RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

SFM11 THRU SFM18

SURFACE MOUNT FAST RECOVERY RECTIFIER

VOLTAGE RANGE 50 to 600 Volts CURRENT 1.0 Ampere

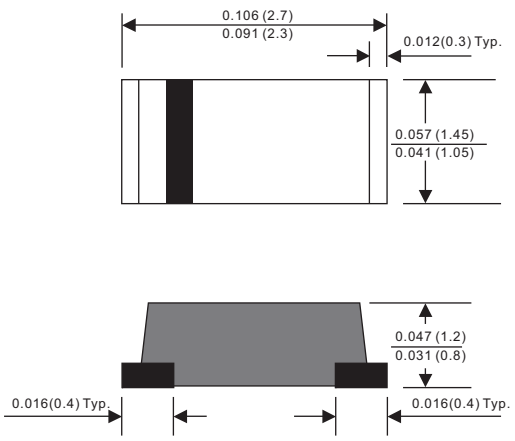
Features

- Very tiny plastic SMD package
- High current capability
- Superfast recovery time for switching mode application
- High surge current capability
- Glass passivated chip junction
- Lead-free parts meet RoHS requirments

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-323
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.008 gram

SOD-323



Dimensions in inches and (millimeters)

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

PARAMETER	SYMBOLS	SFM11	SFM12	SFM13	SFM14	SFM15	SFM16	SFM17	SFM18	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	150	200	300	400	500	600	V
Maximum RMS voltage	V_{RMS}	35	70	105	140	210	280	350	420	V
Maximum continuous reverse voltage	V_R	50	100	150	200	300	400	500	600	V
Maximum average forward rectified current	I_O	1.0								A
Non-repetitive peak forward surge current 8.3ms single half sine-wave	I_{FSM}	15								A
Typical junction capacitance (Note 1)	C_J	10								pF
Operating junction temperature range	T_J	-55 to +150								°C
Storage temperature range	T_{STG}	-65 to +175								°C

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

PARAMETER	SYMBOLS	SFM11	SFM12	SFM13	SFM14	SFM15	SFM16	SFM17	SFM18	UNIT
Maximum instantaneous forward voltage at I_F=1.0A	V_F	0.95				1.25		1.70		V
Maximum reverse leakage current T_J=25°C at rated V_R T_J=125°C	I_R	5.0 100								μA μA
Maximum reverse recovery time (Note 2)	t_{rr}	35								ns

Thermal characteristics

PARAMETER	SYMBOLS	SFM11	SFM12	SFM13	SFM14	SFM15	SFM16	SFM17	SFM18	UNIT
Typical thermal resistance junction to ambient (3)	$R_{\theta JA}$	68								°C/W
Typical thermal resistance junction to case(3)	$R_{\theta JC}$	48								°C/W

Notes 1: Measured at 1 MHz and applied reverse voltage of 4.0 VDC
2: Measured with IF = 0.5 A, IR = 1 A, Irr = 0.25 A
3: Mounted on FR-4 PCB Copper, minimum recommended pad layout

2020-12/35
REV:O

RATING AND CHARACTERISTICS CURVES (SFM11 THRU SFM18)

FIG.1-TYPICAL FORWARD CHARACTERISTICS

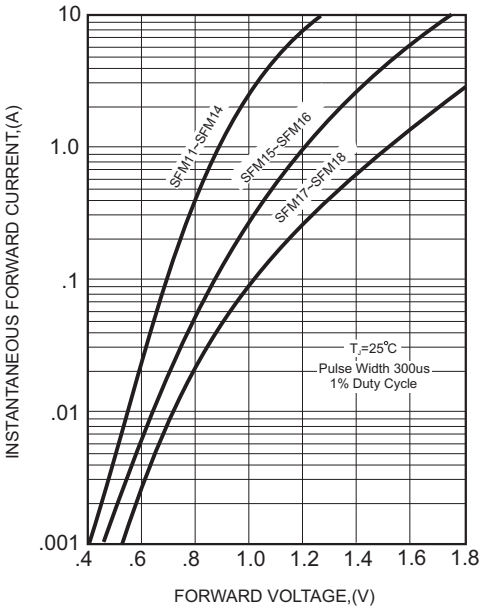


FIG.2-TYPICAL FORWARD CURRENT DERATING CURVE

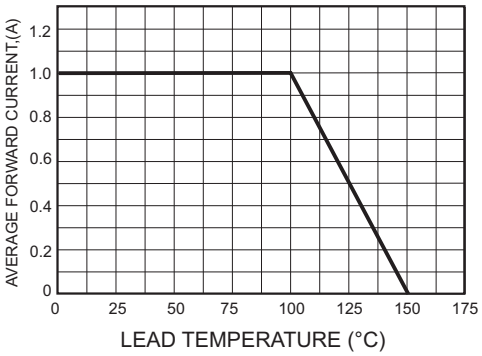
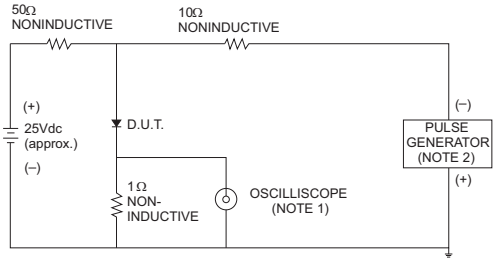


FIG.3- TEST CIRCUIT DIAGRAM AND REVERSE RECOVERY TIME CHARACTERISTICS



NOTES: 1. Rise Time= 7ns max., Input Impedance= 1 megohm.22pF.

2. Rise Time= 10ns max., Source Impedance= 50 ohms.

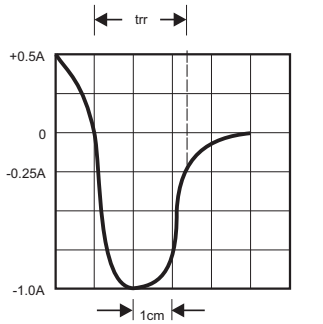


FIG.4-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

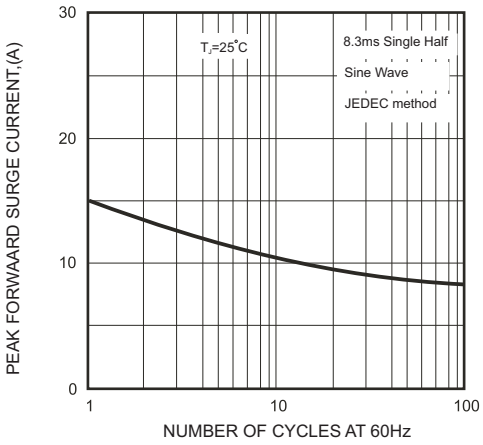
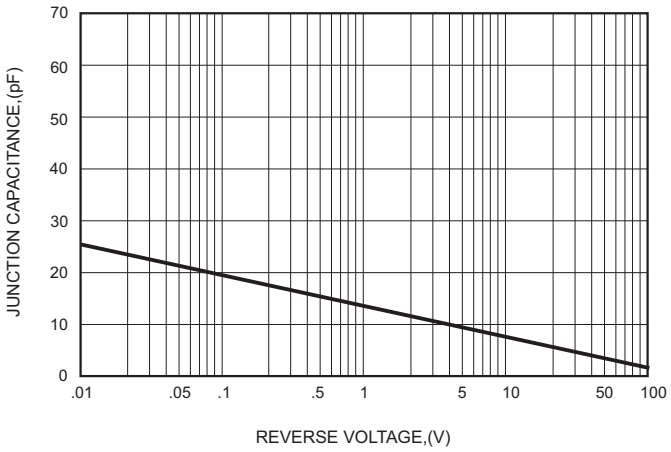


FIG.5-TYPICAL JUNCTION CAPACITANCE



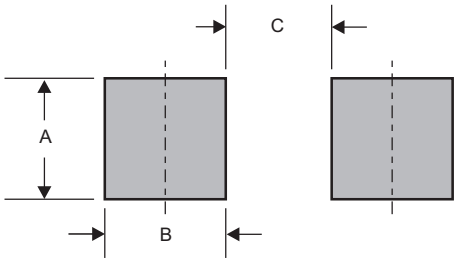
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
SFM11	S1
SFM12	S2
SFM13	S3
SFM14	S4
SFM15	S5
SFM16	S6
SFM17	S7
SFM18	S8

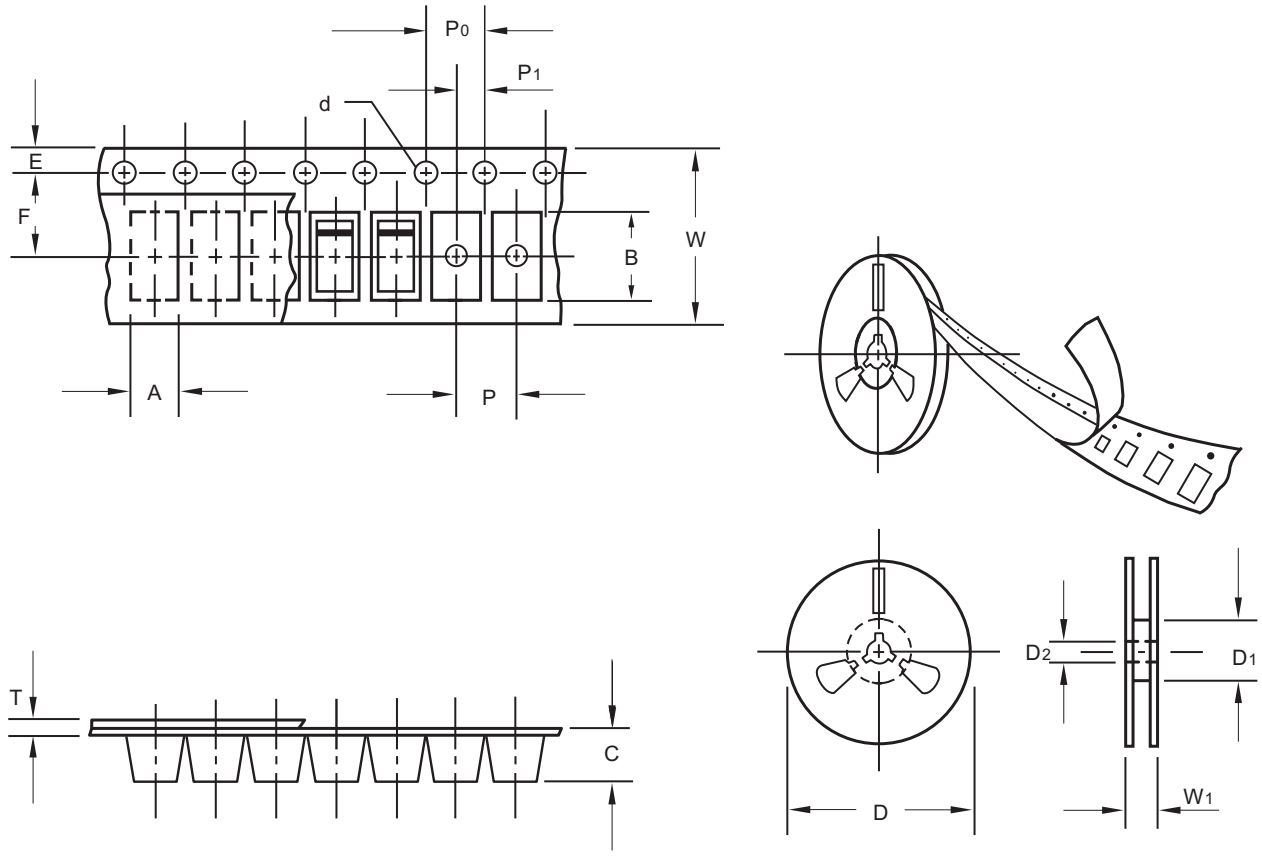
Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323	0.059 (1.50)	0.039 (1.00)	0.051 (1.30)

Packing information



unit:mm

Item	Symbol	Tolerance	SOD-323
Carrier width	A	0.1	1.47
Carrier length	B	0.1	2.95
Carrier depth	C	0.1	1.15
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	62.00
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	11.40

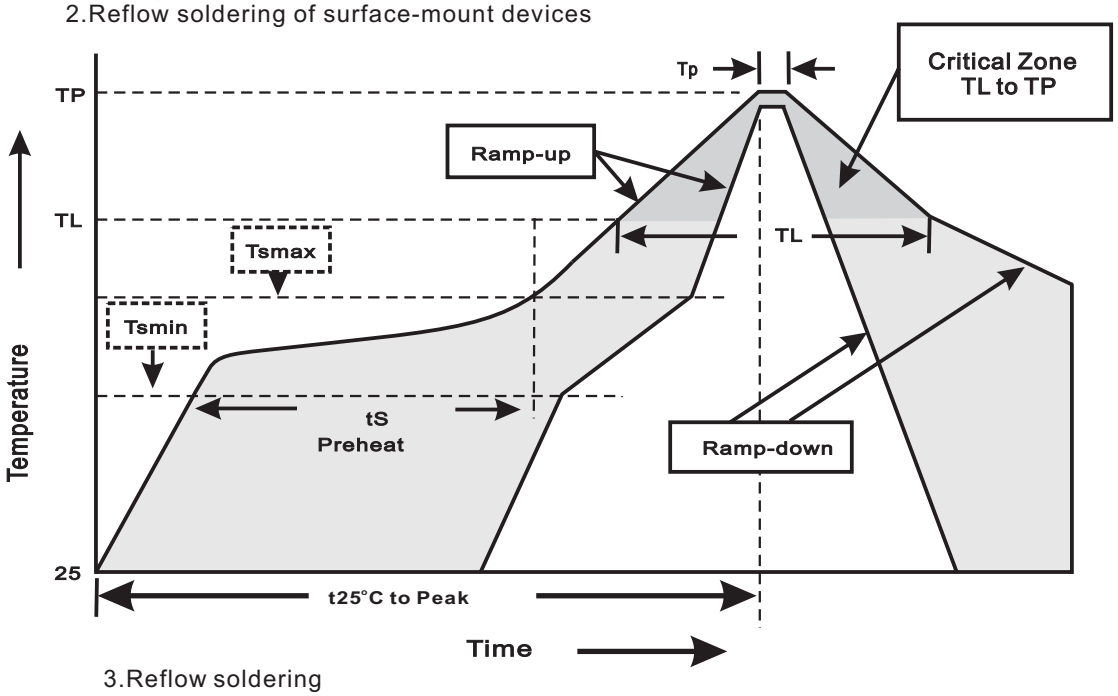
Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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-323	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	8.0

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°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

DISCLAIMER NOTICE

Rectron Inc reserves the right to make changes without notice to any product specification herein, to make corrections, modifications, enhancements or other changes. Rectron Inc or anyone on its behalf assumes no responsibility or liability for any errors or inaccuracies. Data sheet specifications and its information contained are intended to provide a product description only. "Typical" parameters which may be included on RECTRON data sheets and/ or specifications can and do vary in different applications and actual performance may vary over time. Rectron Inc does not assume any liability arising out of the application or use of any product or circuit.

Rectron products are not designed, intended or authorized for use in medical, life-saving implant or other applications intended for life-sustaining or other related applications where a failure or malfunction of component or circuitry may directly or indirectly cause injury or threaten a life without expressed written approval of Rectron Inc. Customers using or selling Rectron components for use in such applications do so at their own risk and shall agree to fully indemnify Rectron Inc and its subsidiaries harmless against all claims, damages and expenditures.