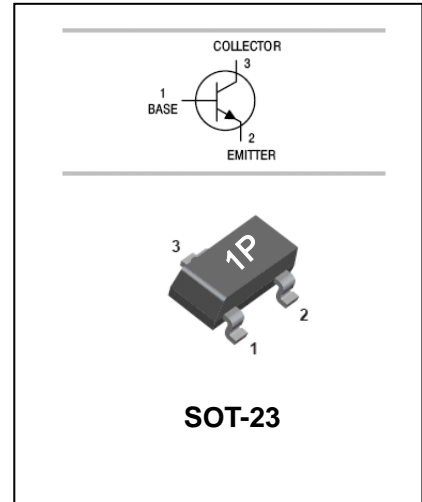


## FEATURES

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

## 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>CBO</sub>	Collector-Base Voltage	75	V
V <sub>CEO</sub>	Collector-Emitter Voltage	40	V
V <sub>EBO</sub>	Emitter-Base Voltage	6	V
I <sub>C</sub>	Collector Current -Continuous	600	mA
I <sub>CM</sub>	Collector Current –Peak pulse width ≤40us, D = 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.

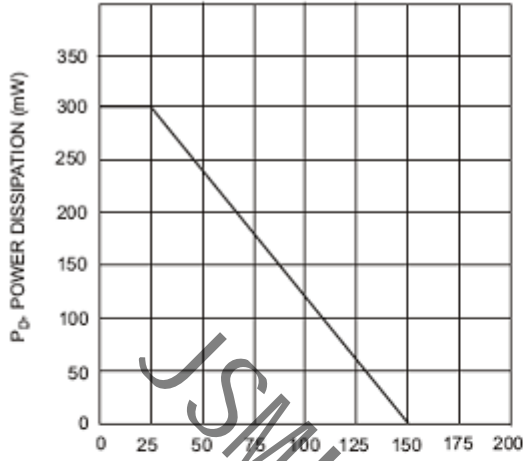
Note 2. Alumina = 0.4 0.3 0.024 in. 99.5% alumina.

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

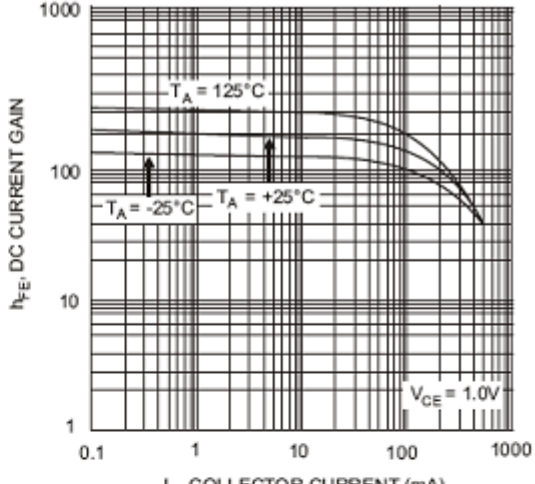
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	75			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10mA, I_B=0$	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	6			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=60V, I_E=0$			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			
		$V_{CE}=10V, I_C=10mA$ $T_A=-55^\circ C$	35			
		$V_{CE}=10V, I_C=500mA$	40			
		$V_{CE}=1V, I_C=150mA$	50			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=500mA, I_B=50mA$ $I_C=150mA, I_B=15mA$			1.0 0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=500mA, I_B=50mA$ $I_C=150mA, I_B=15mA$		0.6	2.0 1.2	V
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



$I_{FE}$ , DC CURRENT GAIN  
 $I_C$ , COLLECTOR CURRENT (mA)  
 Fig. 2 Typical DC Current Gain vs Collector Current

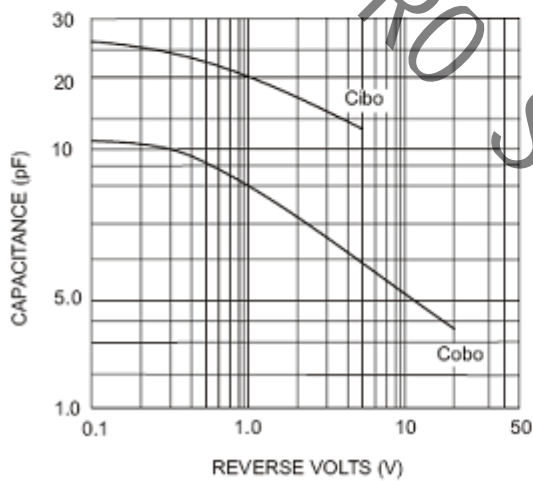


Fig. 3 Typical Capacitance

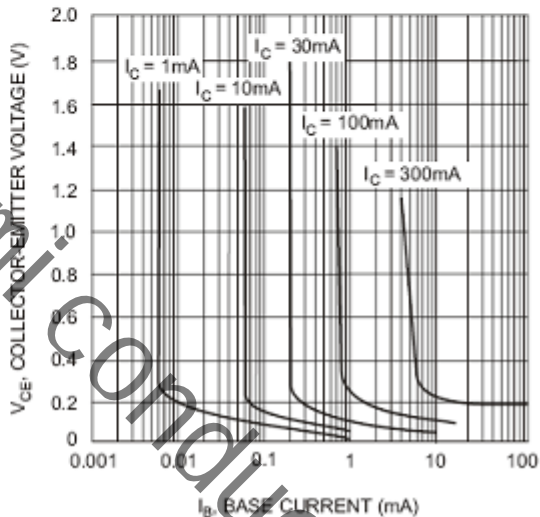
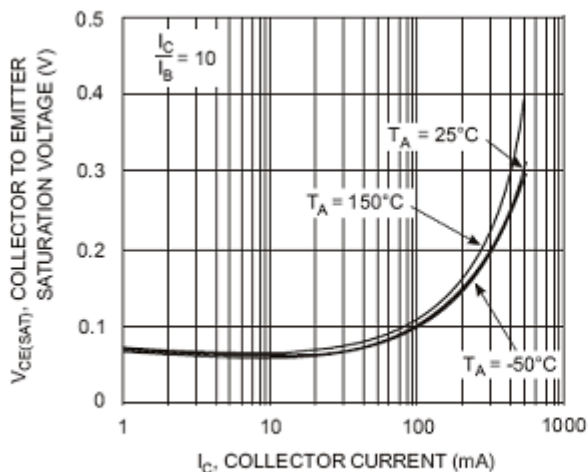
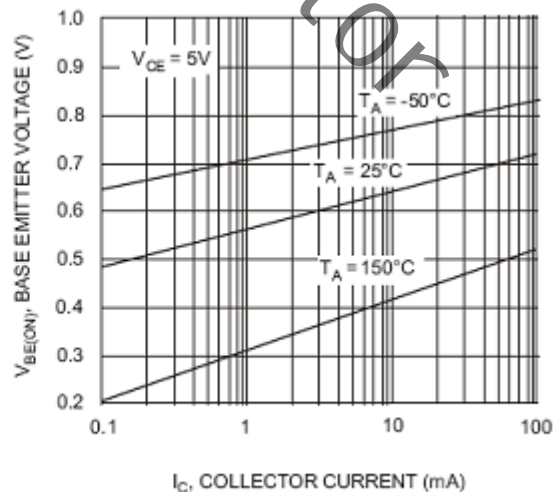


Fig. 4 Typical Collector Saturation Region



$V_{CE(sat)}$ , COLLECTOR TO EMITTER SATURATION VOLTAGE (V)  
 $I_C$ , COLLECTOR CURRENT (mA)  
 Fig. 5 Collector Emitter Saturation Voltage vs. Collector Current

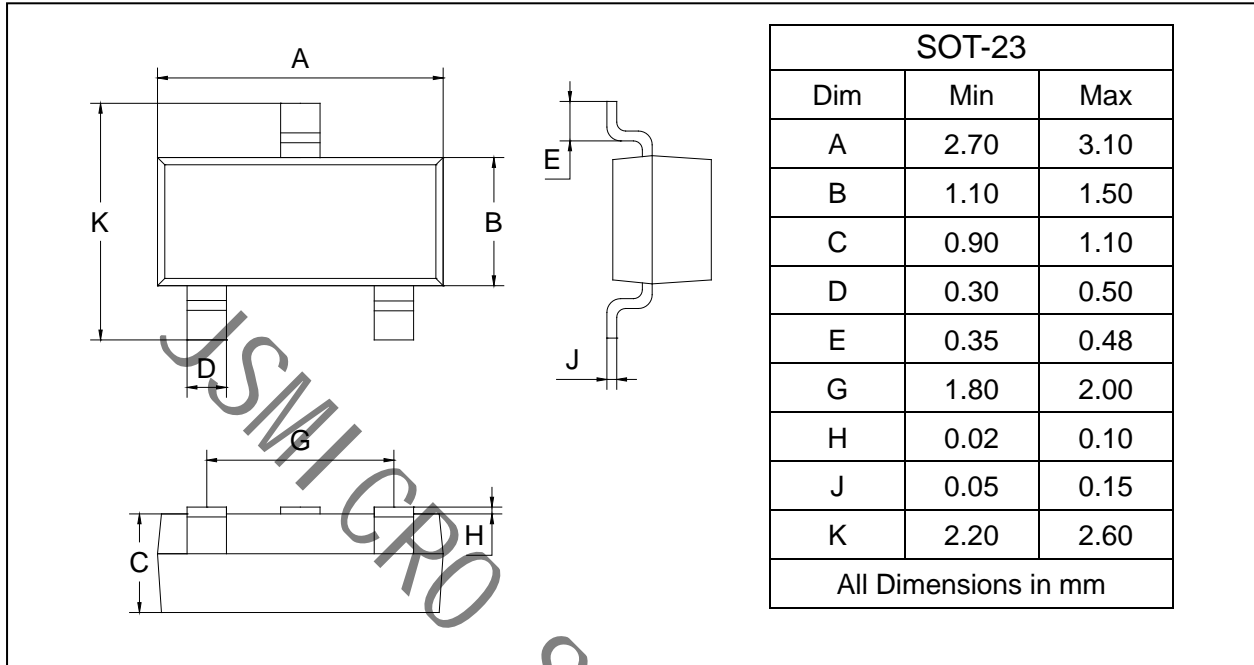


$V_{BE(on)}$ , BASE EMITTER VOLTAGE (V)  
 $I_C$ , COLLECTOR CURRENT (mA)  
 Fig. 6 Base Emitter Voltage vs. Collector Current

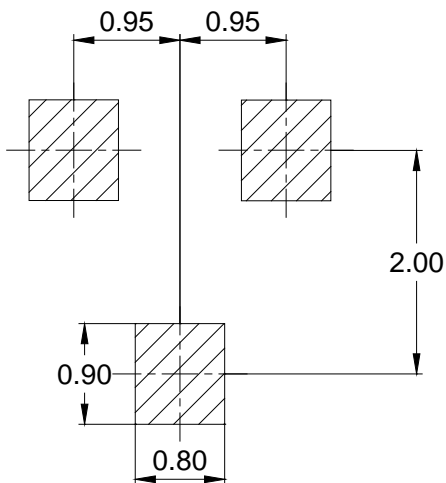
## PACKAGE OUTLINE

Plastic surface mounted package

SOT-23



## SOLDERING FOOTPRINT



## PACKAGE INFORMATION

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

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