



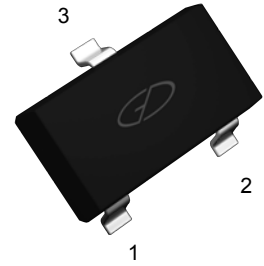
# THE DATASHEET OF MMBT589



## Features

- High current surface mount PNP silicon switching transistor for load management in portable applications

1. BASE
2. EMITTER
3. COLLECTOR



Package: SOT-23

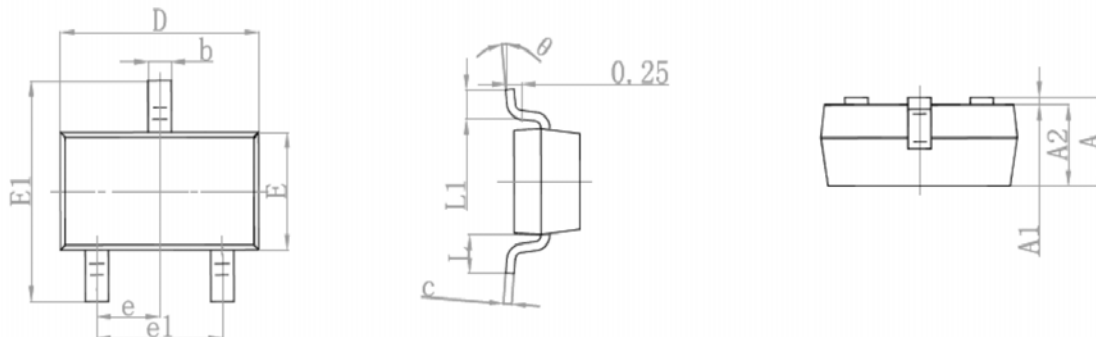
## Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	-50	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-30	V
Emitter-Base Voltage	V <sub>EBO</sub>	-5	V
Collector Current -Continuous	I <sub>C</sub>	-1	A
Collector Power Dissipation	P <sub>C</sub>	310	mW
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	403	°C/W
Junction Temperature	T <sub>J</sub>	-55 to +150	°C
Storage Temperature	T <sub>STG</sub>	-55 to +150	°C

## Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise specified)

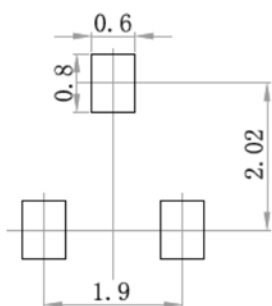
Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =-100μA, I <sub>E</sub> =0	-50	-	V
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =-10mA, I <sub>B</sub> =0	-30	-	V
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =-100μA, I <sub>C</sub> =0	-5	-	V
Collector Cut-Off Current	I <sub>CBO</sub>	V <sub>CB</sub> =-30V, I <sub>E</sub> =0	-	-0.1	μA
Collector-Emitter Cut-Off Current	I <sub>CES</sub>	V <sub>CE</sub> =-30V	-	-0.1	μA
Emitter Cut-Off Current	I <sub>EBO</sub>	V <sub>EB</sub> =-4V, I <sub>C</sub> =0	-	-0.1	μA
DC Current Gain	h <sub>FE1</sub>	V <sub>CE</sub> =-2V, I <sub>C</sub> =-1mA	100	-	-
	h <sub>FE2</sub>	V <sub>CE</sub> =-2V, I <sub>C</sub> =-500mA	100	300	-
	h <sub>FE3</sub>	V <sub>CE</sub> =-2V, I <sub>C</sub> =-1A	80	-	-
	h <sub>FE4</sub>	V <sub>CE</sub> =-2V, I <sub>C</sub> =-2A	40	-	-
Collector-Emitter Saturation Voltage	V <sub>CE(sat)1</sub>	I <sub>C</sub> = -500mA, I <sub>B</sub> =-50mA	-	-0.25	V
	V <sub>CE(sat)2</sub>	I <sub>C</sub> = -1A, I <sub>B</sub> =-100mA	-	-0.3	V
	V <sub>CE(sat)3</sub>	I <sub>C</sub> = -2A, I <sub>B</sub> =-200mA	-	-0.65	V
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> = -1A, I <sub>B</sub> =-100mA	-	-1.2	V
Base-Emitter Turn-On Voltage	V <sub>BE(on)</sub>	V <sub>CE</sub> =-2V, I <sub>C</sub> =-1A	-	-1.1	V
Transition Frequency	f <sub>T</sub>	V <sub>CE</sub> =-5V, I <sub>C</sub> =-100mA , f =100MHz	100	-	MHz
Collector Output Capacitance	C <sub>ob</sub>	f=1MHz	-	15	pF

**Package Outline Dimensions SOT-23**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

**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.

**Ordering Information**

Device	Package	Marking	Quantity	HSF Status
MMBT589	SOT-23	589	3,000pcs / Reel	RoHS Compliant

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