

<b>PNP General Purpose Transistor</b>		
<b>FEATURES</b> <ul style="list-style-type: none"> <li>• High current surface mount PNP silicon switching transistor for load management in portable applications</li> </ul> <b>MECHANICAL DATA</b> <ul style="list-style-type: none"> <li>• Case: SOT-23 Plastic</li> <li>• Case material: "Green" molding compound, UL flammability classification 94V-0, (No Br. Sb. Cl)</li> <li>• Lead Free in RoHS 2002/95/EC Compliant</li> </ul>		

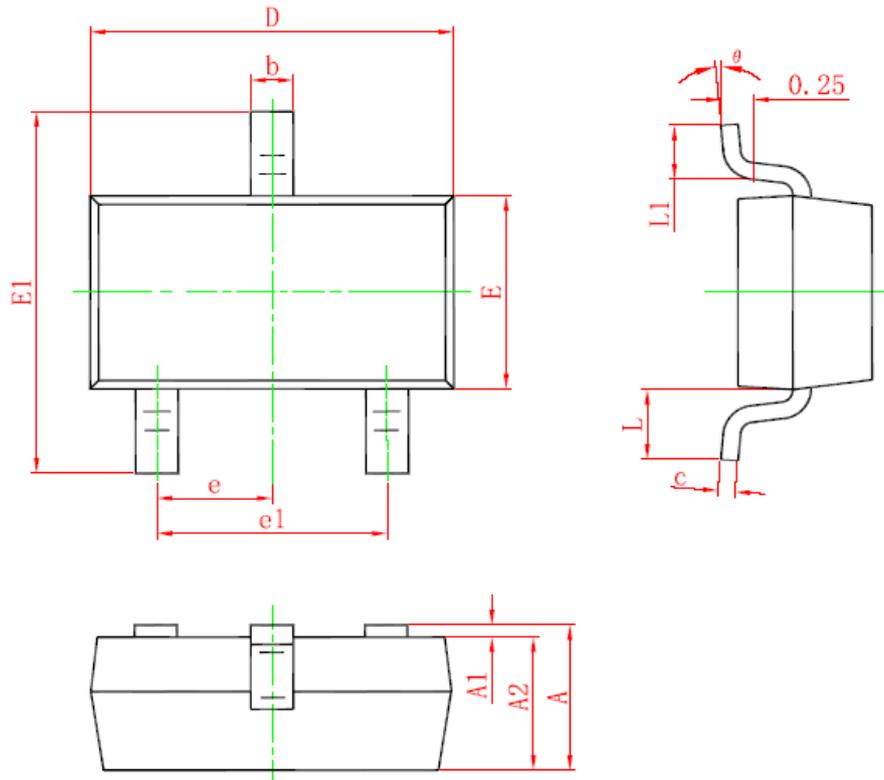
**Maximum Ratings @ T<sub>A</sub> = 25°C**

Characteristic	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>	150	°C
Storage Temperature Range	T <sub>STG</sub>	-55~+150	°C

**Electrical Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified**

Characteristic	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	I <sub>C</sub> =-100μA, I <sub>E</sub> =0	V <sub>CB0</sub>	-50			V
Collector-emitter breakdown voltage	I <sub>C</sub> =-10mA, I <sub>B</sub> =0	V <sub>CEO</sub>	-30			V
Emitter-base breakdown voltage	I <sub>E</sub> =-100μA, I <sub>C</sub> =0	V <sub>EBO</sub>	-5			V
Collector-base cut-off current	V <sub>CB</sub> =-30V, I <sub>E</sub> =0	I <sub>CB0</sub>			-0.1	uA
Collector-emitter cut-off current	V <sub>CE</sub> =-30V	I <sub>CES</sub>			-0.1	uA
Emitter-base cut-off current	V <sub>EB</sub> =-4V, I <sub>C</sub> =0	I <sub>EBO</sub>			-0.1	uA
DC current gain	V <sub>CE</sub> =-2V, I <sub>C</sub> =-1mA	h <sub>FE1</sub>	100			
	V <sub>CE</sub> =-2V, I <sub>C</sub> =-500mA	h <sub>FE2</sub>	100		300	
	V <sub>CE</sub> =-2V, I <sub>C</sub> =-1A	h <sub>FE3</sub>	80			
	V <sub>CE</sub> =-2V, I <sub>C</sub> =-2A	h <sub>FE4</sub>	40			
Collector-emitter saturation voltage	I <sub>C</sub> =-500mA, I <sub>B</sub> =-50mA	V <sub>CE(sat)1</sub>			-0.25	V
	I <sub>C</sub> =-1A, I <sub>B</sub> =-100mA	V <sub>CE(sat)2</sub>			-0.3	
	I <sub>C</sub> =-2A, I <sub>B</sub> =-200mA	V <sub>CE(sat)3</sub>			-0.65	
Base-emitter saturation voltage	I <sub>C</sub> =-1A, I <sub>B</sub> =-100mA	V <sub>BE(sat)</sub>			-1.2	V
Base-emitter saturation voltage	I <sub>C</sub> =-1A, V <sub>CE</sub> =-2V	V <sub>BE(ON)</sub>			-1.1	V
Transition frequency	V <sub>CE</sub> =-5V, I <sub>C</sub> =-100mA, f=100MHz	f <sub>T</sub>	100			MHz
Collector output capacitance	f=1MHz	C <sub>ob</sub>			4.5	pF

## SOT-23 Outline Dimension



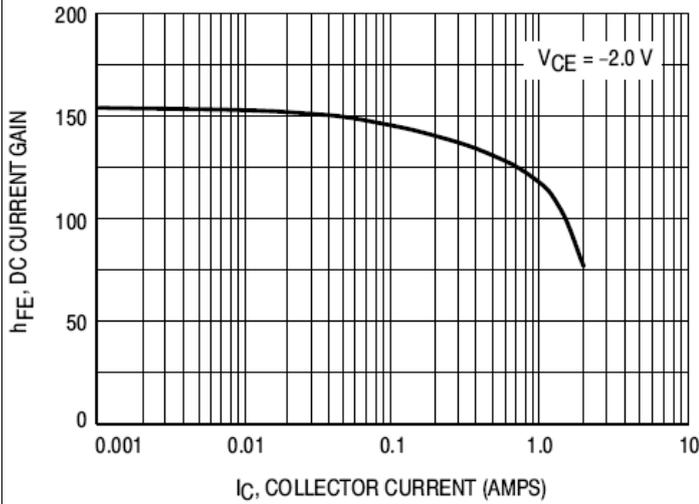
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 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°	6°

### Device Marking :

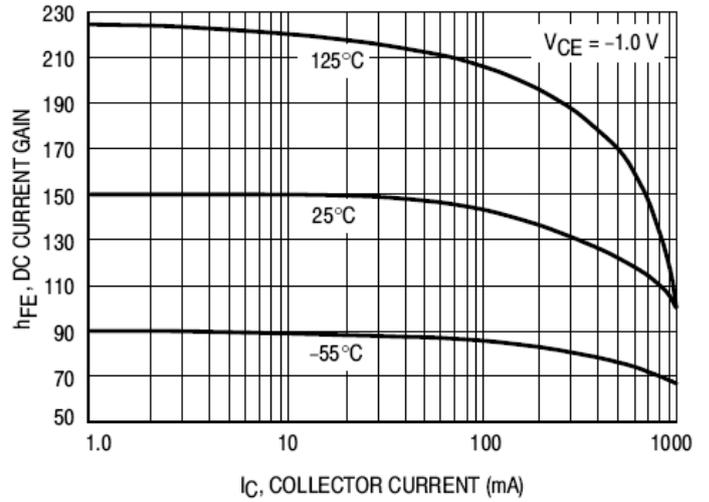
Device P/N	Marking code
MMBT589	589

# Electrical characteristic curves

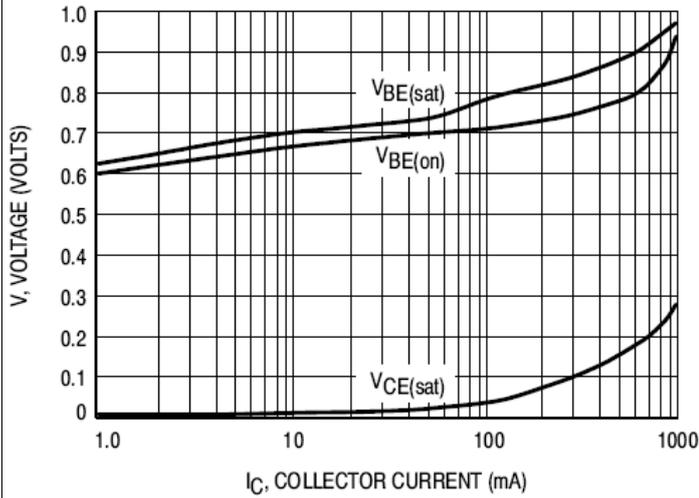
**Fig.1 DC Current Gain vs. Collector Current ( I )**



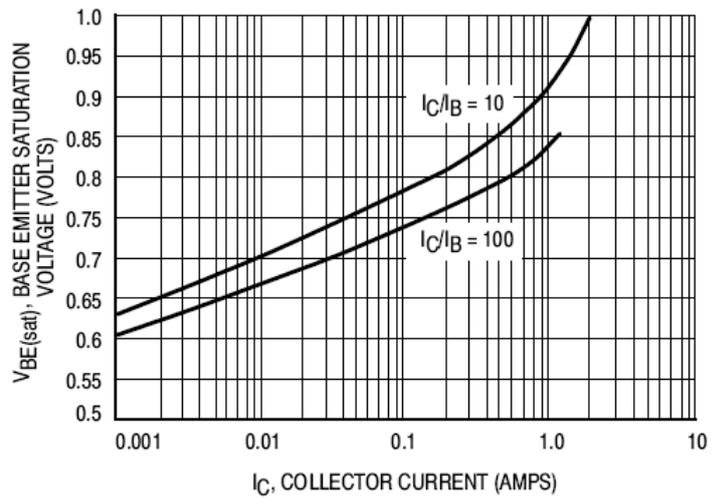
**Fig.2 DC Current Gain vs. Collector Current ( II )**



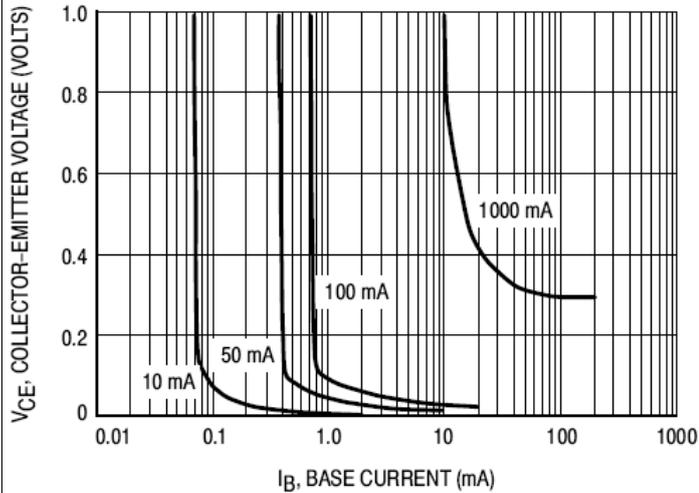
**Fig.3 "On" Voltages**



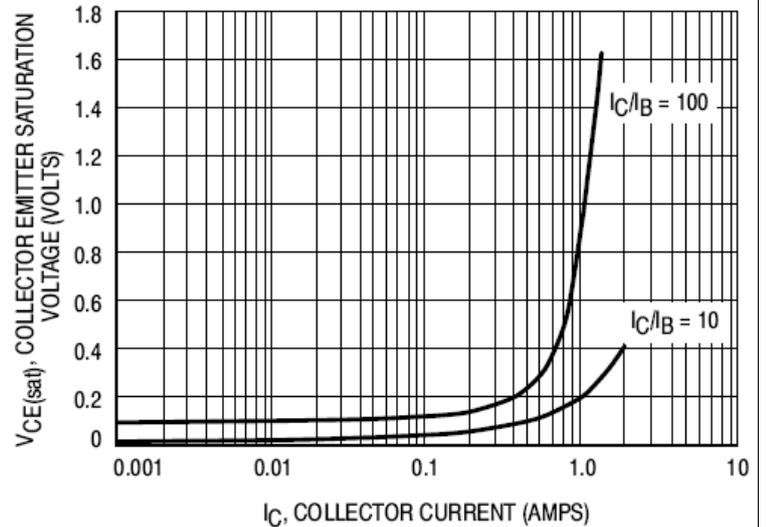
**Fig.4 Base Emitter Saturation Voltage Vs. Collector Current**



**Fig.5 Collector Emitter Saturation Voltage Vs. Base Current**



**Fig.6 Collector Emitter Saturation Voltage Vs. Collector Current**



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