

FMBTRC105SS

List

List.....	
Package outline.....	
Features.....	
Mechanical data.....	
Maximum ratings	
Electrical characteristics.....	
Rating and characteristic curves.....	
Pinning information.....	
Marking.....	
Suggested solder pad layout.....	
Reel packing.....	
Suggested thermal profiles for soldering processes.....	

FMBTRC105SS

NPN Silicon Epitaxial Planar Digital Transistor

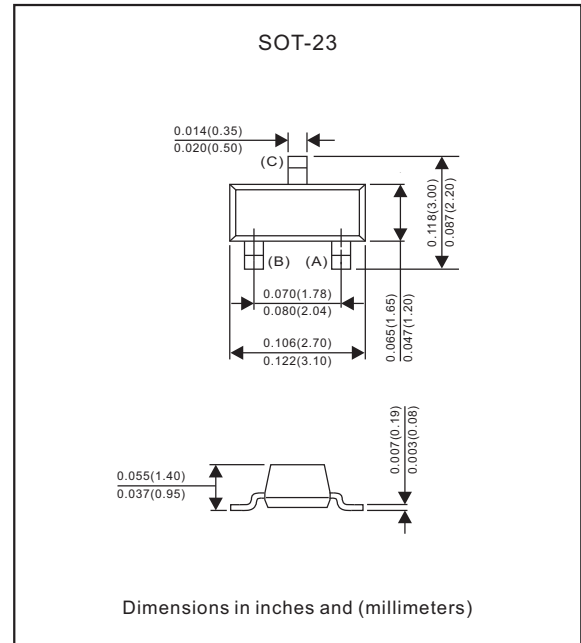
Features

- For Switching and interface circuit and drive circuit applications.
- Built-in biasing resistors, $R_1=2.2K\Omega$, $R_2=47K\Omega$.
- Simplify circuit design.
- Reduce a quantity of parts and manufacturing process.
- We declare that the material of product compliance with RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. FMBTRC105SS-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	Value	Unit
Output voltage	V_O	50	V
Input voltage	V_I	12, -5	V
Output current	I_O	100	mA
Power dissipation	P_{tot}	200	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to +150	$^\circ\text{C}$

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

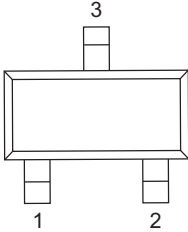
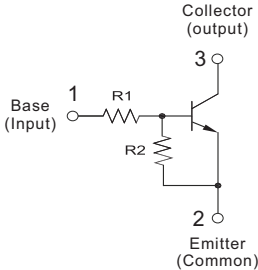
Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
DC current gain	$V_O=5V$, $I_O=10mA$	h_{FE}	80			
Output cut-off current	$V_O=50V$	$I_{O(OFF)}$			500	nA
Input current	$V_I=5V$	I_I			3.6	mA
Output voltage	$I_O=10mA$, $I_I=0.5mA$	$V_{O(ON)}$			0.3	V
Input voltage (ON)	$V_O=0.2V$, $I_O=5mA$	$V_{I(ON)}$			1.1	V
Input voltage (OFF)	$V_{CC}=5V$, $I_O=0.1mA$	$V_{I(OFF)}$	0.5			V
Input resistance		R_1		2.2		K Ω
Resistance ratio		R_1/R_2		0.047		
Transition frequency	$V_O=10V$, $I_O=5mA$ (Note 1)	f_T		200		MHz

Note :

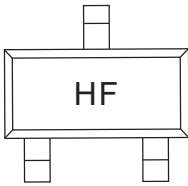
- 1.Characteristic of transistor only.

FMBTRC105SS

Pinning information

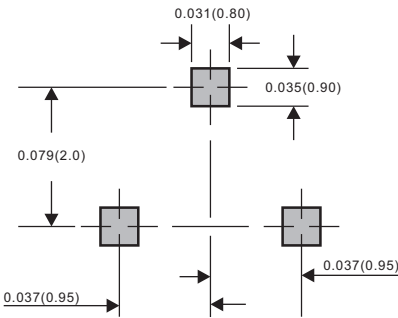
Pin	Simplified outline	Symbol
Pin1 Base Pin2 Emitter Pin3 Collector		

Marking

Type numbe	Marking code
FMBTRC105SS	

Suggested solder pad layout

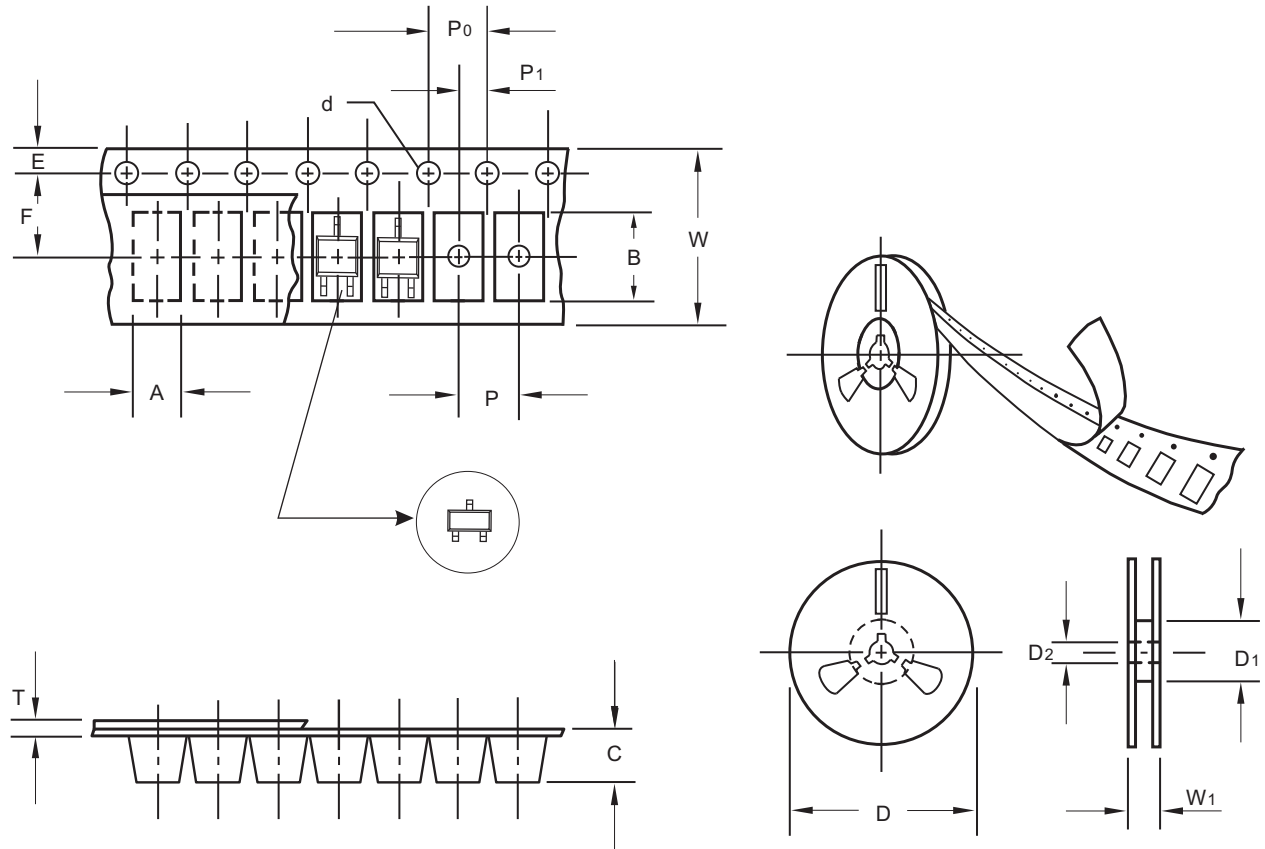
SOT-23



Dimensions in inches and (millimeters)

FMBTRC105SS

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.

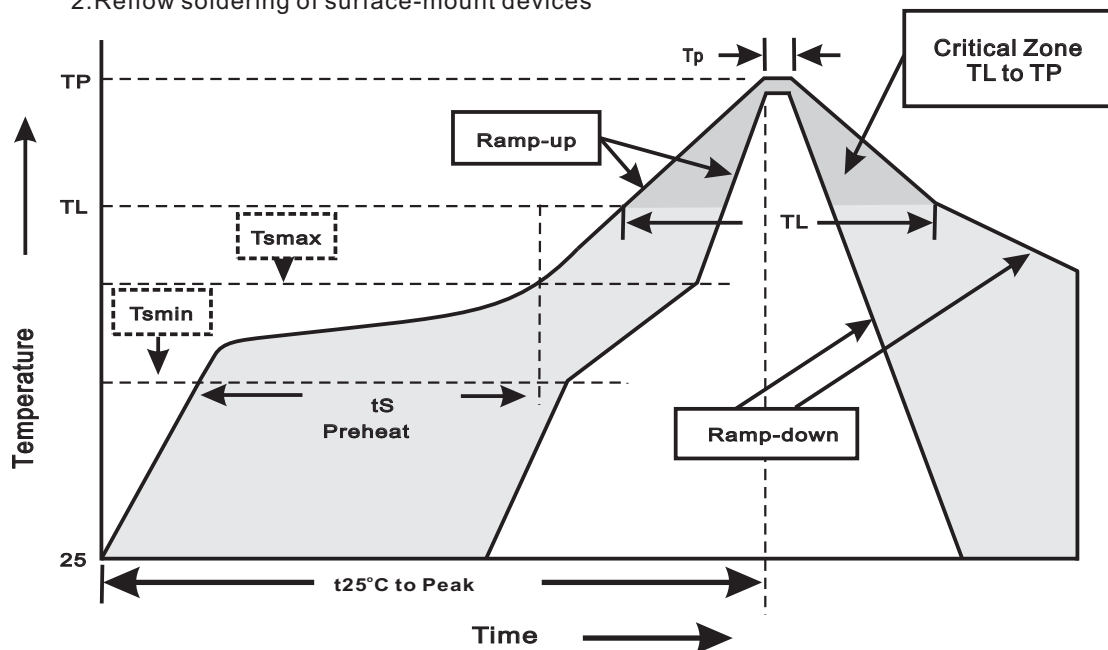
FMBTRC105SS

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(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