



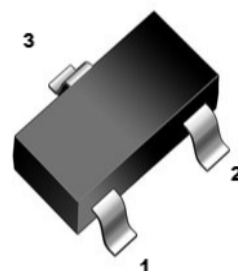
MMBTA10 THRU MMBTA11

NPN Plastic-Encapsulate Transistors

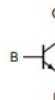
1. Features

- VHF / UHF transistor

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: MMBTA10:1E; MMBTA11:1F
- 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}	30	V
Collector-Emitter Voltage	V_{CEO}	25	V
Emitter-Base Voltage	V_{EBO}	3	V
Collector Current	I_C	100	mA
Power Dissipation	P_{tot}	200	mW
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)

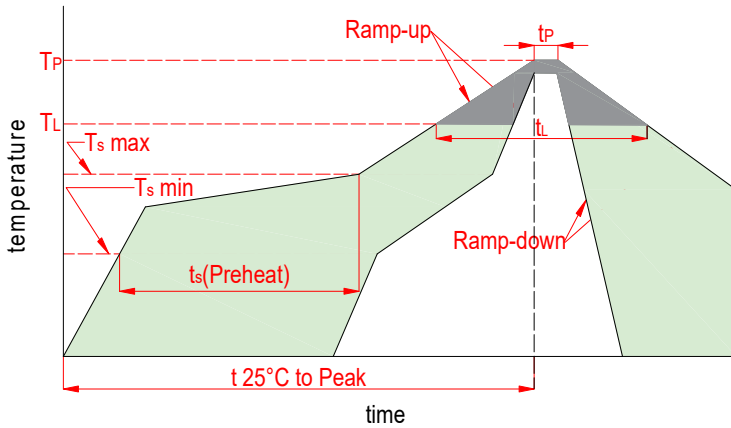
Characteristics	Symbol	Condition	Min	TYP	Max	Unit
Collector Base Breakdown Voltage	BV_{CBO}	$I_C=100\mu\text{A}$	30	-	-	V
Collector Emitter Breakdown Voltage	BV_{CEO}	$I_C=1\text{mA}$	25	-	-	V
Emitter Base Breakdown Voltage	BV_{EBO}	$I_E=10\mu\text{A}$	3	-	-	V
Collector cut-off current	I_{CBO}	$V_{CB}=25\text{V}$	-	-	100	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=2\text{V}$	-	-	100	nA
DC current gain	h_{FE}	$V_{CE}=10\text{V}, I_C=4\text{mA}$	60	-	-	-
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=4\text{mA}, I_B=0.4\text{mA}$	-	-	500	mV
Base-emitter voltage	V_{BE}	$V_{CE}=10\text{V}, I_C=4\text{mA}$	-	-	0.95	V
Current Gain - Bandwidth Product	f_T	$V_{CE}=10\text{V}, I_C=4\text{mA}, f=100\text{MHz}$	650	-	-	MHz
Collector Base Capacitance	C_{cb}	$V_{CB}=10\text{V}, f=1\text{MHz}$	-	-	0.7	pF
Collector Base Feedback Capacitance	MMBTA10 MMBTA11 C_{rb}	$V_{CB}=10\text{V}, f=1\text{MHz}$	0.35	-	0.65	pF
			0.6	-	0.9	



MMBTA10 THRU MMBTA11

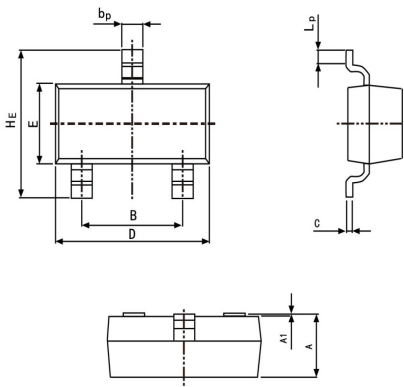
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5. Soldering Parameters



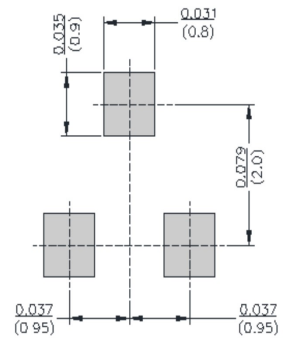
Reflow Condition		Lead-free
Pre Heat	Temp. min(T_s (min))	150°C
	Temp. max(T_s (min))	200°C
	Time(min to max)(t_s)	60~120s
Aver. ramp up rate(Liquidus Temp.)(T_L)to peak		3°C/s max
T_s (max) to T_L -Ramp-up Rate		3°C/s max
Reflow	Temp. (T_L)(Liquidus)	217°C
	Temp. (t_L)(Liquidus)	60~150s
Peak Temp. (T_P)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

6. Dimensions

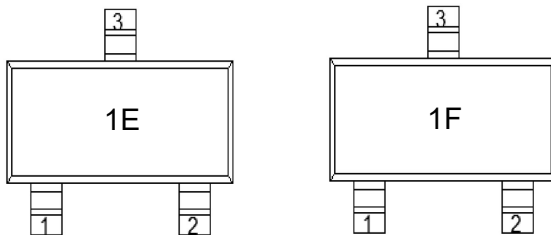


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.035	0.045	0.90	1.15
B	0.070	0.081	1.78	2.05
bp	0.012	0.020	0.30	0.51
C	0.003	0.007	0.08	0.18
D	0.110	0.118	2.80	3.00
E	0.047	0.055	1.20	1.40
HE	0.087	0.110	2.20	2.80
A1	0.000	0.004	0.00	0.10
LP	0.008	0.020	0.20	0.50

Mounting PAD Layout



7. Part Marking System



8. Package Information

Package	Part Number	Marking	Tape Width(mm)	Quantity(pcs)
SOT-23	MMBTA10	1E	8	3000
SOT-23	MMBTA11	1F	8	3000



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