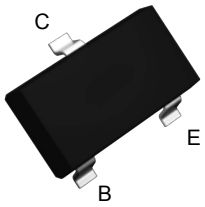
GOOD-ARK
SEMICONDUCTOR

MMBTA42
NPN Transistor

Features

- Power dissipation of 350mW
- High stability and high reliability



SOT-23

Mechanical Data

- SOT-23 small outline plastic package
- Epoxy UL: 94V-0
- Mounting position: Any

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

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	300	V
Collector - Emitter Voltage	V_{CEO}	300	V
Emitter - Base Voltage	V_{EBO}	5	V
Collector Current - Continuous	I_C	300	mA
Collector Power Dissipation	P_C	350	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	°C/W
Juction Temperature	T_J	-55 to +150	°C
Storage Temperature	T_{STG}	-55 to +150	°C

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

Parameter	Symbol	Conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CEO}$	I_C=100μA, I_E=0	300	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CBO}$	I_C=1mA, I_B=0	300	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0	5	-	V
Collector Cut-off Current	I_{CBO}	V_{CB}=200V, I_E=0	-	250	nA
Emitter Cut-off Current	I_{EBO}	V_{EB}=5V, I_C=0	-	100	nA
DC Current Gain[1]	$h_{FE(1)}$	V_{CE}=10V, I_C=1mA	60	-	-
	$h_{FE(2)}$	V_{CE}=10V, I_C=10mA	100	200	-
	$h_{FE(3)}$	V_{CE}=10V, I_C=30mA	65	-	-
Collector-Emitter Saturation Voltage[1]	$V_{CE(sat)}$	I_C=20mA, I_B=2mA	-	0.20	V
Base-Emitter Voltage[1]	$V_{BE(sat)}$	I_C=20mA, I_B=2mA	-	0.90	V
Tansition Frequency	f_T	V_{CE}=20V, I_C=100mA F=30MHz	50	-	MHz

Note: 1) Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%.

Typical Electrical and Thermal Characteristic Curves

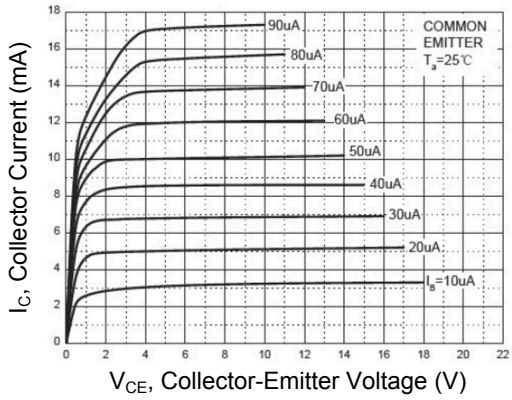


Figure 1. Collector Current vs. Collector - Emitter Voltage

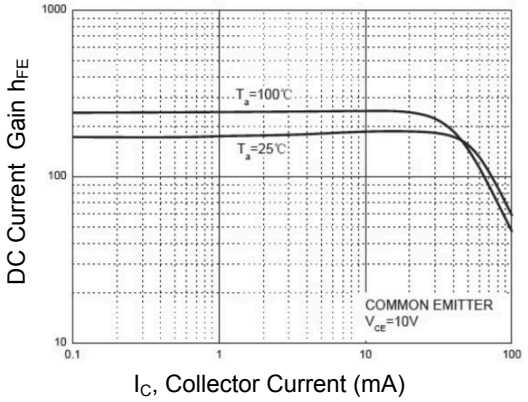


Figure 2. DC Current Gain vs Collector Current

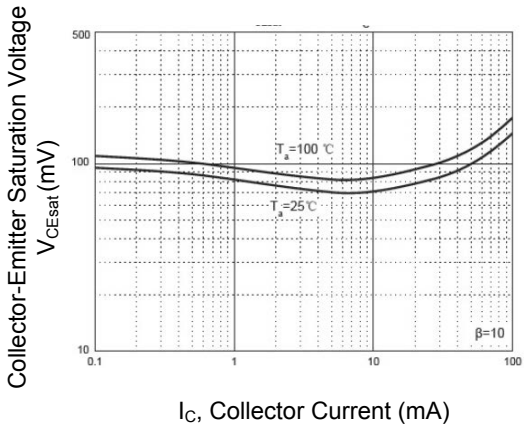


Figure 3. Collector-Emitter Saturation Voltage vs. Collector Current

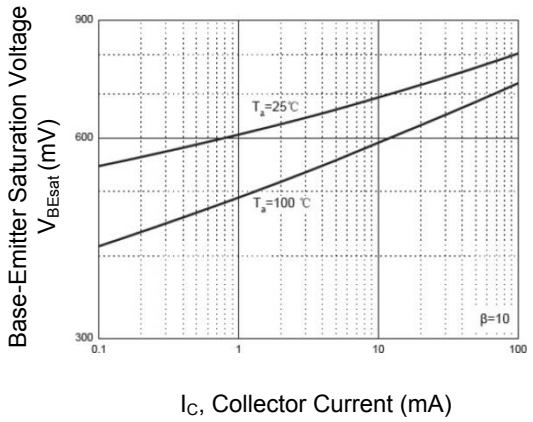


Figure 4. Base-Emitter Saturation Voltage vs. Collector Current

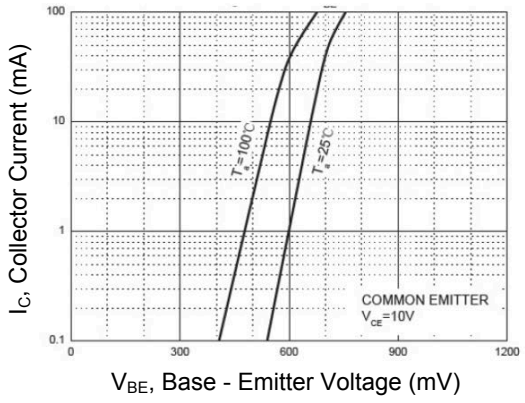


Figure 5. Collector Current vs. Base - Emitter Voltage

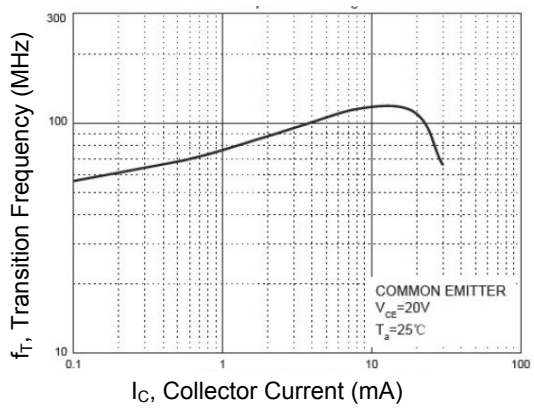


Figure 6. f_T vs. Collector Current

Typical Electrical and Thermal Characteristic Curves

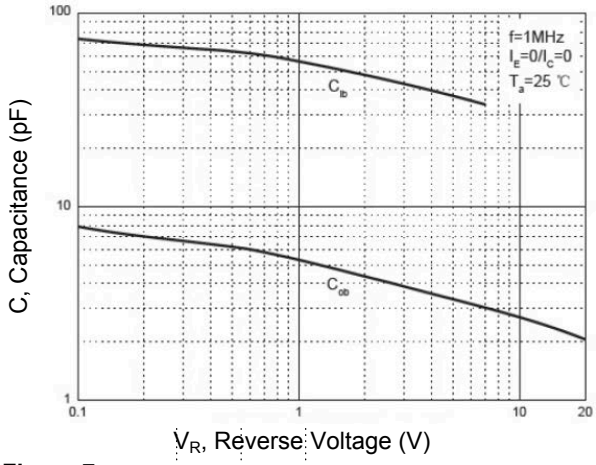


Figure 7. Capacitance Characteristics

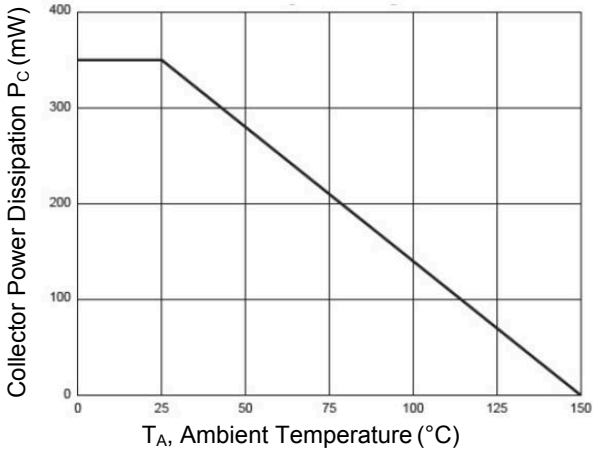
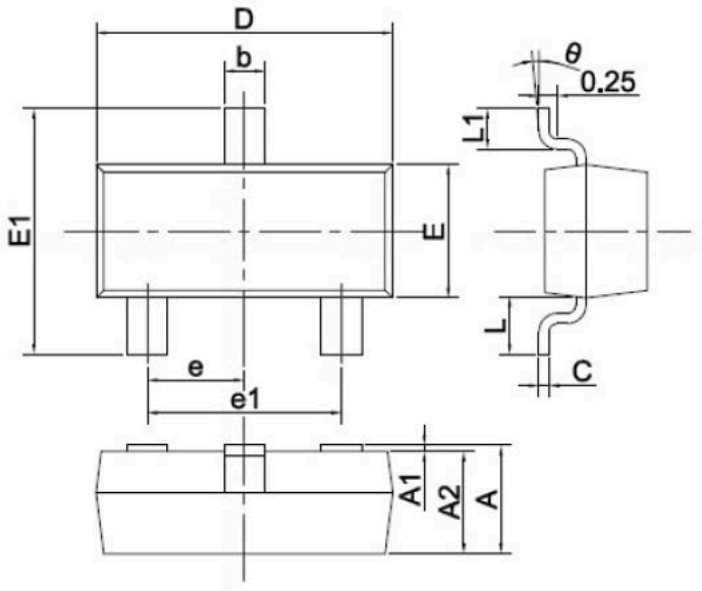


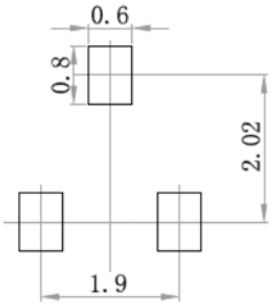
Figure 8. Power Dissipation vs Ambient Temperature

Package Outline Dimensions (SOT-23)



Symbol	Dimensions in Millimeters	
	Min	Max
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950 TYP.	
e1	1.800	2.000
L	0.550 REF.	
L1	0.300	0.500
θ	0°	8°

Recommended Pad Layout



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