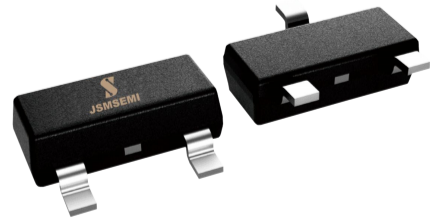


## FEATURES

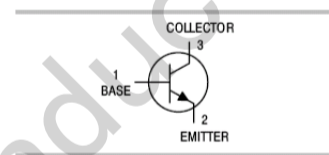
- ◆ Epitaxial planar die construction.
- ◆ Complementary PNP type available MMBT2907A.
- ◆ Ultra-small surface mount package.
- ◆ MSL 1



SOT-23

## APPLICATIONS

- ◆ Use as a medium power amplifier.
- ◆ Switching requiring collector currents up to 500mA.



## MAXIMUM RATING @ Ta=25°C unless otherwise specified

Symbol	Parameter	Value	Unit
V <sub>CB0</sub>	Collector-Base Voltage	35	V
V <sub>CEO</sub>	Collector-Emitter Voltage	20	V
V <sub>EBO</sub>	Emitter-Base Voltage	6	V
I <sub>C</sub>	Collector Current -Continuous	350	mA
I <sub>CM</sub>	Collector Current -Peak pulse width ≤ 40us, δ = 0.35	1.5	A
P <sub>C</sub>	Collector Dissipation Alumina Substrate (Note 1) TA = 25°C	300	mW
P <sub>C</sub>	Collector Dissipation FR-5 Board (Note 2) TA = 25°C	225	mW
R <sub>θJA</sub>	Thermal resistance junction to ambient	417	°C/W
R <sub>θJC</sub>	Thermal Resistance Junction to Case	250	°C/W
T <sub>J</sub> , T <sub>STG</sub>	Junction and Storage Temperature	-55 to +150	°C

Note 1. FR-5 = 1.0 0.75 0.062 in.

Note 2. Alumina = 0.4 0.3 0.024 in. 99.5% alumina.

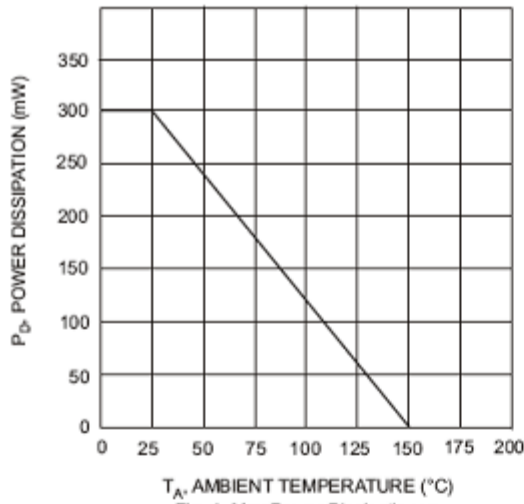
**ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified**

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	35			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10mA, I_B=0$	20			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	6			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=60V, I_E=0$			0.01	$\mu A$
Collector cut-off current	$I_{CEX}$	$V_{CE}=60V, V_{BE}=-3.0V$			0.01	$\mu A$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=3V, I_C=0$			0.01	$\mu A$
DC current gain	$h_{FE}$	$V_{CE}=10V, I_C=150mA$	100		300	
		$V_{CE}=10V, I_C=0.1mA$	35			
		$V_{CE}=10V, I_C=1.0mA$	50			
		$V_{CE}=10V, I_C=10mA$	75			
		$V_{CE}=10V, I_C=10mA$ $TA=-55^\circ C$	35			
		$V_{CE}=10V, I_C=500mA$	40			
		$V_{CE}=1V, I_C=150mA$	50			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=500mA, I_B=50mA$			1.0	V
		$I_C=150mA, I_B=15mA$			0.3	
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=500mA, I_B=50mA$		0.6	2.0	V
		$I_C=150mA, I_B=15mA$			1.2	
Transition frequency	$f_T$	$V_{CE}=20V, I_C=20mA$ $f=100MHz$	300			MHz
Output capacitance	$C_{obo}$	$V_{CB}=10V, I_E=0, f=1.0MHz$		8.0		pF
Input capacitance	$C_{ibo}$	$V_{EB}=0.5V, I_C=0,$ $f=1.0MHz$		25		pF
Delay time	$t_d$	$V_{CC}=30V, V_{BE(off)}=-0.5V$			10	ns
Rise time	$t_r$	$I_C=150mA, I_{B1}=15mA$			25	ns
Storage time	$t_s$	$V_{CC}=30V, I_C=150mA$			225	ns
Fall time	$t_f$	$I_{B1}=-I_{B2}=15mA$			60	ns

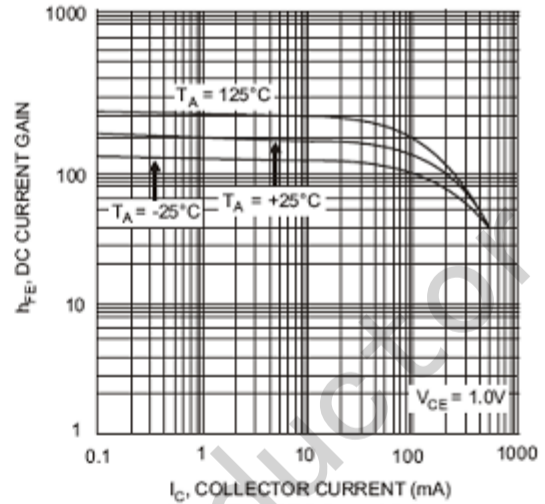
**ESD RATING**

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

TYPICAL CHARACTERISTICS @  $T_A=25^\circ\text{C}$  unless otherwise specified



$T_A$ , AMBIENT TEMPERATURE ( $^\circ\text{C}$ )  
Fig. 1 Max Power Dissipation vs Ambient Temperature



$I_C$ , COLLECTOR CURRENT (mA)  
Fig. 2 Typical DC Current Gain vs Collector Current

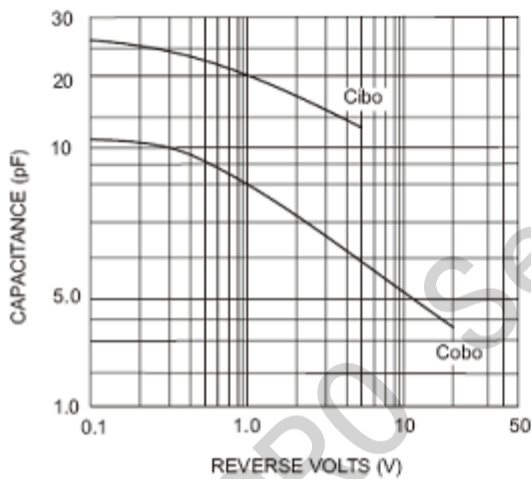
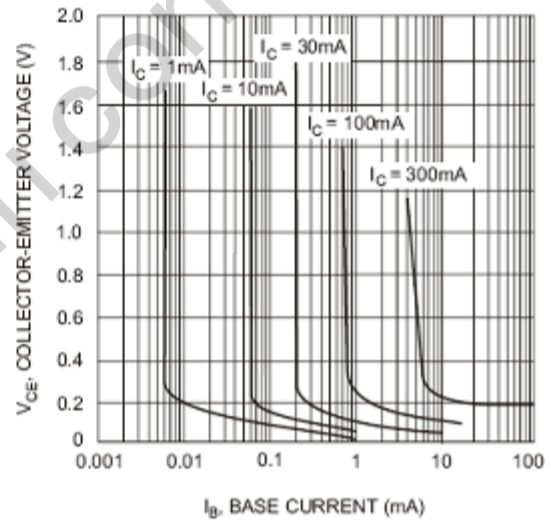
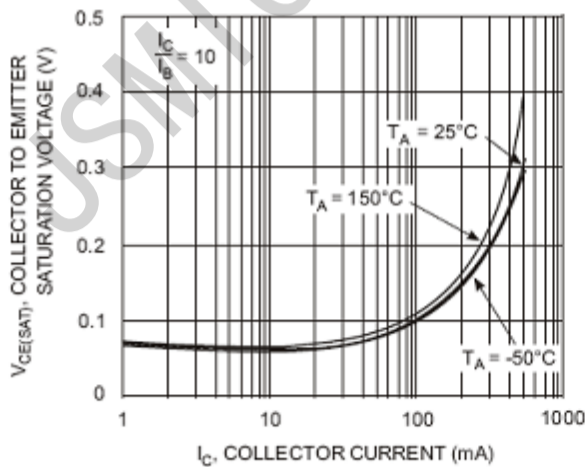


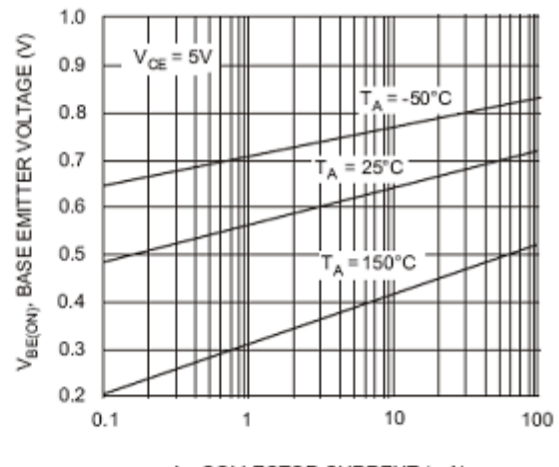
Fig. 3 Typical Capacitance



$I_B$ , BASE CURRENT (mA)  
Fig. 4 Typical Collector Saturation Region



$I_C$ , COLLECTOR CURRENT (mA)  
Fig. 5 Collector Emitter Saturation Voltage vs. Collector Current

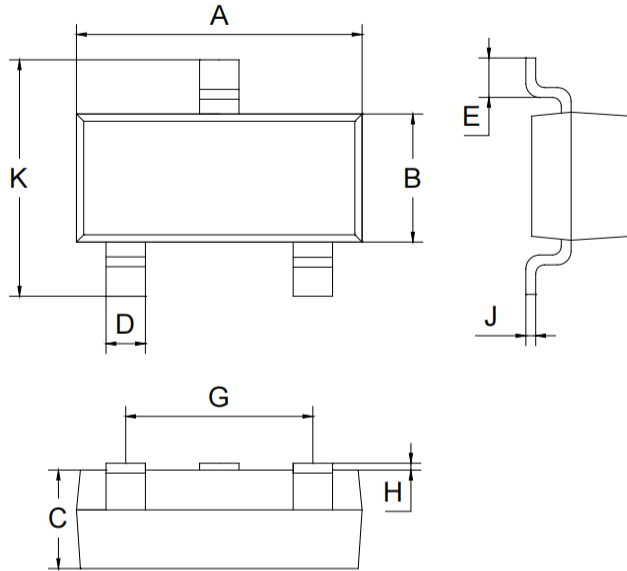


$I_C$ , COLLECTOR CURRENT (mA)  
Fig. 6 Base Emitter Voltage vs. Collector Current

PACKAGE OUTLINE

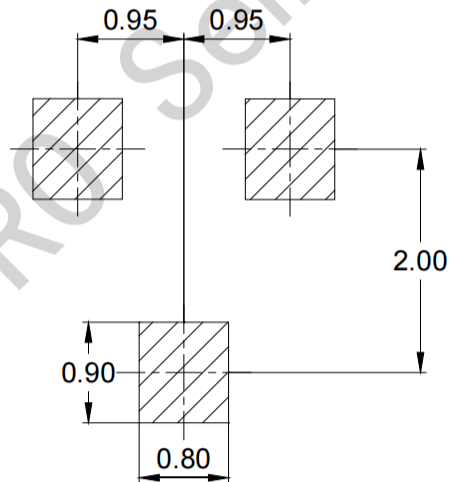
Plastic surface mounted package

SOT-23



SOT-23		
Dim	Min	Max
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60
All Dimensions in mm		

SOLDERING FOOTPRINT



Unit : mm

PACKAGE INFORMATION

Device	Package	Shipping
MMBT2222A	SOT-23	3000 pcs / Tape & Reel