

FMBZTA42

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FMBZTA42

500mA, 300V NPN Silicon Power Transistor

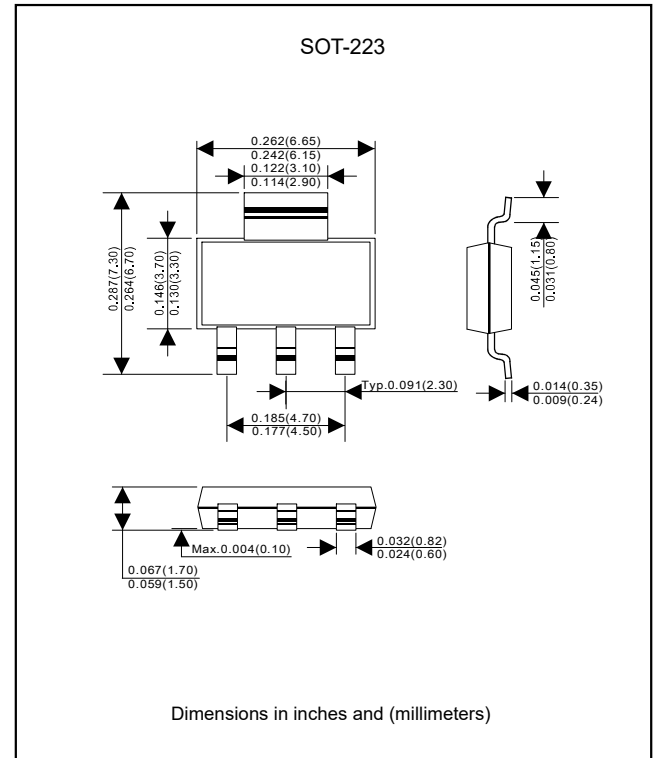
Features

- Collector - emitter voltage : $V_{CE0} = 300V$.
- High current gain.
- Collector Dissipation : $P_{D(MAX)} = 1.0W$.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex.FMBZTA42-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}	300	V
Collector-emitter voltage	V_{CEO}	300	V
Emitter-base voltage	V_{EBO}	6	V
DC collector current	I_C	500	mA
Power dissipation (Note 4)	P_D	1.0	W
Junction temperature	T_J	+150	$^\circ C$
Storage temperature	T_{STG}	-55 ~ +150	$^\circ C$

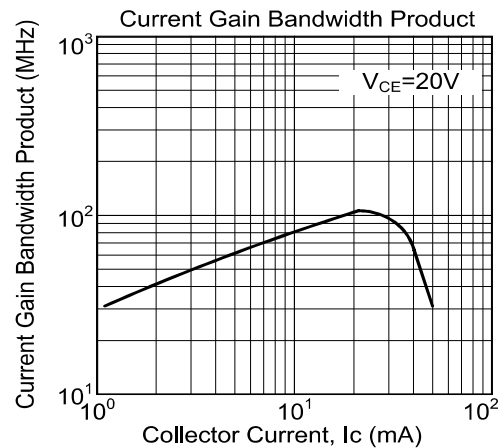
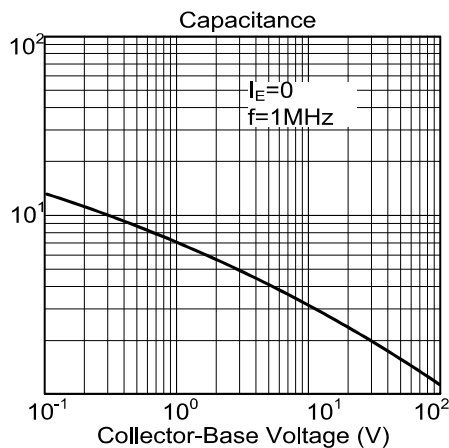
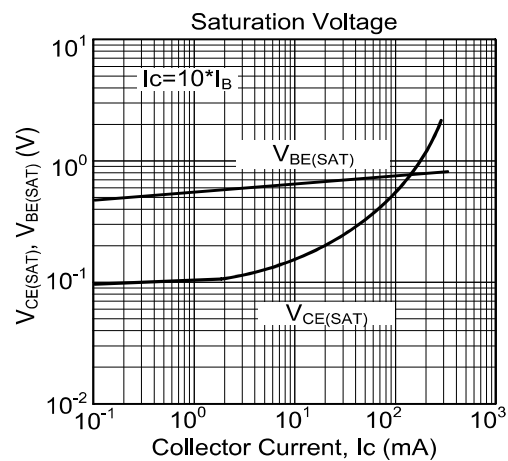
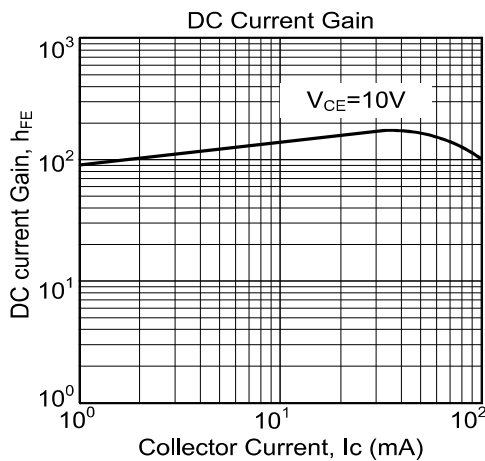
Note :

1. 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.

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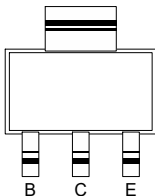
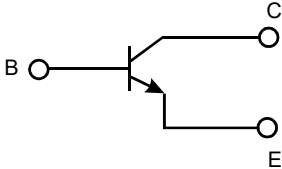
Electrical characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector base breakdown voltage	$I_C=100\mu\text{A}$, $I_E=0$	$V_{(BR)CBO}$	300			V
Collector emitter breakdown voltage	$I_C=1\text{mA}$, $I_B=0$	$V_{(BR)CEO}$	300			V
Emitter base breakdown voltage	$I_E=100\mu\text{A}$, $I_C=0$	$V_{(BR)EBO}$	6			V
Collector cut off current	$V_{CB}=200\text{V}$, $I_E=0$	I_{CBO}			100	nA
Emitter cut off current	$V_{EB}=6\text{V}$, $I_C=0$	I_{EBO}			100	nA
Collector-emitter saturation voltage	$I_C=20\text{mA}$, $I_B=2\text{mA}$	$V_{CE(SAT)}$			0.2	V
Base-emitter saturation voltage	$I_C=20\text{mA}$, $I_B=2\text{mA}$	$V_{BE(SAT)}$			0.9	V
DC current gain (Note)	$V_{CE}=10\text{V}$, $I_C=1\text{mA}$	h_{FE}	80			
	$V_{CE}=10\text{V}$, $I_C=10\text{mA}$		80		300	
	$V_{CE}=10\text{V}$, $I_C=30\text{mA}$		80			
Current gain bandwidth product	$V_{CE}=20\text{V}$, $I_C=10\text{mA}$, $f=100\text{MHz}$	f_T	50			MHz
Collector base capacitance	$V_{CB}=20\text{V}$, $I_E=0$, $f=1\text{MHz}$	C_{CB}			3	pF

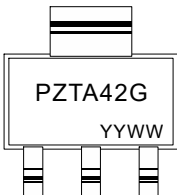
Rating and characteristic curves (FMBZTA42)

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Pinning information

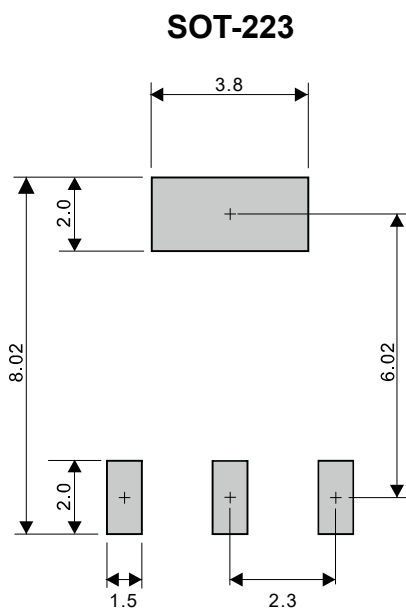
Pin	Simplified outline	Symbol
Pin B Base Pin C Collector Pin E Emitter		

Marking

Type number	Marking code
FMBZTA42	

Date Code : YYWW

Suggested solder pad layout

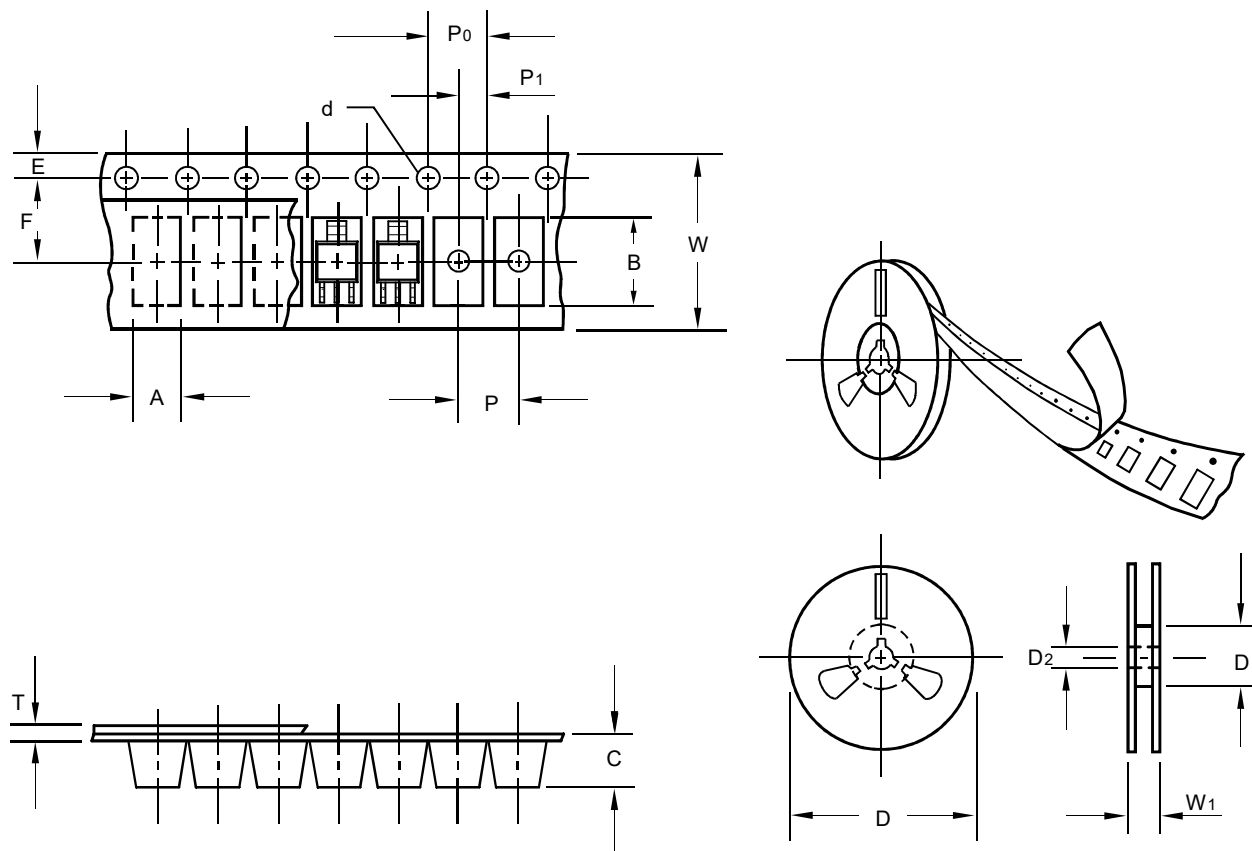


Note:

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



unit:mm

Item	Symbol	Tolerance	SOT-223
Carrier width	A	0.1	6.765
Carrier length	B	0.1	7.335
Carrier depth	C	0.1	1.88
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D1	min	100.00
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.50
Punch hole pitch	P	0.1	8.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.29
Tape width	W	0.3	12.00
Reel width	W1	0.3	17.6

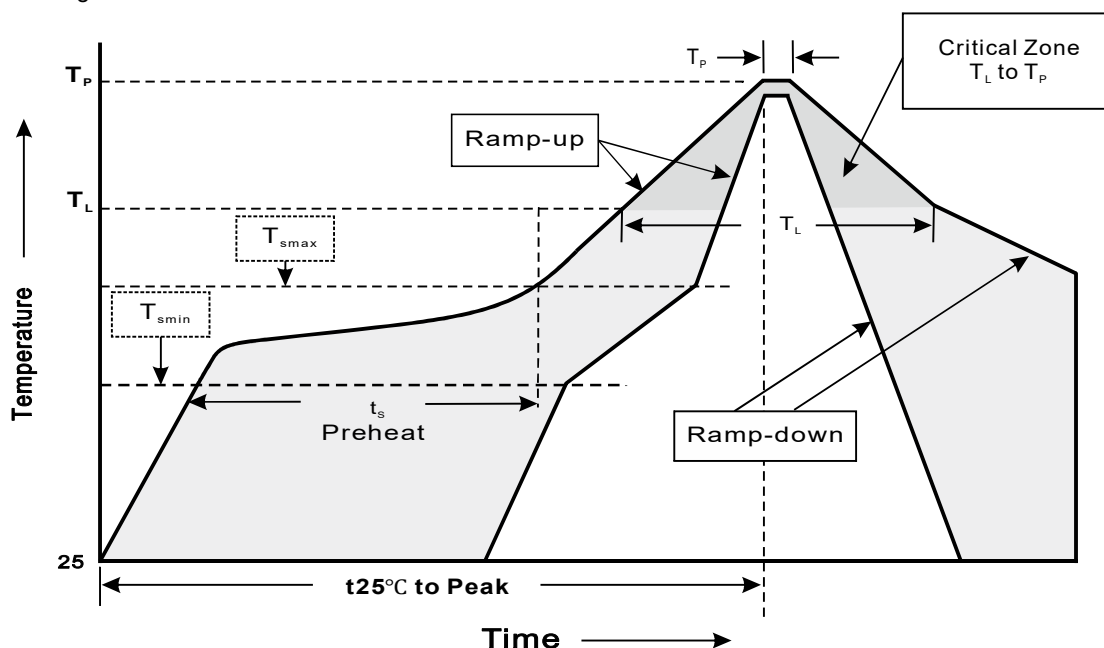
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Reel packing

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_{smin}) -Temperature Max (T_{smax}) -Time (min to max) (t_s)	150°C 200°C 60 ~ 120sec
T_{smax} 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