

FMBTSA1981O/Y

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FMBTSA1981O/Y

-800mA, -30V PNP Silicon Epitaxial Transistors

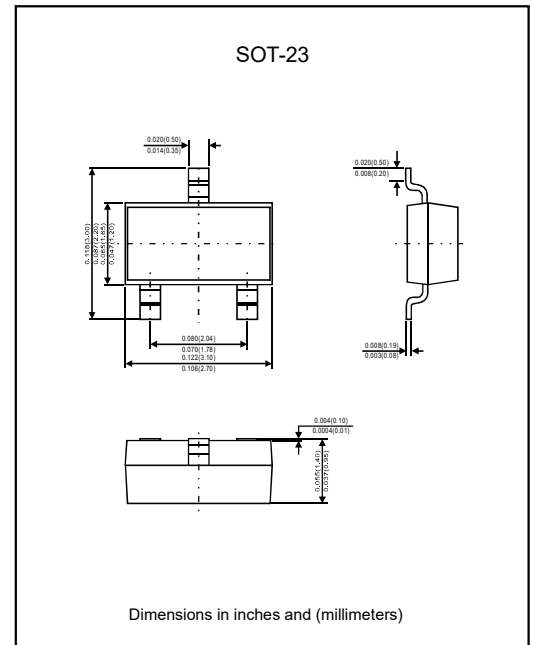
Features

- For audio power amplifier applications.
- High DC current gain.
- We declare that the material of product compliance with RoHS requirements.
- Pb-Free Package is available.
- Suffix "-H" dinicates Halogen-free part, ex.FMBTSA1981O/Y-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, SOT-23.
- Terminals : Solder plated, solder able per MIL-STD-750, Method 2026.
- Mounting Position : Any.
- Weight : Approximated 0.008 gram.

Package outline



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

Parameter	Symbol	Value	Unit
Collector to base voltage	$-V_{CBO}$	35	V
Collector to emitter voltage	$-V_{CEO}$	30	V
Emitter to base voltage	$-V_{EBO}$	5	V
Collector current	$-I_C$	800	mA
Total power dissipation	P_D	200	mW
Junction temperature	T_J	+150	$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

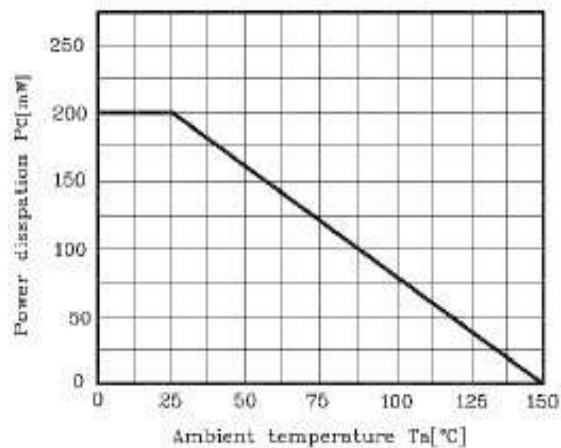
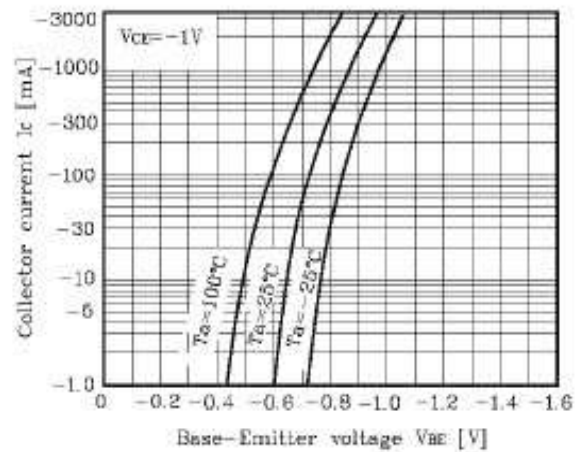
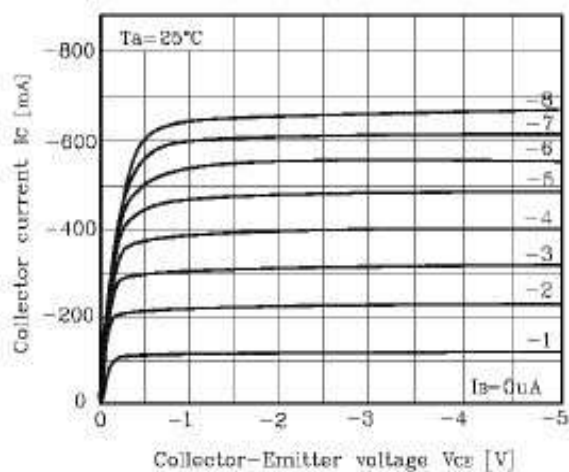
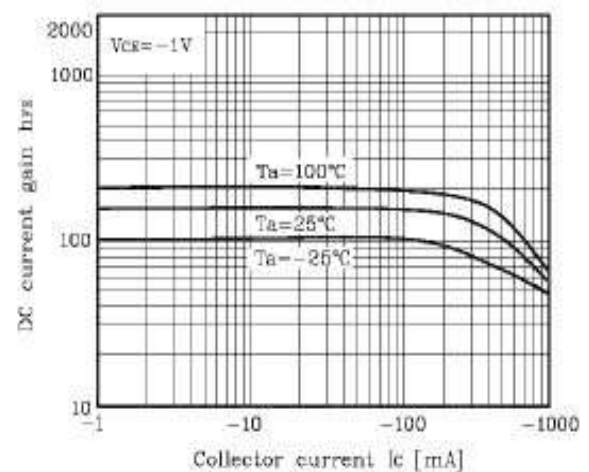
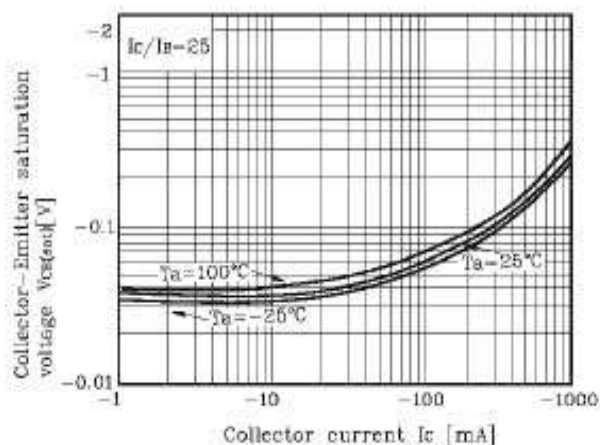
Electrical characteristics (At $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector base cut off current	$-V_{CB} = 35\text{V}$	$-I_{CBO}$			100	nA
Emitter Base cut-off current	$-V_{EB} = 5\text{V}$	I_{EBO}			100	nA
Collector base breakdown voltage	$-I_C = 500\mu\text{A}$	$V_{(BR)CBO}$	35			V
Collector emitter breakdown voltage	$-I_C = 1\text{mA}$	$V_{(BR)CEO}$	30			V
Emitter base breakdown voltage	$-I_C = 100\text{mA}$, $V_{CE} = 5\text{V}$	$V_{(BR)EBO}$	5			V
Collector-emitter saturation voltage	$-I_C = 500\text{mA}$, $-I_B = 20\text{mA}$	$V_{CE(SAT)}$			0.5	V
DC current gain (FMBTSA1981O) (FMBTSA1981Y)	$-V_{CE} = 1\text{V}$, $-I_C = 100\text{mA}$	h_{FE}	100		200	
	$-V_{CE} = 1\text{V}$, $-I_C = 100\text{mA}$		160		320	
Transition Frequency	$-V_{CE} = 5\text{V}$, $-I_E = 10\text{mA}$	f_T		120		MHz
Collector output	$-V_{CB} = 10\text{V}$, $f = 1\text{MHz}$	C_{OB}		19		pF

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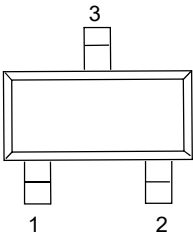
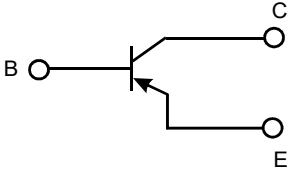
Rating and characteristic curves

Pc-Ta

IC - V_{BE}I_C - V_{CE}h_{FE} - I_CV_{CE(sat)} - I_C

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Pinning information

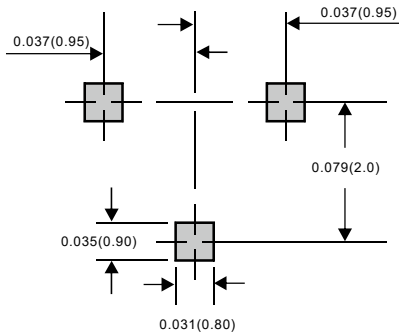
Pin	Simplified outline	Symbol
Pin 1 Base Pin 2 Emitter Pin 3 Collector		

Marking

Type number	Marking code
FMBTSA1981O	2TO
FMBTSA1981Y	2YO

Suggested solder pad layout

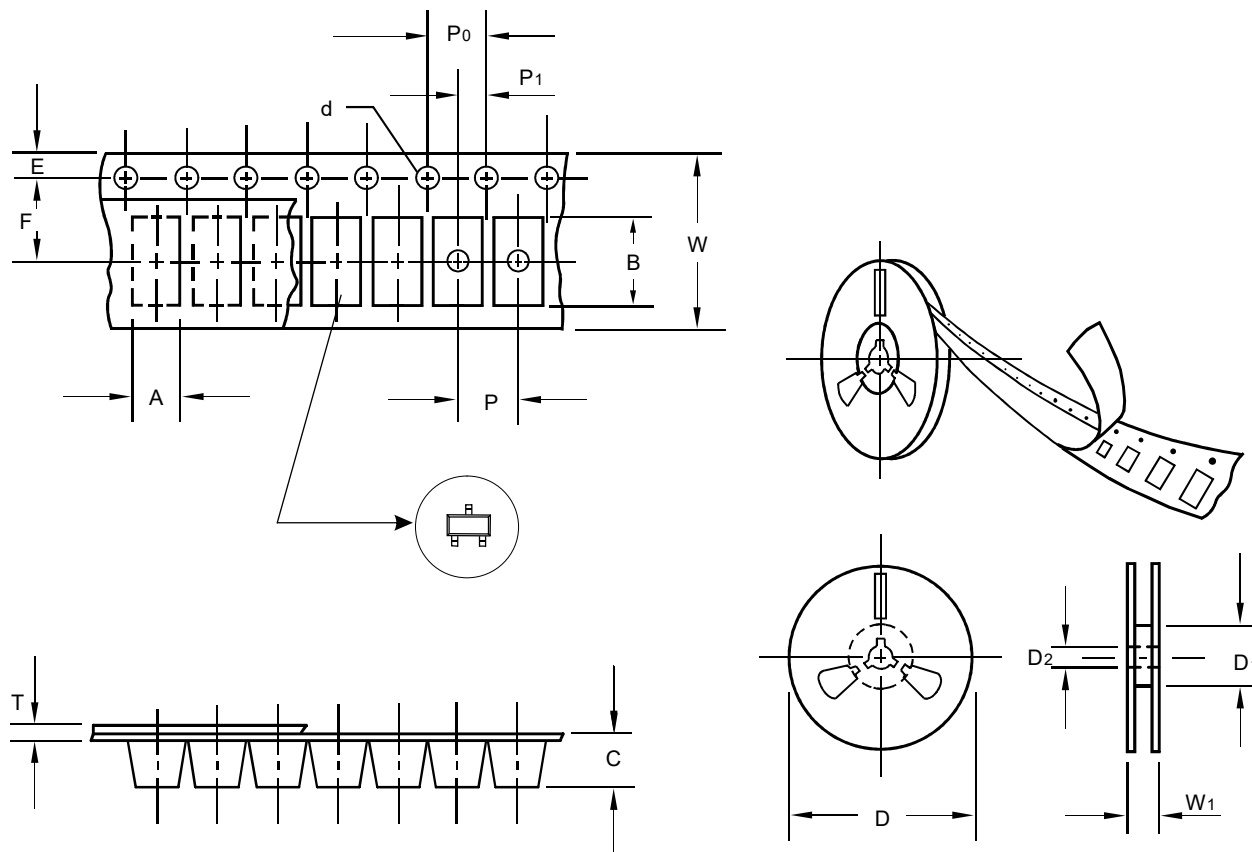
SOT-23



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	1.22
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.

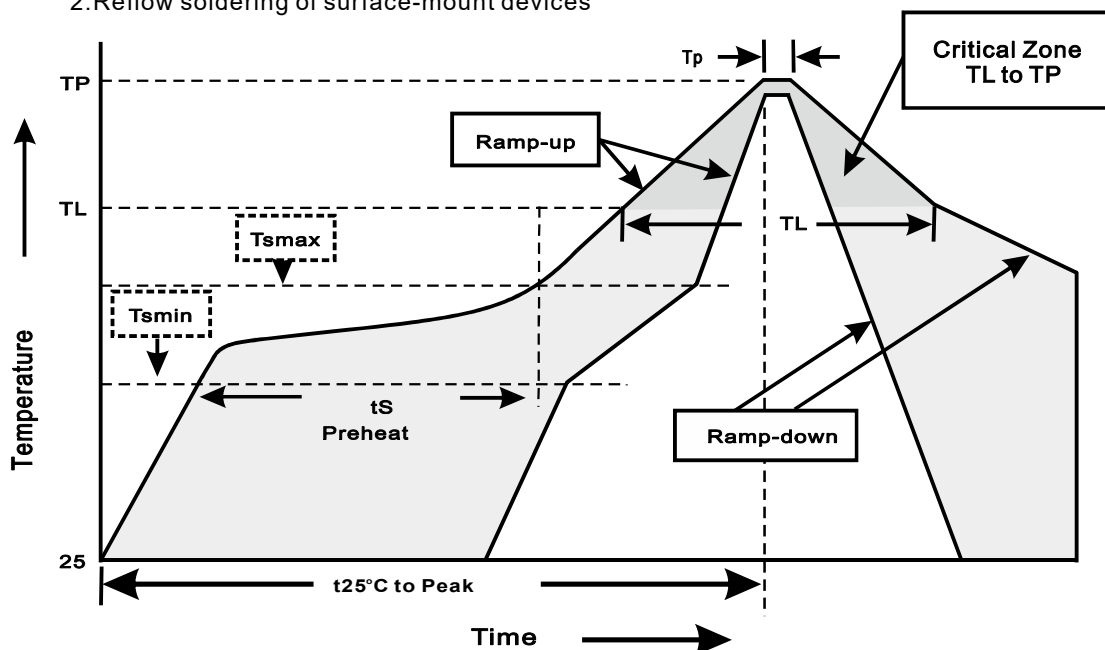
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Reel packing

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)	APPROX. GROSS WEIGHT (kg)
SOT-23	7"	3,000	4.0	30,000	183*183*123	178	382*262*387	240,000	11.6

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