

FM320-MHT THRU FM3100-MHT

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FM320-MHT THRU FM3100-MHT

3.0A Surface Mount Schottky Barrier Rectifiers 20V-100V

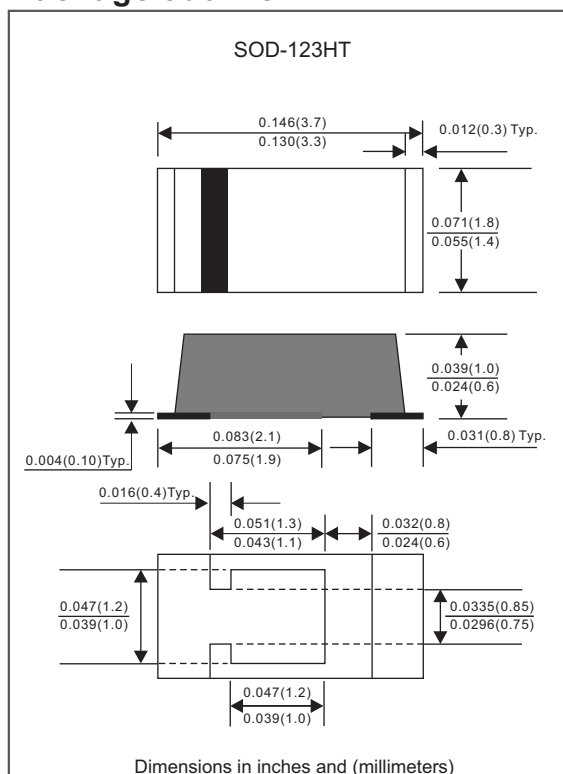
Features

- Well package design with solder pad on the bottom for best thermal performance
- Low profile surface mounted application in order to optimize board space
- Tiny plastic SMD package
- Low power loss, high efficiency
- High current capability, low forward voltage drop
- High surge capability
- Silicon epitaxial planar chip, metal silicon junction
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen free parts, ex. FM320-MHT-H

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-123HT
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.011 gram

Package outline



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

PARAMETER	SYMBOLS	FM320-MHT	FM330-MHT	FM340-MHT	FM350-MHT	FM360-MHT	FM380-MHT	FM3100-MHT	UNITS
Maximum repetitive peak reverse voltage	VRRM	20	30	40	50	60	80	100	V
Maximum RMS voltage	VRMS	14	21	28	35	42	56	70	V
Maximum continuous reverse voltage	VR	20	30	40	50	60	80	100	V
Maximum average forward rectified current	IO	3.0							A
Non-repetitive peak forward surge current 8.3ms single half sine-wave	IFSM	70							A
Typical diode junction capacitance (Note 1)	CJ	160							pF
Operating junction temperature range	TJ	-55 to +125			-55 to +150				°C
Storage temperature range	TSTG	-65 to +175							°C

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

PARAMETER	SYMBOLS	FM320-MHT	FM330-MHT	FM340-MHT	FM350-MHT	FM360-MHT	FM380-MHT	FM3100-MHT	UNITS
Maximum instantaneous forward voltage at $I_F=3.0A$	V_F	0.55			0.70		0.85		V
Maximum reverse leakage current at rated V_R $T_J=25^{\circ}C$ $T_J=100^{\circ}C$	I_R	0.2 10							mA mA

Thermal characteristics

PARAMETER	SYMBOLS	FM320-MHT	FM330-MHT	FM340-MHT	FM350-MHT	FM360-MHT	FM380-MHT	FM3100-MHT	UNITS
Typical thermal resistance junction to ambient (Note 2)	$R_{\theta JA}$	70							$^{\circ}\text{C} / \text{W}$
Typical thermal resistance junction to case (Note 2)	$R_{\theta JC}$	35							$^{\circ}\text{C} / \text{W}$

Notes 1: $f=1\text{MHz}$ and applied 4V DC reverse voltage

2: Mounted on FR-4 PCB Copper, minimum recommended pad layout

Rating and characteristic curves (FM320-MHT THRU FM3100-MHT)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

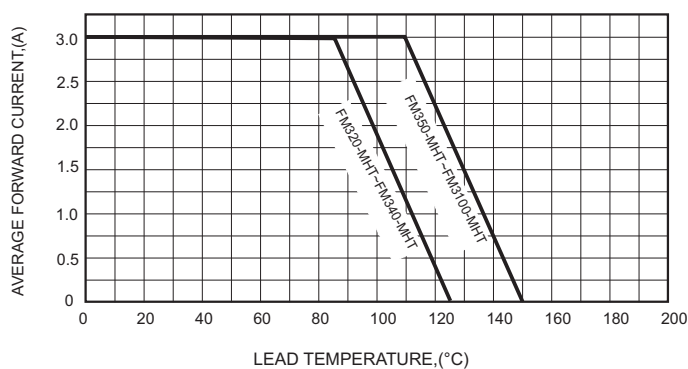


FIG.3-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

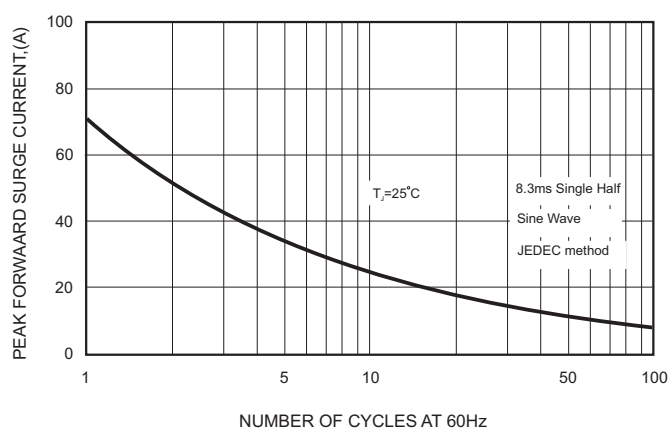


FIG.4-TYPICAL JUNCTION CAPACITANCE

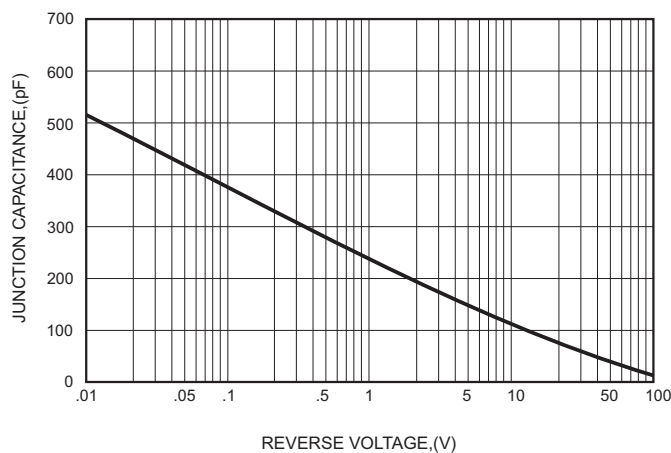


FIG.2-TYPICAL FORWARD CHARACTERISTICS

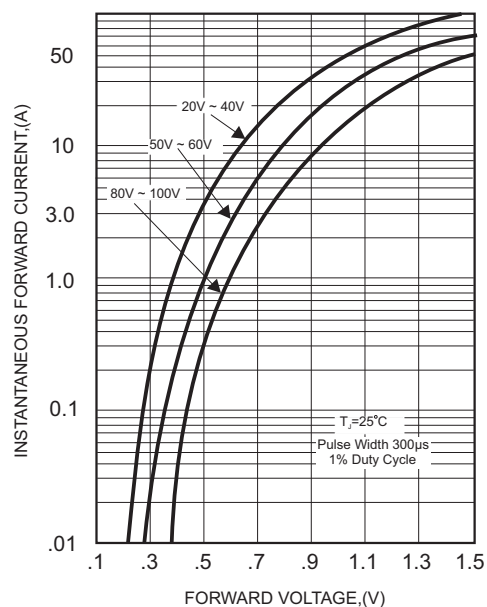
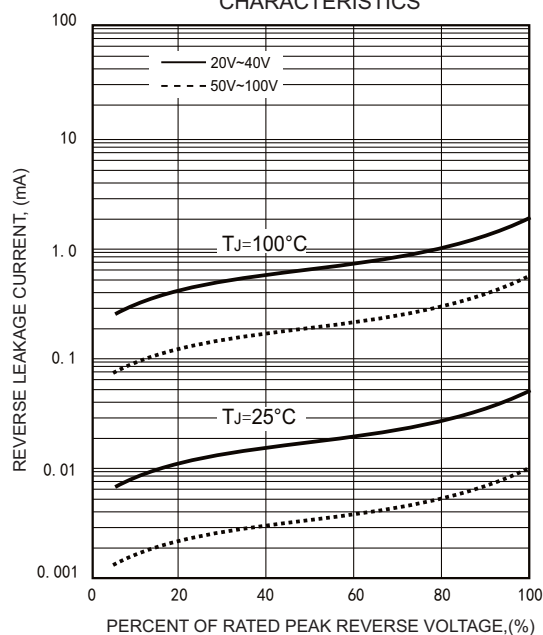


FIG.5 - TYPICAL REVERSE CHARACTERISTICS



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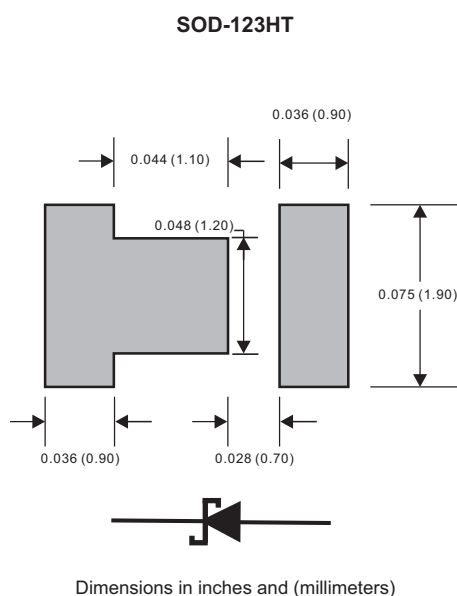
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

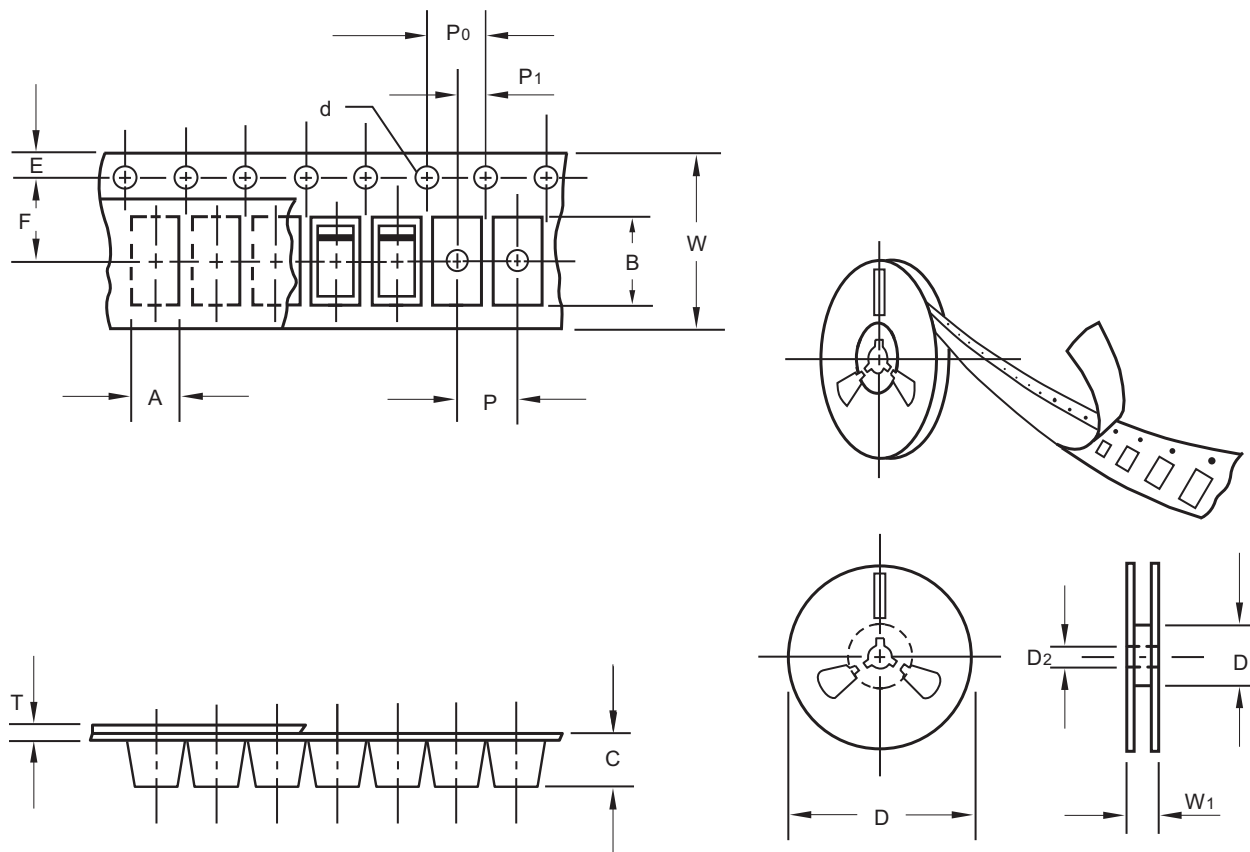
Type number	Marking code
FM320-MHT	32
FM330-MHT	33
FM340-MHT	34
FM350-MHT	35
FM360-MHT	36
FM380-MHT	38
FM3100-MHT	310

Suggested solder pad layout



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Packing information



unit:mm

Item	Symbol	Tolerance	SOD-123HT
Carrier width	A	0.1	2.00
Carrier length	B	0.1	3.85
Carrier depth	C	0.1	1.10
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	62.00
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	11.40

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

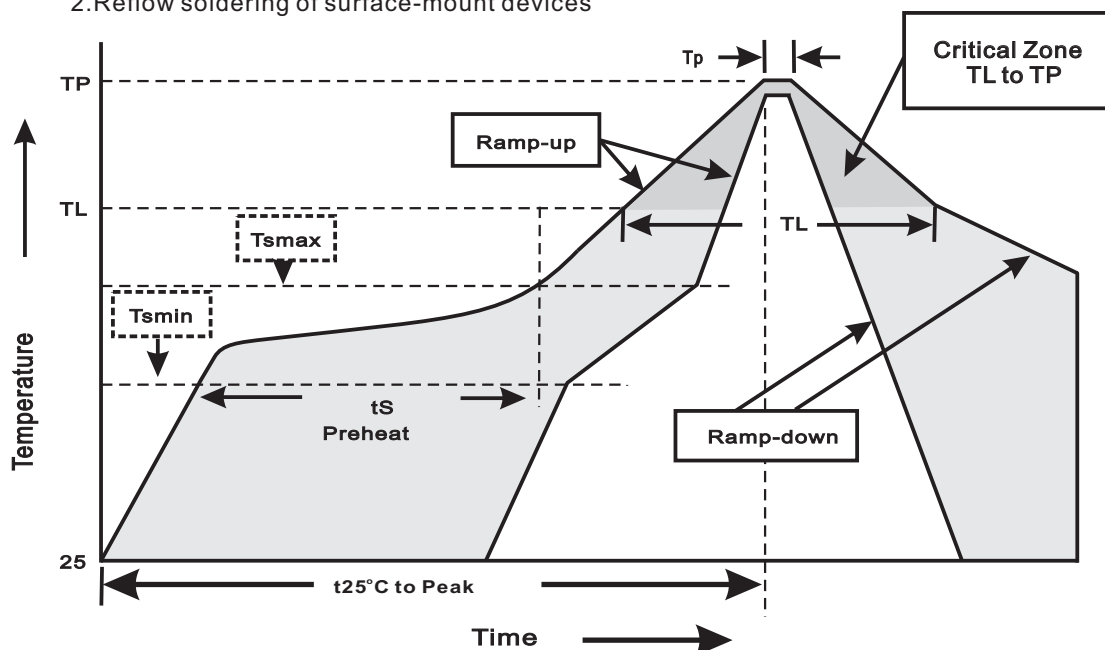
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Reel packing

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)
SOD-123HT	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	9.0

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_{smin}) -Temperature Max(T_{smax}) -Time(min to max)(t_s)	150°C 200°C $60\sim 120\text{sec}$
T_{smax} to T_L -Ramp-upRate	$<3^{\circ}\text{C}/\text{sec}$
Time maintained above: -Temperature(T_L) -Time(t_L)	217°C $60\sim 260\text{sec}$
Peak Temperature(T_P)	$255^{\circ}\text{C}-0/+5^{\circ}\text{C}$
Time within 5°C of actual Peak Temperature(t_P)	$10\sim 30\text{sec}$
Ramp-down Rate	$<3^{\circ}\text{C}/\text{sec}$
Time 25°C to Peak Temperature	$<6\text{minutes}$

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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^\circ\text{C}$ for $10 \pm 2\text{sec.}$	MIL-STD-750D METHOD-2031
2. Solderability	at $245 \pm 5^\circ\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_R = 80\%$ rate at $T_J = 125^\circ\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at $T_A = 25^\circ\text{C}$ for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	$T_A = 25^\circ\text{C}$, $I_F = I_O$ On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles.	MIL-STD-750D METHOD-1036
6. Pressure Cooker	$15P_{SIG}$ at $T_A = 121^\circ\text{C}$ for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to $+125^\circ\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Forward Surge	8.3ms single half sine-wave , one surge.	MIL-STD-750D METHOD-4066-2
9. Humidity	at $T_A = 85^\circ\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
10. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031