

FMBZTA94**List**

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FMBZTA94

-300mA, -400V PNP High Voltage Transistor

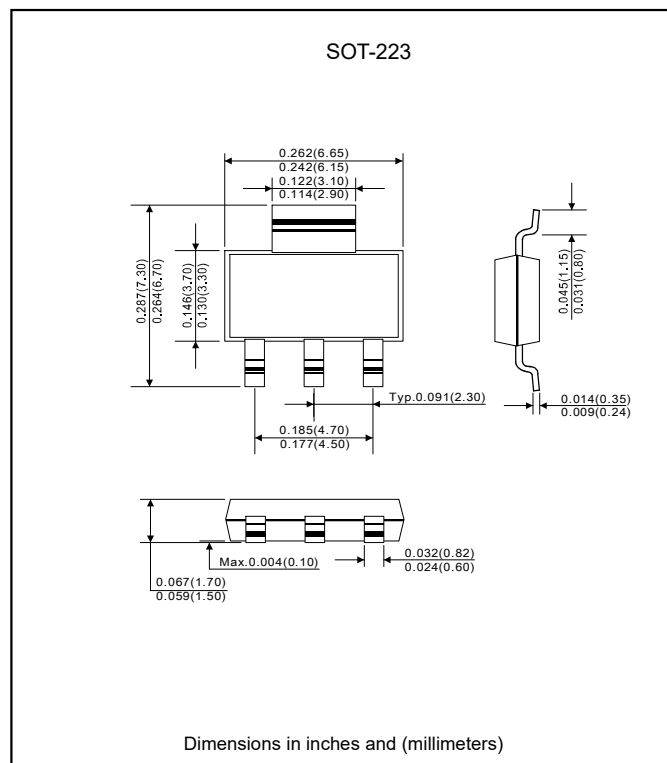
Features

- Collector-emitter voltage $-V_{CEO}=400V$.
- Collector dissipation : $P_{D(MAX)}=625mW$.
- Low collector-emitter saturation voltage.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex.FMBZTA94-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-223
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.1171 gram

Package outline



Maximum ratings (At $T_A=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Collector-base voltage	$-V_{CBO}$	400	V
Collector-emitter voltage	$-V_{CEO}$	400	V
Emitter-base voltage	$-V_{EBO}$	6	V
DC collector current	$-I_C$	300	mA
Power dissipation (Note 4)	P_D	625	mW
Junction temperature	T_J	+150	$^{\circ}C$
Storage temperature	T_{STG}	-40 ~ +150	$^{\circ}C$

Note :

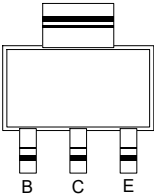
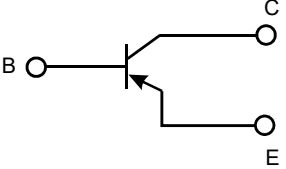
Absolute maximum rating are those values beyond which the device could be permanently damaged.
 Absolute maximum ratings are stress ratings only and functional device operation is not implied.

FMBZTA94**Electrical characteristics** ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

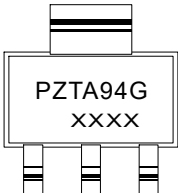
Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	$-I_C = 100\mu\text{A}$, $-I_E = 0$	$-BV_{CBO}$	400			V
Collector-emitter breakdown voltage	$-I_C = 1\text{mA}$, $V_{BE} = 0\text{V}$	$-BV_{CEO}$	400			V
Emitter-base breakdown voltage	$-I_E = 100\mu\text{A}$, $I_C = 0$	$-BV_{BEO}$	5			V
Base-emitter saturation voltage	$-I_C = 10\text{mA}$, $-I_B = 1\text{mA}$	$-V_{BE(SAT)}$			0.75	V
Collector-emitter saturation voltage	$-I_C = 10\text{mA}$, $-I_B = 1\text{mA}$	$-V_{CE(SAT)}$			0.2	V
	$-I_C = 50\text{mA}$, $-I_B = 5\text{mA}$				0.5	V
Collector cut off current	$-V_{CB} = 300\text{V}$, $I_E = 0$	$-I_{CBO}$			100	nA
	$-V_{CE} = 400\text{V}$, $V_{BE}=0$	$-I_{CES}$			1	μA
Emitter cut off current	$-V_{EB}=4\text{V}$, $I_C=0$	$-I_{EBO}$			100	nA
DC current gain	$-V_{CE} = 10\text{V}$, $-I_C = 1\text{mA}$	h_{FE}	60		300	
	$-V_{CE} = 10\text{V}$, $-I_C = 10\text{mA}$		70			
	$-V_{CE} = 10\text{V}$, $-I_C = 50\text{mA}$		70			
	$-V_{CE} = 10\text{V}$, $-I_C = 100\text{mA}$		40			
Output capacitance	$-V_{CB}=20\text{V}$, $I_E=0$, $f=1\text{MHz}$	C_{ob}			7	pF

Note : Pulse test : Pulse width < 300 μs , Duty cycle < 2%.

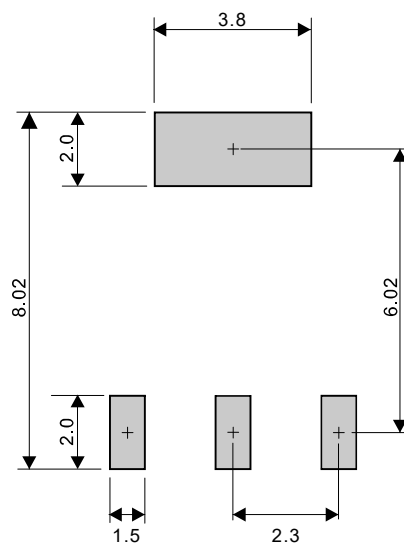
FMBZTA94**Pinning information**

Pin	Simplified outline	Symbol
Pin B Base Pin C Collector Pin E Emitter		

Marking

Type number	Marking code
FMBZTA94	

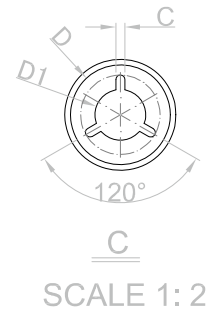
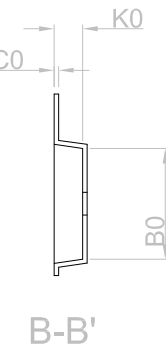
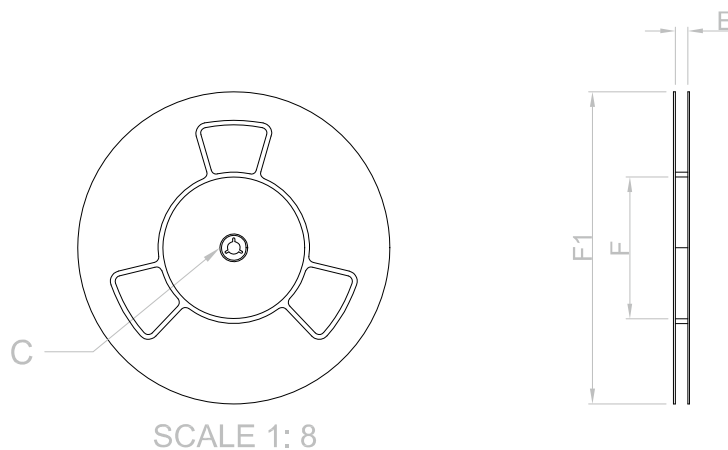
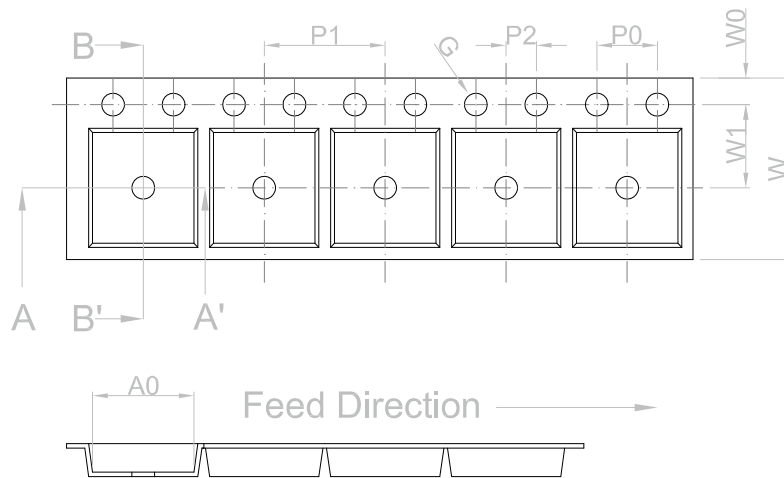
Date Code : XXXX

Suggested solder pad layout**SOT-223****Note:**

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.050\text{mm}$.
3. The pad layout is for reference purposes only

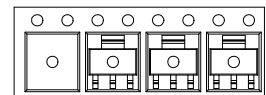
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Packing information



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A0	6.60	6.80	0.260	0.268
B0	7.15	7.35	0.281	0.289
C0	0.25	0.35	0.010	0.014
K0	1.78	1.98	0.070	0.078
W0	1.65	1.85	0.065	0.073
W1	5.45	5.55	0.215	0.219
W	11.90	12.30	0.469	0.484
P0	3.90	4.10	0.154	0.161
P1	7.90	8.10	0.311	0.319
P2	1.95	2.05	0.077	0.081
G	1.50	1.60	0.059	0.063
C	1.50	3.00	0.059	0.118
D	20.70	21.30	0.815	0.839
D1	12.80	13.40	0.504	0.528
E	12.50	13.50	0.492	0.531
F	149.00	151.00	5.866	5.945
F1	328.00	332.00	12.913	13.071

SOT-223 T/R



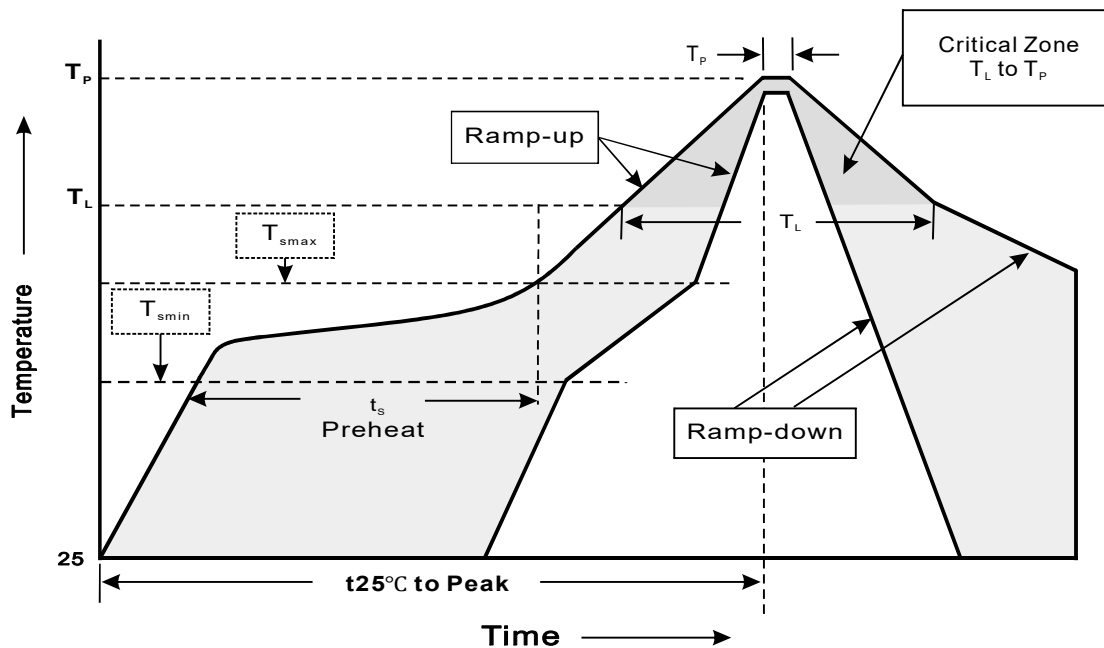
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Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)
SOT-223	13"	2,500	8.0	5,000	335*335*38	330	350*330*360	40,000

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile feature	Soldering Condition
Average ramp-up rate (T_L to T_p)	< 3°C/sec
Preheat -Temperature Min (T_{smmin}) -Temperature Max (T_{smmax}) -Time (min to max) (t_s)	150°C 200°C 60 ~ 120sec
T_{smmax} to T_L -Ramp-up rate	< 3°C/sec
Time maintained above: -Temperature (T_L) -Time(T_L)	217°C 60 ~ 260 sec
Peak Temperature(T_p)	255°C -0/+5°C
Time within 5°C of actual peak Temperature(T_p)	10 ~ 30sec
Ramp-down rate	< 6°C/sec
Time 25°C to peak temperature	< 6 minutes