

FMBTA92W

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FMBTA92W

-200mA, -300V High Voltage PNP Transistor

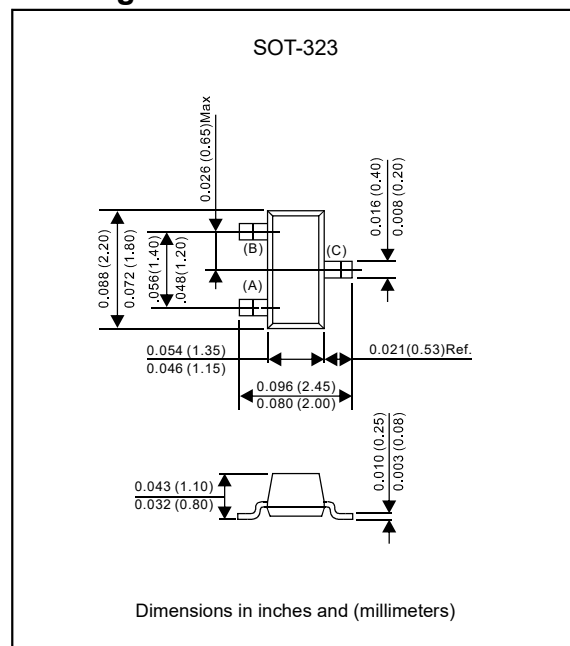
Features

- High voltage transistor. ($BV_{CEO} = -300V$ @ $I_C = -200mA$)
- Capable of 150mW power dissipation.
- Lead-free parts for green partner, exceeds environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen-free part, ex.FMBTA92W-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-323
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.006 gram

Package outline



Maximum ratings (AT $T_A = 25^\circ C$ unless otherwise noted)

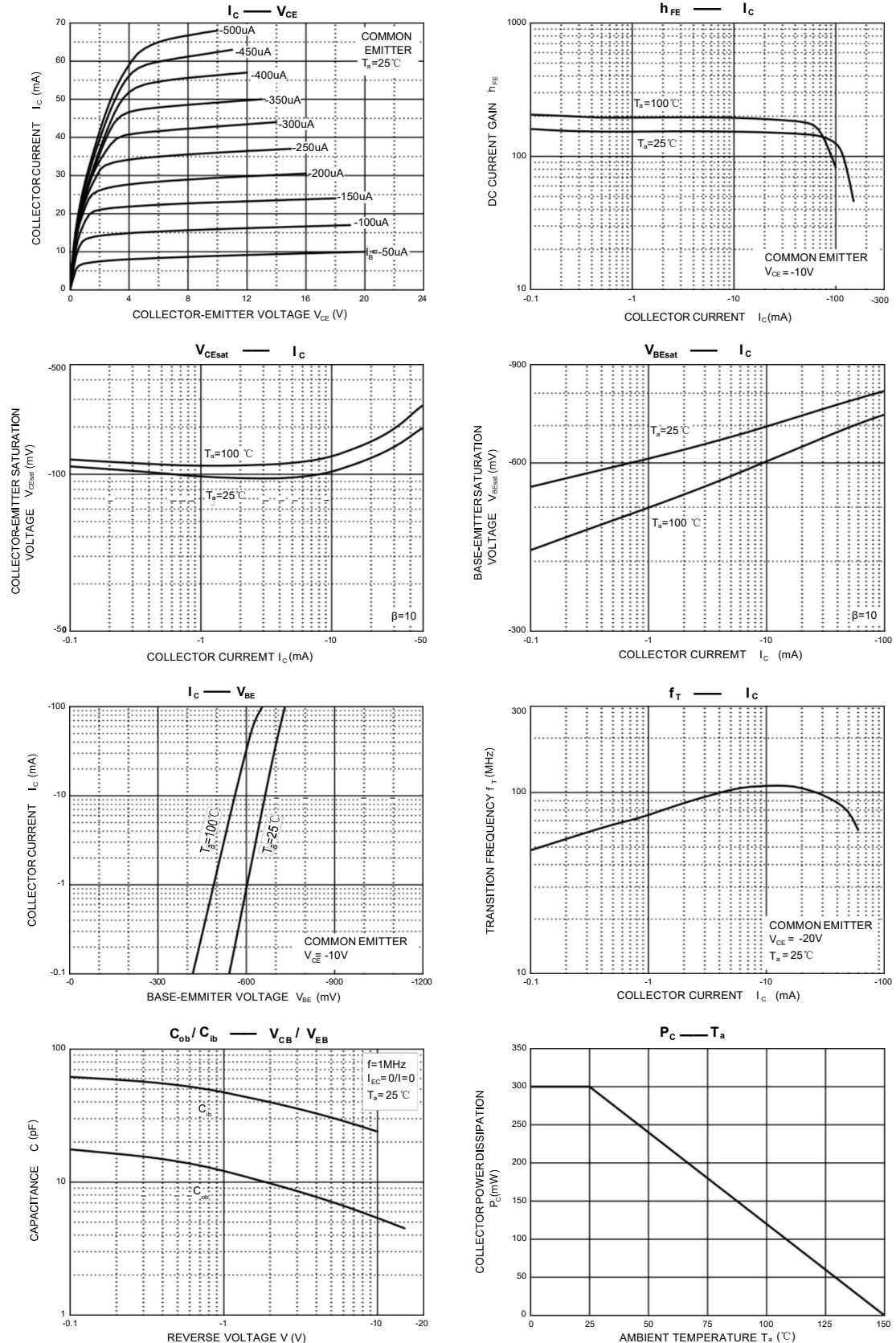
Parameter	Symbol	Value	Unit
Collector to base voltage	$-V_{CBO}$	300	V
Collector to Emitter Voltage	$-V_{CEO}$	300	V
Emitter to base voltage	$-V_{EBO}$	5	V
Collector current - continuous	$-I_C$	200	mA
Collector current - pulsed	$-I_{CM}$	500	mA
Total power dissipation	P_D	300	mW
Junction temperature	T_J	+150	$^\circ C$
Storage temperature range	T_{STG}	-55 ~ +150	$^\circ C$
Thermal resistance, Junction to ambient	$R_{\theta JA}$	410	$^\circ C/W$

Electrical characteristics (AT $T_A = 25^\circ C$ unless otherwise noted)

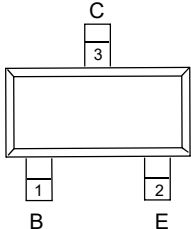
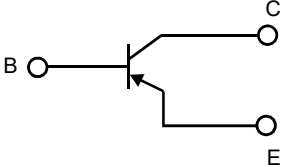
Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector base breakdown voltage	$-I_C = 100\mu A, I_E = 0$	$-V_{(BR)CBO}$	300			V
Collector emitter breakdown voltage	$-I_C = 1mA, I_B = 0$	$-V_{(BR)CEO}$	300			V
Emitter base breakdown voltage	$-I_E = 100\mu A, I_C = 0$	$-V_{(BR)EBO}$	5			V
Collector cut off current	$-V_{CB} = 200V, I_E = 0$	$-I_{CBO}$			0.25	μA
Emitter cut-off current	$-V_{EB} = 5V, I_C = 0$	$-I_{EBO}$			0.1	μA
DC current gain	$-V_{CE} = 10V, -I_C = 1mA$	h_{FE}	60		560	
	$-V_{CE} = 10V, -I_C = 10mA$		100	200		
	$-V_{CE} = 10V, -I_C = 30mA$		60			
Collector-emitter saturation voltage	$-I_C = 20mA, -I_B = 2mA$	$-V_{CE(SAT)}$			0.2	V
Base-emitter saturation voltage	$-I_C = 20mA, -I_B = 2mA$	$-V_{BE(SAT)}$			0.9	V
Transition Frequency	$-V_{CE} = 2V, -I_C = 10mA, f = 30MHz$	f_T	50			MHz

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Rating and characteristic curves



FMBTA92W**Pinning information**

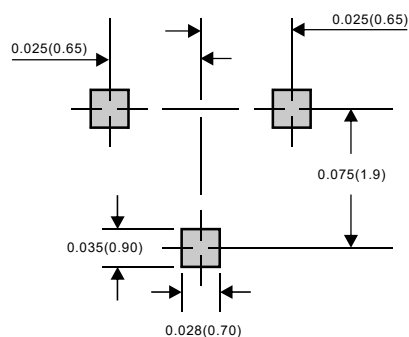
Pin	Simplified outline	Symbol
Pin 1 Base Pin 2 Emitter Pin 3 Collector		

Marking

Type number	Marking code
FMBTA92W	2D

Suggested solder pad layout

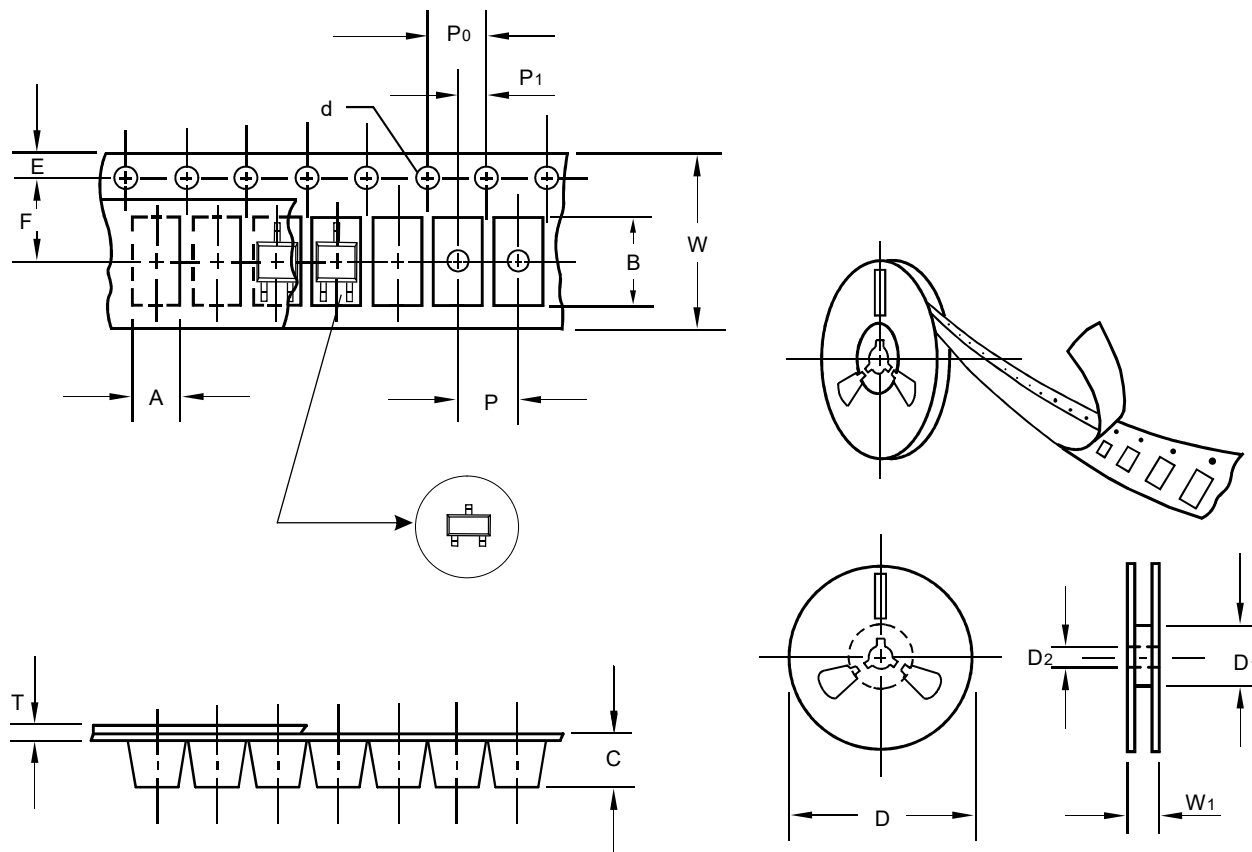
SOT-323



Dimensions in inches and (millimeters)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-323
Carrier width	A	0.1	2.25
Carrier length	B	0.1	2.55
Carrier depth	C	0.1	1.19
Sprocket hole	d	0.1	1.55
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	54.40
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	12.30

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

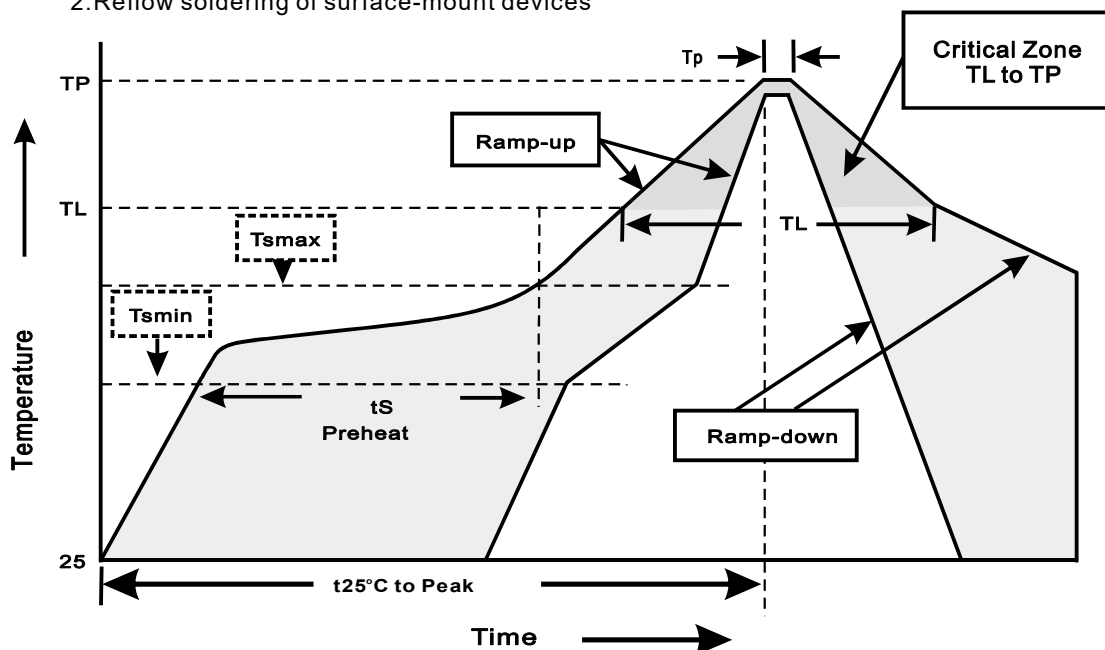
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Reel packing

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)	APPROX. GROSS WEIGHT (kg)
SOT-323	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	9.5

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-upRate	<3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	217°C 60~260sec
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	<6minutes

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High reliability test capabilities

Item Test	Conditions
1. Steady State Operating Life	$P_o=150\text{mW}$ Test Duration:1000hrs
2. High Temperature Reverse Bias	$T_j=150^\circ\text{C}$, $V_{ce}=80\%$ related volage, 1000hrs
3. Temperature Cycle	-55°C (15min) to 150°C (15min) Air to Air Transition Time<20sec Test Cycles: 1000cycle
4. Autoclave	$P=2\text{atm}$ $T_a=121^\circ\text{C}$ $\text{RH}=100\%$ Test Duration:96hrs
5. High Temperature Storage Life	$T_a=150^\circ\text{C}$ Test Duration: 1000hrs
6. Solderability	245°C ,5sec
7. High Temperature High Humidity Reverse Bias	$T_a=85^\circ\text{C}$, 85%RH, $V_{ce}=80\%$ related volage, 1000hrs
8. Resistance to Soldering Heat	260°C ,10sec
10. Solvent Resistance	