

FMBTEMX1V

List

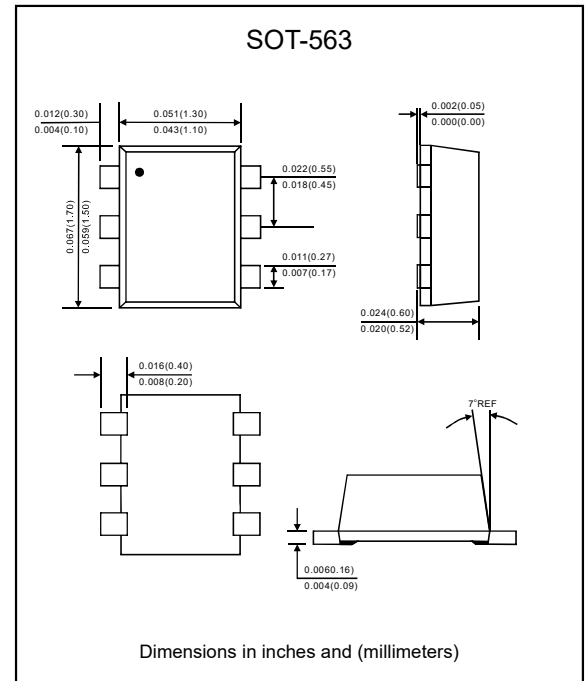
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FMBTEMX1V**150mA, 60V NPN Plastic-Encapsulate Transistor****Features**

- Transistor elements are independent, eliminating interference.
- $BV_{CEO}=60V$, $I_C=150mA$.
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen-free part, ex.FMBTEMX1V-H

Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-563
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.003 gram

Package outline**Maximum ratings** (At $T_A=25^\circ C$ unless otherwise specified)

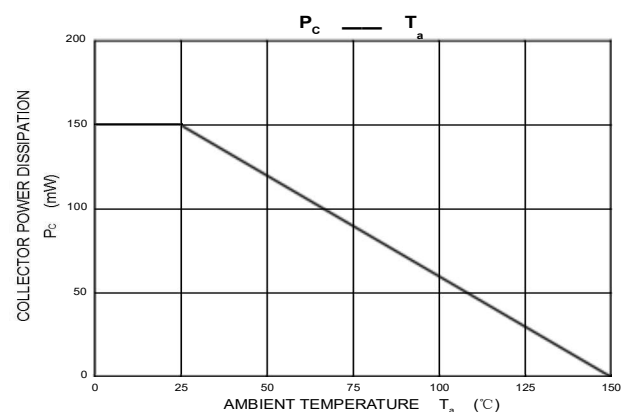
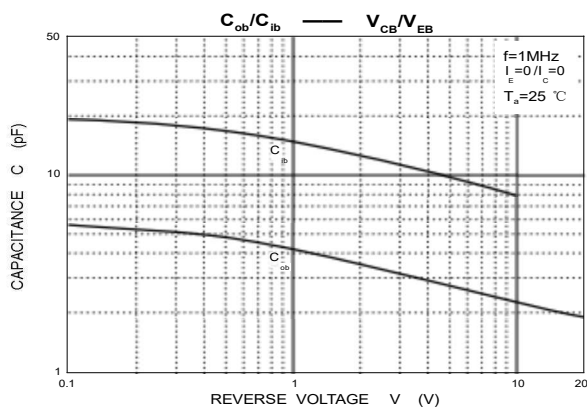
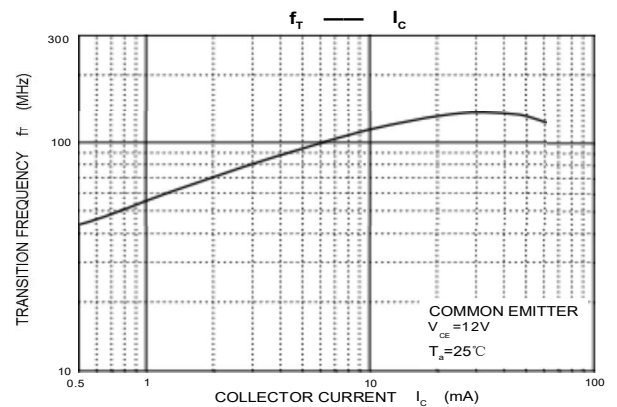
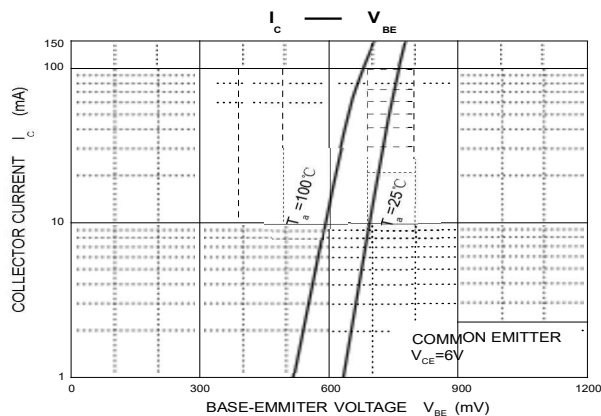
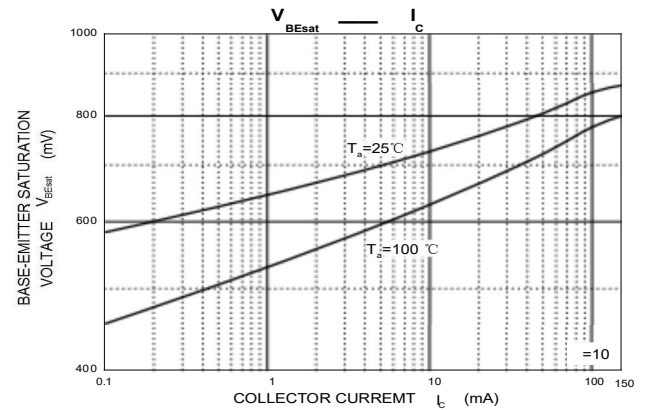
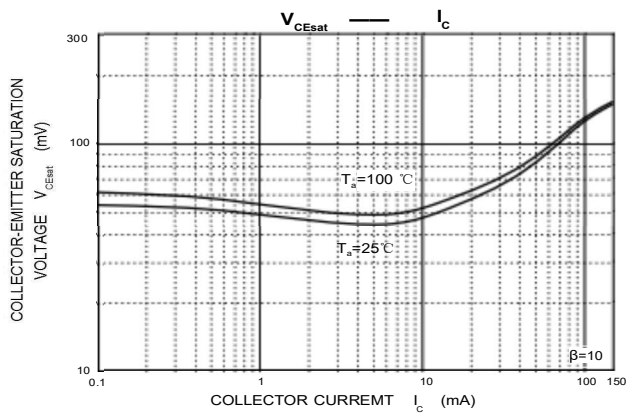
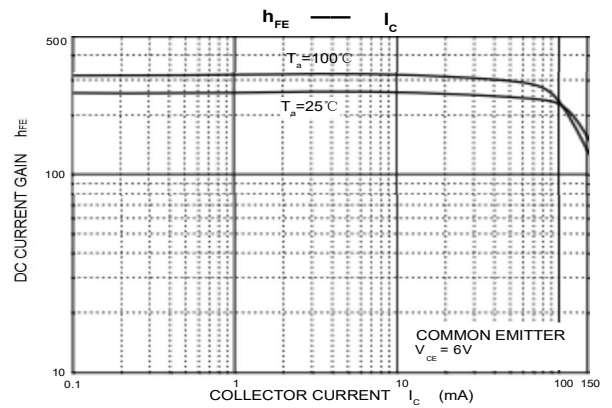
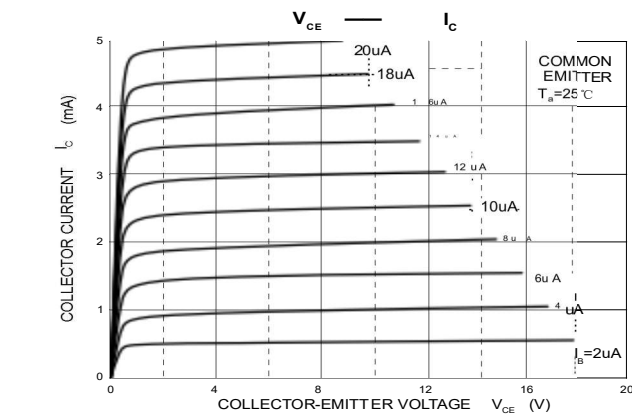
Parameter	Symbol	Ratings	Unit
Collector-base votage	V_{CBO}	60	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	7	V
Collector current continuous	I_C	150	mA
Collector power dissipation	P_C	150	mW
Junction temperature	T_J	150	$^\circ C$
Storage temperature	T_{STG}	-55 ~ +150	$^\circ C$

Electrical characteristics (At $T_A=25^\circ C$ unless otherwise specified)

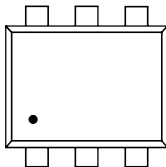
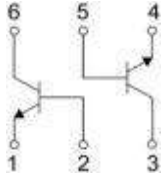
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=50\mu A$, $I_E=0$	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1mA$, $I_B=0$	50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=50\mu A$, $I_C=0$	7			V
Collector cut-off current	I_{CBO}	$V_{CB}=60V$, $I_E=0$			0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=7V$, $I_C=0$			0.1	μA
DC current gain	h_{FE}	$V_{CE}=6V$, $I_C=1mA$	120		560	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=50mA$, $I_B=5mA$			0.4	V
Transition frequency	f_T	$V_{CE}=12V$, $I_C=2mA$, $f=100MHz$		180		MHZ
Collector output capacitance	C_{ob}	$V_{CB}=12V$, $I_E=0$, $f=1MHz$		2.0	3.5	pF

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Rating and characteristic curves

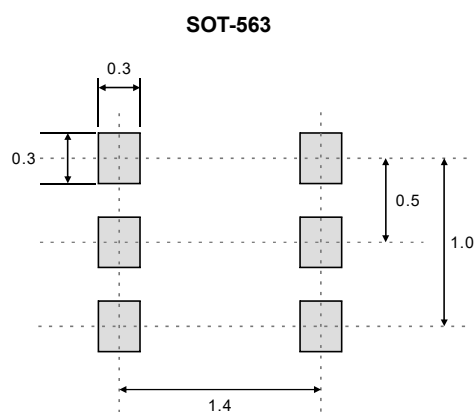


FMBTEMX1V**Pinning information**

Pin	Simplified outline	Symbol
Pin2, 5 BASE Pin1, 4 EMITTER Pin3, 6 COLLECTOR		

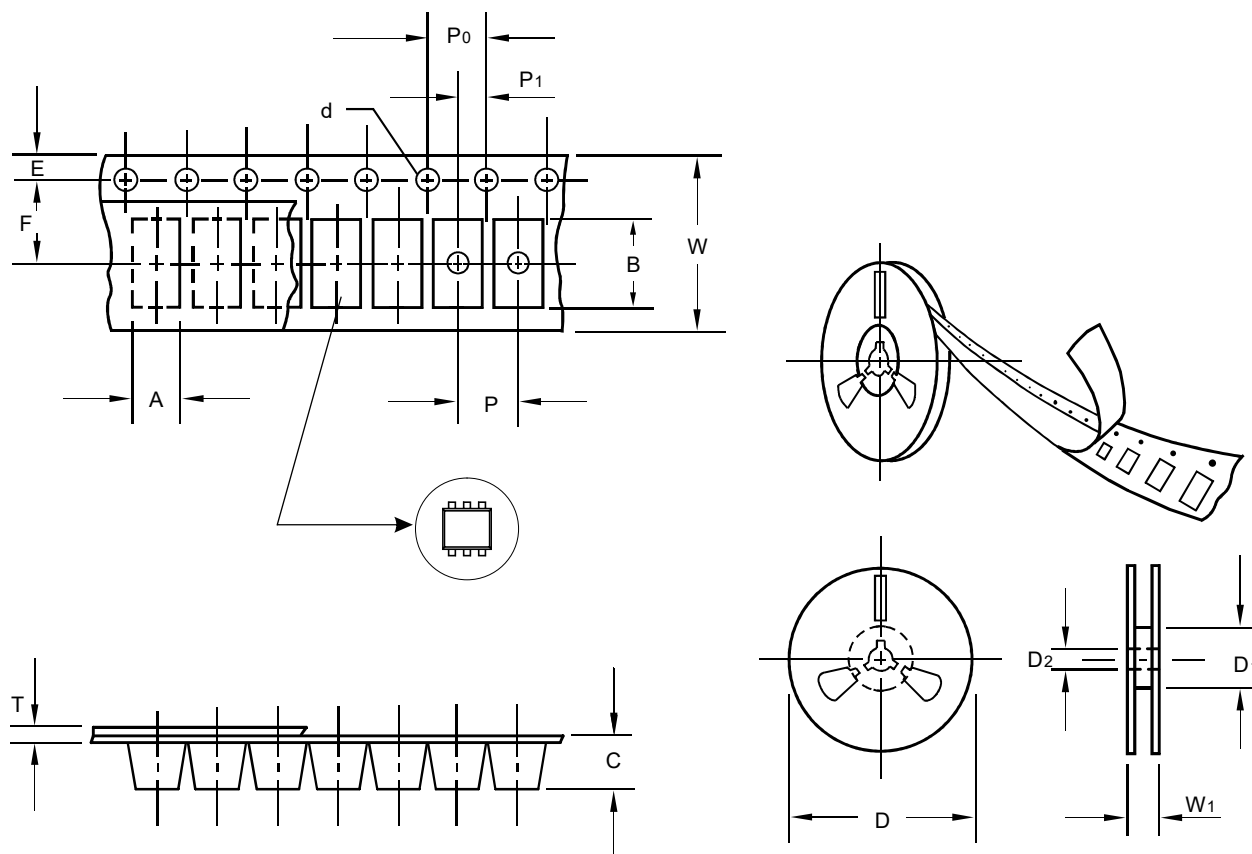
Marking

Type number	Marking code
FMBTEMX1V	X1

Suggested solder pad layoutDimensions in millimeters (tolerance $\pm 0.1\text{mm}$)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-563
Carrier width	A	0.1	1.85
Carrier length	B	0.1	1.85
Carrier depth	C	0.1	0.875
Sprocket hole	d	0.1	1.5
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	60.00
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	9.50

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

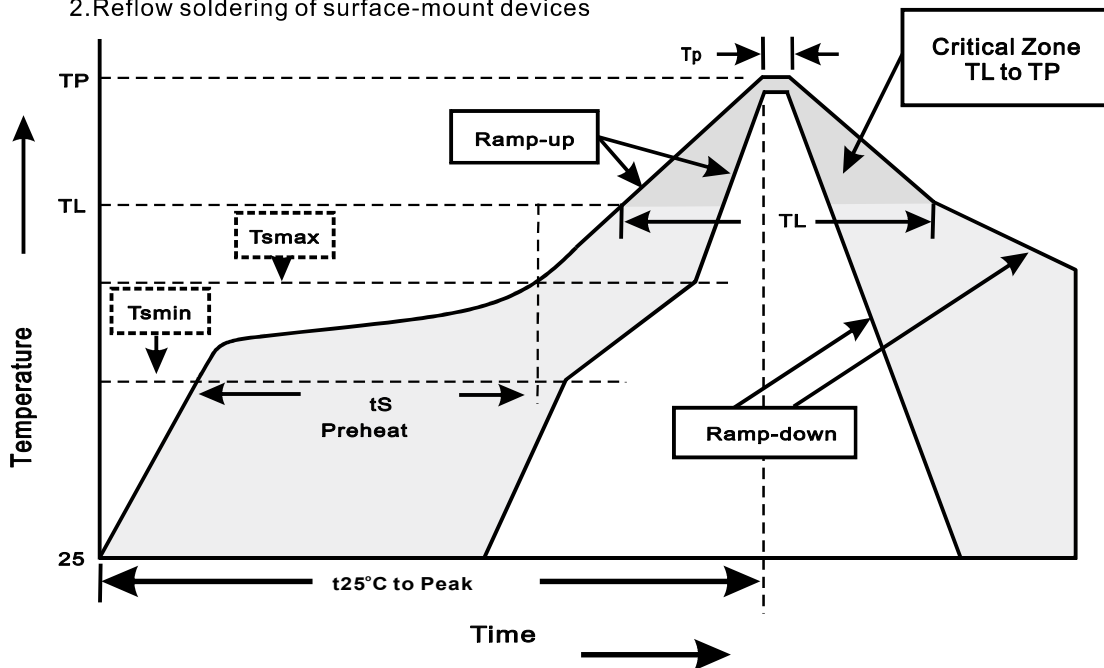
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Reel packing

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-563	7"	3,000	4.0	30,000	183*183*123	178	382*262*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(TL to TP)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(ts)	150°C 200°C 60~120sec
Tsmax to TL -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(TL) -Time(tL)	217°C 60~260sec
Peak Temperature(Tp)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(tp)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes