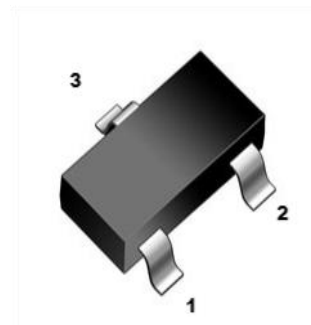




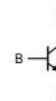
1. Features

- Epitaxial planar die construction
- Complementary PNP Type available(MMBT2907A)

SOT-23



1 base
2 emitter
3 collector



2. Mechanical Data

- Case:Molded Plastic,SOT-23 .
- Epoxy:UL 94V-0 rate flame retardant.
- Terminals:Plated Leads Solderable per MIL-STD-750,Method-2026.
- Marking: 1P
- Mounting Position : Any.

3. Maximum Ratings

Electrical Characteristics Rating at 25°C ambient temperature unless otherwise specified.

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	75	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	600	mA
Collector Power Dissipation	P_C	300	mW
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	417	°C/W
Junction Temperature	T_j	-55~+150	°C
Storage Temperature	T_{stg}	-55~+150	°C

4. Electrical Characteristics ($T_a=25^\circ\text{C}$ unless otherwise noted)

Characteristics	Symbol	Condition	Min	TYP	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}$	75	-	-	V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10\text{mA}$	40	-	-	V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}$	6	-	-	V
Collector cut-off current	I_{CBO}	$V_{CB}=60\text{V}$	-	-	10	nA
Collector Emitter Cutoff Current	I_{CEX}	$V_{CE}=30\text{V}, V_{BE(off)}=3\text{V}$	-	-	10	nA
Emitter Base Cutoff Current	I_{EBO}	$V_{EB}=3\text{V}$	-	-	0.1	μA
DC current gain	h_{FE}^*	$V_{CE}=10\text{V}, I_C=150\text{mA}$	100	-	300	-
		$V_{CE}=10\text{V}, I_C=0.1\text{mA}$	40	-	-	-
		$V_{CE}=10\text{V}, I_C=500\text{mA}$	42	-	-	-
Collector-emitter saturation voltage	$V_{CE(sat)}^*$	$I_C=500\text{mA}, I_B=50\text{mA}$	-	-	1	V
		$I_C=150\text{mA}, I_B=15\text{mA}$	-	-	0.3	V
Base -emitter saturation voltage	$V_{BE(sat)}^*$	$I_C=500\text{mA}, I_B=50\text{mA}$	-	-	2	V
Transition frequency	f_T	$V_{CE}=20\text{V}, I_C=20\text{mA}, f=100\text{MHz}$	300	-	-	MHz
Delay time	t_d	$V_{CC}=30\text{V}, V_{BE(off)}=-0.5\text{V}$ $I_C=150\text{mA}, I_{B1}=15\text{mA}$	-	-	10	ns
Rise Time	t_r		-	-	25	ns
Storage Time	t_s	$V_{CC}=30\text{V}, I_C=150\text{mA}, I_{B1}=$ $I_{B2}=15\text{mA}$	-	-	225	ns
Fall Time	t_f		-	-	60	ns

*Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycles $\leq 2.0\%$.



5. Rating And Characteristic Curves

Fig.Max Power Dissipation vs Ambient Temperature

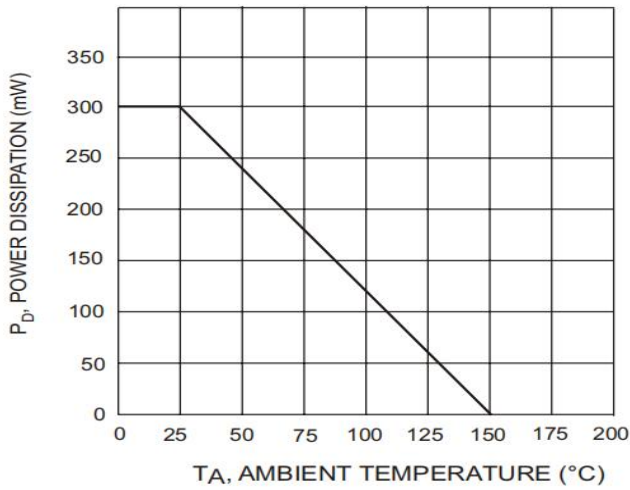


Fig.2 Typical DC Current Gain vs Collector Current

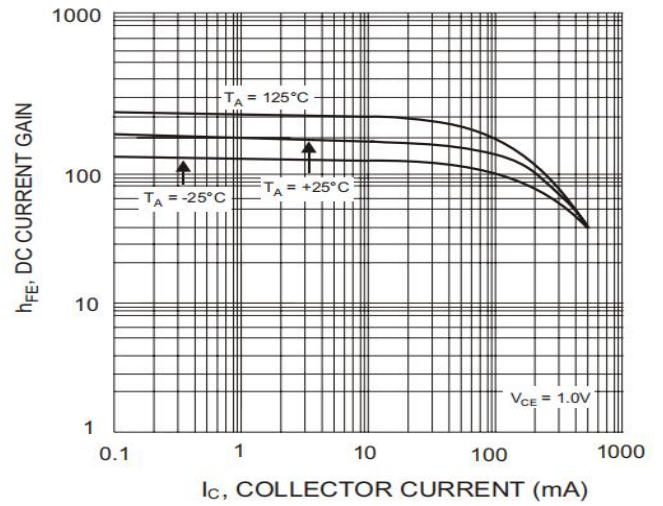


Fig.3 Typical Capacitance

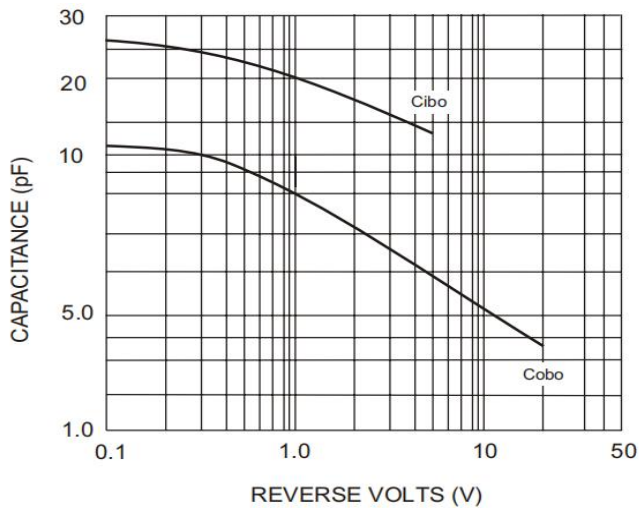
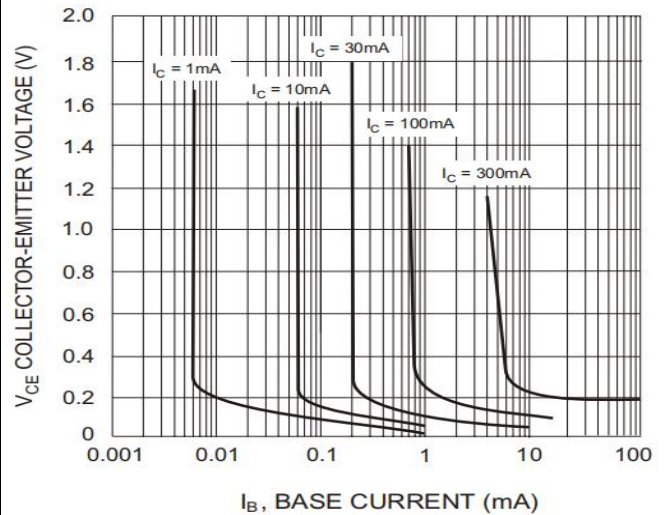
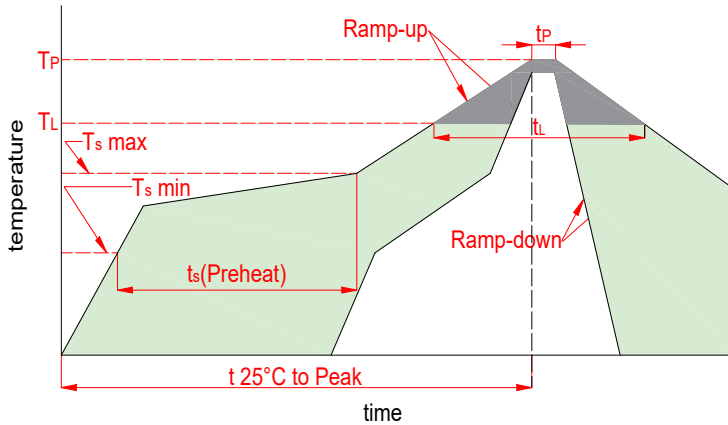


Fig.4 Typical Collector Saturation Region



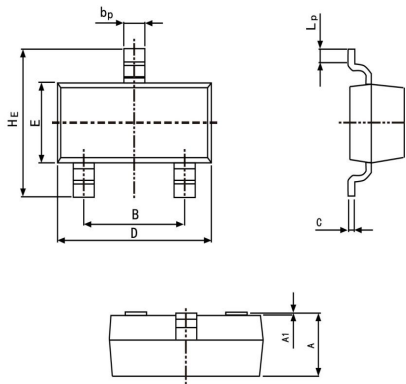


6. Soldering Parameters



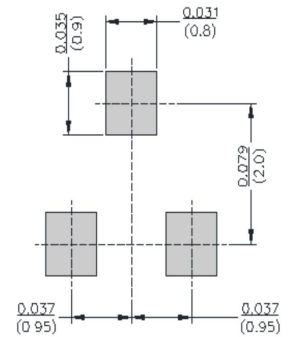
Reflow Condition		Lead-free
Pre Heat	Temp. min(T_s (min))	150℃
	Temp. max(T_s (min))	200℃
	Time(min to max)(t_s)	60~120s
Aver. ramp up rate(Liquidus Temp.)(T_L)to peak		3℃/s max
T_s (max) to T_L -Ramp-up Rate		3℃/s max
Reflow	Temp.(T_L)(Liquidus)	217℃
	Temp.(t_L)(Liquidus)	60~150s
Peak Temp.(T_P)		260 ^{+0/-5} ℃
Time within actual peak Temp.(t_p)		30s max
Ramp-down Rate		6℃/s max
Time 25℃ to peak Tempe.(T_P)		8 minutes max
Do not exceed		260℃

7. Dimensions

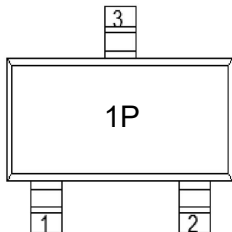


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.035	0.045	0.90	1.15
B	0.070	0.081	1.78	2.05
bp	0.012	0.020	0.30	0.51
C	0.003	0.007	0.08	0.18
D	0.110	0.118	2.80	3.00
E	0.047	0.055	1.20	1.40
HE	0.087	0.110	2.20	2.80
A1	0.000	0.004	0.00	0.10
LP	0.008	0.020	0.20	0.50

Mounting PAD Layout



8. Part Marking System



9. Package Information

Package	Part Number	Tape Width(mm)	Quantity(pcs)
SOT-23	MMBT2222A	8	3000



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