

FM2L40-S THRU FM2L100-S

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FM2L40-S THRU FM2L100-S

2.0A Low VF Surface Mount Schottky Barrier Rectifiers 40V-100V

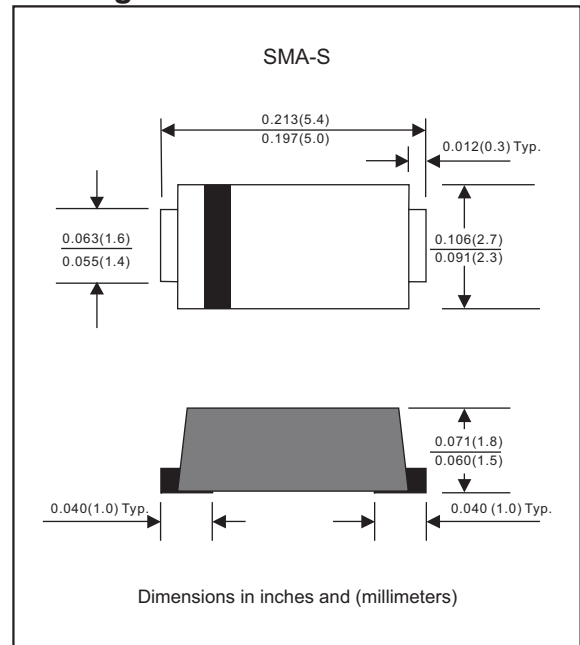
Features

- High current density schottky
- Low profile surface mounted application in order to optimize board space
- Low power loss, high efficiency
- High current capability, low forward voltage drop
- High surge capability
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen free parts, ex. FM2L40-S-H

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SMA-S
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.05 gram

Package outline



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

PARAMETER	SYMBOLS	FM2L40-S	FM2L45-S	FM2L60-S	FM2L100-S	UNITS
Maximum repetitive peak reverse voltage	VRRM	40	45	60	100	Volts
Maximum RMS voltage	VRMS	28	31.5	42	70	Volts
Maximum continuous reverse voltage	VR	40	45	60	100	Volts
Maximum average forward rectified current	Io	2.0				Amps
Non-repetitive peak forward surge current 1.0ms square-wave	IFSM	50				Amps
Operating junction temperature range	TJ	-55 to +125		-55 to +150		$^{\circ}\text{C}$
Storage temperature range	TSTG	-65 to +175				$^{\circ}\text{C}$

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

PARAMETER	SYMBOLS	FM2L40-S	FM2L45-S	FM2L60-S	FM2L100-S	UNITS
Maximum instantaneous forward voltage at $I_F=2.0\text{A}$	VF	0.45	0.45	0.55	0.75	Volts
Maximum reverse leakage current at rated VR	IR	0.5 10				mA mA

Thermal characteristics

PARAMETER	SYMBOLS	FM2L40-S	FM2L45-S	FM2L60-S	FM2L100-S	UNITS
Typical thermal resistance junction to ambient (Note 1)	$R_{\theta JA}$	65				$^{\circ}\text{C} / \text{W}$
Typical thermal resistance junction to case (Note 1)	$R_{\theta JC}$	30				$^{\circ}\text{C} / \text{W}$

Note 1: Mounted on FR-4 PCB Copper, minimum recommended pad layout.

Rating and characteristic curves (FM2L40-S THRU FM2L100-S)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

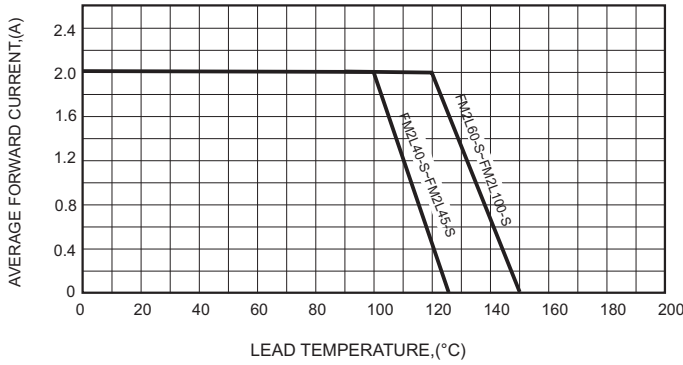


FIG.2-TYPICAL FORWARD CHARACTERISTICS

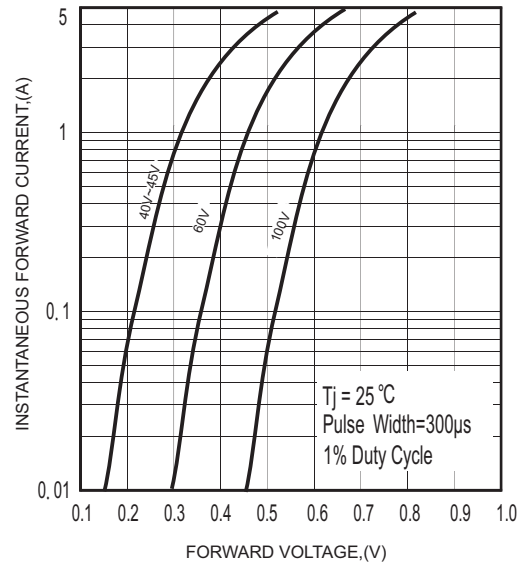


FIG.3-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

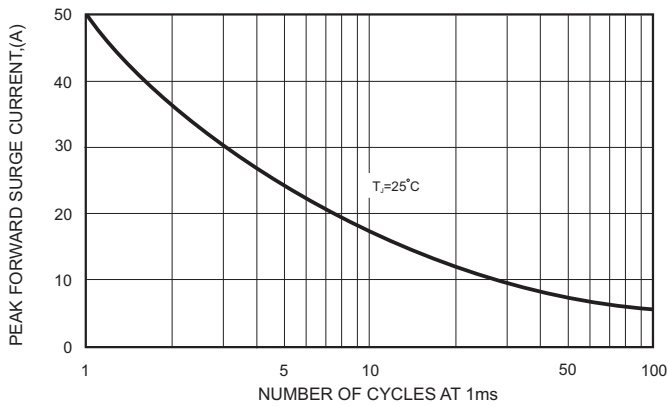


FIG.5 - TYPICAL REVERSE CHARACTERISTICS

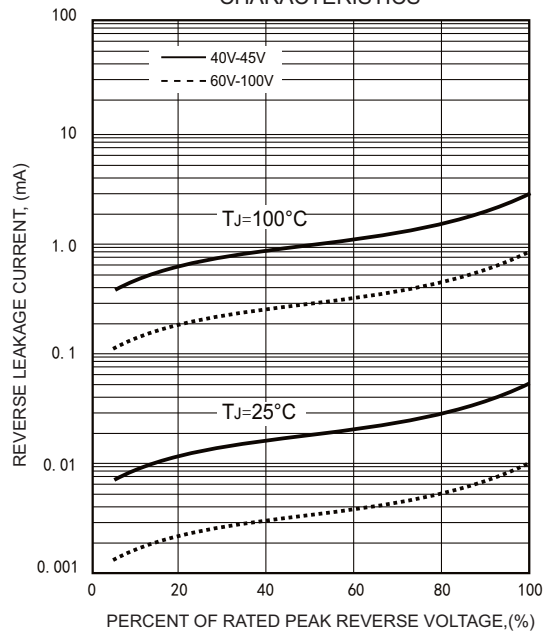
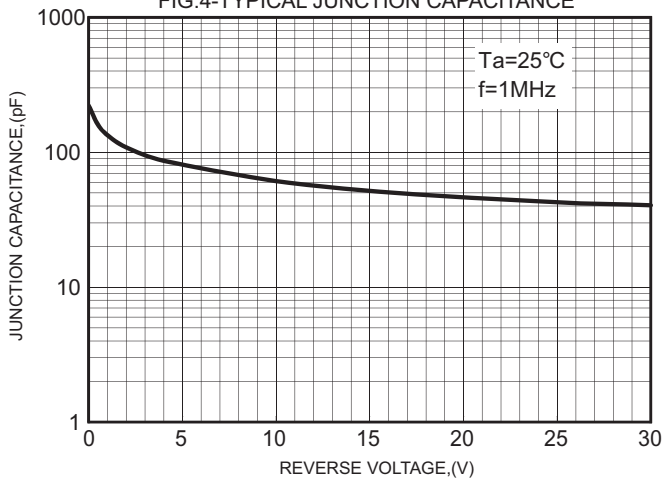




FIG.4-TYPICAL JUNCTION CAPACITANCE



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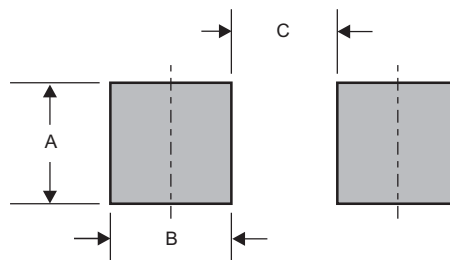
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
FM2L40-S	2L40
FM2L45-S	2L45
FM2L60-S	2L60
FM2L100-S	2L100

Suggested solder pad layout

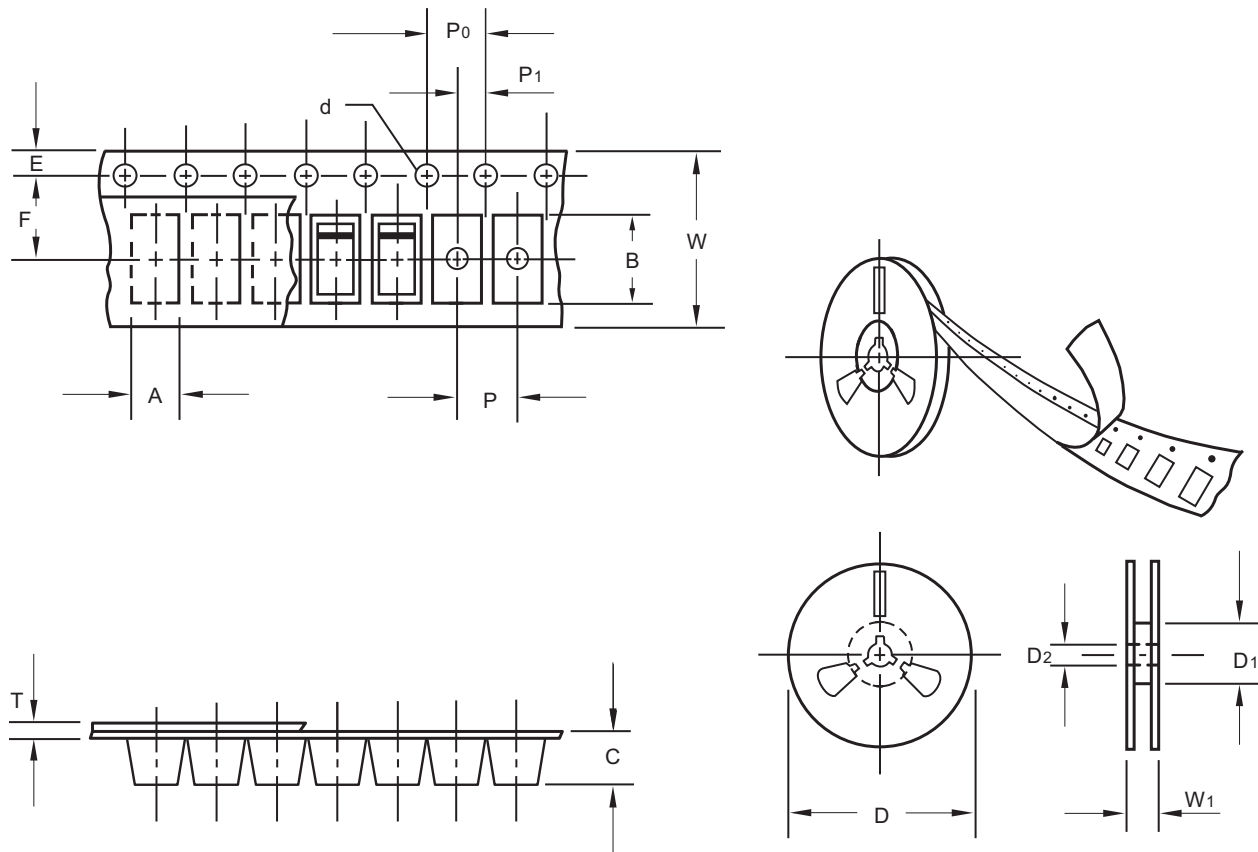


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMA-S	0.063 (1.60)	0.059 (1.50)	0.110 (2.80)

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Packing information



unit:mm

Item	Symbol	Tolerance	SMA-S
Carrier width	A	0.1	2.90
Carrier length	B	0.1	5.50
Carrier depth	C	0.1	2.10
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D1	min	50.00
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	5.50
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	12.00
Reel width	W1	1.0	18.00

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

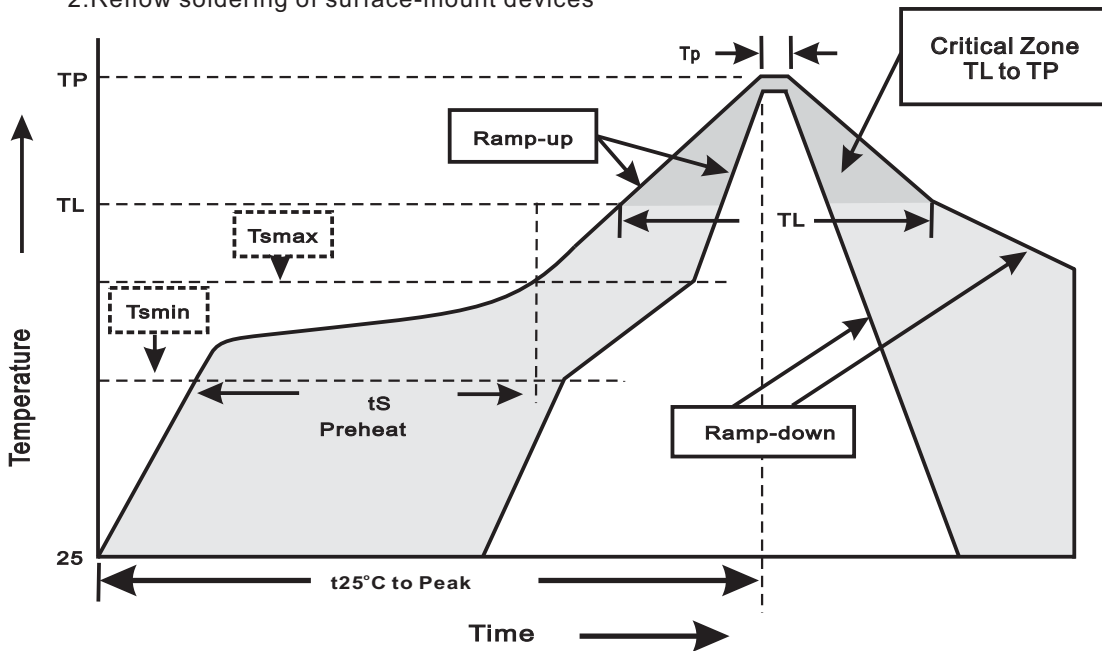
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Reel packing

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)
SMA-S	7"	2,000	4.0	20,000	183*155*183	178	382*356*392	160,000	15.0
	13"	7,500	4.0	15,000	335*335*38	330	350*330*360	120,000	14.5

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(TL to TP)	<3°C/sec
Preheat -Temperature Min(T Amin) -Temperature Max(Tsmax) -Time(min to max)(tS)	150°C 200°C 60~120sec
Tsmax to TL -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(TL) -Time(tL)	217°C 60~260sec
Peak Temperature(TP)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(tp)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

FM2L40-S THRU FM2L100-S**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec.	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°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°C dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Forward Surge	1.0ms square-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