA43	3K / 7" Reel

Suggested PAD Layout



Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Maximum Ratings

Type Number	Symbol	Value	Units
Power Dissipation	P_D	350	mW
Collector-Base Voltage	V_{CBO}	300	V
Collector-Emitter Voltage	V_{CEO}	300	V
Emitter-Base Voltage	V_{EBO}	6	V
Thermal Resistance Junction Ambient	$R_{\theta JA}$	357	A
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to + 150	°C

Notes:1. Valid provided that electrodes are kept at ambient temperature

Small Signal Diode

Rating and Characteristic Curves

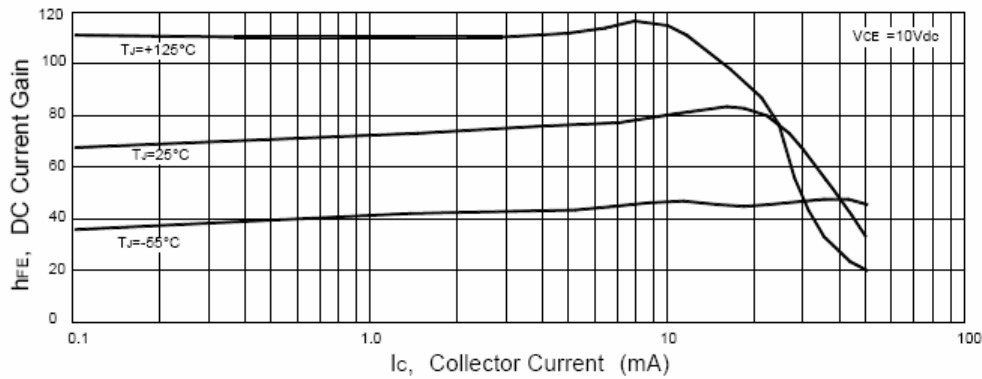


Figure 1. DC Current Gain

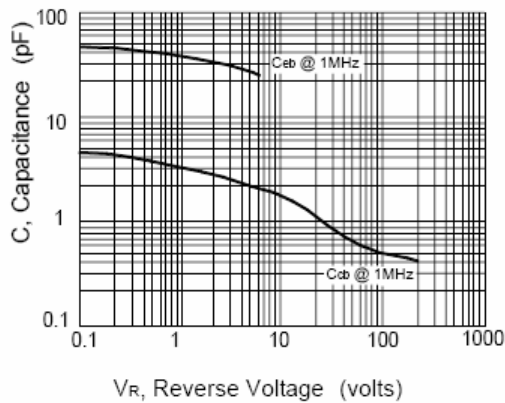


Figure 2. Capacitance

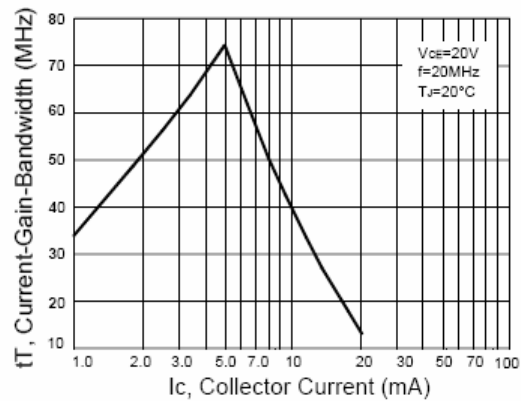


Figure 3. Current-Gain-Bandwidth

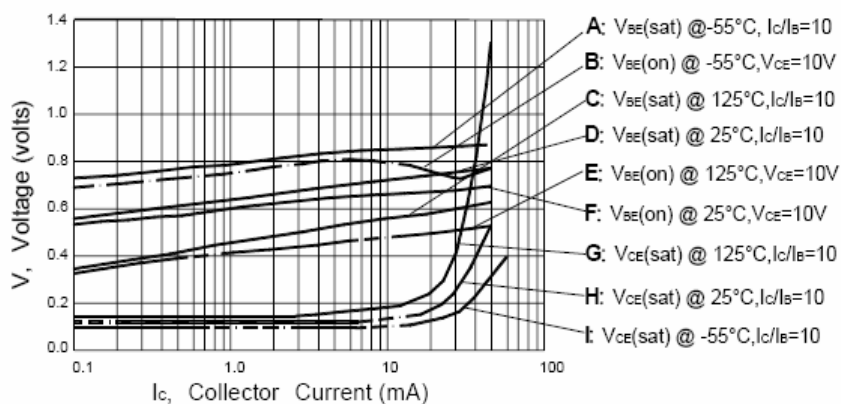


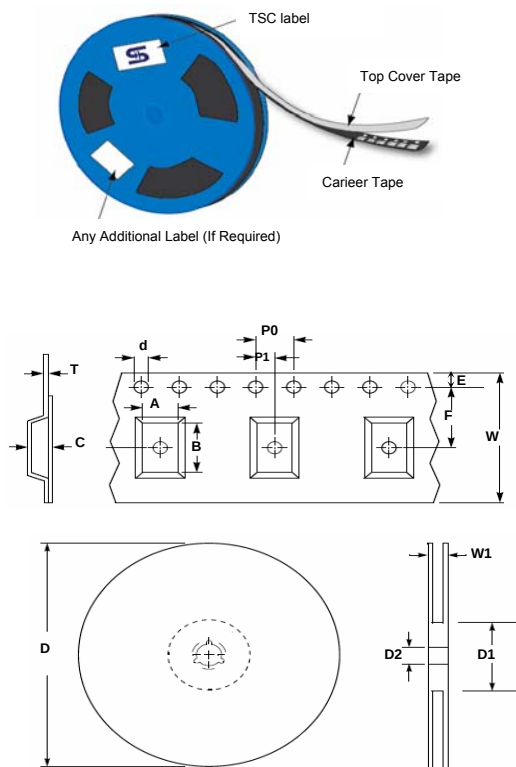
Figure 4. "on" Voltages

Small Signal Diode

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

Type Number	Symbol	Min	Max	Units
Collector-Base Breakdown Voltage MMBRA42 MMBRA43	$I_C = -100\mu\text{A}$ $V_{(BR)CBO}$	300 200	-	V
Collector-Emitter Breakdown Voltage MMBRA42 MMBRA43	$I_C = 1\text{mA}$ $V_{(BR)CEO}$	300 200	-	V
Emitter-Base Breakdown Voltage	$I_E = 100\mu\text{A}$ $V_{(BR)EBO}$	6	-	V
Collector Cut-off Current MMBRA42 MMBRA43	$V_{CB}=200\text{V}$ $V_{CB}=160\text{V}$ I_{CBO}	-	0.1	nA
Emitter Cut-off Current MMBRA42 MMBRA43	$V_{EB}=6\text{V}$ $V_{EB}=4\text{V}$ I_{EBO}	-	0.1	μA
DC current gain	$V_{CE}=10\text{V}$ $V_{CE}=10\text{V}$ $V_{CE}=10\text{V}$ $I_C=1\text{mA}$ $I_C=10\text{mA}$ $I_C=30\text{mA}$ h_{FE}	25 80 40	- 200 -	- - -
Collector-Emitter saturation voltage	$I_C = 20\text{mA}$ $I_B = 2\text{mA}$ $V_{CE(sat)}$	-	0.5	V
Base-Emitter saturation voltage	$I_C = 20\text{mA}$ $I_B = 2\text{mA}$ $V_{BE(sat)}$	-	0.9	V
Gain Bandwid Product $V_{CE}=20\text{V}$	$I_C=10\text{mA}$ $f=100\text{MHz}$ f_T	50	-	MHz
Collector Output Capacitance MMBRA42 MMBRA43	$V_{CB}=20\text{V}$ $f=1\text{MHz}$ V_{OB}	-	3 4	

Tape & Reel specification



Item	Symbol	Dimension(mm)
Carrier width	A	3.15 ±0.10
Carrier length	B	2.77 ±0.10
Carrier depth	C	1.22 ±0.10
Sprocket hole	d	1.50 ± 0.10
Reel outside diameter	D	178 ± 1
Reel inner diameter	D1	55 Min
Feed hole width	D2	13.0 ± 0.20
Sprocket hole position	E	1.75 ±0.10
Punch hole position	F	3.50 ±0.05
Sprocket hole pitch	P0	4.00 ±0.10
Embossment center	P1	2.00 ±0.05
Overall tape thickness	T	0.229 ±0.013
Tape width	W	8.10 ±0.20
Reel width	W1	12.30 ±0.20

