FMBT5551W

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NPN SMD Transistor

FMBT5551W

Formosa MS

General Purpose Transistors
NPN Silicon

Features

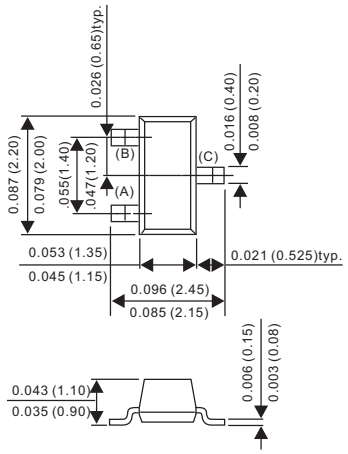
- Small surface mount package
- Ideal for medium power amplification and switching
- Lead free parts meet RoHS requirments
- Suffix "-H" indicates Halogen free parts, ex. FMBT5551W-H

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

SOT-323



Dimensions in inches and (millimeters)

Maximum ratings (AT T_A=25°C unless otherwise noted)

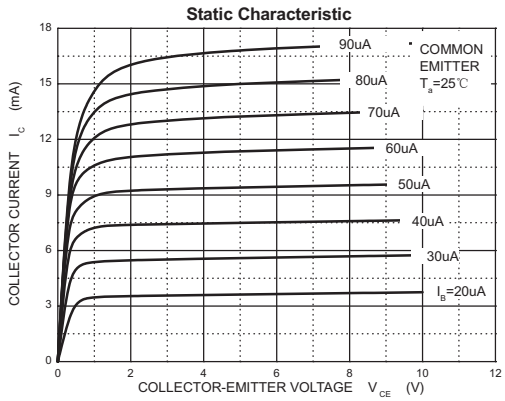
PARAMETER	Symbol	Value	UNIT
Collector-base voltage	V_{CBO}	180	V
Collector-emitter voltage	V_{CEO}	160	V
Emitter-base voltage	V_{EBO}	6.0	V
Collector current -continuous	I_C	0.6	A
Collector power dissipation	P_C	200	mW
Typical thermal resistance junction to ambient	$R_{\theta JA}$	625	°C/W
Operating junction temperature range	T_J	-55 to +150	°C
Storage temperature range	T_{STG}	-55 to +150	°C

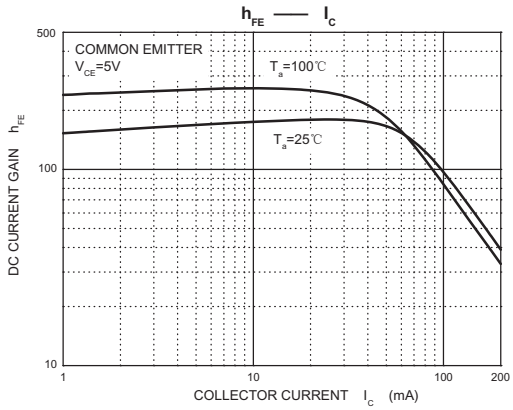
Electrical characteristics (AT T_A=25°C unless otherwise noted)

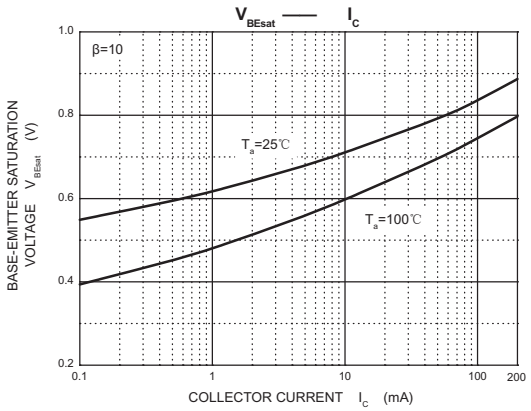
PARAMETER	CONDITIONS	Symbol	Min.	Typ.	Max.	UNIT
Collector- base breakdown voltage	I_C = 100uA,I_E=0	$V_{(BR)CBO}$	180			V
Collector-emitter breakdown voltage*	I_C = 1mA,I_B=0	$V_{(BR)CEO}$	160			V
Emitter-base breakdown voltage	I_E = 10uA,I_C=0	$V_{(BR)EBO}$	6.0			V
Collector cut-off current	V_{CB} = 120V, I_E = 0	I_{CBO}			50	nA
Emitter cut-off current	V_{EB} = 4V, I_C = 0	I_{EBO}			50	nA
DC current gain	V_{CE} = 5V, I_C = 1mA V_{CE} = 5V, I_C = 10mA V_{CE} = 5V, I_C = 50mA	h_{FE}	80 80 30		- 300 -	
Collector-emitter saturation voltage	I_C = 50mA, I_B = 5mA I_C = 10mA, I_B = 1mA	$V_{CE(sat)}$			0.2 0.15	V
Base-emitter saturation voltage	I_C = 50mA, I_B = 5mA I_C = 10mA, I_B = 1mA	$V_{BE(sat)}$			1.0 1.0	V
Transition frequency	V_{CE} = 10V, I_C = 10mA,f=100MHz	f_T	100		300	MHZ
Collector output capacitance	V_{CB} = 10V, I_E = 0,f=1MHz	C_{ob}			6.0	pF

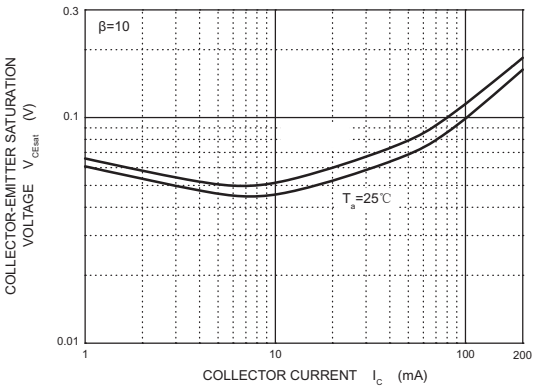
* Pulse test: pulse width ≤300μs, duty cycle≤ 2.0%.

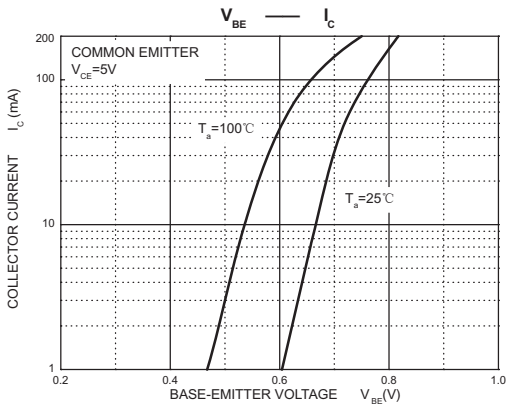
Rating and characteristic curves (FMBT5551W)

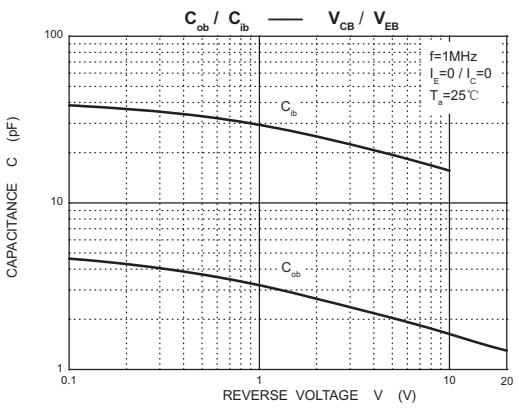


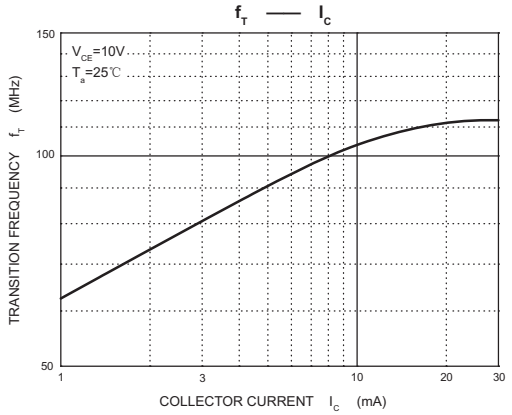


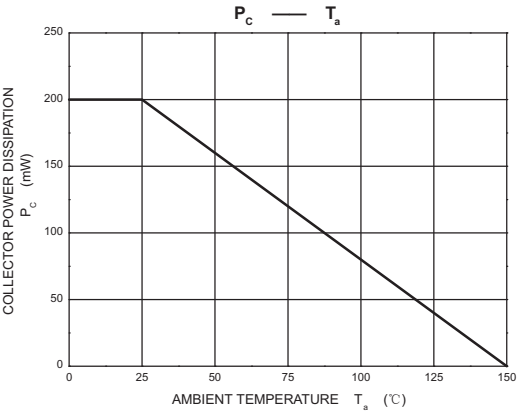




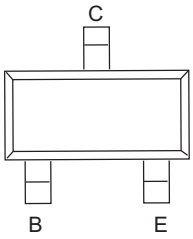
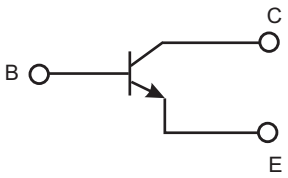








Pinning information

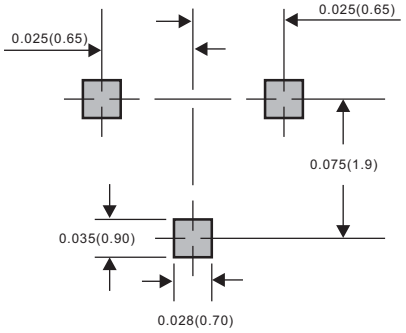
Pin	Simplified outline	Symbol
PinB Base PinC Collector PinE Emitter		

Marking

Type number	Marking code
FMBT5551W	K4N

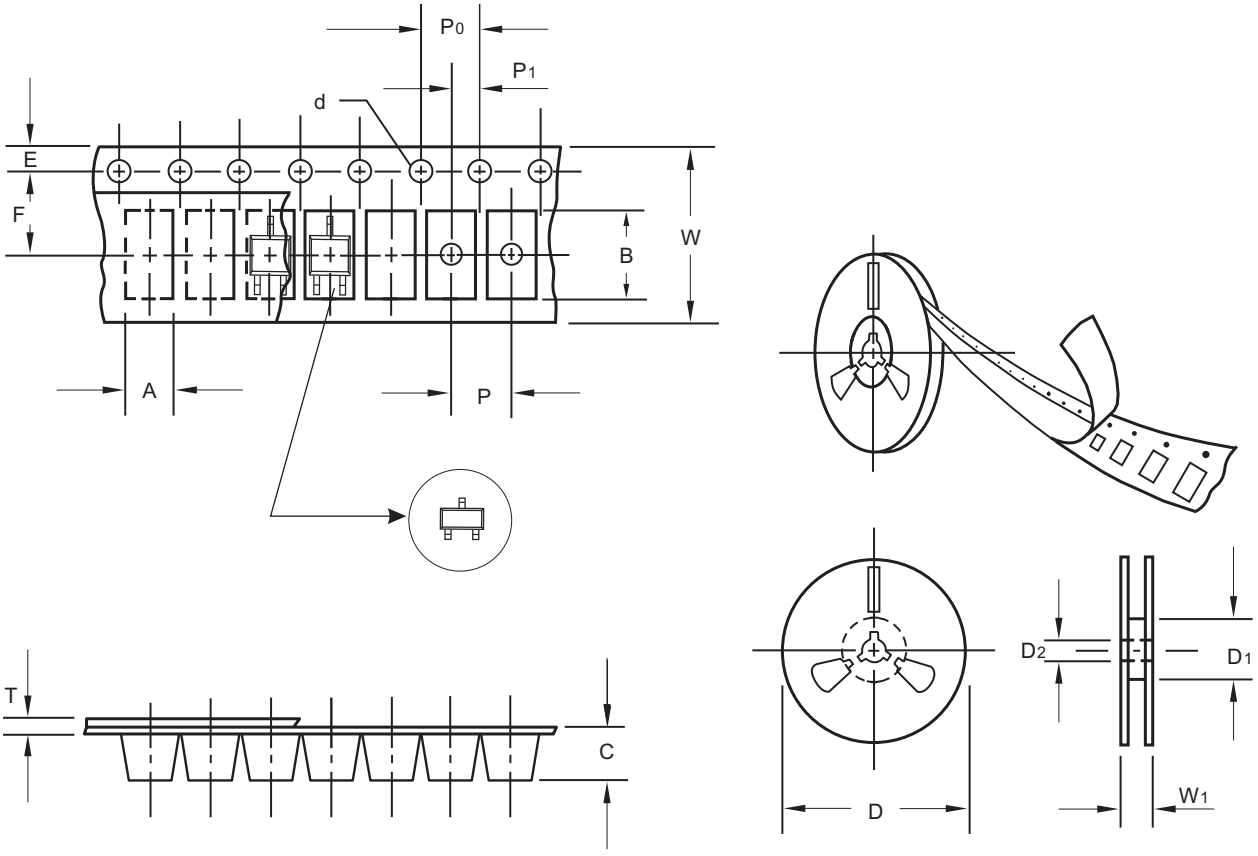
Suggested solder pad layout

SOT-323



Dimensions in inches and (millimeters)

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	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	54.40
Feed hole diameter	D_2	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	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W_1	1.0	12.30

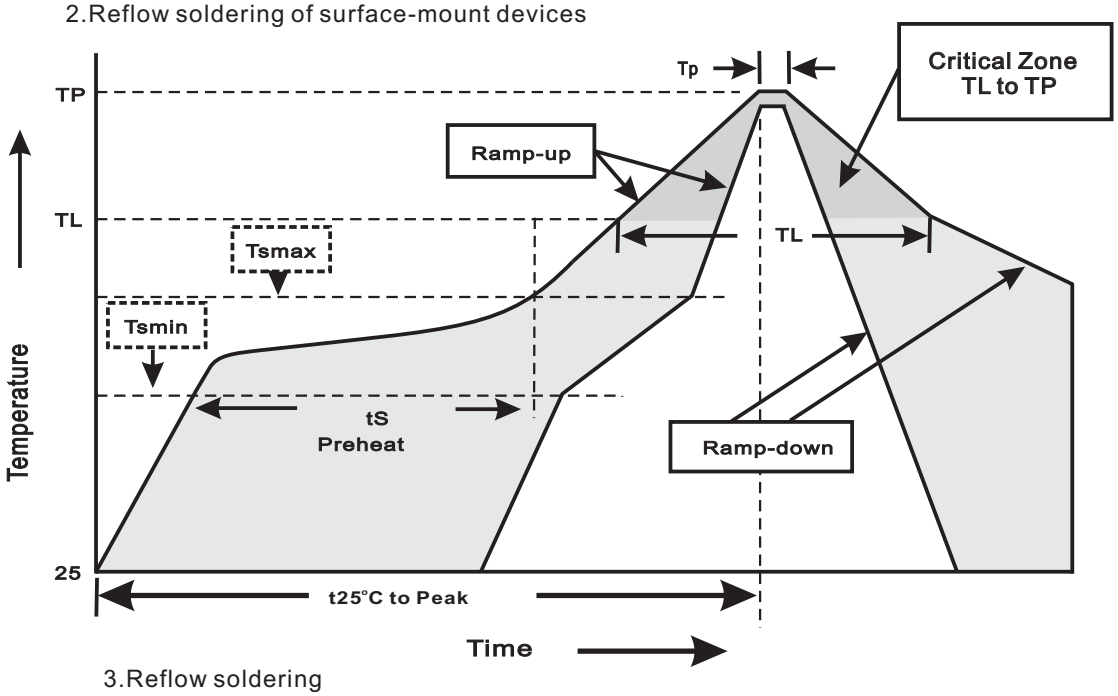
Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax 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