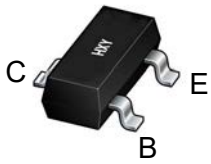
MMBT589LT1G

PNP Plastic-Encapsulate Transistors

Features

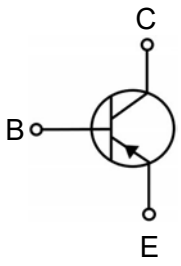
- High current surface mount PNP silicon switching transistor for Load management in portable applications



SOT-23

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MMBT589LT1G	SOT-23	589	3000



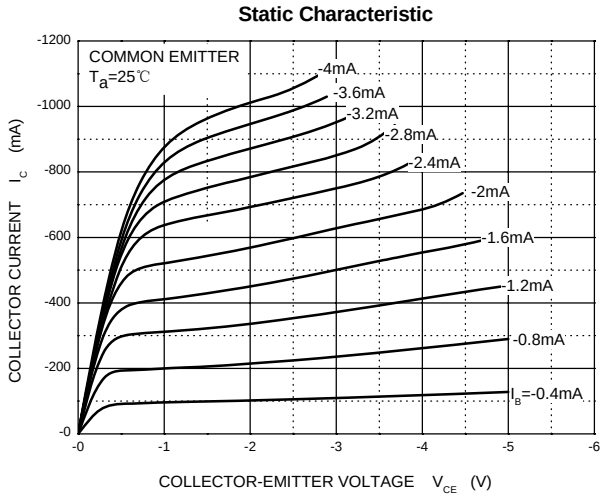
Maximum Ratings (Ta=25°C unless otherwise noted)

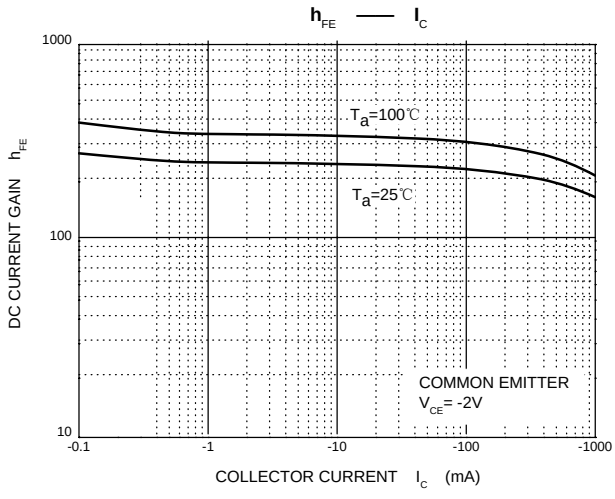
Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-30	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-1	A
Collector Power Dissipation	P_C	310	mW
Thermal Resistance From Junction To Ambient	$R_{\Theta JA}$	403	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	-55～+150	°C

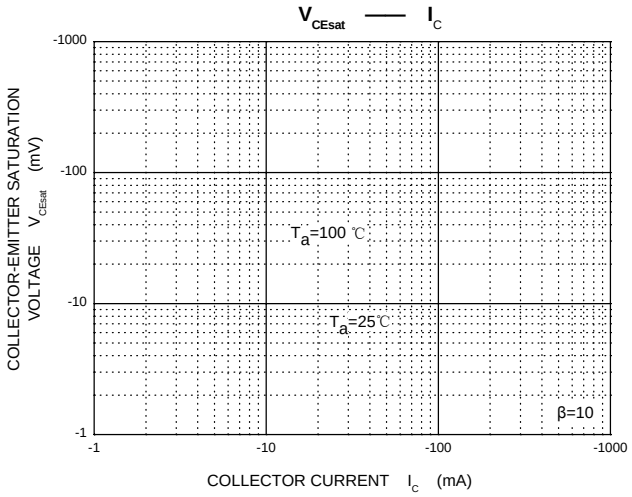
Electrical Characteristics (Ta=25°C unless otherwise specified)

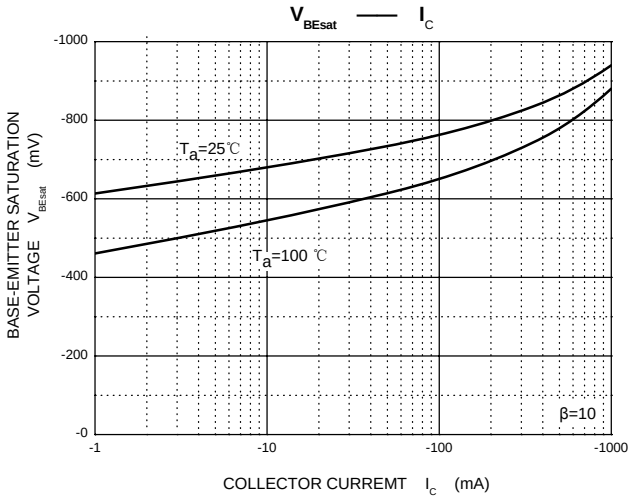
Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=-100μA,I_E=0	-50		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=-10mA,I_B=0	-30		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=-100μA,I_C=0	-5		V
Collector cut-off current	I_{CBO}	V_{CB}=-30V,I_E=0		-0.1	μA
Collector-emitter cut-off current	I_{CES}	V_{CES}=-30V		-0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB}=-4V,I_C=0		-0.1	μA
DC current gain	h_{FE1}	V_{CE}=-2V,I_C=-1mA	100		
	h_{FE2}	V_{CE}=-2V,I_C=-500mA	100	300	
	h_{FE3}	V_{CE}=-2V,I_C=-1A	80		
	h_{FE4}	V_{CE}=-2V,I_C=-2A	40		
Collector-emitter saturation voltage	$V_{CE(sat)1}$	I_C= -500mA, I_B=-50mA		-0.25	V
	$V_{CE(sat)2}$	I_C= -1A, I_B=-100mA		-0.3	V
	$V_{CE(sat)3}$	I_C= -2A, I_B=-200mA		-0.65	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C= -1A, I_B=-100mA		-1.2	V
Base-emitter Turn-on voltage	$V_{BE(on)}$	V_{CE}=-2V, I_C=-1A		-1.1	V
Transition frequency	f_T	V_{CE}=-5V, I_C=-100mA , f =100MHz	100		MHz
Collector Output Capacitance	C_{ob}	f=1MHz		15	pF

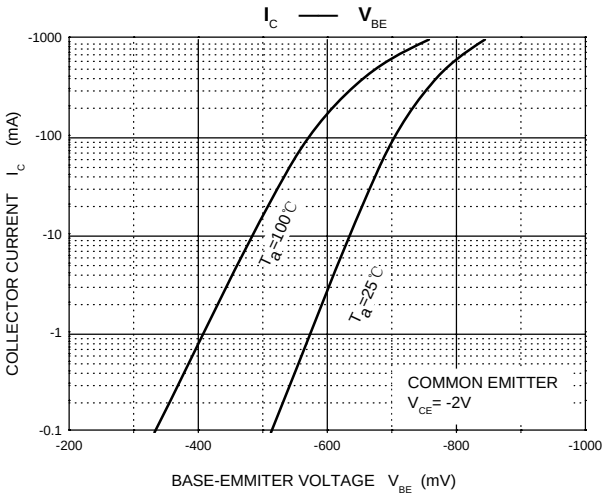
Typical Characteristics

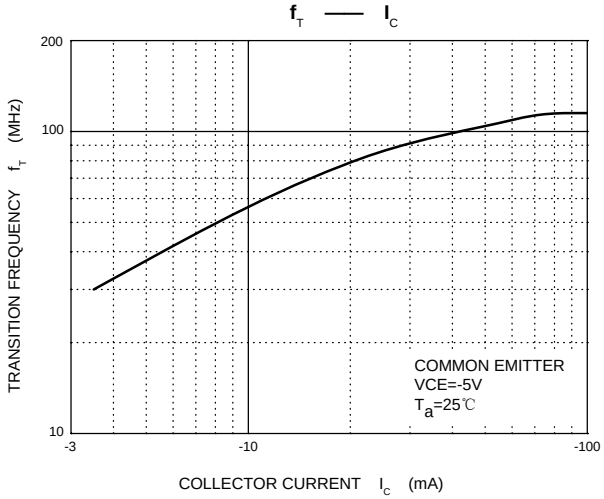


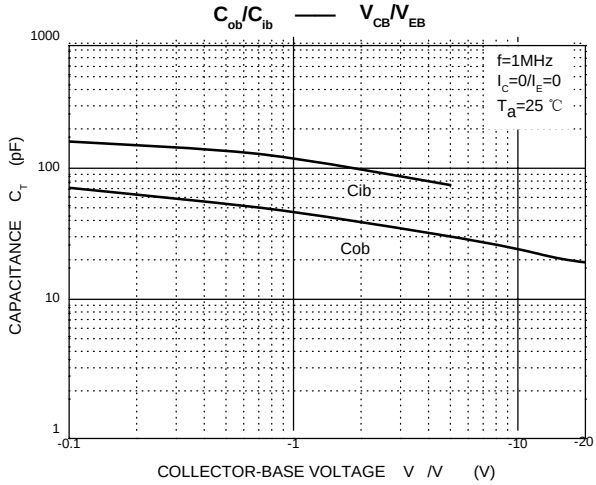


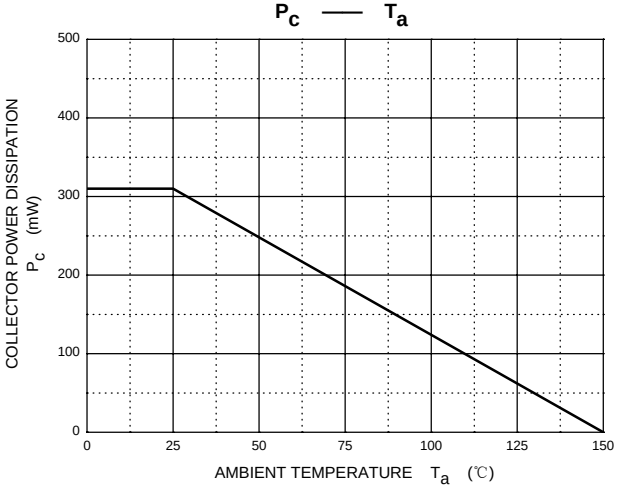

V_{CEsat} —— I_C
COLLECTOR-EMITTER SATURATION VOLTAGE V_{CEsat} (mV)
-1000
-100
-10
-1
T_a=100 ℃
T_a=25℃
β=10
-1
-10
-100
-1000
COLLECTOR CURRENT I_C (mA)


V_{BEsat} —— I_C
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (mV)
-1000
-800
-600
-400
-200
-0
T_a=25℃
T_a=100 ℃
β=10
-1
-10
-100
-1000
COLLECTOR CURREMT I_C (mA)

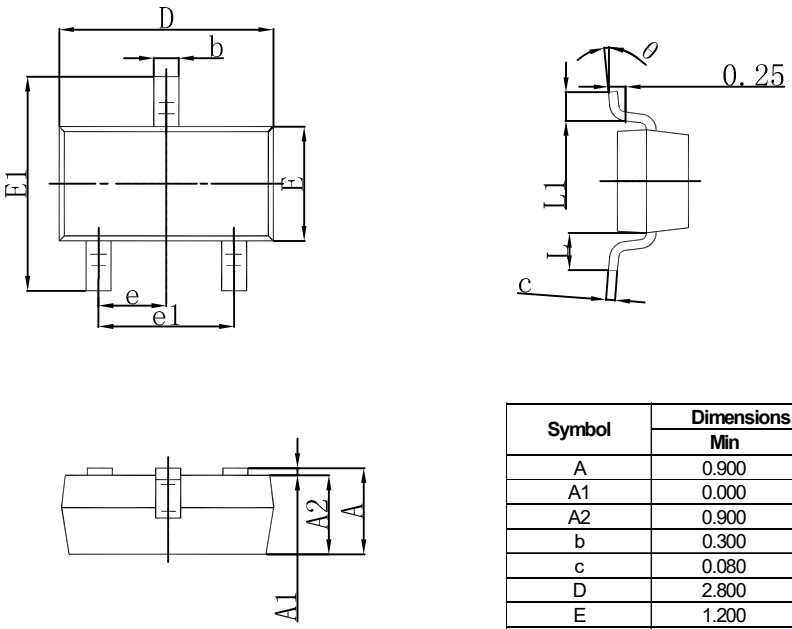

I_C —— V_{BE}
COLLECTOR CURRENT I_C (mA)
-1000
-100
-10
-1
-0.1
T_a=100℃
T_a=25℃
COMMON EMITTER
V_{CE}= -2V
-200
-400
-600
-800
-1000
BASE-EMMITER VOLTAGE V_{BE} (mV)


f_T —— I_C
TRANSITION FREQUENCY f_T (MHz)
200
100
10
COMMON EMITTER
VCE=-5V
T_a=25℃
-3
-10
-100
COLLECTOR CURRENT I_C (mA)


C_{ob}/C_{ib} —— V_{CB}/V_{EB}
CAPACITANCE C_T (pF)
1000
100
10
1
f=1MHz
I_C=0/I_E=0
T_a=25 ℃
Cib
Cob
-0.1
-1
-10
-20
COLLECTOR-BASE VOLTAGE V /V (V)

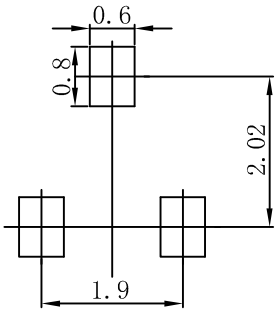

P_C —— T_a
COLLECTOR POWER DISSIPATION P_C (mW)
500
400
300
200
100
0
0
25
50
75
100
125
150
AMBIENT TEMPERATURE T_a (℃)

SOT-23 Package Outline Dimensions



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°

SOT-23 Suggested Pad Layout



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

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