FEATURES

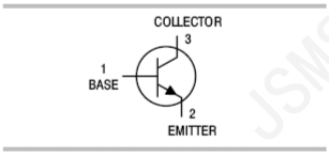
- Epitaxial planar die construction.
- Complementary PNP type available MMBT2907A.
- Ultra-small surface mount package.
- MSL 1



SOT-23

APPLICATIONS

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



MAXIMUM RATING @ Ta=25℃ unless otherwise specified

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
I_{CM}	Collector Current –Peak pulse width≤40us,δ = 0.35	1.5	A
P_C	Collector Dissipation Alumina Substrate (Note 1) TA = 25°C	300	mW
P_C	Collector Dissipation FR−5 Board (Note 2) TA = 25°C	225	mW
$R_{\theta JA}$	Thermal resistance junction to ambient	417	°C/W
$R_{\theta jC}$	Thermal Resistance Junction to Case	250	°C/W
T_J, T_{STG}	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℃ 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}=60V,V_{BE}=-3.0V			0.01	μA
Emitter cut-off current	I_{EBO}	V_{EB}=3V I_C=0			0.01	μA
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℃	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 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

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 @ Ta=25℃ unless otherwise specified

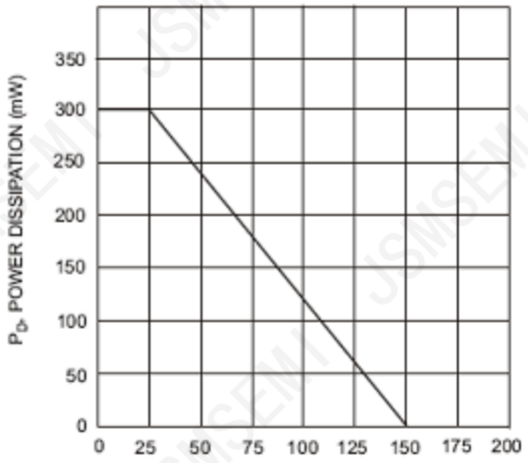


Fig. 1 Max Power Dissipation vs Ambient Temperature

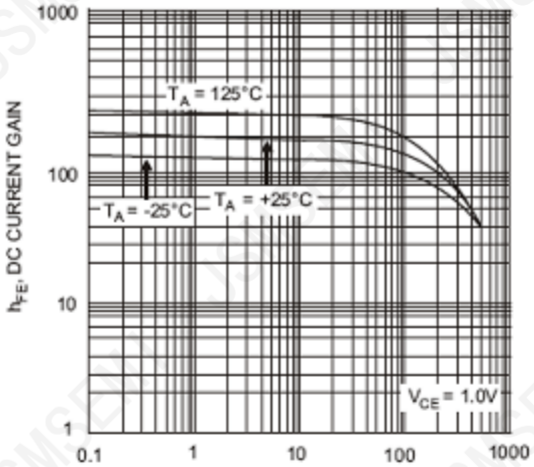


Fig. 2 Typical DC Current Gain vs Collector Current

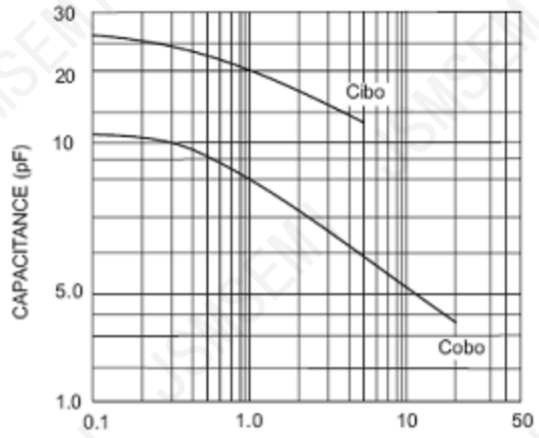


Fig. 3 Typical Capacitance

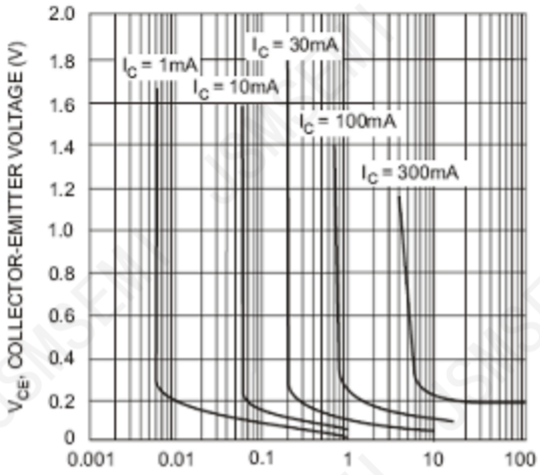


Fig. 4 Typical Collector Saturation Region

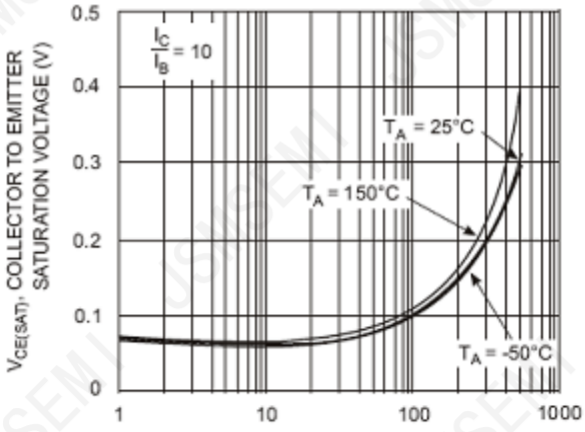


Fig. 5 Collector Emitter Saturation Voltage vs. Collector Current

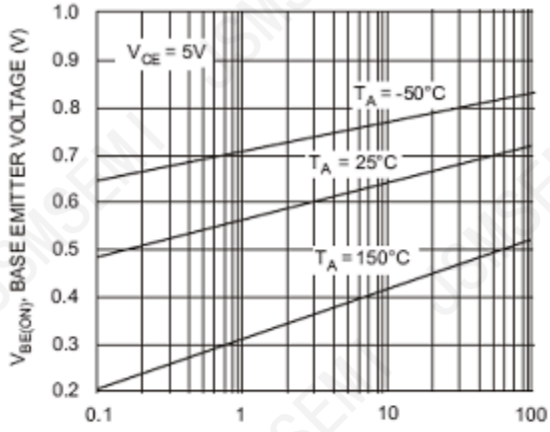
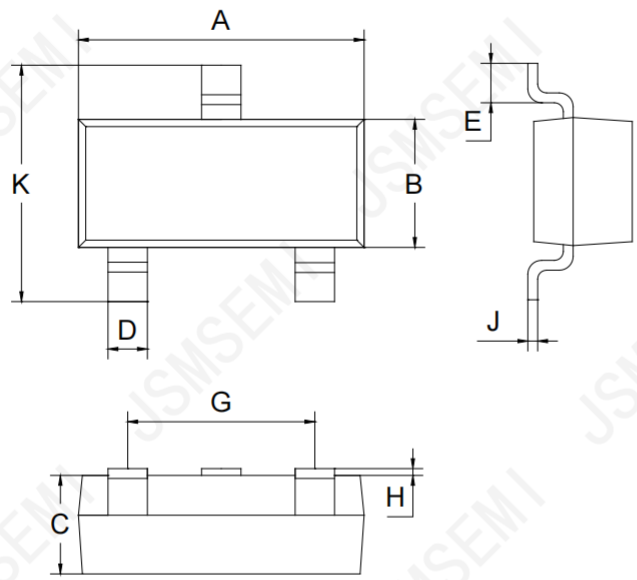


Fig. 6 Base Emitter Voltage vs. Collector Current

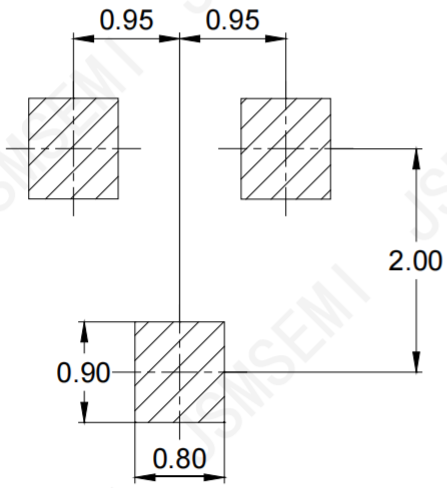
PACKAGE OUTLINE

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

Revision History

Rev.	Change	Date
V1.0	Initial version	2/23/2024

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