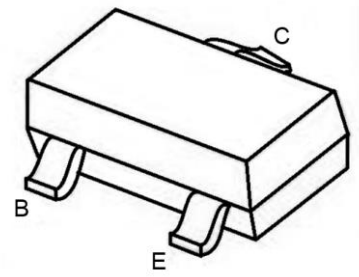
Transistor(NPN)

Feature

- Switching Transistor
- AEC-Q101 qualified (Automotive grade with suffix " Q".)
- Exsemi technology

Marking: G1

SOT-23



MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

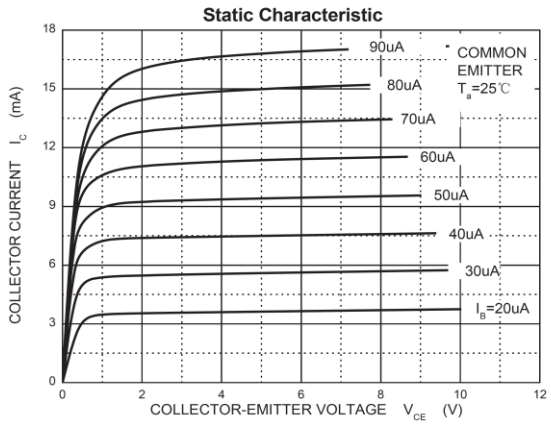
Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	180	V
Collector-Emitter Voltage	V_{CEO}	160	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current -Continuous	I_C	0.6	A
Power Dissipation	P_d	0.3	W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

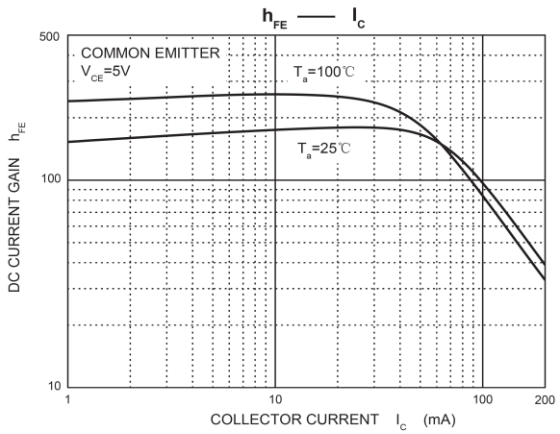
Classification of h_{FE3}

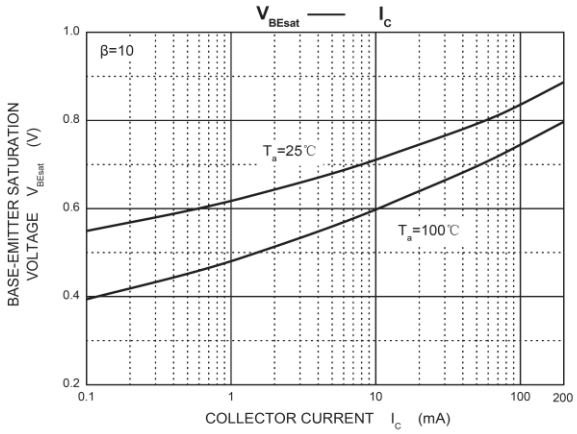
Rank	L	H
Range	100-200	200-300

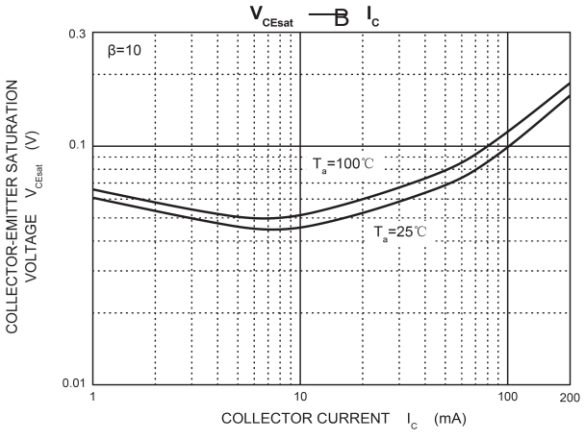
ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

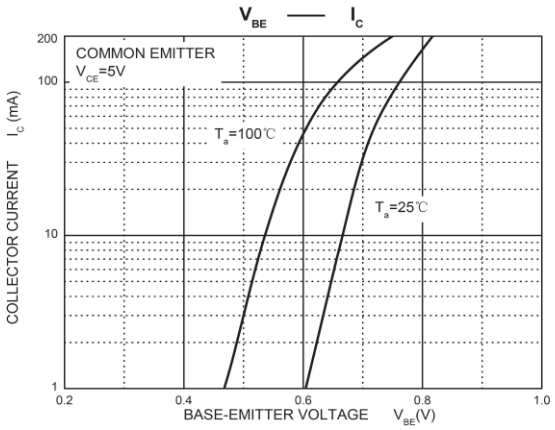
Parameter	Symbol	Test Condition	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=100μA ,I_E=0	180		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=1mA , I_B=0	160		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=100μA,I_C=0	5		V
Collector cut-off current	I_{CBO}	V_{CB}=150V, I_E=0		0.1	μA
Collector cut-off current	I_{CEO}	V_{CE}=150V, I_B=0		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}=5V, I_C=0.1mA	10		
	h_{FE2}	V_{CE}=5V, I_C=1mA	10		
	h_{FE3}	V_{CE}=5V, I_C=10mA	100	300	
	h_{FE4}	V_{CE}=5V, I_C=50mA	40		
	h_{FE5}	V_{CE}=5V, I_C=100mA	30		
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=10mA, I_B=1mA		0.2	V
		I_C=50mA, I_B=5mA		0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=10mA, I_B=1mA		1.1	V
		I_C=50mA, I_B=5mA		1.2	V
Transition frequency	f_T	V_{CE}= 6V, I_C=10mA,f =100MHz	100		MHZ
Collector Out capacitance	C_{OB}	VCB=10V, IE=0, f=1MHz		6.0	pF

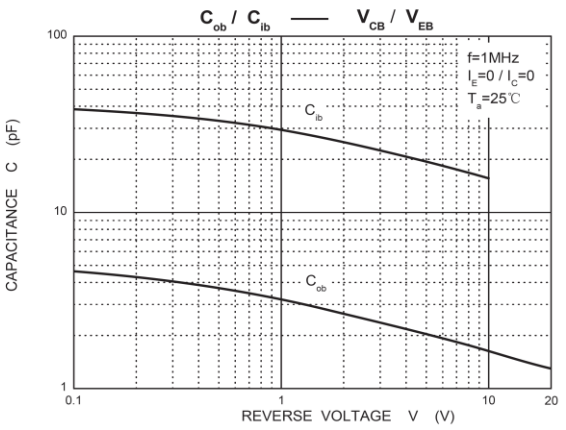

Static Characteristic
COMMON EMITTER
T_a=25℃
90uA
80uA
70uA
60uA
50uA
40uA
30uA
I_B=20uA
COLLECTOR CURRENT I_C (mA)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)

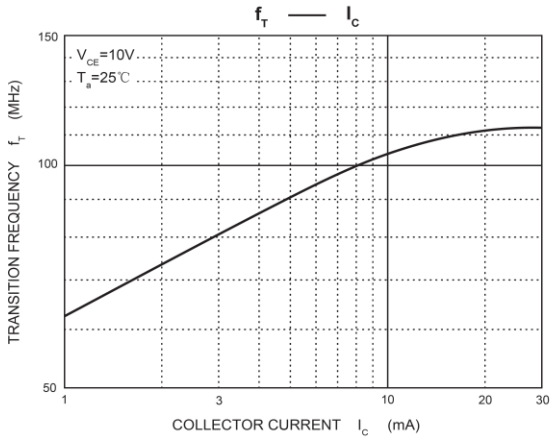

h_{FE} — I_C
COMMON EMITTER
V_{CE}=5V
T_a=100℃
T_a=25℃
DC CURRENT GAIN h_{FE}
COLLECTOR CURRENT I_C (mA)

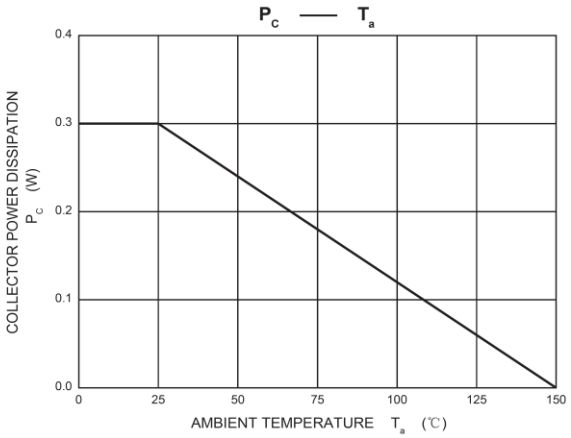

V_{BEsat} — I_C
β=10
T_a=25℃
T_a=100℃
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (V)
COLLECTOR CURRENT I_C (mA)


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

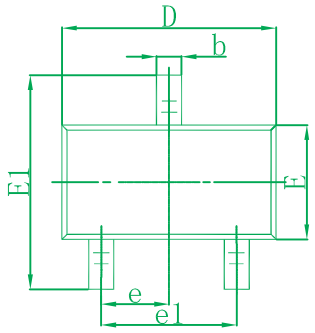

V_{BE} — I_C
COMMON EMITTER
V_{CE}=5V
T_a=100℃
T_a=25℃
COLLECTOR CURRENT I_C (mA)
BASE-EMITTER VOLTAGE V_{BE}(V)

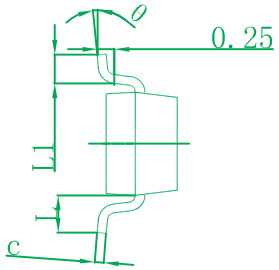

C_{ob} / C_{ib} — V_{CB} / V_{EB}
f=1MHz
I_E=0 / I_C=0
T_a=25℃
C_{ib}
C_{ob}
CAPACITANCE C (pF)
REVERSE VOLTAGE V (V)

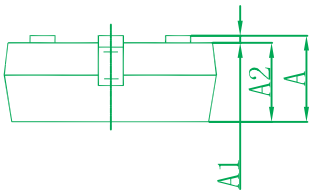

f_T — I_C
V_{CE}=10V
T_a=25℃
TRANSITION FREQUENCY f_T (MHz)
COLLECTOR CURRENT I_C (mA)


P_C — T_a
COLLECTOR POWER DISSIPATION P_C (W)
AMBIENT TEMPERATURE T_a (℃)

SOT-23 Package Information

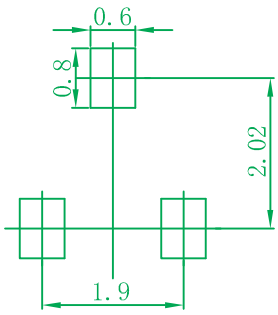






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.150	0.035	0.045
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.050	0.110	0.120
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 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.

Ordering information

Device	Package	Shipping
MMBT5551	SOT-23	3000/Tape&Reel(7inches)