

# FM3L40-BS THRU FM3L100-BS

## List

List.....	1
Package outline.....	2
Features.....	2
Mechanical data.....	2
Maximum ratings and Electrical characteristics .....	2
Rating and characteristic curves.....	3
Pinning information.....	4
Marking.....	4
Suggested solder pad layout.....	4
Packing information.....	5
Reel packing.....	6
Suggested thermal profiles for soldering processes.....	6
High reliability test capabilities.....	7

# FM3L40-BS THRU FM3L100-BS

## 3.0A Low VF Surface Mount Schottky Barrier Rectifiers 40V-100V

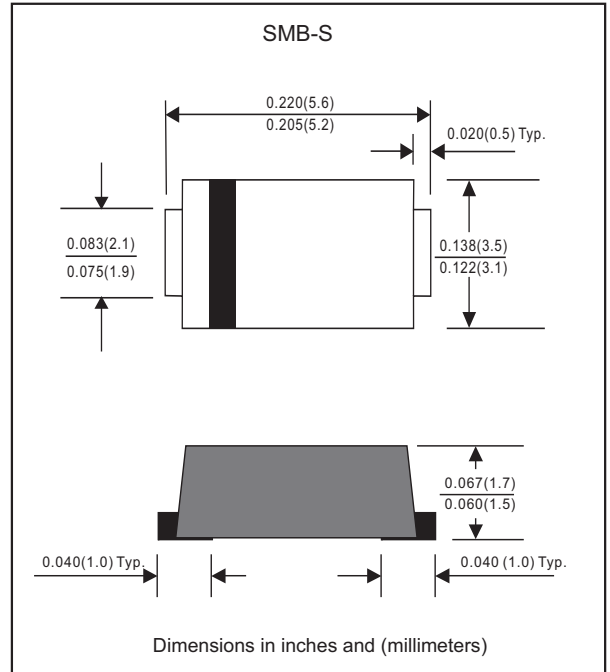
### Features

- 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. FM3L40-BS-H

### Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic,SMB-S
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.072 gram

### Package outline



### Maximum ratings (AT T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOLS	FM3L40-BS	FM3L45-BS	FM3L60-BS	FM3L100-BS	UNITS
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	40	45	60	100	Volts
Maximum RMS voltage	V <sub>RMS</sub>	28	31.5	42	70	Volts
Maximum continuous reverse voltage	V <sub>R</sub>	40	45	60	100	Volts
Maximum average forward rectified current	I <sub>O</sub>	3.0				Amps
Non-repetitive peak forward surge current 1.0ms square-wave	I <sub>FSM</sub>	80				Amps
Operating junction temperature range	T <sub>J</sub>	-55 to +125		-55 to +150		°C
Storage temperature range	T <sub>STG</sub>	-65 to +175				°C

### Electrical characteristics (AT T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOLS	FM3L40-BS	FM3L45-BS	FM3L60-BS	FM3L100-BS	UNITS
Maximum instantaneous forward voltage at I <sub>F</sub> =3.0A	V <sub>F</sub>	0.45	0.45	0.55	0.75	Volts
Maximum reverse leakage current at rated V <sub>R</sub>	I <sub>R</sub>	0.5 20				mA mA

### Thermal characteristics

PARAMETER	SYMBOLS	FM3L40-BS	FM3L45-BS	FM3L60-BS	FM3L100-BS	UNITS
Typical thermal resistance junction to ambient (Note 1)	R <sub>θJA</sub>	61				°C / W
Typical thermal resistance junction to case (Note 1)	R <sub>θJC</sub>	31				°C / W

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

## Rating and characteristic curves (FM3L40-BS THRU FM3L100-BS)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

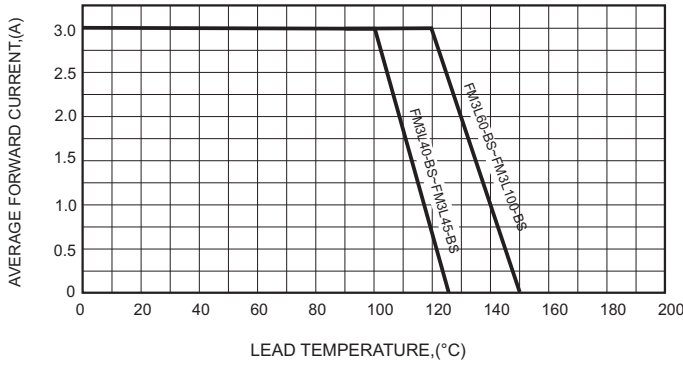


FIG.2-TYPICAL FORWARD CHARACTERISTICS

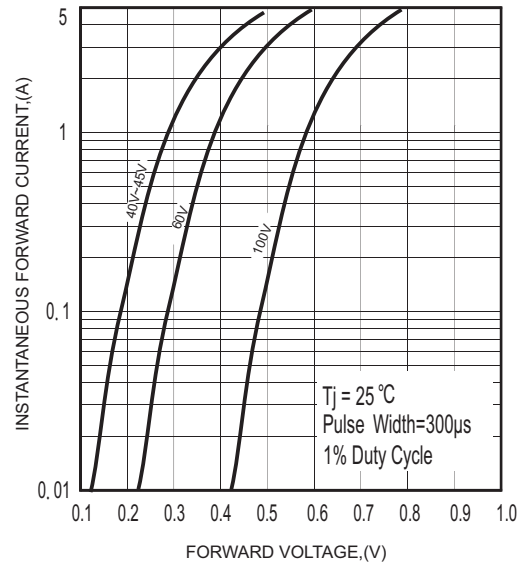


FIG.3-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

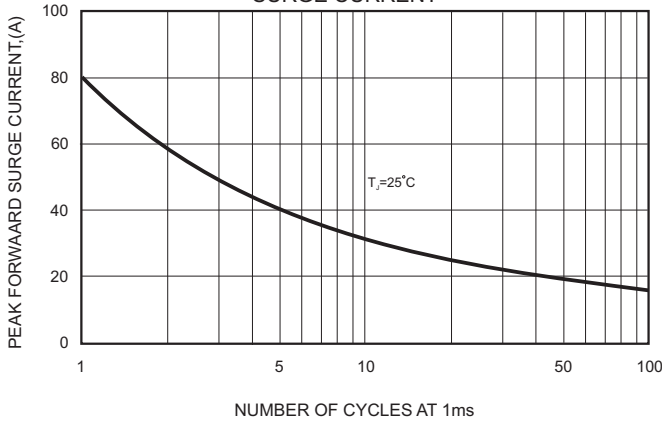


FIG.5 - TYPICAL REVERSE CHARACTERISTICS

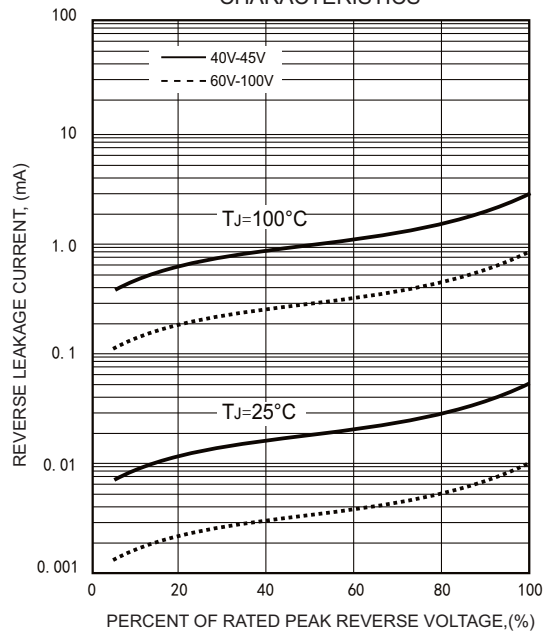
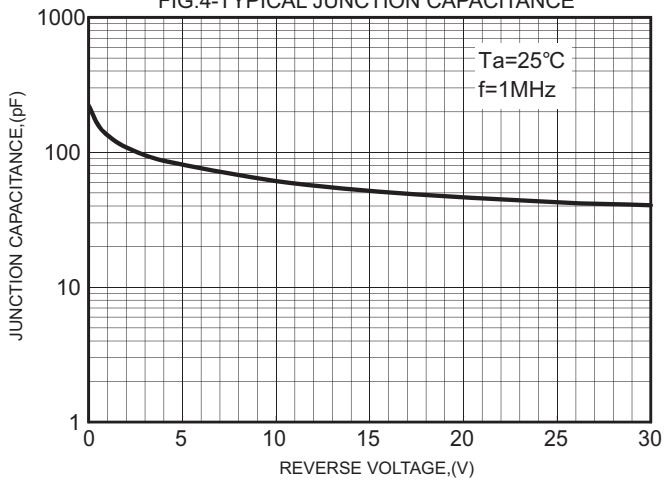




FIG.4-TYPICAL JUNCTION CAPACITANCE



# FM3L40-BS THRU FM3L100-BS

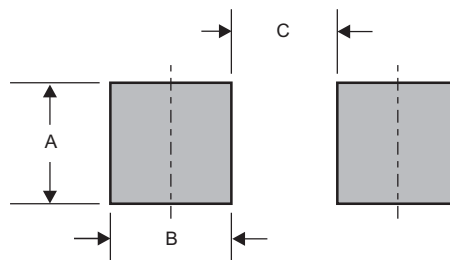
## Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

## Marking

Type number	Marking code
FM3L40-BS	3L40
FM3L45-BS	3L45
FM3L60-BS	3L60
FM3L100-BS	3L100

## Suggested solder pad layout

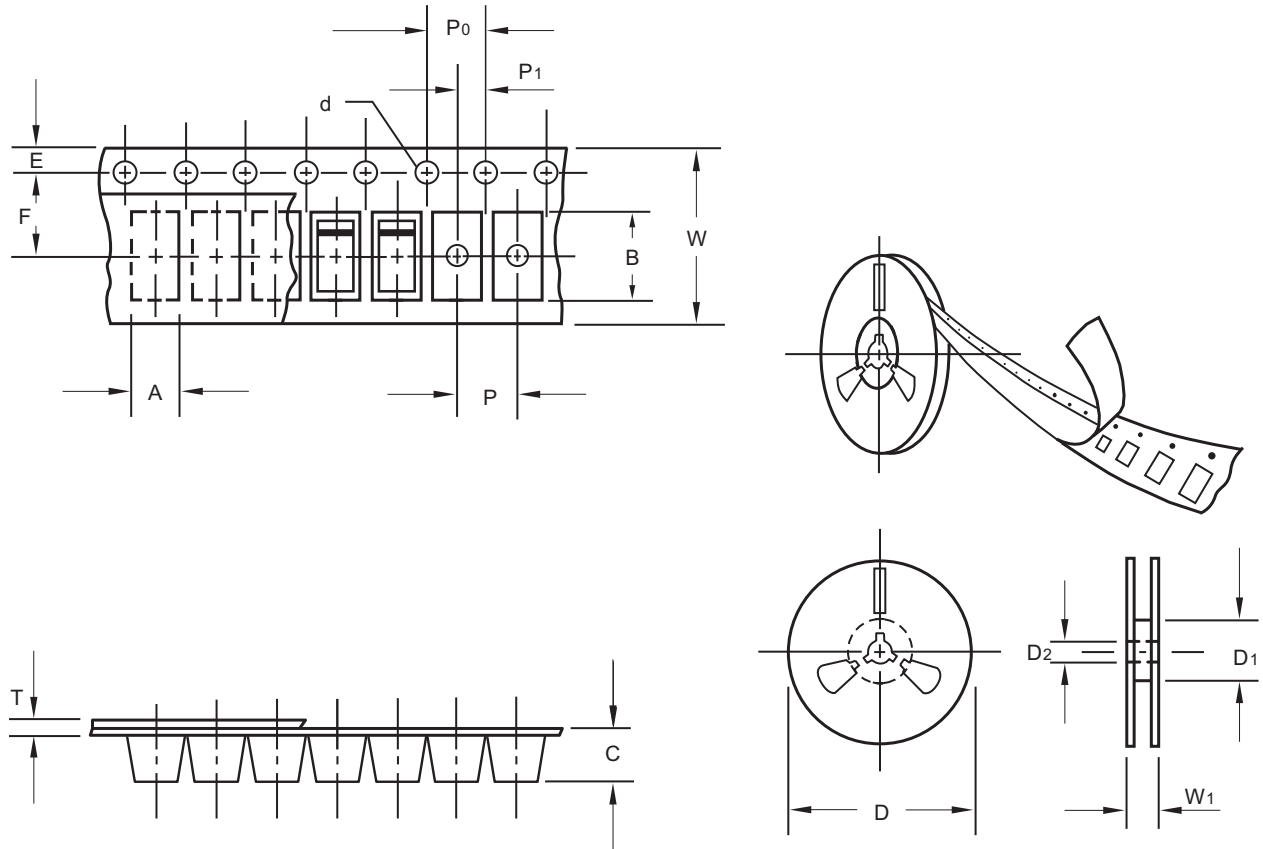


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMB-S	0.078 (2.00)	0.059 (1.50)	0.110 (2.80)

# FM3L40-BS THRU FM3L100-BS

## Packing information



unit:mm

Item	Symbol	Tolerance	SMB-S
Carrier width	A	0.1	3.81
Carrier length	B	0.1	5.74
Carrier depth	C	0.1	2.24
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	8.00
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.

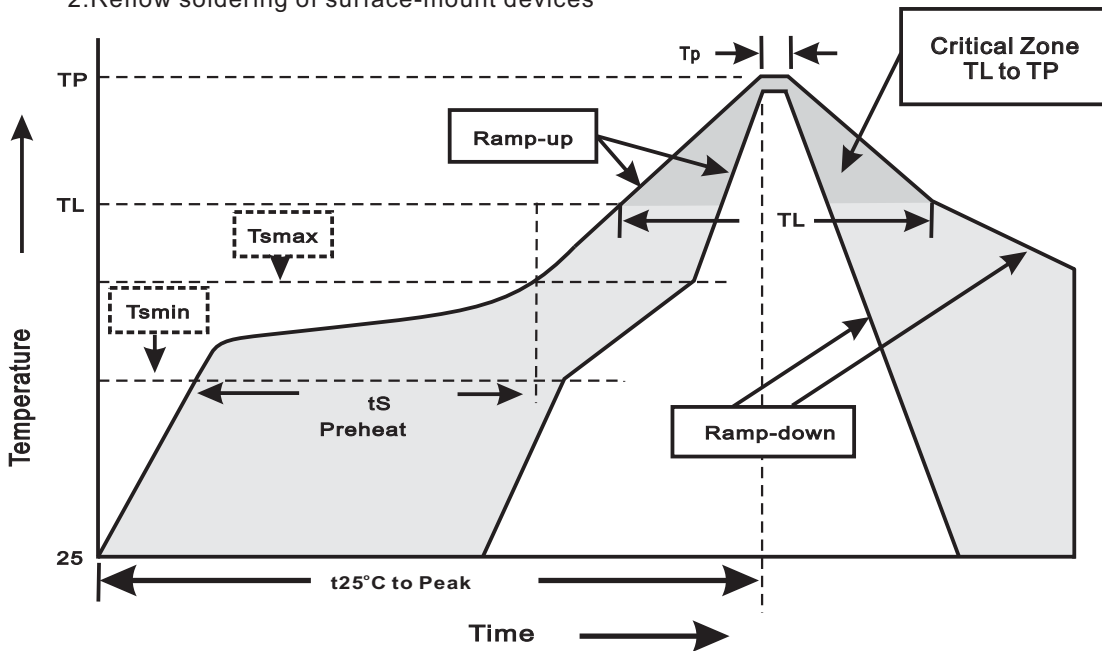
# FM3L40-BS THRU FM3L100-BS

## 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)
SMB-S	13"	4,000	8.0	8,000	335*335*38	330	350*330*360	64,000	13.0

## 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 <sub>L</sub> to T <sub>P</sub> )	<3°C/sec
Preheat -Temperature Min(T <sub>min</sub> ) -Temperature Max(T <sub>max</sub> ) -Time(min to max)(t <sub>s</sub> )	150°C 200°C 60~120sec
T <sub>max</sub> to T <sub>L</sub> -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T <sub>L</sub> ) -Time(t <sub>L</sub> )	217°C 60~260sec
Peak Temperature(T <sub>P</sub> )	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t <sub>P</sub> )	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

**FM3L40-BS THRU FM3L100-BS****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 <sub>SIG</sub> 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