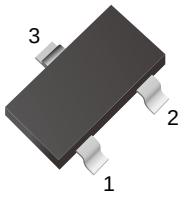
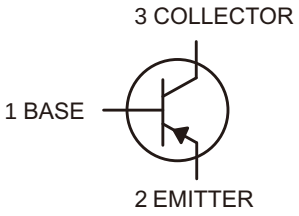
MMBT2907A

Transistor(PNP)

Features

- Epitaxial planar die construction
- Lead free in comply with EU RoHS 2011/65/EU directives





Ordering Information

Part Number	Marking	Shipping	Reel
MMBT2907A-TR3	2F	3000PCS Tape&Reel	7 inchs
MMBT2907A-TR12	2F	12000PCS Tape&Reel	13 inchs

Limiting Values (Absolute Maximum Ratings)

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	-600	mA
P_C	Collector Power Dissipation	250	mW
$R_{\Theta JA}$	Thermal Resistance From Junction To Ambient	500	℃/W
T_j	Junction Temperature	-55 to +150	℃
T_{stg}	Storage Temperature	-55 to +150	℃

Electrical Characteristics (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=-10μA，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=-10μA,I_C=0	-5			V
Collector cut-off current	I_{CBO}	V_{CB}=-50V,I_E=0			-20	nA
Base cut-off current	I_{EBO}	V_{EB}=-3V, I_C=0			-10	nA
Collector cut-off current	I_{CEX}	V_{CE}=-30 V, $V_{EB(off)}$=-0.5V			-50	nA
DC current gain	$h_{FE(1)}$	V_{CE}=-10V,I_C=-150mA	100		300	
	$h_{FE(2)}$	V_{CE}=-10V,I_C=-0.1mA	75			
	$h_{FE(3)}$	V_{CE}=-10V,I_C=-1mA	100			
	$h_{FE(4)}$	V_{CE}=-10V,IC=-10mA	100			
	$h_{FE(5)}$	V_{CE}=-10V,I_C=-500mA	50			
Collector-emitter saturation voltage	$V_{CE(sat)*}$	I_C=-150mA,I_B=-15mA			-0.4	V
	$V_{CE(sat)*}$	I_C=-500mA,I_B=-50mA			-1.6	V
Base-emitter saturation voltage	$V_{BE(sat)*}$	I_C=-150mA,I_B=-15mA			-1.3	V
	$V_{BE(sat)*}$	I_C=-500mA,I_B=-50mA			-2.6	V
Transition frequency	f_T	V_{CE}=-20V,I_C=-50mA,f=100MHz	200			MHz
Delay time	t_d	V_{CE}=-30V,I_C=-150mA,$_{B1}$=-15mA			10	ns
Rise time	t_r				25	ns
Storage time	t_S	V_{CE}=-6V,I_C=-150mA, I_{B1}=- I_{B2}=- 15mA			225	ns
Fall time	t_f				60	ns
Ouput Capacitance	C_{ob}	V_{CB}=-10.0V, I_E=0, f=1.0MHz			8	pF
Input Capacitance	C_{ib}	V_{EB}=-2.0V, I_C=0, f=1.0MHz			30	pF

*Pulse test: t_p≤300μs, δ≤0.02.

Characteristics Curves

Fig.1 Static Characteristic

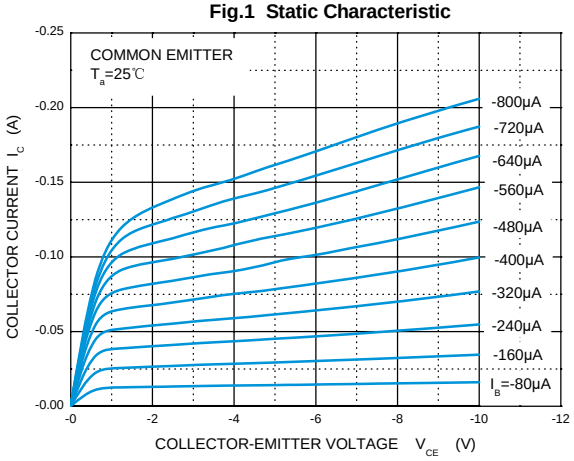


Fig.2 h_{FE} vs I_C

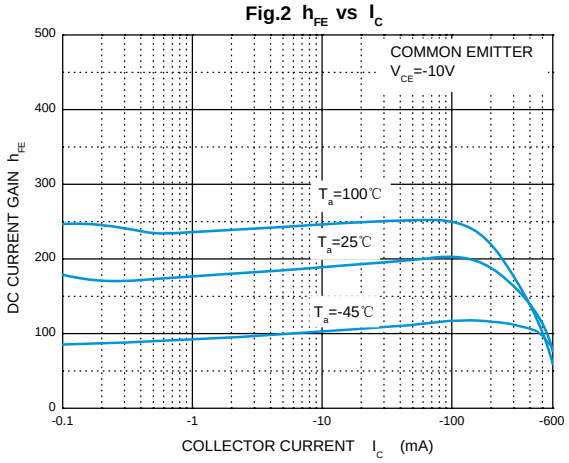


Fig.3 V_{CEsat} vs I_C

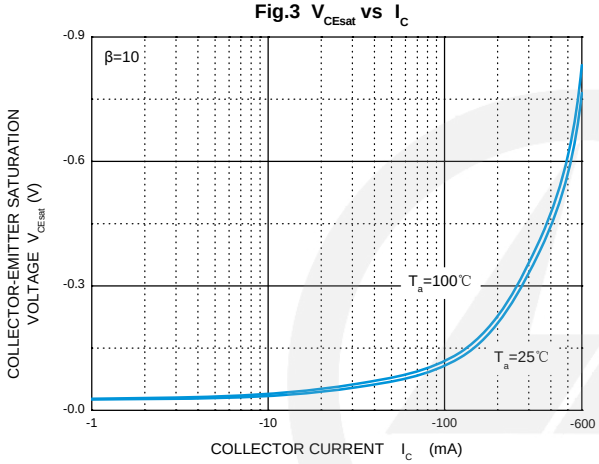


Fig.4 V_{BEsat} vs I_C

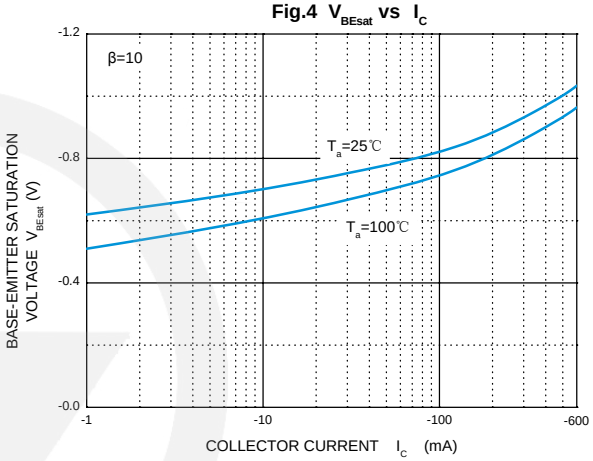


Fig.5 I_C vs V_{BE}

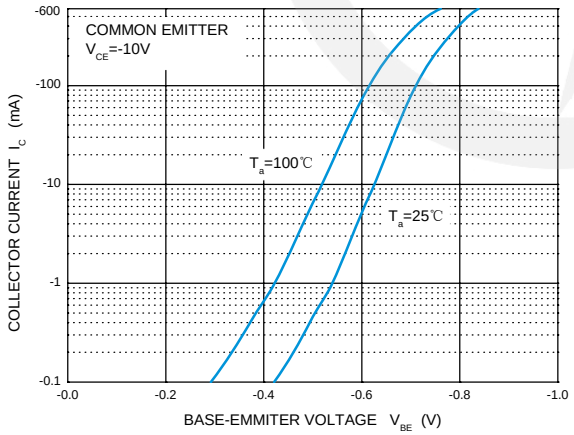


Fig.6 C_{ob}/ C_{ib} vs V_{CB}/ V_{EB}

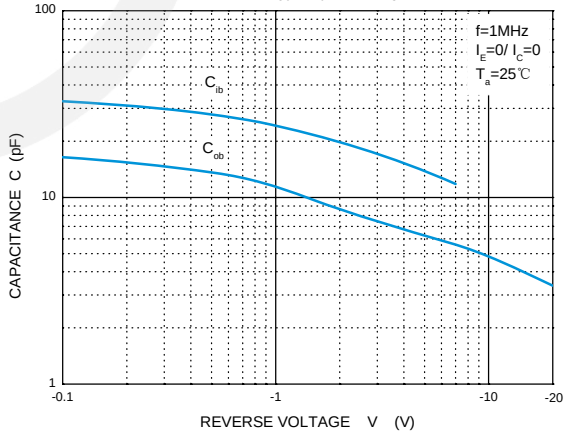
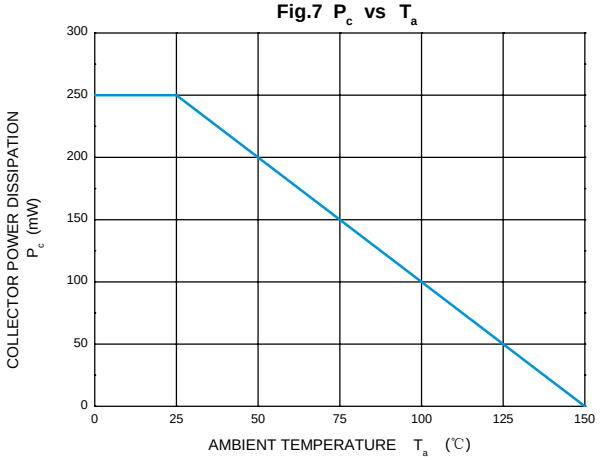
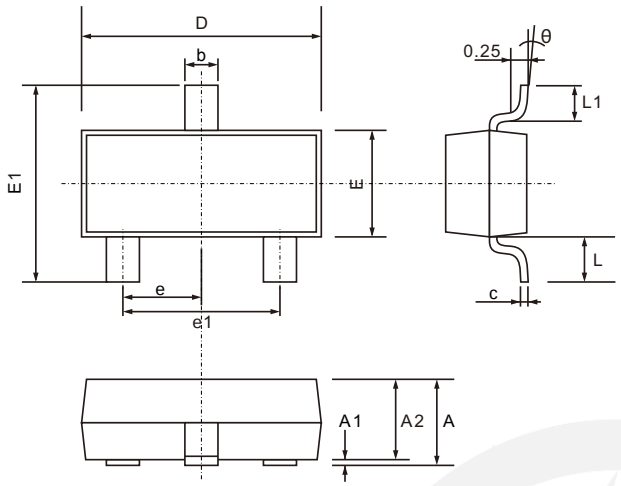


Fig.7 P_c vs T_a



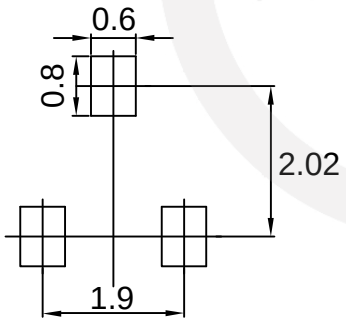
SOT-23 Package Outline



Unit : mm

SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.200
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.200
D	2.700	3.100
E	1.200	1.400
E1	2.200	2.600
e	0.950 TYP.	
e1	1.750	2.050
L	0.550 TYP.	
L1	0.300	0.500
θ	0°	8°

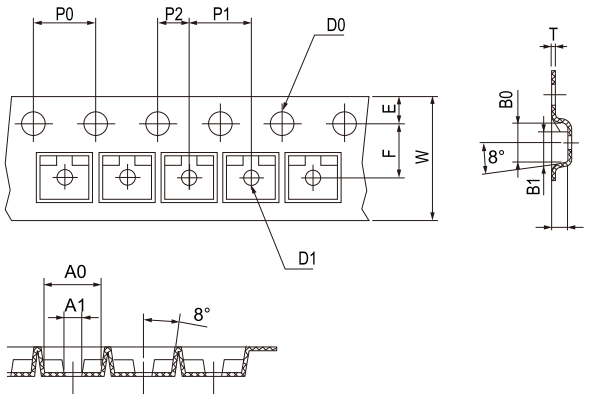
SOT-23 Suggested Pad Layout



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

Carrier Tape Dimensions

Unit：mm

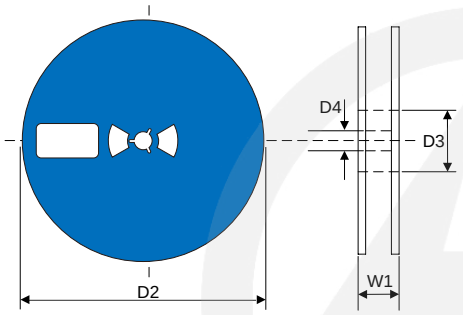


Symbol	Spec	Symbol	Spec
A0	3.15±0.10	P0	4.00±0.05
A1	1.09±0.10	P1	4.00±0.02
B0	2.77±0.10	W	8.00±0.10
B1	2.15±0.10	E	1.75±0.10
K0	1.22±0.10	F	3.50±0.05
D0	1.50±0.10	T	2.00±0.10
D1	1.00±0.10		

Reel Dimensions

Unit：mm

7” Reel

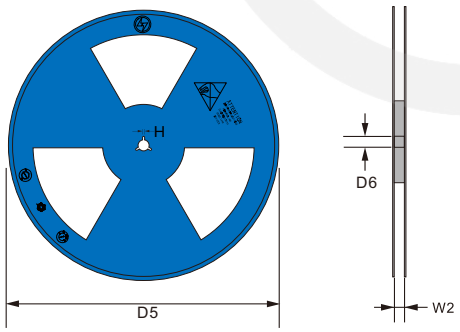


D2	Φ178.0±2.0
D3	Φ50
D4	13.0±0.5
W1	12±0.5
Quantity: 3000PCS	

Reel Dimensions

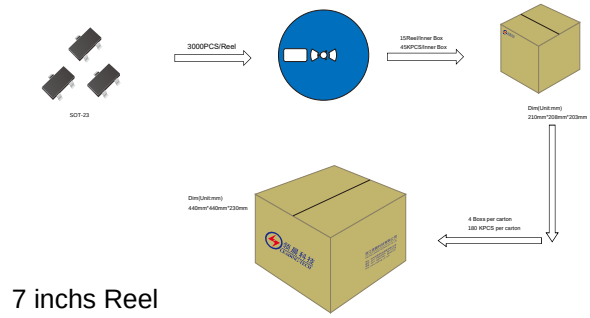
Unit：mm

13” Reel

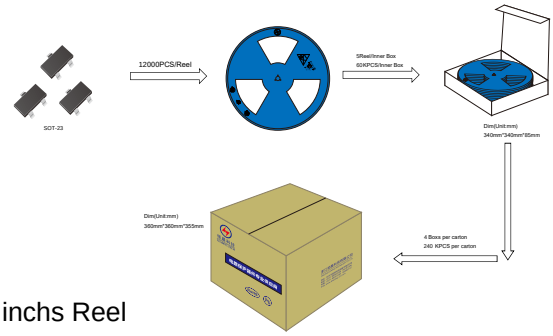


D5	Φ330.0±2.0
D6	Φ13.5±0.5
H	2.5±1.0
W2	12±2.0
Quantity: 12000PCS	

Packaging



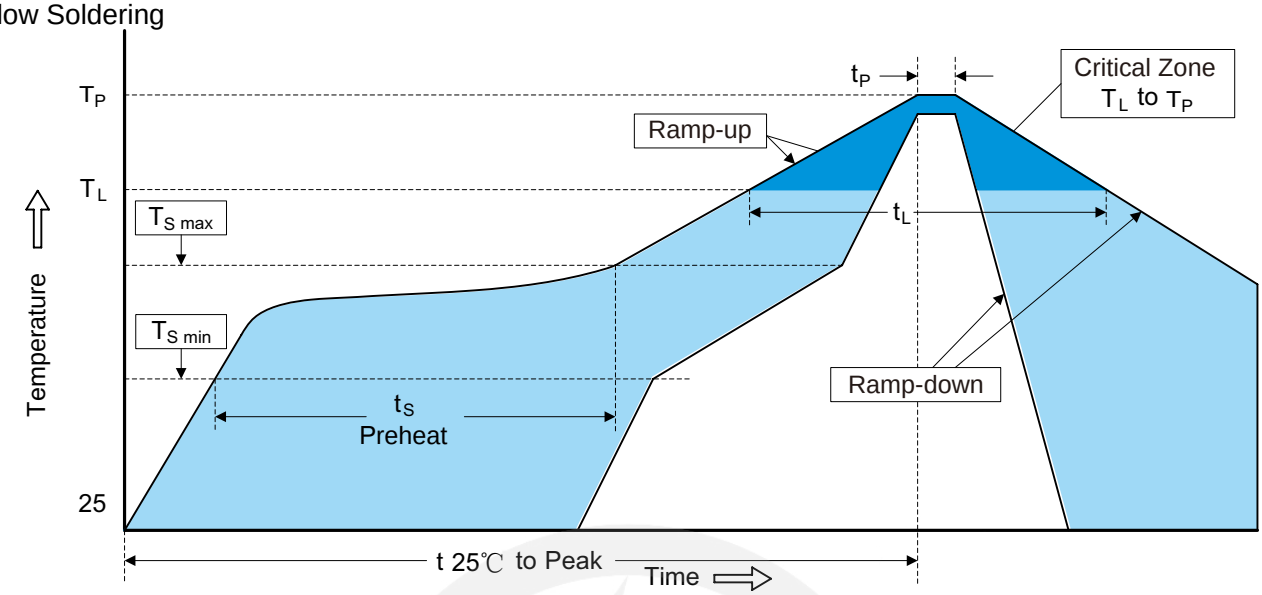
7 inchs Reel



13 inchs Reel

Recommended Soldering Conditions

Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3℃/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_S)	 150℃ 200℃ 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3℃/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	 217℃ 60-150 seconds
Peak Temperature (T_P)	260℃
Time within 5℃ of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.

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Version Update Information

Series NO.	Enactment/Revision Date	Effective Date	Version	Revision Content	Revision Reason	Revision Person	Note
01	2025.12.19	2025.12.19	3.0	New file	/	Ding	
02	2026.03.06	2026.03.06	3.1	Package outline E1(max)=2.6mm	/	Ding	