

FMBTSC4226QW/RW/SW

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FMBTSC4226QW/RW/SW

100mA 20V NPN Silicon Epitaxial Planar Transistor

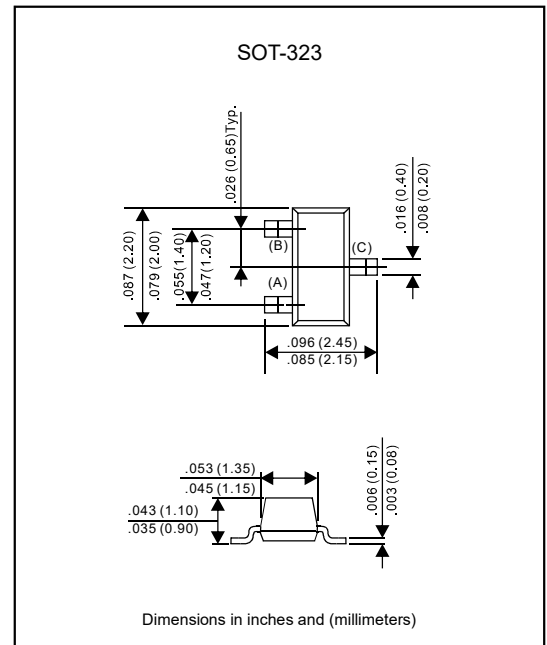
Features

- $N_F = 1.2\text{dB typ. @ } f = 1\text{GHz}, V_{CE} = 3\text{V}, I_C = 7\text{mA}$.
- High gain $|S_{21}|^2 = 9\text{dB typ. @ } f = 1\text{GHz}, V_{CE} = 3\text{V}, I_C = 7\text{mA}$.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex. FMBTSC4226QW-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.

Package outline



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

Parameter	Symbol	Value	Unit
Collector to base voltage	V_{CBO}	20	V
Collector to Emitter Voltage	V_{CEO}	12	V
Emitter to base voltage	V_{EBO}	3	V
Collector current - continuous	I_C	100	mA
Total power dissipation	P_D	200	mW
Junction temperature	T_J	+150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-65 to +150	$^\circ\text{C}$

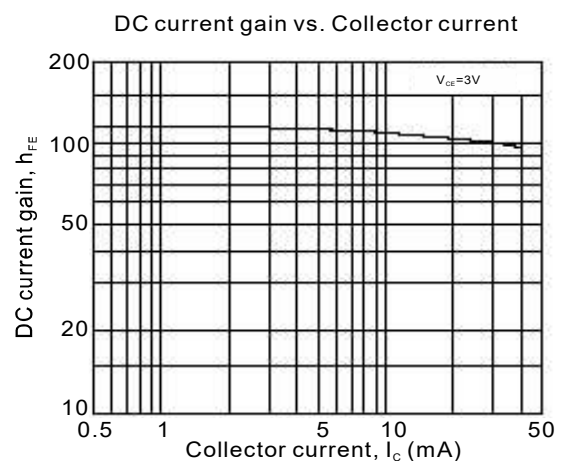
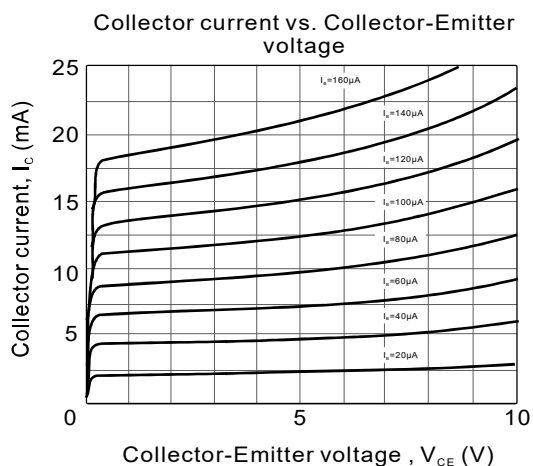
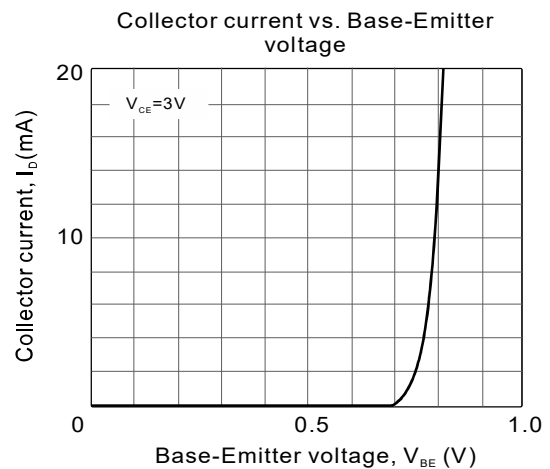
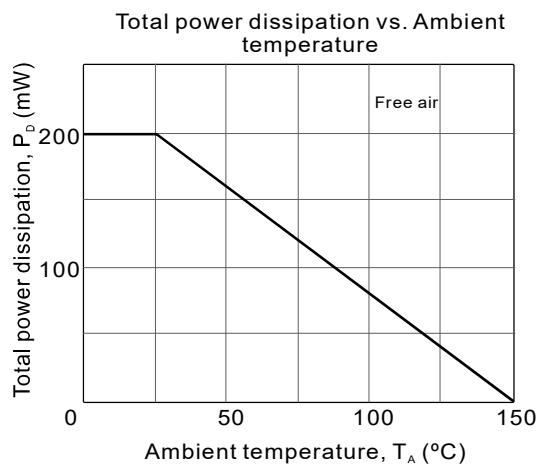
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Electrical characteristics (At $T_A=25^\circ\text{C}$ unless otherwise noted)

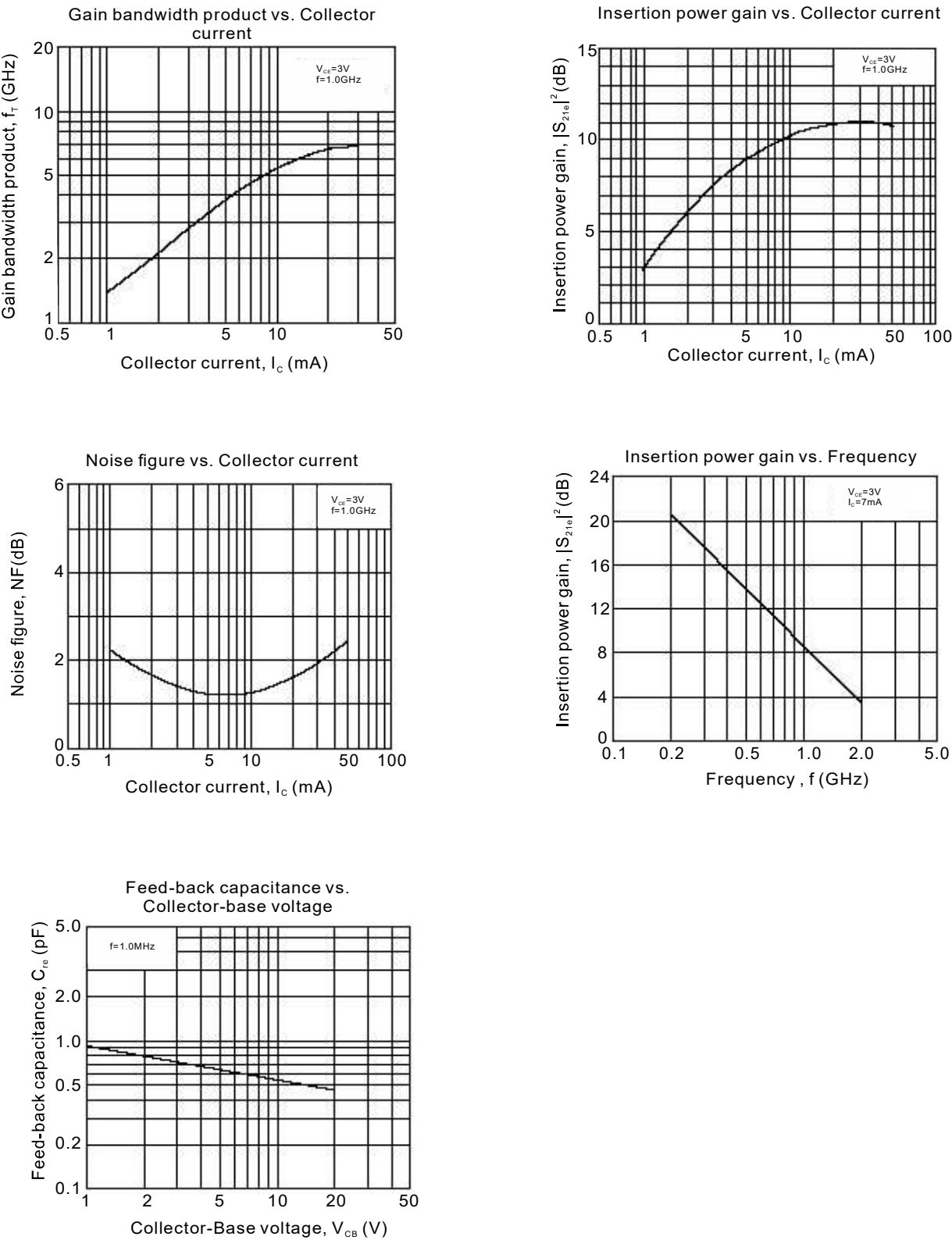
Parameter		Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector cut off current		$V_{CB} = 10\text{V}$	I_{CBO}			1	μA
Emitter cut-off current		$V_{EB} = 1\text{V}$	I_{EBO}			1	μA
DC current gain	FMBTSC4226QW	$V_{CE} = 3\text{V}, I_C = 7\text{mA}$	h_{FE}	50		100	
	FMBTSC4226RW			80		160	
	FMBTSC4226SW			125		250	
Transition Frequency		$V_{CE} = 3\text{V}, I_C = 7\text{mA}$	f_T	3	4.5		GHz
Feed back capacitance (Note1)		$V_{CE} = 3\text{V}, f=1\text{MHz}$	C_{re}		0.7	1.5	pF
Insertion Power Gain		$V_{CE} = 3\text{V}, I_C = 7\text{mA}, f=1\text{GHz}$	$ S_{21e} ^2$	7	9		dB
Noise Figure		$V_{CE} = 3\text{V}, I_C = 7\text{mA}, f=1\text{GHz}$	NF		1.2	2.5	dB

Note: 1. Measured with 3 terminal bridge, Emitter and case should be grounded.

Rating and characteristic curves



Rating and characteristic curves



Pinning information

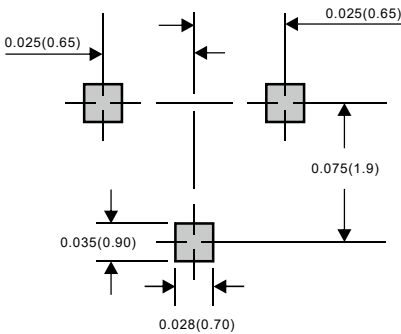
Pin	Simplified outline	Symbol
Pin 1 Base Pin 2 Emitter Pin 3 Collector		

Marking

Type number	Marking code
FMBTSC4226QW	R23
FMBTSC4226RW	R24
FMBTSC4226SW	R25

Suggested solder pad layout

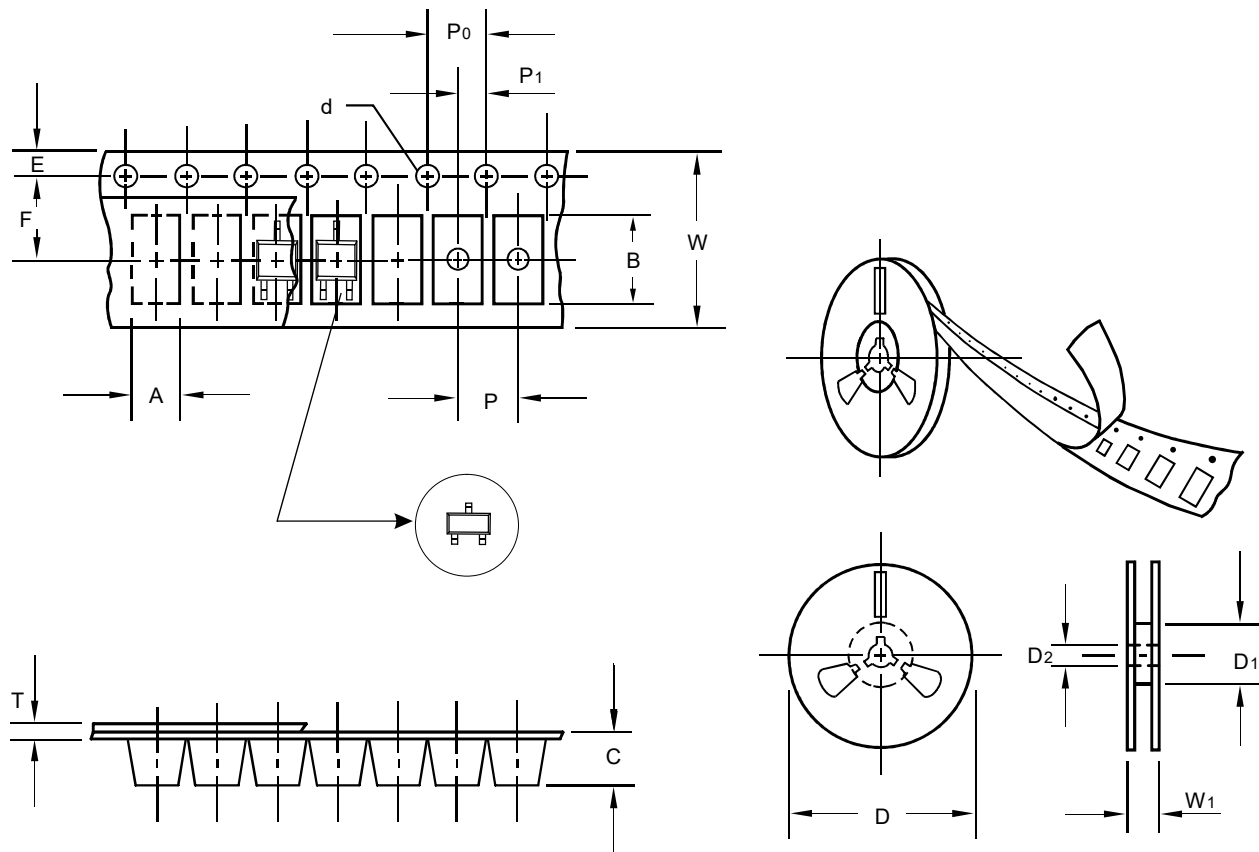
SOT-323



Dimensions in inches and (millimeters)

FMBTSC4226QW/RW/SW

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.

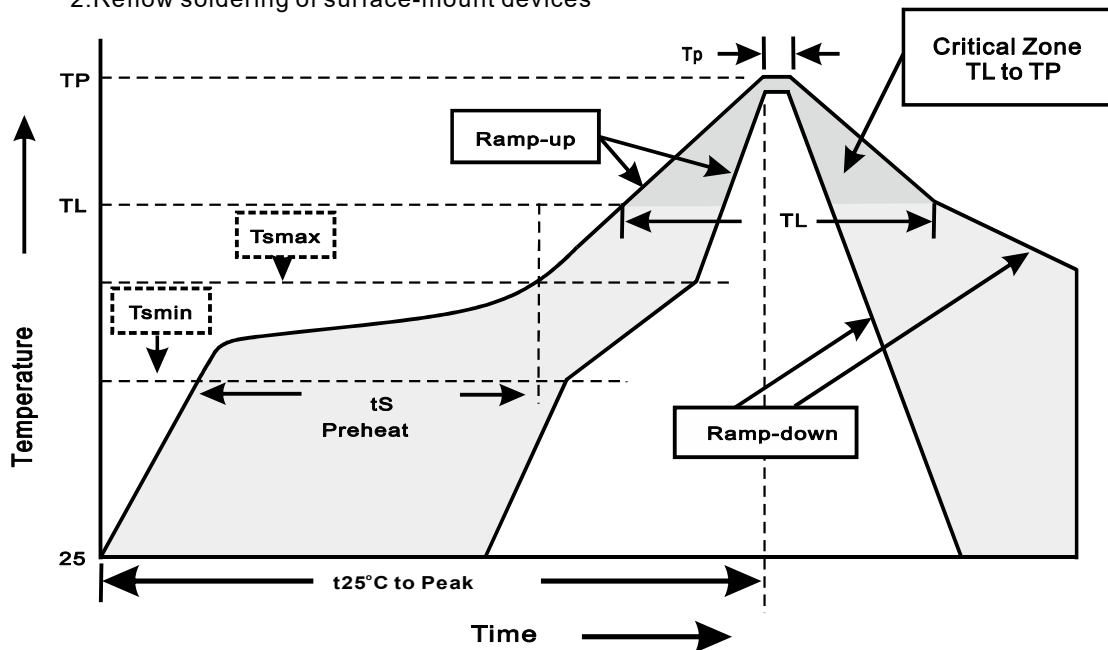
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Reel packing

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)
SOT-323	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000

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-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