

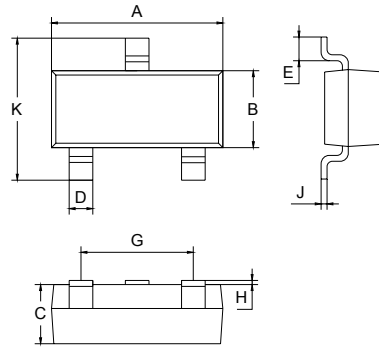
1. BASE
2. EMITTER
3. COLLECTOR

### FEATURES

- Epitaxial planar die construction.
- Complementary NPN type available MMBT2222A.
- Ideal for medium power amplification and switching.

### APPLICATIONS

- This device is designed as a general purpose amplifier and switching.
- The useful dynamic range extends to 600mA as a switch and to 100MHz as a amplifier.



SOT-23		
Dim	Min	Max
A	2.70	3.10
B	1.10	1.50
C	1.0 Typical	
D	0.4 Typical	
E	0.35	0.48
G	1.80	2.00
H	0.02	0.1
J	0.1 Typical	
K	2.20	2.60
All Dimensions in mm		

### ORDERING INFORMATION

Type No.	Marking	Package Code
MMBT2907A	2F	SOT-23

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

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	-60	V
$V_{CEO}$	Collector-Emitter Voltage	-60	V
$V_{EBO}$	Emitter-Base Voltage	-5	V
$I_C$	Collector Current -Continuous	-600	mA
$P_D$	Total Device Dissipation	300	mW
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	357	°C/W
$T_j, T_{stg}$	Junction and Storage Temperature	-55 to +150	°C

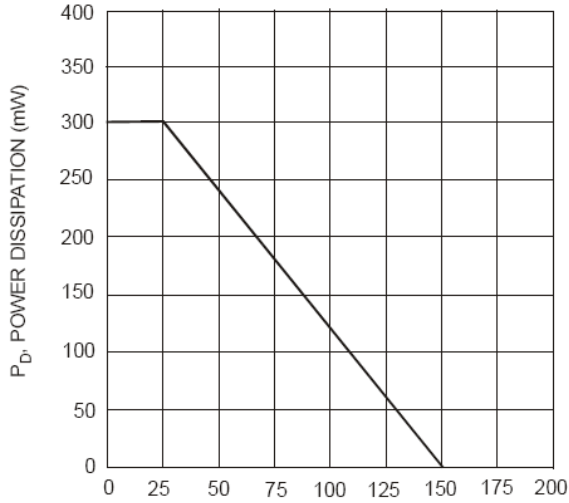
### ESD RATING

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

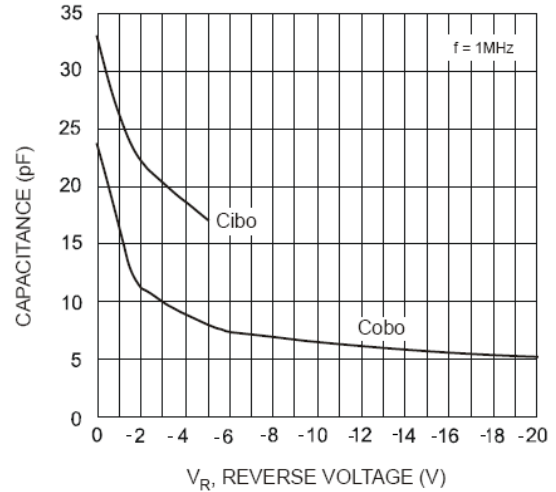
### ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -10\mu A$ $I_E = 0$	-60		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -10mA$ $I_B = 0$	-60		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -10\mu A$ $I_C = 0$	-5		V
Collector cut-off current	$I_{CBO}$	$V_{CB} = -50V$ $I_E = 0$ $V_{CB} = -50V$ $I_E = 0$ $T_A = 125^\circ C$		-10 -10	nA $\mu A$
Collector cut-off current	$I_{CEX}$	$V_{CE} = -30V$ , $V_{BE(OFF)} = -0.5V$		-50	nA
Base cut-off current	$I_{BL}$	$V_{CE} = -30V$ , $V_{BE(OFF)} = -0.5V$		-50	nA
DC current gain	$h_{FE}$	$V_{CE} = -10V$ $I_C = -100\mu A$ $V_{CE} = -10V$ $I_C = -1mA$ $V_{CE} = -10V$ $I_C = -10mA$ $V_{CE} = -10V$ $I_C = -150mA$ $V_{CE} = -10V$ $I_C = -500mA$	75 100 100 100 50	- - - 300 -	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -150mA$ $I_B = -15mA$ $I_C = -500mA$ $I_B = -50mA$		-0.4 -1.6	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -150mA$ $I_B = -15mA$ $I_C = -500mA$ $I_B = -50mA$		-1.3 -2.6	V
Transition frequency	$f_T$	$V_{CE} = -20V$ $I_C = -50mA$ $f = 100MHz$	200		MHz
Output Capacitance	$C_{obo}$	$V_{CB} = -10V$ $f = 100kHz$ $I_E = 0$	-	8.0	pF
Input Capacitance	$C_{ibo}$	$V_{EB} = -2V$ $f = 100kHz$ $I_C = 0$	-	30	pF
Delay time	$t_d$	$V_{CE} = -30V$ , $I_C = -150mA$ , $I_{B1} = -15mA$		10	ns
Rise time	$t_r$			40	ns
Storage time	$t_s$	$V_{CE} = -6V$ , $I_C = -150mA$		80	ns
Fall time	$t_f$	$I_{B1} = -I_{B2} = -15mA$		30	ns

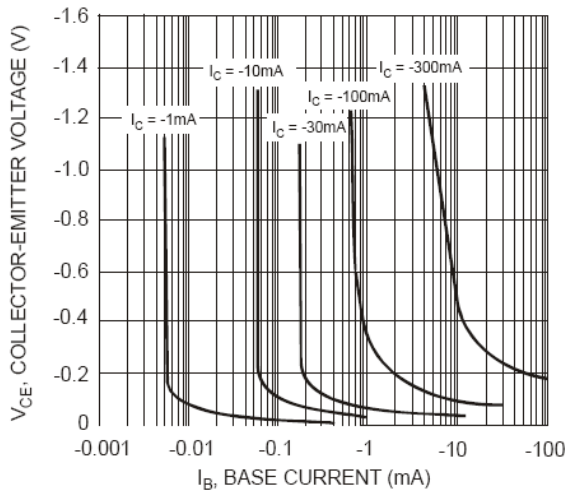
### TYPICAL CHARACTERISTICS @ $T_a=25^\circ\text{C}$ unless otherwise specified



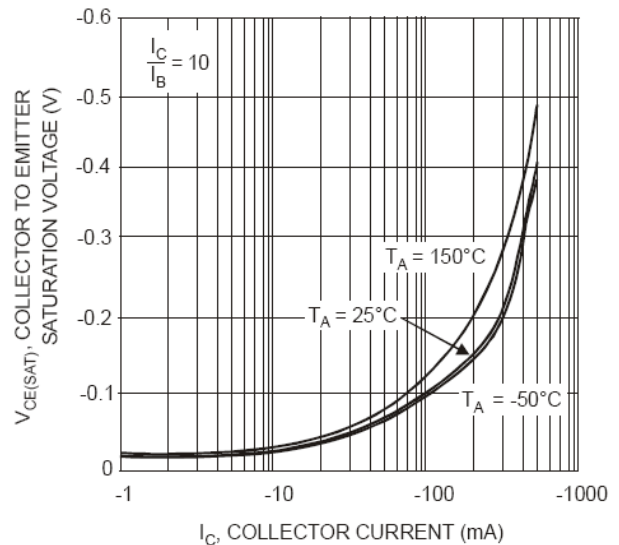
$T_A$ , AMBIENT TEMPERATURE ( $^\circ\text{C}$ )  
Fig. 1, Max Power Dissipation vs Ambient Temperature



$V_R$ , REVERSE VOLTAGE (V)  
Fig. 2, Typical Capacitance Characteristics



$I_B$ , BASE CURRENT (mA)  
Fig. 3, Typical Collector Saturation Region



$I_C$ , COLLECTOR CURRENT (mA)  
Fig. 4, Collector-Emitter Saturation Voltage vs. Collector Current

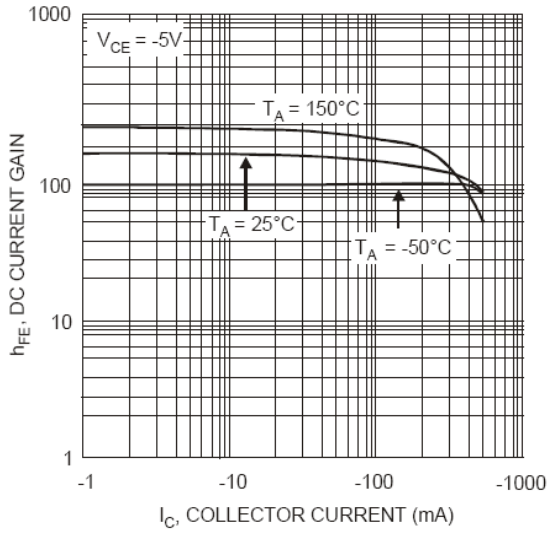


Fig. 5, DC Current Gain vs Collector Current

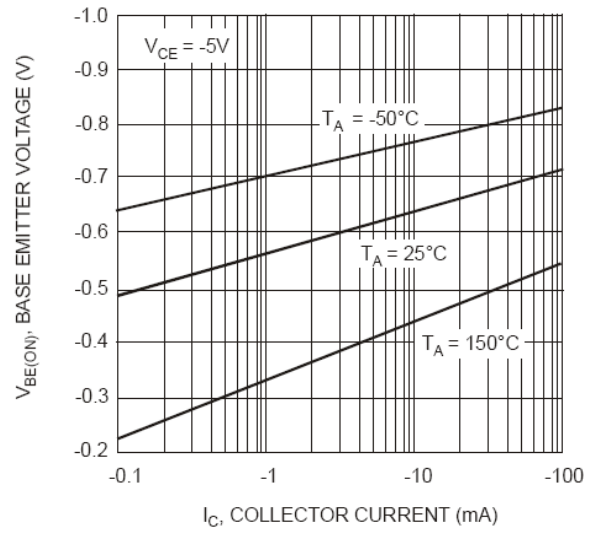


Fig. 6, Base-Emitter Voltage vs. Collector Current

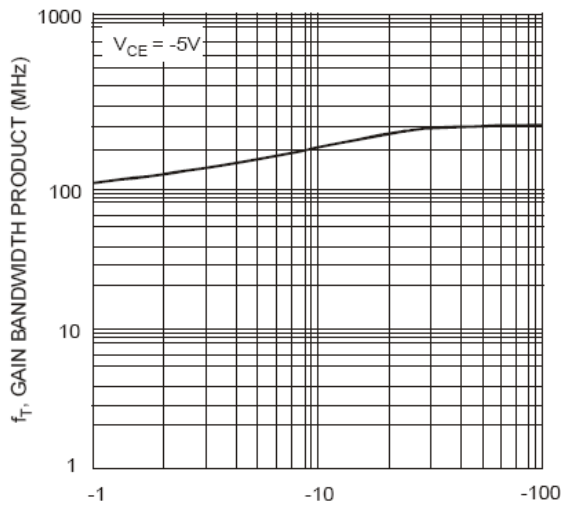


Fig. 7, Gain Bandwidth Product vs. Collector Current

Device	Package	Shipping
MMBT2907A	SOT-23	3000/Tape&Reel