

SOT-23 Plastic-Encapsulate Transistors

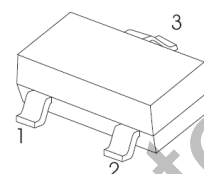


MMBT2222A

Features

- Complementary to MMBT2907A

SOT-23



1. BASE
2. EMITTER
3. COLLECTOR

MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	75	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current -Continuous	600	mA
P_C	Collector Dissipation	300	mW
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	417	$^\circ\text{C}/\text{W}$
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature	-55~+150	$^\circ\text{C}$

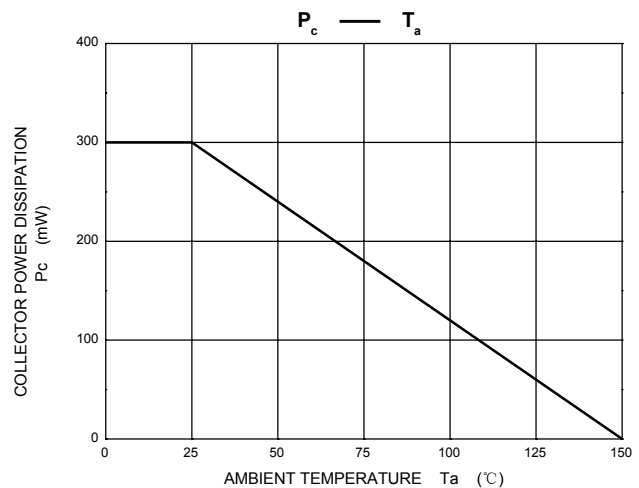
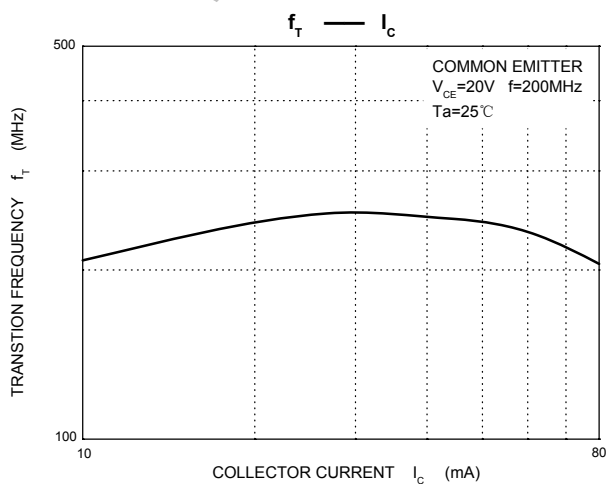
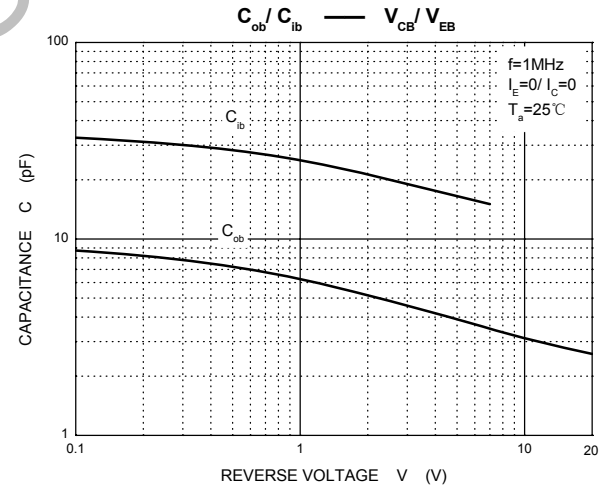
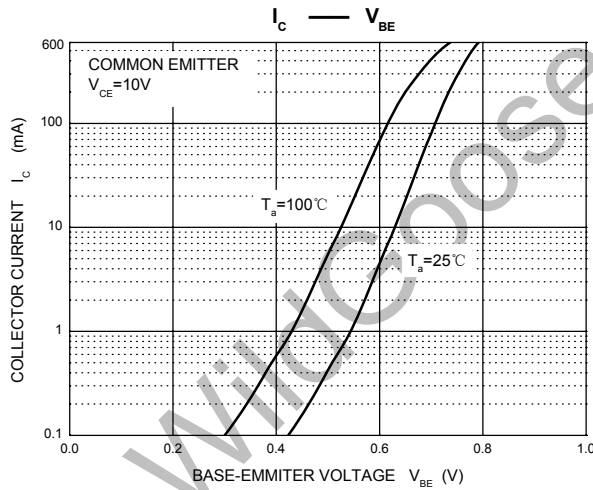
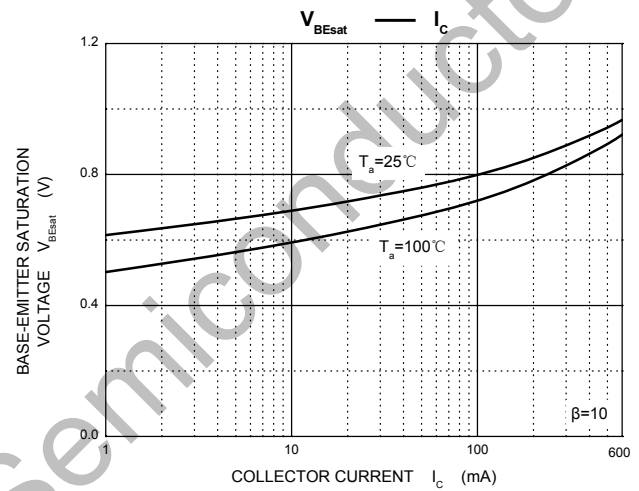
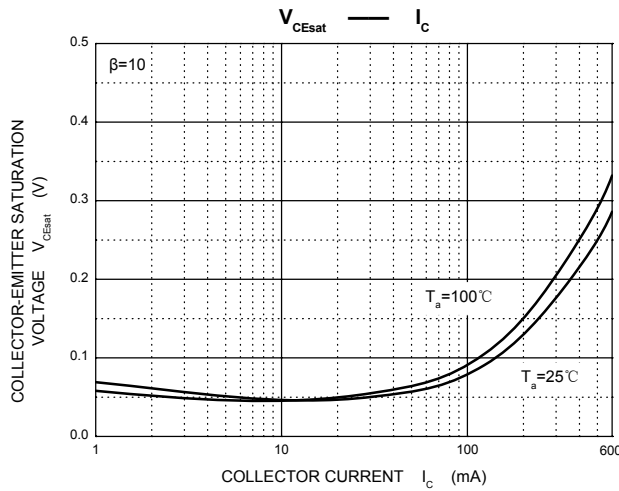
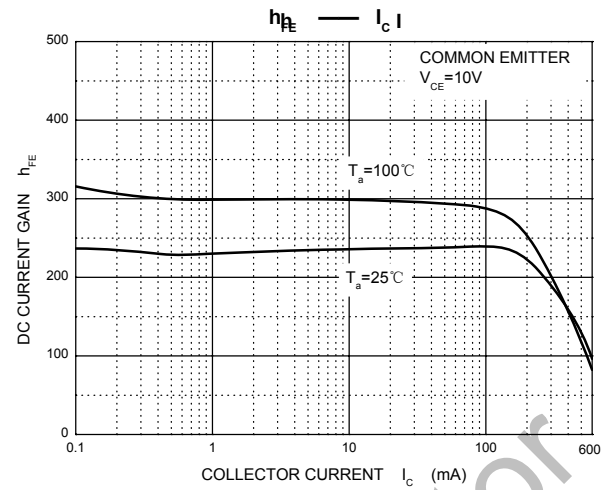
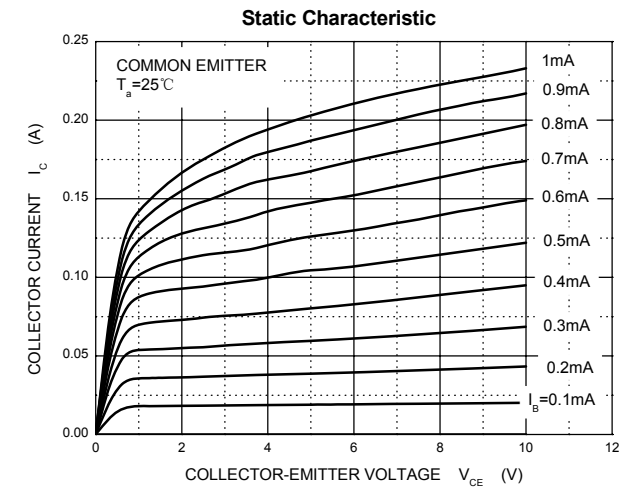
ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = 10\mu\text{A}, I_E = 0$	75			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}^*$	$I_C = 10\text{mA}, I_B = 0$	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}, I_C = 0$	6			V
Collector cut-off current	I_{CBO}	$V_{CB} = 60\text{V}, I_E = 0$			0.01	μA
Collector cut-off current	I_{CEX}	$V_{CE} = 30\text{V}, V_{BE(off)} = 3\text{V}$			0.01	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 3\text{V}, I_C = 0$			0.1	μA
DC current gain	$h_{FE(1)}^*$	$V_{CE} = 10\text{V}, I_C = 150\text{mA}$	100		300	
	$h_{FE(2)}$	$V_{CE} = 10\text{V}, I_C = 0.1\text{mA}$	40			
	$h_{FE(3)}^*$	$V_{CE} = 10\text{V}, I_C = 500\text{mA}$	42			
Collector-emitter saturation voltage	$V_{CE(sat)}^*$	$I_C = 500\text{mA}, I_B = 50\text{mA}$ $I_C = 150\text{mA}, I_B = 15\text{mA}$			1 0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}^*$	$I_C = 500\text{mA}, I_B = 50\text{mA}$ $I_C = 150\text{mA}, I_B = 15\text{mA}$			2.0 1.2	V
Transition frequency	f_T	$V_{CE} = 20\text{V}, I_C = 20\text{mA}, f = 100\text{MHz}$	300			MHz
Delay time	t_d	$V_{CC} = 30\text{V}, V_{BE(off)} = -0.5\text{V}$			10	ns
Rise time	t_r	$I_C = 150\text{mA}, I_{B1} = 15\text{mA}$			25	ns
Storage time	t_s	$V_{CC} = 30\text{V}, I_C = 150\text{mA}$			225	ns
Fall time	t_f	$I_{B1} = -I_{B2} = 15\text{mA}$			60	ns

*pulse test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycles $\leq 2.0\%$.

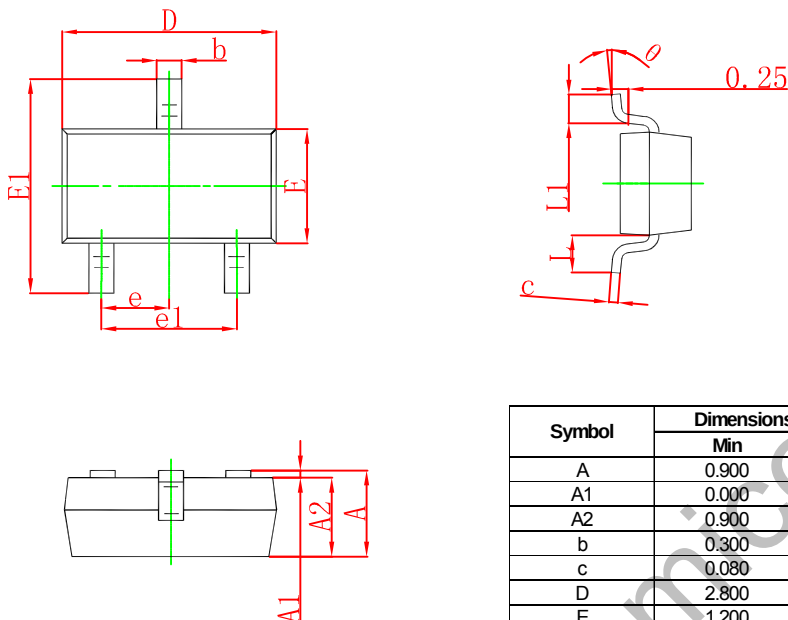
Typical Characteristics

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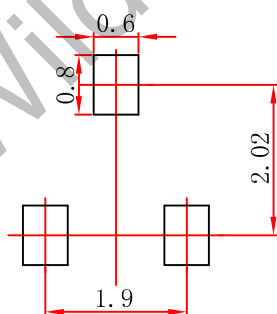
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SOT-23 Package Outline Dimensions



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: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

NOTICE

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