

FMBTSC3356Q/R/S

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FMBTSC3356Q/R/S

NPN Epitaxial Planar Transistor

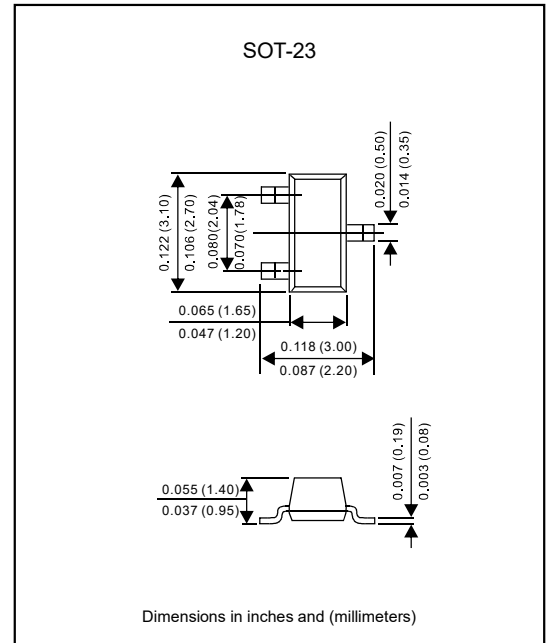
Features

- Epitaxial planar die construction.
- For microwave low noise amplifier at VHF, UHF and CATV band.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex.FMBTSC3356Q-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, SOT-23.
- 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	Ratings	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	I_C	100	mA
Total power dissipation	P_{TOT}	200	mW
Junction temperature	T_J	150	$^{\circ}\text{C}$
Storage temperature	T_{STG}	-65 to +150	$^{\circ}\text{C}$

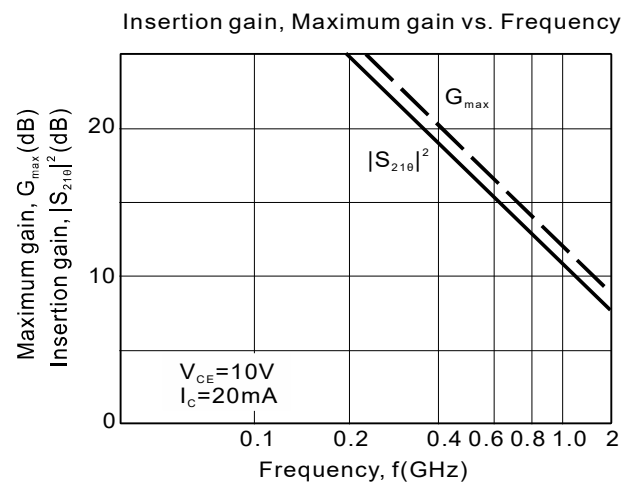
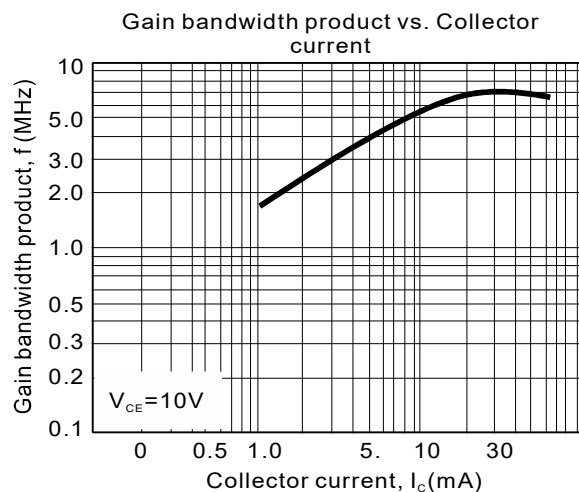
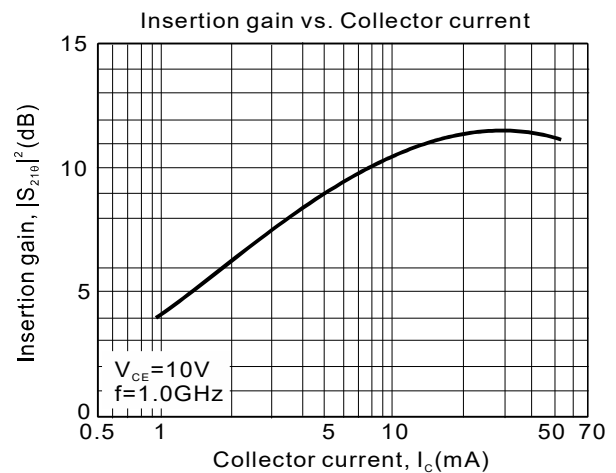
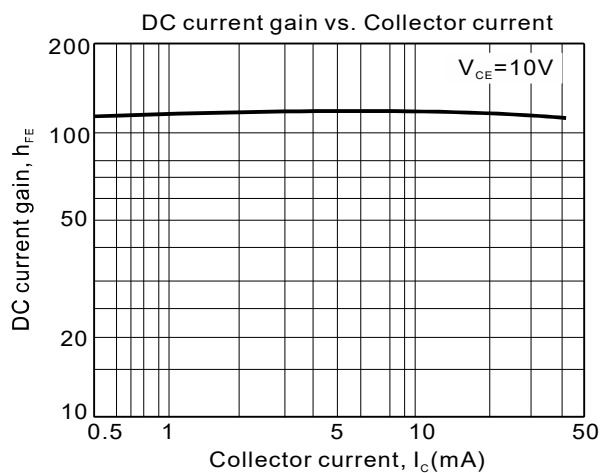
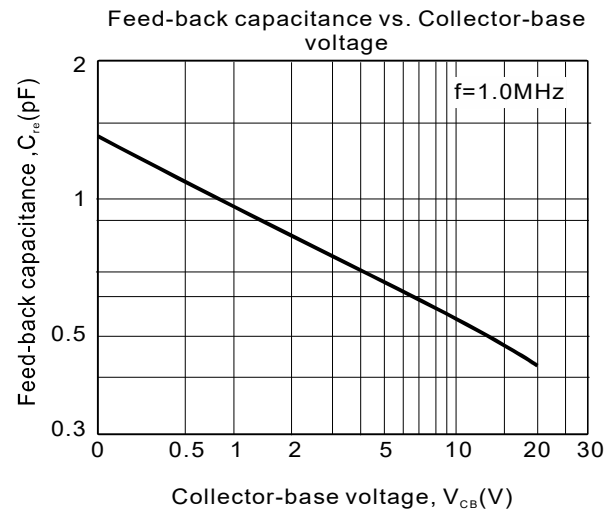
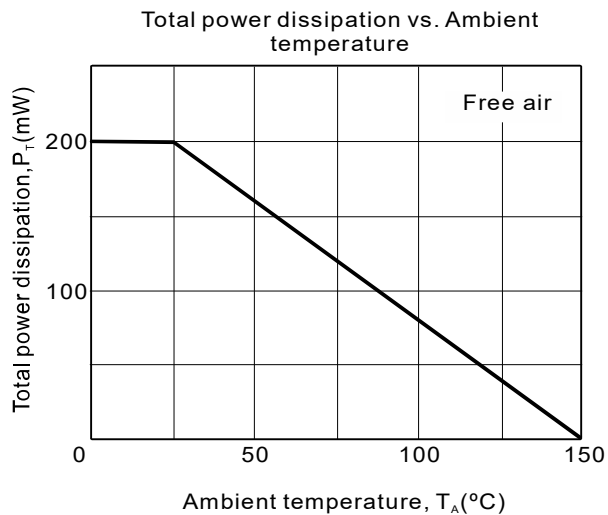
Electrical characteristics (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
DC current gain	h_{FE}	$V_{CE} = 10\text{ V}, I_C = 20\text{ mA}$	FMBTSC3356Q	50	100	
			FMBTSC3356R	80	160	
			FMBTSC3356S	125	250	
Collector cut off current	I_{CBO}	$V_{CB} = 10\text{ V}$			1	μA
Emitter cut off current	I_{EBO}	$V_{EB} = 1\text{ V}$			1	μA
Gain bandwidth product	f_T	$V_{CE} = 10\text{ V}, I_C = 20\text{ mA}$		7		GHz
Feed-back capacitance (Note 1)	C_{re}	$V_{CB} = 10\text{ V}, f=1\text{ MHz}$		0.55	1	pF
Noise figure	NF	$V_{CE} = 10\text{ V}, I_C = 7\text{ mA}, f=1\text{ GHz}$		1.1	2	dB

Note : 1.The emitter terminal and the case shall be connected to the guard terminal of the three-terminal capacitance bridge.

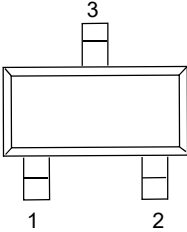
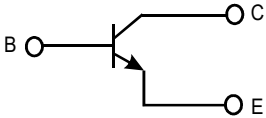
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Rating and characteristic curves



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Pinning information

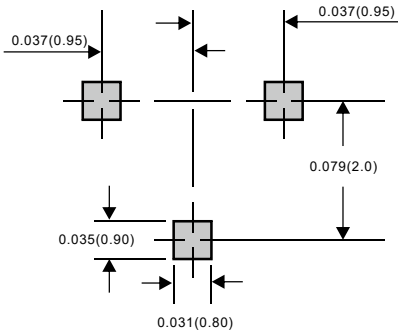
Pin	Simplified outline	Symbol
Pin 1 Base Pin 2 Emitter Pin 3 Collector		

Marking

Type number	Marking code
FMBTSC3356Q	R23
FMBTSC3356R	R24
FMBTSC3356S	R25

Suggested solder pad layout

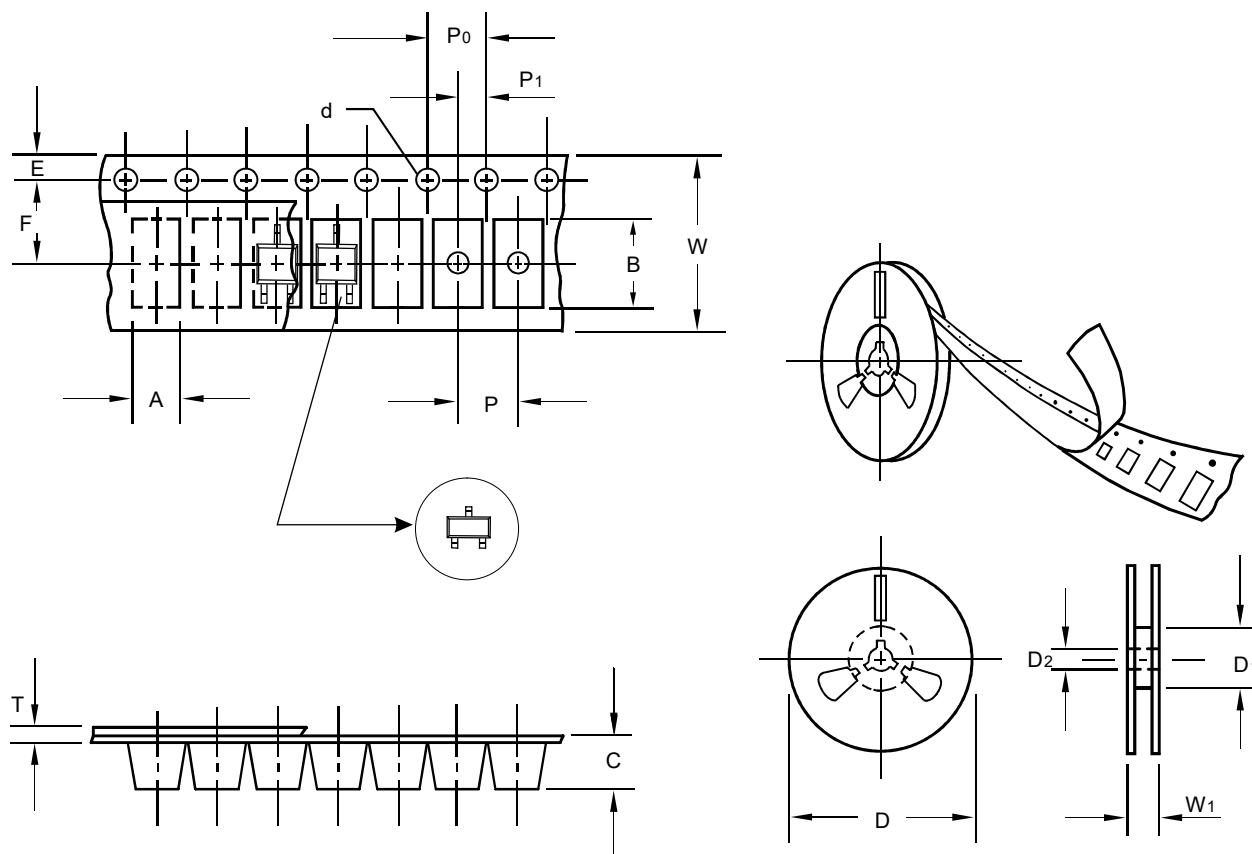
SOT-23



Dimensions in inches and (millimeters)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-23
Carrier width	A	0.1	3.15
Carrier length	B	0.1	2.77
Carrier depth	C	0.1	1.50
Sprocket hole	d	0.1	1.50
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	55.00
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	12.0

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

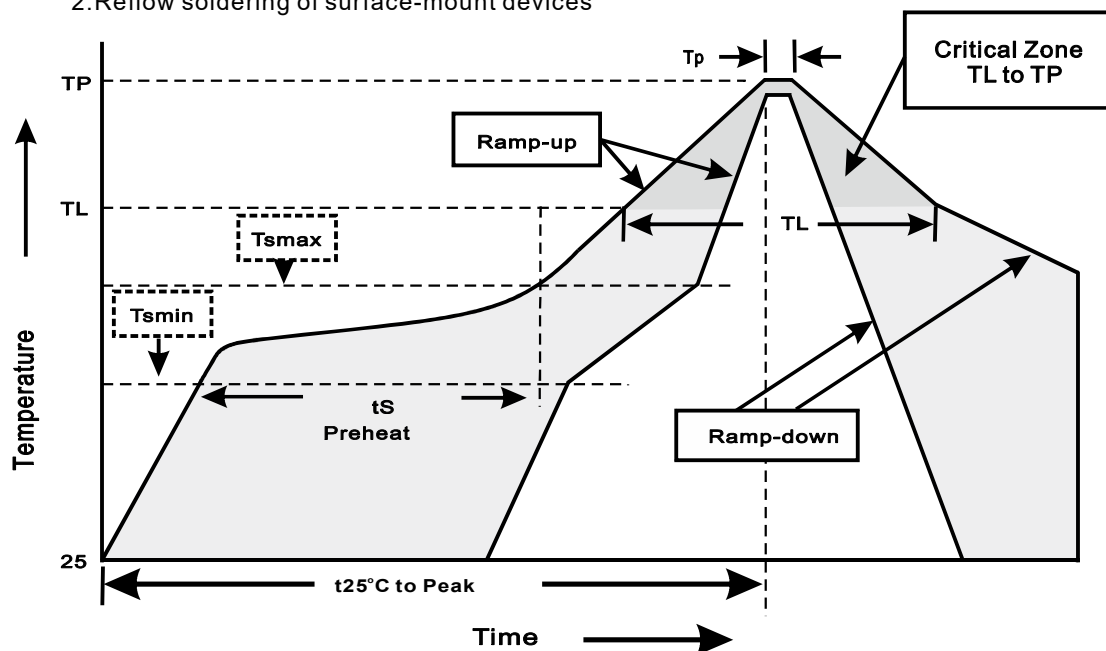
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Reel packing

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-23	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)	$<3^{\circ}\text{C}/\text{sec}$
Preheat -Temperature Min(T_{min}) -Temperature Max(T_{max}) -Time(min to max)(t_s)	150°C 200°C 60~120sec
T_{max} to T_L -Ramp-upRate	$<3^{\circ}\text{C}/\text{sec}$
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	$<6^{\circ}\text{C}/\text{sec}$
Time 25°C to Peak Temperature	$<6\text{minutes}$