FMBTSA1037Q/R/S

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FMBTSA1037Q/R/S

-50V, -150mA General Purpose Transistors
PNP Silicon

Features

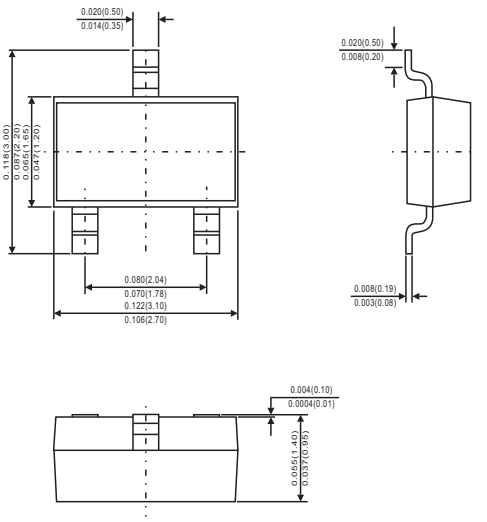
- For switching and AF amplifier applications.
- Epitaxial planar type.
- We declare that the material of product compliance with RoHS requirements.
- Pb-Free Package is available
- Suffix "-H" dinicates Halogen-free part, ex.FMBTSA1037Q-H.

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
- Weight : Approximated 0.008 gram

Package outline

SOT-23



Dimensions in inches and (millimeters)

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

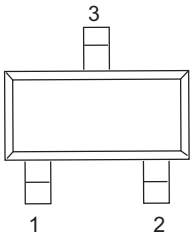
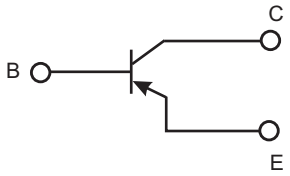
Parameter	Symbol	Value	Unit
Collector to base voltage	$-V_{CBO}$	60	V
Collector current	$-I_C$	150	mA
Total power dissipation	P_D	200	mW
Junction temperature	T_j	+150	°C
Storage temperature range	T_{STG}	-50 ~ +150	°C

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

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector base breakdown voltage	$-I_C$=50μA, I_E=0mA	$-V_{(BR)CBO}$	60			V
Collector emitter breakdown voltage	$-I_C$ =1mA, I_B=0mA	$-V_{(BR)CEO}$	50			V
Emitter base breakdown voltage	$-I_E$ = 50μA, I_C=0mA	$-V_{(BR)EBO}$	6			V
Collector-base cut off current	$-V_{CB}$=60V, I_E=0mA	$-I_{CBO}$			0.1	μA
Emitter-Base cut-off current	$-V_{EB}$=6V, $-I_C$=0mA	$-I_{EBO}$			0.1	μA
Collector-emitter saturation voltage	$-I_C$=50mA, $-I_B$=5mA	$-V_{CE(sat)}$			0.5	V
DC current gain Current Gain Group Q	$-V_{CE}$=6V, $-I_C$=1mA	h_{FE}	120		270	
R		h_{FE}	180		390	
S		h_{FE}	270		560	
Transition Frequency	$-V_{CE}$ = 12V, $-I_C$ = 2mA, f = 30MHz	f_T	120			MHZ

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Pinning information

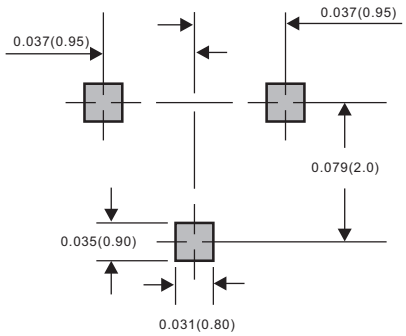
Pin	Simplified outline	Symbol
Pin 1 Base Pin 2 Emitter Pin 3 Collector		

Marking

Type number	Marking code
FMBTSA1037Q	FQ
FMBTSA1037R	FR
FMBTSA1037S	FS

Suggested solder pad layout

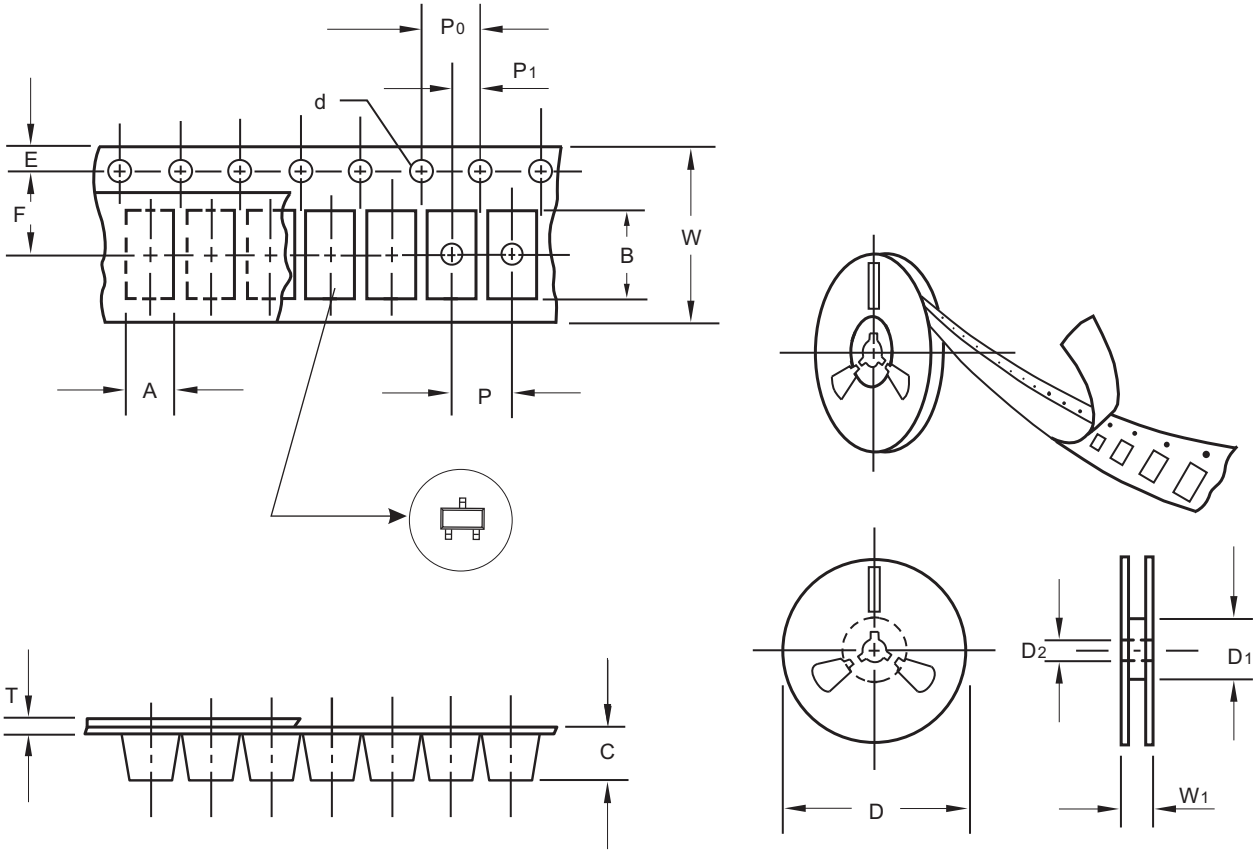
SOT-23



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	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	55.00
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	12.0

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

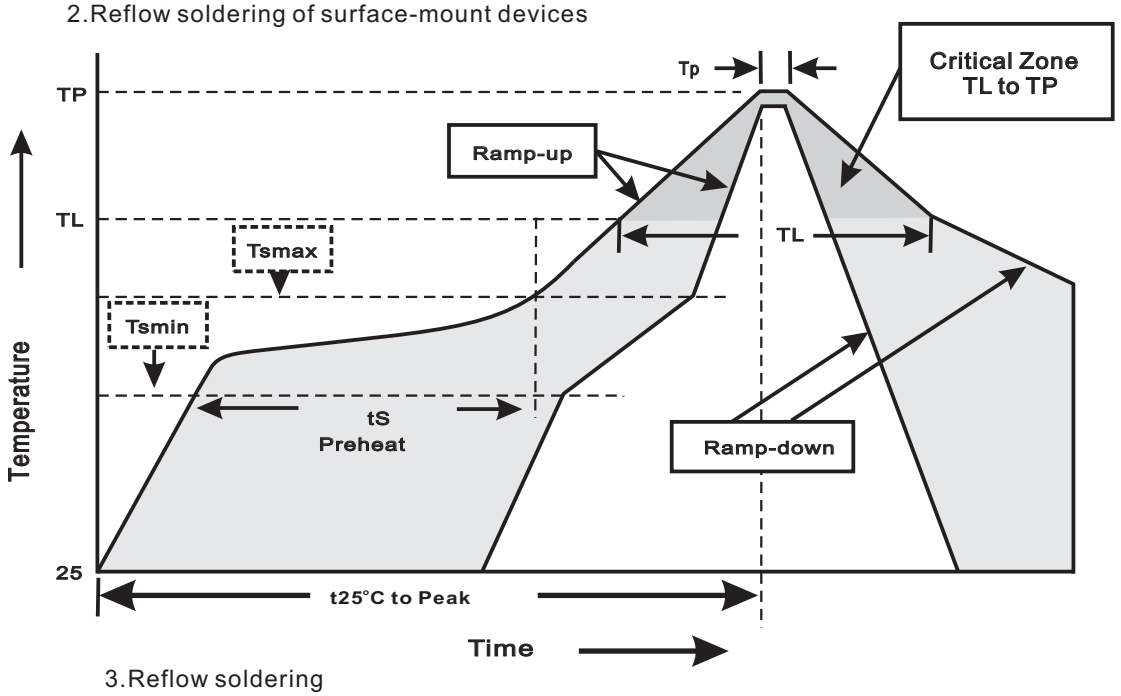
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Reel packing

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(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