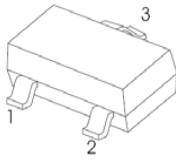
TRANSISTOR (NPN)

FEATURES

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

MARKING:2X

SOT－23



1. BASE
2. EMITTER
3. COLLECTOR

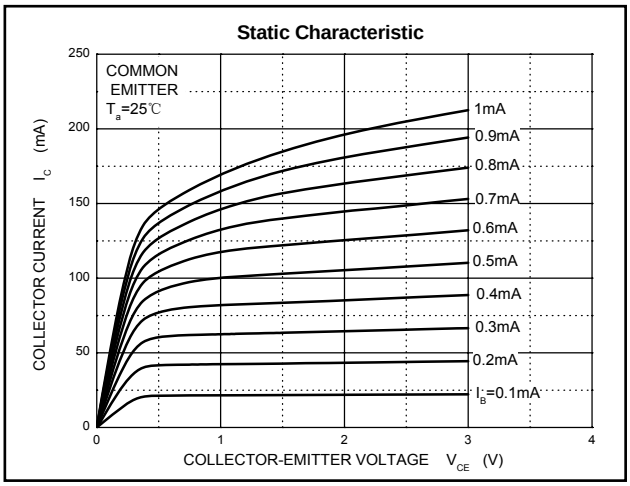
MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

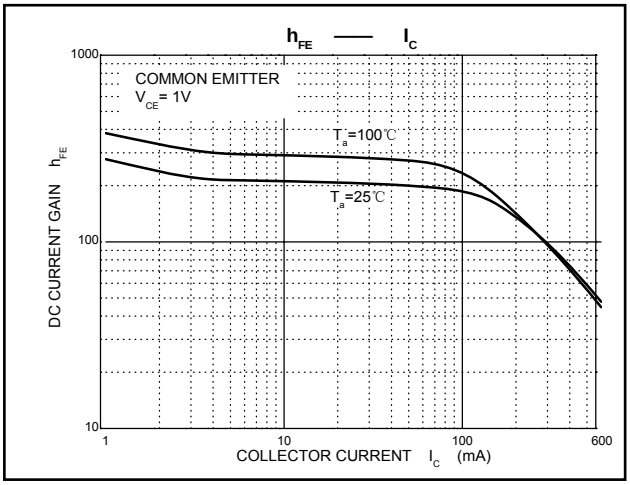
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	600	mA
P_C	Collector Power Dissipation	300	mW
$R_{\Theta JA}$	Thermal Resistance From Junction To Ambient	417	℃/W
T_j	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55～+150	℃

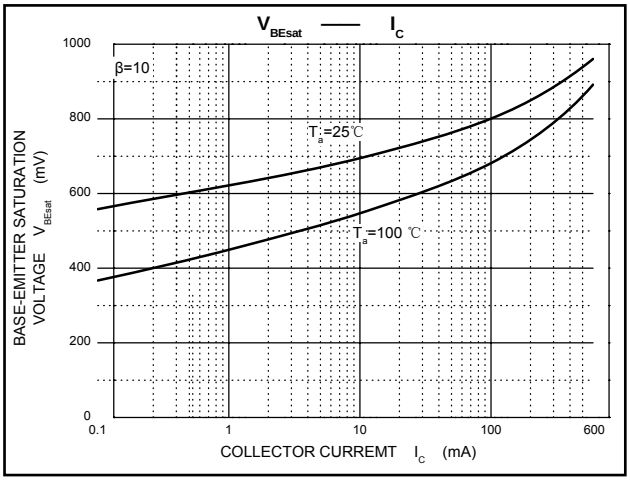
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

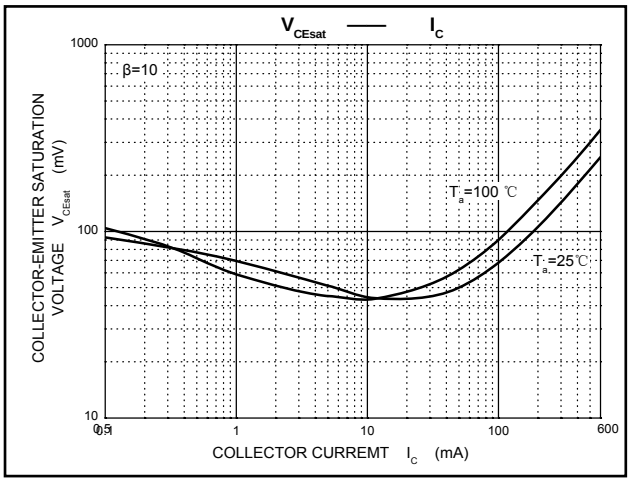
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=100μA,I_E=0	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=1mA,I_B=0	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=100μA,I_C=0	6			V
Collector cut-off current	I_{CBO}	V_{CB}=50V,I_E=0			0.1	μA
Collector cut-off current	I_{CEX}	V_{CE}=35V, V_{EB}=0.4V			0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB}=5V,I_C=0			0.1	μA
DC current gain	h_{FE1}	V_{CE}=1V, I_C=0.1mA	20			
	h_{FE2}	V_{CE}=1V, I_C=1mA	40			
	h_{FE3}	V_{CE}=1V, I_C=10mA	80			
	h_{FE4}	V_{CE}=1V, I_C=150mA	100		300	
	h_{FE5}	V_{CE}=2V, I_C=500mA	40			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=150mA,I_B=15mA			0.4	V
		I_C=500mA,I_B=50mA			0.75	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=150mA,I_B=15mA			0.95	V
		I_C=500mA,I_B=50mA			1.2	V
Transition frequency	f_T	V_{CE}=10V, I_C=20mA,f =100MHz	250			MHz
Delay time	t_d	V_{CC}=30V, $V_{BE(off)}$=-2V			15	ns
Rise time	t_r	I_C=150mA , I_{B1}=15mA			20	ns
Storage time	t_s	V_{CC}=30V, I_C=150mA			225	ns
Fall time	t_f	I_{B1}=I_{B2}=15mA			60	ns

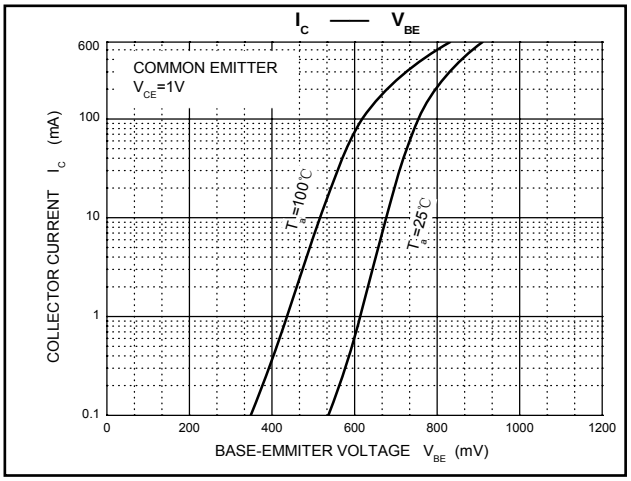
Typical Characteristics

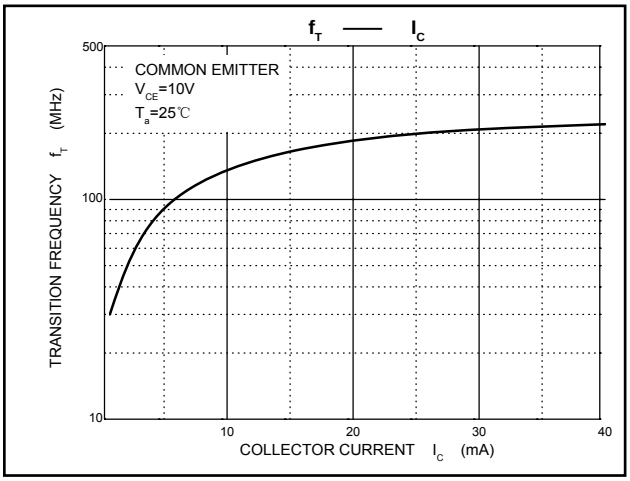


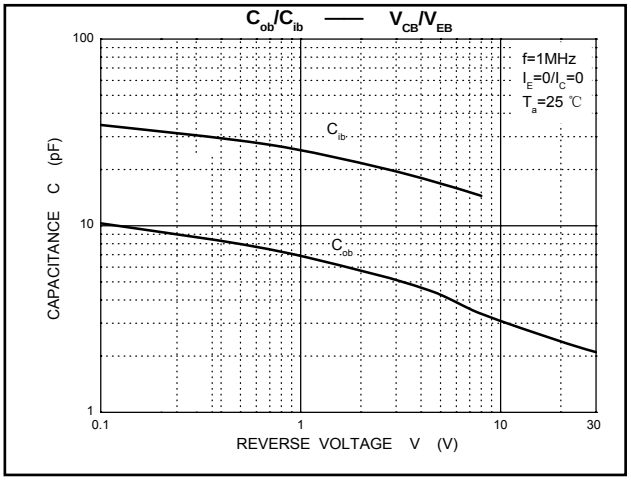


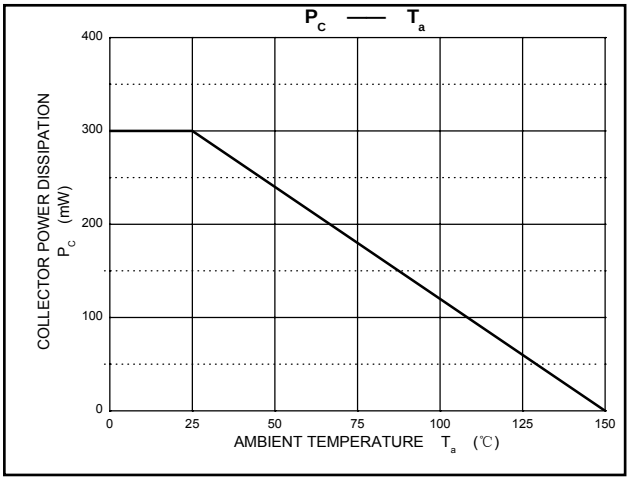




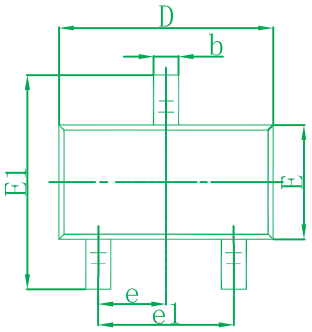


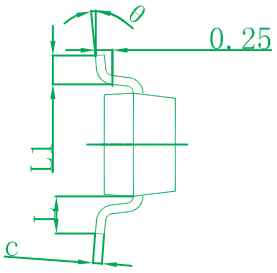


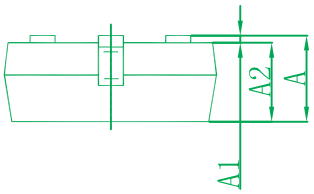




SOT-23 Package Information

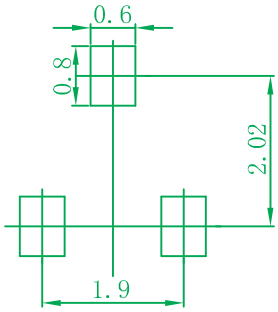






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.150	0.035	0.045
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.050	0.110	0.120
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 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
MMBT4401	SOT-23	3000/Tape&Reel(7inches)