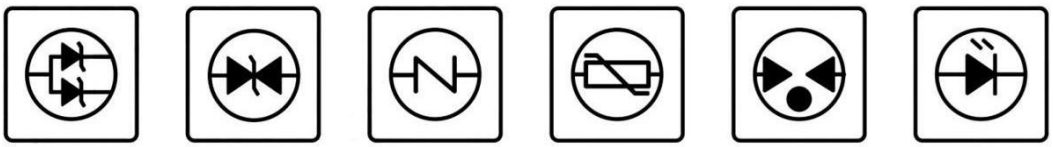
MSKSEMI 美森科
SEMICONDUCTOR



MMBT2222

Product specification

FEATURES

- Epitaxial planar die construction
- Complementary PNP Type available(MMBT2907)

Reference News

PACKAGE OUTLINE	MARKING
 1. BASE 2. EMITTER 3.COLLECTOR	1P
SOT-23	

MAXIMUM RATINGS (Ta=25℃ 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	℃/W
T_J,Tstg	Operation Junction and Storage Temperature Range	-55~+150	℃

ELECTRICAL CHARACTERISTICS (Ta=25℃ unless otherwise specified)

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

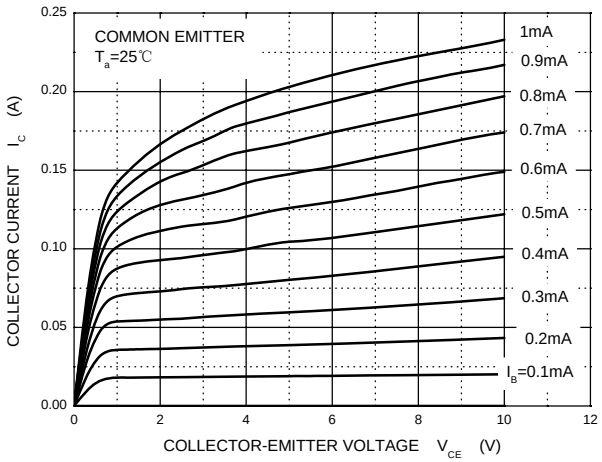
*pulse test: Pulse Width ≤300μs, Duty Cycle≤ 2.0%.

CLASSIFICATION OF $h_{FE(1)}$

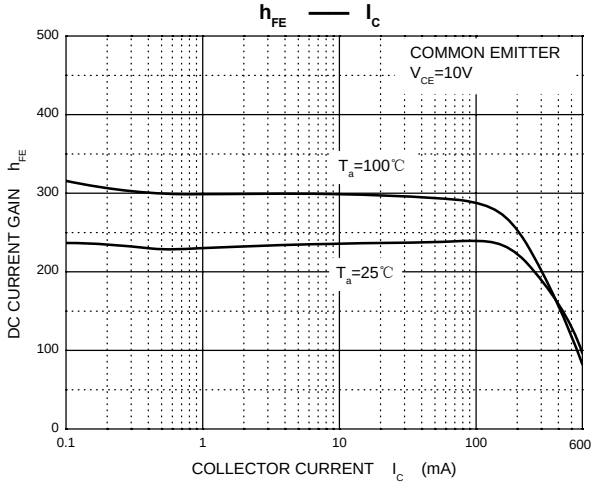
RANK	L	H
RANGE	100 –200	200 –300

Typical Characteristics

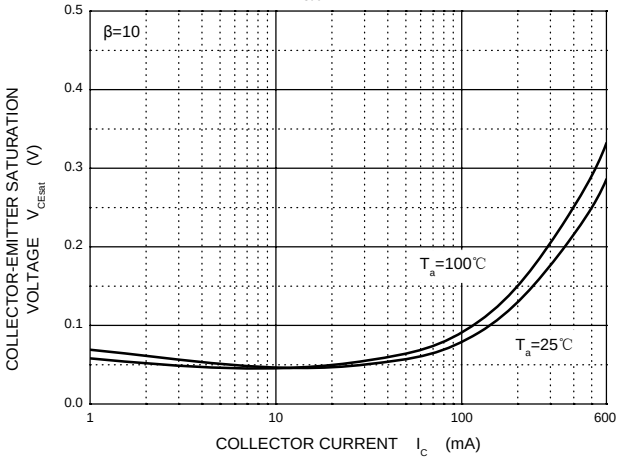
Static Characteristic



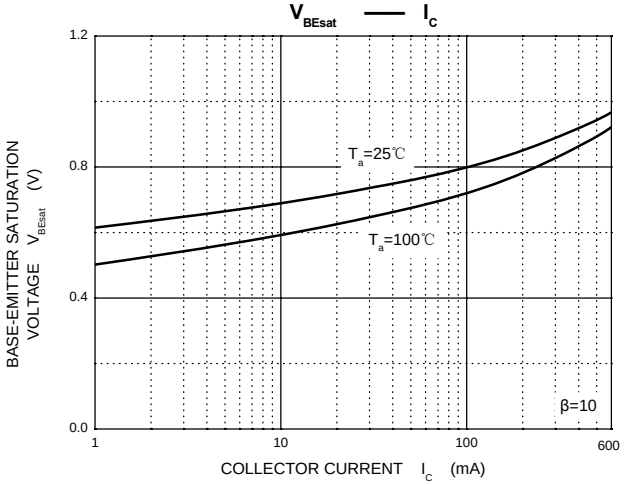
h_{FE} — I_C



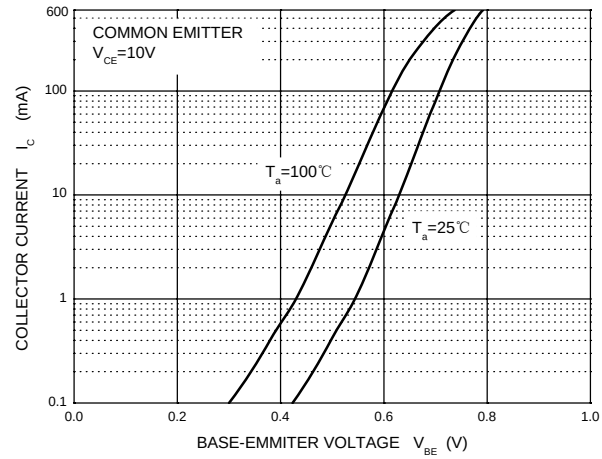
V_{CEsat} — I_C



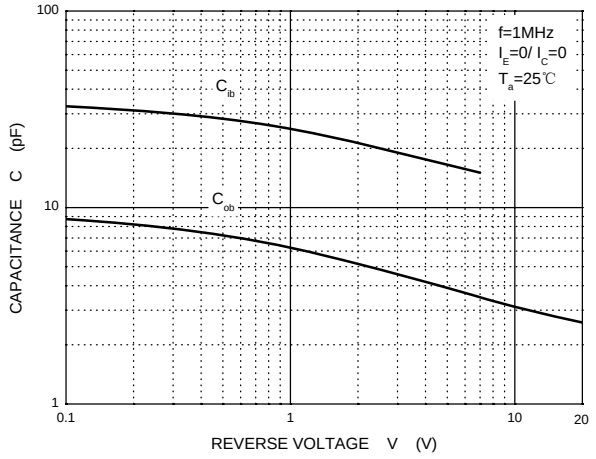
V_{BEsat} — I_C



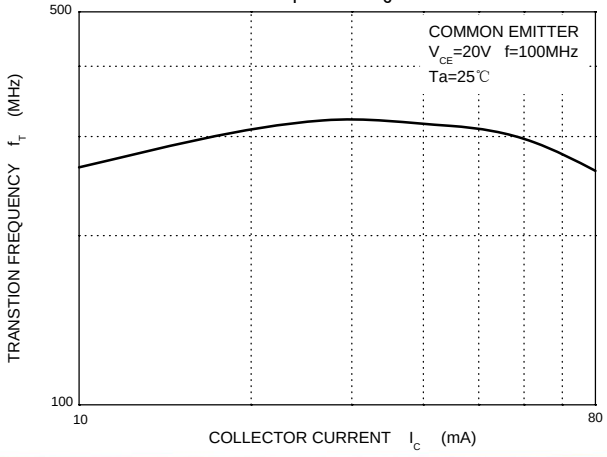
I_C — V_{BE}



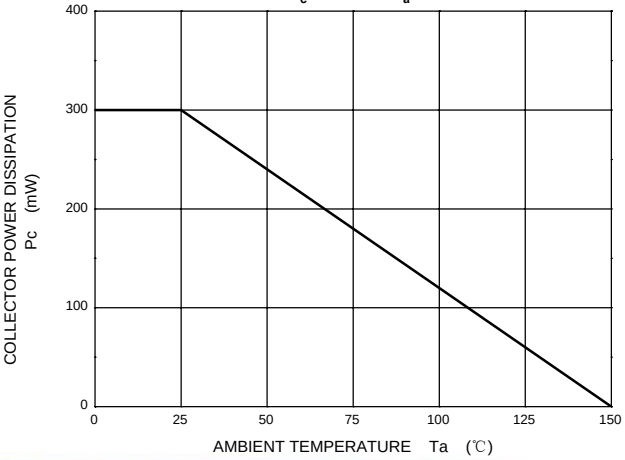
C_{ob} / C_{ib} — V_{CB} / V_{EB}



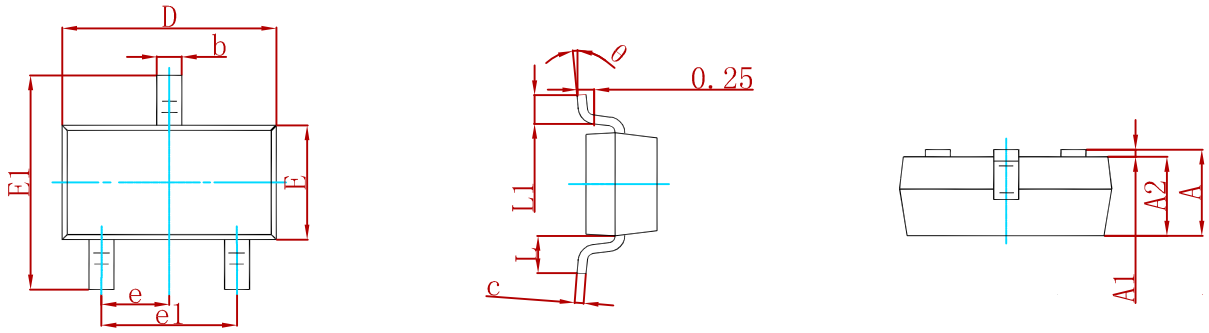
f_T — I_C



P_c — T_a

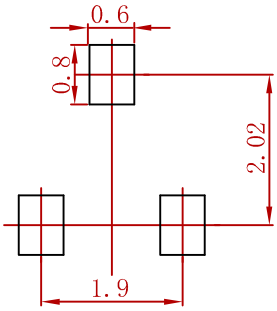


PACKAGE MECHANICAL DATA



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°

Suggested Pad Layout



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

REEL SPECIFICATION

P/N	PKG	QTY
MMBT2222	SOT-23	3000

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