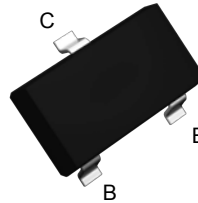
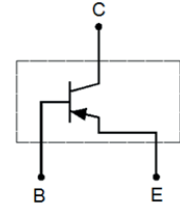


Features

- Epoxy meets UL 94 V-0 flammability rating
- Surface mount SOT-23 package
- RoHS compliant/green EMC



SOT-23



Schematic Diagram

Applications

- Switching application
- General purpose amplifier

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-600	mA
Collector Power Dissipation ¹	P_C	300	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	417	$^{\circ}\text{C}/\text{W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^{\circ}\text{C}$

Note:

1. Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

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

Parameter	Symbol	Test Conditions	Min	Max	Units
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-1.0\text{mA}, I_B=0$	-40	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-100\mu\text{A}, I_E=0$	-40	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-100\mu\text{A}, I_C=0$	-5.0	-	V
Collector-Base Cutoff Current	I_{CBO}	$V_{CB}=-35\text{V}, I_E=0\text{V}$	-	-100	nA
Collector Cutoff Current	I_{CEX}	$V_{CE}=-35\text{V}, V_{BE}=0.4\text{V}$	-	-100	nA
Emitter-Base Cutoff Current	I_{EBO}	$V_{EB}=-4\text{V}, I_C=0\text{V}$	-	-100	nA
DC Current Gain	h_{FE}	$I_C=-0.1\text{mA}, V_{CE}=-1.0\text{V}$	30	-	-
		$I_C=-1\text{mA}, V_{CE}=-1.0\text{V}$	60	-	
		$I_C=-10\text{mA}, V_{CE}=-1.0\text{V}$	100	-	
		$I_C=-150\text{mA}, V_{CE}=-2.0\text{V}$	100	300	
		$I_C=-500\text{mA}, V_{CE}=-2.0\text{V}$	20	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-150\text{mA}, I_B=-15\text{mA}$	-	-0.4	V
		$I_C=-500\text{mA}, I_B=-50\text{mA}$	-	-0.75	
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-150\text{mA}, I_B=-15\text{mA}$	-	-0.95	V
		$I_C=-500\text{mA}, I_B=-50\text{mA}$	-	-1.3	
Transition Frequency	f_T	$I_C=-20\text{mA}, V_{CE}=-10\text{V}, f=100\text{MHz}$	200	-	MHz
Collector-Base Capacitance	C_{cb}	$V_{CB}=-10\text{V}, I_E=0, f=1.0\text{MHz}$	-	8.5	pF
Emitter-Base Capacitance	C_{eb}	$V_{EB}=-0.5\text{V}, I_C=0, f=1.0\text{MHz}$	-	30	pF

Switching Characteristics

Parameter	Symbol	Test Conditions	Min	Max	Units
Delay Time	t_d	$V_{CC}=-3.0\text{V}, V_{BE}=-0.5\text{V}, I_C=-150\text{mA}, I_{B1}=-15\text{mA}$	-	15	nS
Rise Time	t_r		-	20	nS
Storage Time	t_s	$V_{CC}=-3.0\text{V}, I_C=-150\text{mA}, I_{B1}=I_{B2}=-15\text{mA}$	-	225	nS
Fall Time	t_f		-	30	nS

Ratings and Characteristic Curves

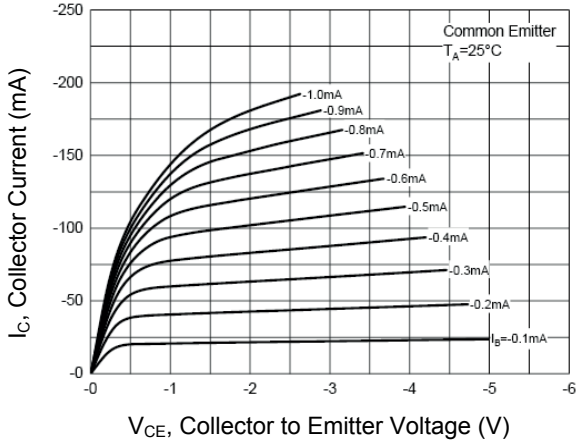


Figure 1. Static Characteristics

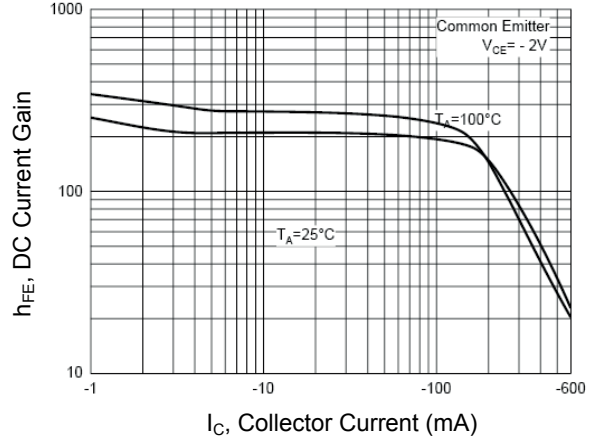


Figure 2. DC Current Gain Characteristics

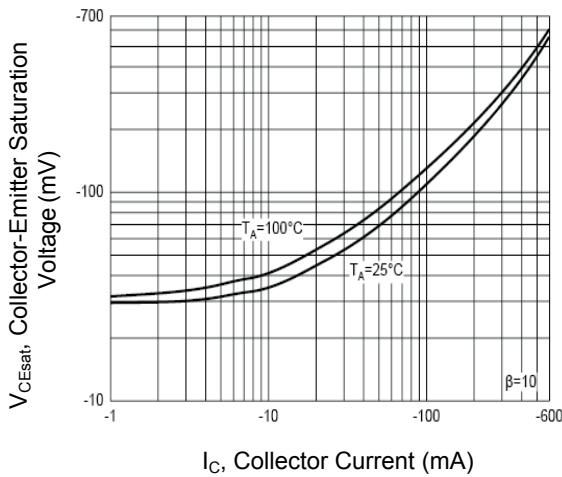


Figure 3. Collector-Emitter Saturation Voltage Characteristics

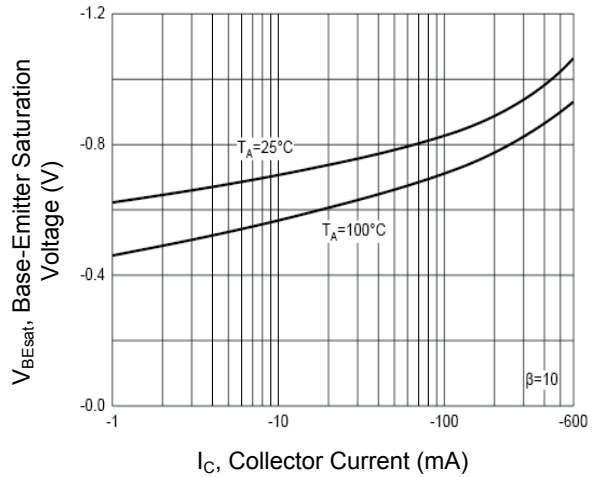


Figure 4. Base-Emitter Saturation Voltage Characteristics

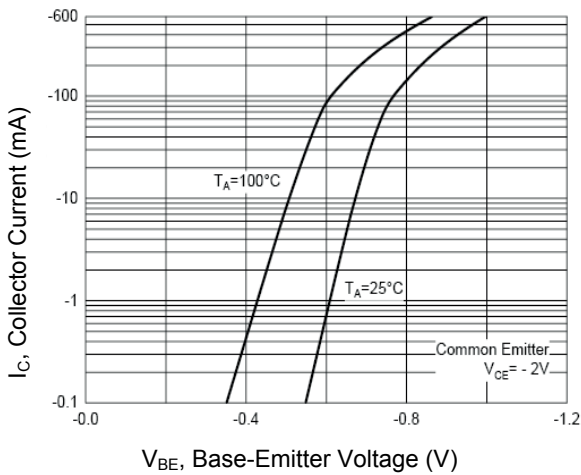


Figure 5. Base-Emitter Voltage Characteristics

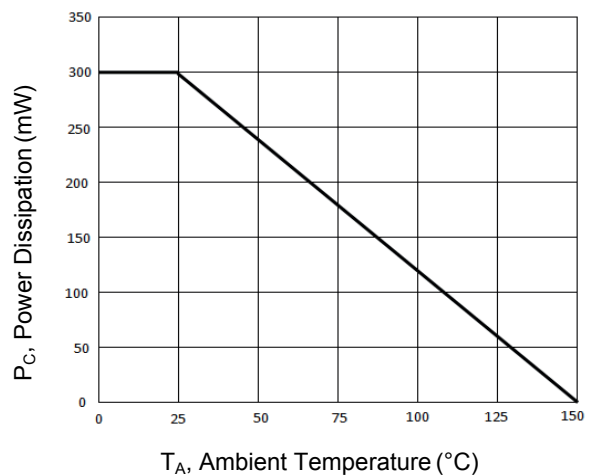
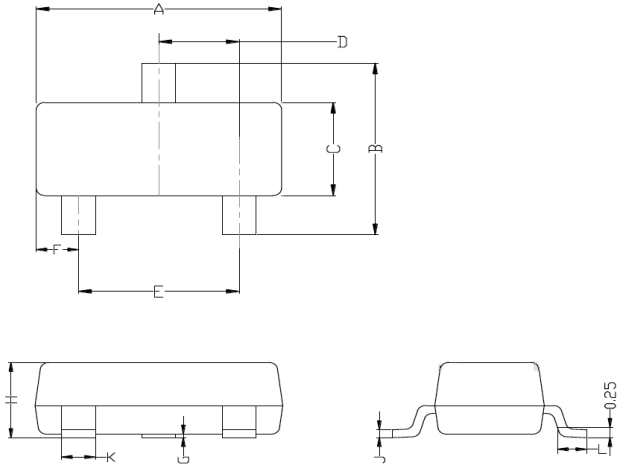


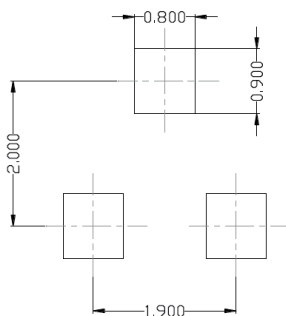
Figure 6. Collector Power Derating Curve

Package Outline Dimensions (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.800	3.040	0.110	0.120
B	2.100	2.640	0.083	0.104
C	1.200	1.400	0.047	0.055
D	0.890	1.030	0.035	0.041
E	1.780	2.050	0.070	0.081
F	0.450	0.600	0.018	0.024
G	0.013	0.100	0.001	0.004
H	0.900	1.110	0.035	0.044
J	0.085	0.180	0.003	0.007
K	0.370	0.510	0.015	0.020
L	0.300	0.500	0.012	0.020

Recommended Pad Layout



Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

Order Information

Device	Package	Marking	Carrier	Quantity
MMBT4403	SOT-23	2T	Tape & Reel	3,000pcs / Reel

For more information, please contact us at: inquiry@goodarksemi.com