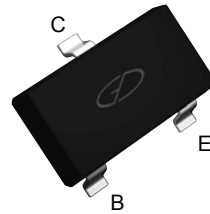
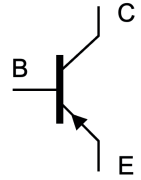


# MMBT591

## PNP Silicon Epitaxial Planar Transistor



SOT-23



Schematic Diagram

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

Parameter	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$	-80	V
Collector Emitter Voltage	$V_{CEO}$	-60	V
Emitter Base Voltage	$V_{EBO}$	-5	V
Collector Current	$I_C$	-1	A
Peak Collector Current	$I_{CM}$	-2	A
Power Dissipation	$P_{tot}$	0.5	W
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^\circ\text{C}$
Thermal Resistance from Junction to Ambient <sup>1</sup>	$R_{\theta JA}$	250	$^\circ\text{C/W}$

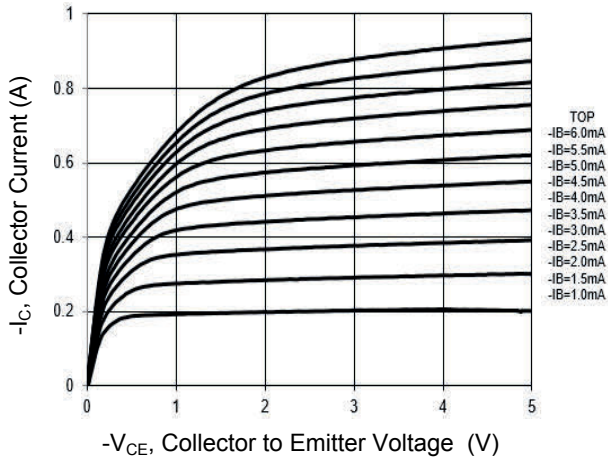
Notes:

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

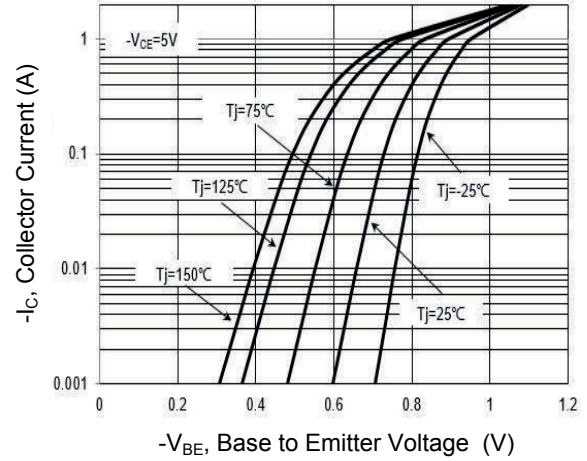
### Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Max.	Unit
DC Current Gain	$h_{FE}$	$V_{CE}=-5\text{V}, I_C=-1\text{mA}$	100	-	-
		$V_{CE}=-5\text{V}, I_C=-500\text{mA}$	100	300	
		$V_{CE}=-5\text{V}, I_C=-1\text{A}$	80	-	
		$V_{CE}=-5\text{V}, I_C=-2\text{A}$	15	-	
Collector Base Cutoff Current	$I_{CBO}$	$V_{CB}=-60\text{V}$	-	-100	nA
Collector Emitter Cutoff Current	$I_{CES}$	$V_{CE}=-60\text{V}$	-	-100	nA
Emitter Base Cutoff Current	$I_{EBO}$	$V_{EB}=-4\text{V}$	-	-100	nA
Collector Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-100\mu\text{A}$	-80	-	V
Collector Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-10\text{mA}$	-60	-	V
Emitter Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-100\mu\text{A}$	-5	-	V
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-500\text{mA}, I_B=-50\text{mA}$	-	-0.3	V
		$I_C=-1\text{A}, I_B=-100\text{mA}$	-	-0.6	
Base Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-1\text{A}, I_B=-100\text{mA}$	-	-1.2	V
Base Emitter On Voltage	$V_{BE(on)}$	$V_{CE}=-5\text{V}, I_C=-1\text{A}$	-	-1	V
Transition Frequency	$f_T$	$V_{CE}=-10\text{V}, I_C=-50\text{mA}, F=100\text{MHz}$	80	-	MHz
Collector Output Capacitance	$C_{ob}$	$V_{CB}=-10\text{V}, F=1\text{MHz}$	-	50	pF

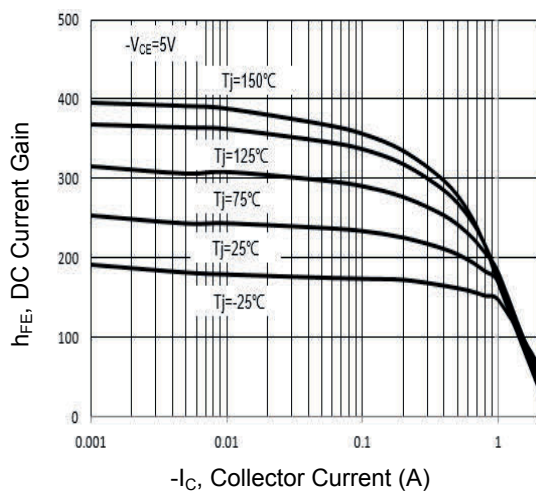
**Typical Electrical Characteristic Curves**



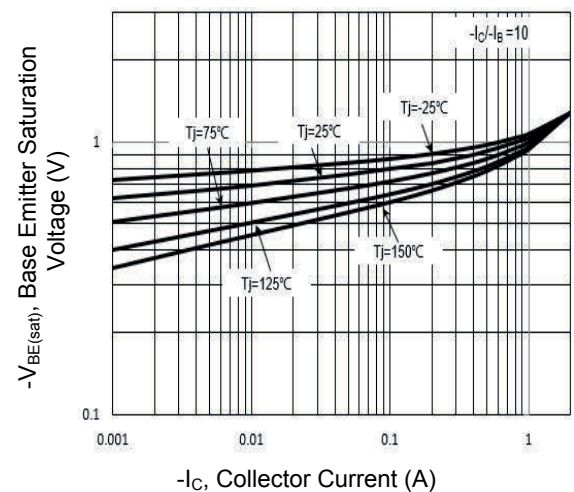
**Figure 1. Output Characteristics Curve**



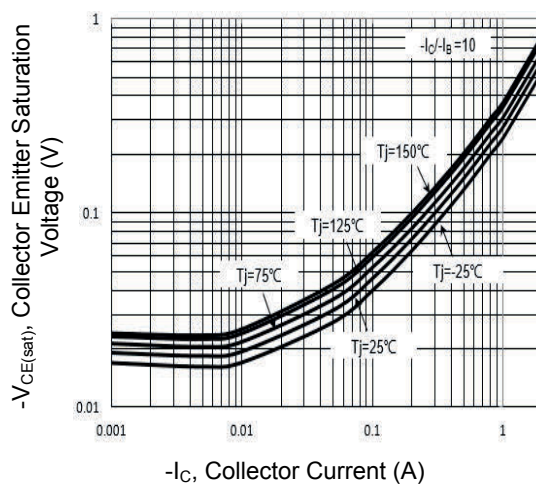
**Figure 2. Collector Current vs.  $V_{BE}$**



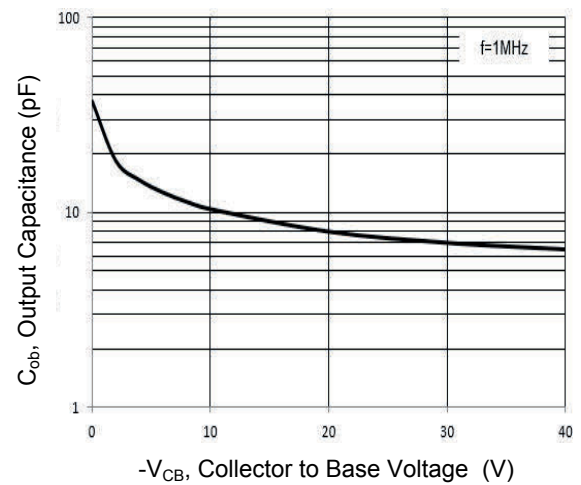
**Figure 3.  $h_{FE}$  vs. Collector Current**



**Figure 4.  $V_{BE(sat)}$  vs. Collector Current**

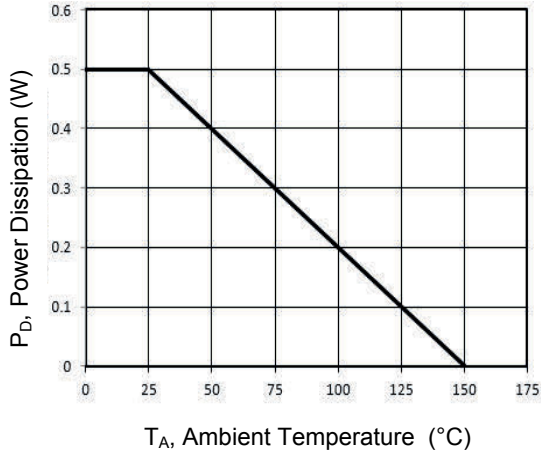


**Figure 5.  $V_{CE(sat)}$  vs. Collector Current**



**Figure 6. Output Capacitance**

**Typical Electrical Characteristic Curves**

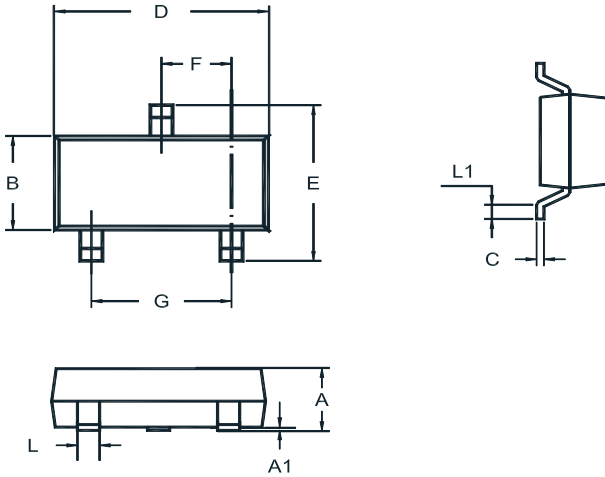


**Figure 7. Power Derating Curve**

# MMBT591

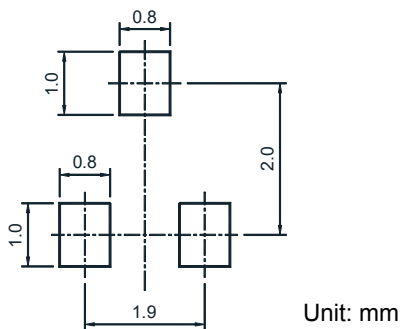
## PNP Silicon Epitaxial Planar Transistor

### Package Outline Dimensions (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.890	1.200	0.035	0.047
A1	0.013	0.100	0.001	0.004
B	1.200	1.400	0.047	0.055
C	0.080	0.190	0.003	0.007
D	2.800	3.040	0.110	0.120
E	2.200	2.600	0.087	0.102
F	0.890	1.020	0.035	0.040
G	1.780	2.040	0.070	0.080
L	0.370	0.510	0.015	0.020
L1	0.200	-	0.008	-

### Recommended Pad Layout



### Order Information

Device	Package	Marking Code	Carrier	Quantity
MMBT591	SOT-23	K82	Tape & Reel	3,000pcs / Reel