FMBTRA117SS-Q1

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PNP Silicon Epitaxial Planar Digital Transistor

Features

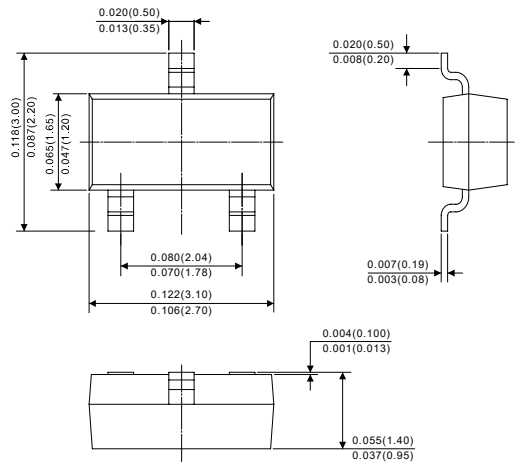
- With built-in bias resistors.
- Simplify circuit design.
- Reduce a quantity of parts and manufacturing process.
- Qualified to AEC-Q101 standards for high reliability
- We declare that the material of product compliance with RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. FMBTRA117SS-Q1-H.

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

SOT-23



Dimensions in inches and (millimeters)

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

Parameter	Symbol	Value	Unit
Collector base voltage	$-V_{CBO}$	50	V
Input voltage	$-V_I$	-12, 10	V
Output current	$-I_O$	100	mA
Power dissipation	P_{tot}	200	mW
Junction temperature	T_j	150	℃
Storage temperature range	T_{stg}	-55 to +150	℃

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

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Output cut-off current	$-V_O$=50V	$-I_{O(OFF)}$			500	nA
Input current	$-V_I$=5V	$-I_I$			3.8	mA
Output voltage	$-I_O$=10mA, $-I_I$=0.5mA	$-V_{O(ON)}$			0.3	V
Input voltage (ON)	$-V_O$=0.3V, $-I_O$=20mA	$-V_{I(ON)}$			3	V
Input voltage (OFF)	$-V_{CC}$=5V, $-I_O$=100μA	$-V_{I(OFF)}$	0.5			V
DC current gain	$-V_O$=5V, $-I_C$=20mA	h_{FE}	20			
Transition frequency	$-V_O$=10V, $-I_O$=5mA (Note 1)	f_T		250		MHZ
Input resistance R1		R_1		2.2		KΩ
Emitter base resistance R2		R_2		2.2		KΩ

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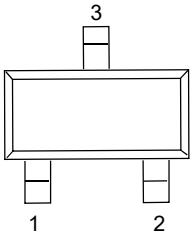
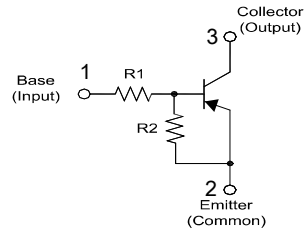
Pinning information

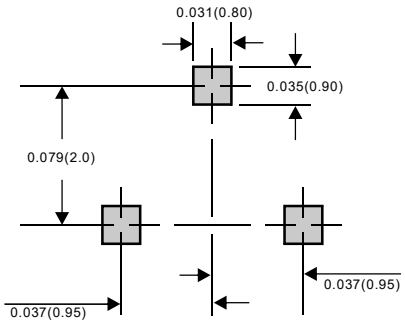
Pin	Simplified outline	Symbol
Pin1 Base Pin2 Emitter Pin3 Collector		

Marking

Type Number	Marking Code
FMBTA117SS-Q1	YF

Suggested solder pad layout

SOT-23



Dimensions in inches and (millimeters)

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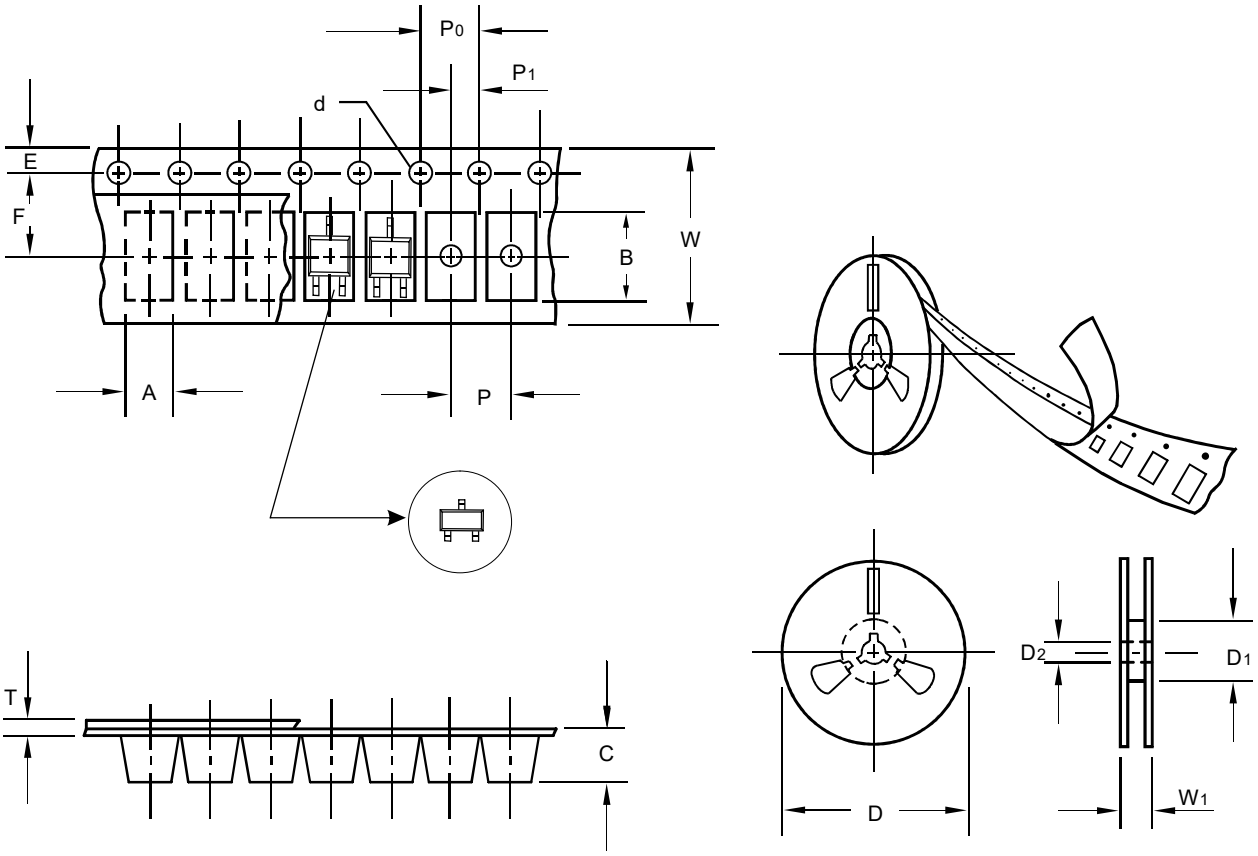
Packing information



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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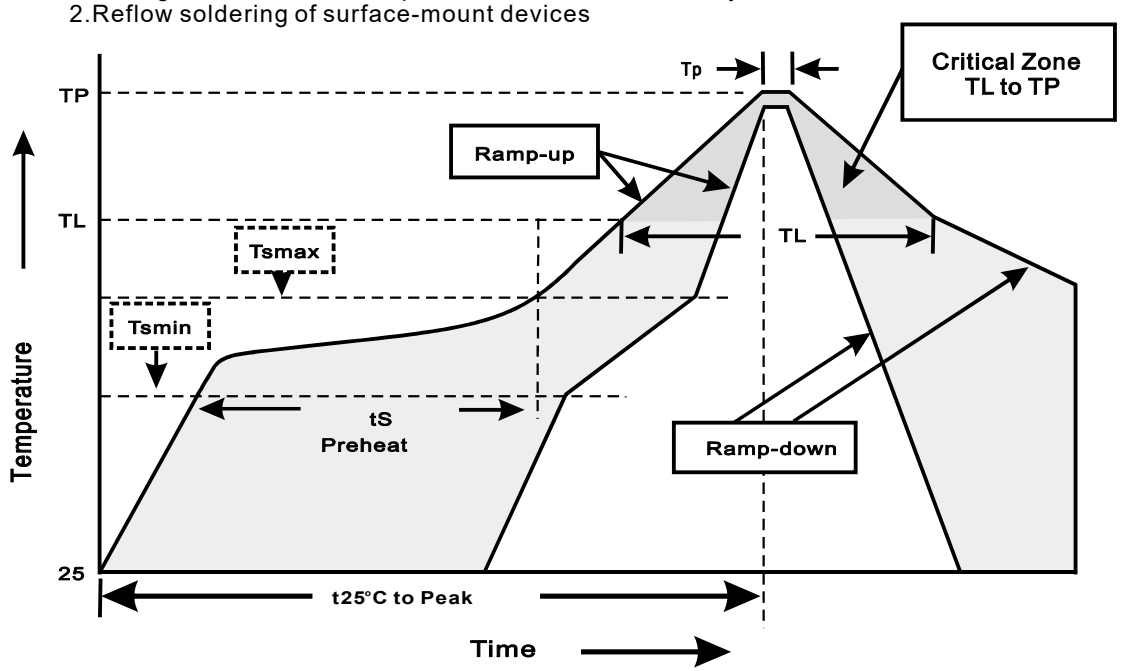
Reel packing

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*123*183	178	382*257*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