FM20L40-T7B THRU FM20L100-T7B

List

FM20L40-T7B THRU FM20L100-T7B

20.0A Surface Mount Trench MOS Schottky Barrier Rectifiers 40V-100V

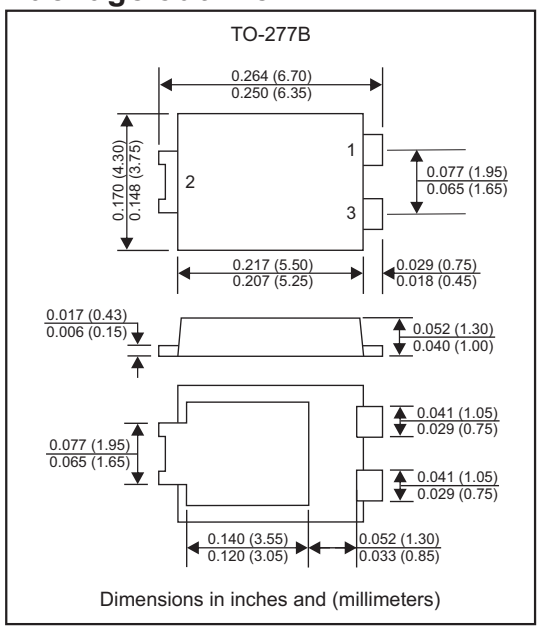
Features

- High current density schottky
- Low forward voltage drop
- Excellent high temperature stability
- High forward surge current capability
- Lead free finish,RoHS compliant
- Suffix "-H" indicates Halogen free parts, ex. FM20L40-T7B-H

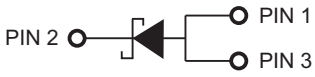
Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, TO-277B
- Terminals: Plated terminals, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight:0.092 grams(approx)

Package outline



Dimensions in inches and (millimeters)



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

PARAMETER	SYMBOLS	FM20L40-T7B	FM20L45-T7B	FM20L50-T7B	FM20L60-T7B	FM20L80-T7B	FM20L100-T7B	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	40	45	50	60	80	100	V
Maximum RMS voltage	V_{RMS}	28	31.5	35	42	56	70	V
Maximum continuous reverse voltage	V_R	40	45	50	60	80	100	V
Maximum average forward rectified current	I_O	20						A
Peak forward surge current 8.3ms single half sine-wave(JEDEC method)	I_{FSM}	250						A
Operating junction temperature range	T_J	-55 to +150						°C
Storage temperature range	T_{STG}	-55 to +150						°C

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

PARAMETER	SYMBOLS	FM20L40-T7B	FM20L45-T7B	FM20L50-T7B	FM20L60-T7B	FM20L80-T7B	FM20L100-T7B	UNIT
Maximum forward voltage at I_F=2.0A at I_F=20.0A	V_F		0.35 0.48		0.40 0.55	0.45 0.70		V
Maximum reverse current at rated V_R T_J =25°C T_J =125°C	I_R		0.5 50			0.2 20		mA

Thermal characteristics

PARAMETER	SYMBOLS	FM20L40-T7B	FM20L45-T7B	FM20L50-T7B	FM20L60-T7B	FM20L80-T7B	FM20L100-T7B	UNIT
Typical thermal resistance junction to ambient	$R_{\theta JA}$	60.0						°C/W

Note 1: Mounted on FR-4 PCB copper pad area. Cathode pad dimensions 4.95mm x 3.4mm. Anode pad dimensions 1.55mm x 5.0mm.

Rating and characteristic curves(FM20L40-T7B THRU FM20L100-T7B)

Fig.1 TYPICAL FORWARD CHARACTERISTICS

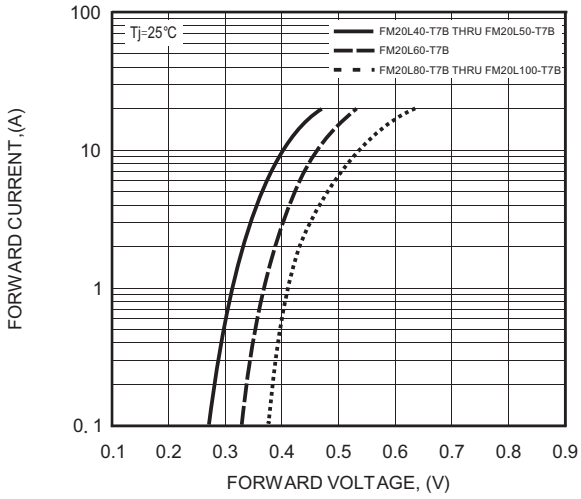


Fig.2 MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

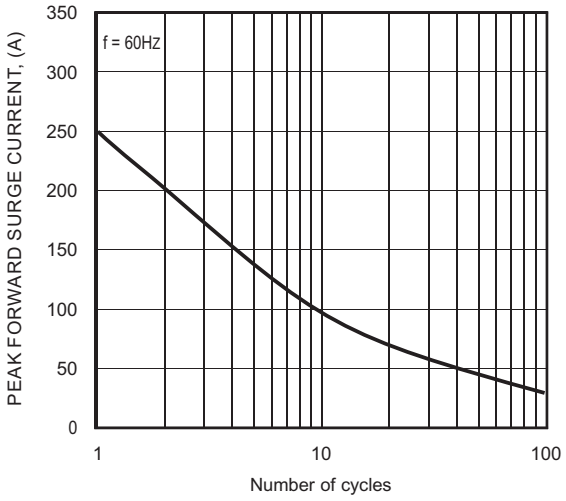


Fig.3 TYPICAL REVERSE LEAKAGE CHARACTERISTICS

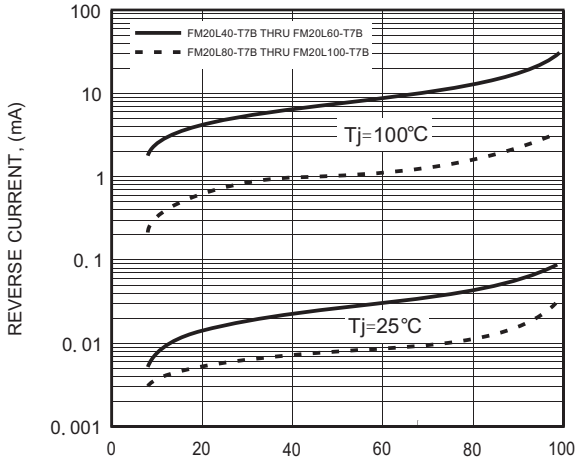
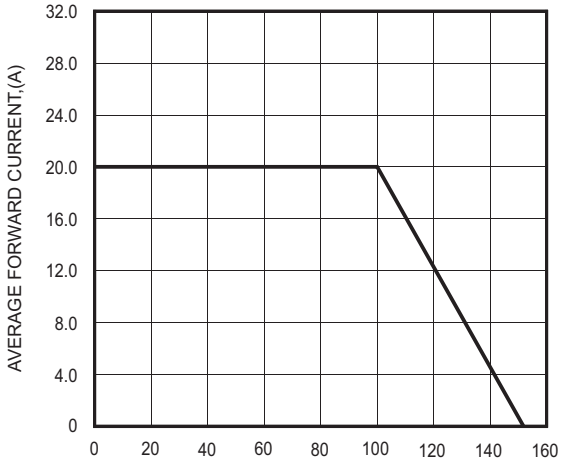


Fig.4 TYPICAL FORWARD CURRENT DERATING CURVE



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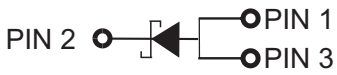
Pinning information

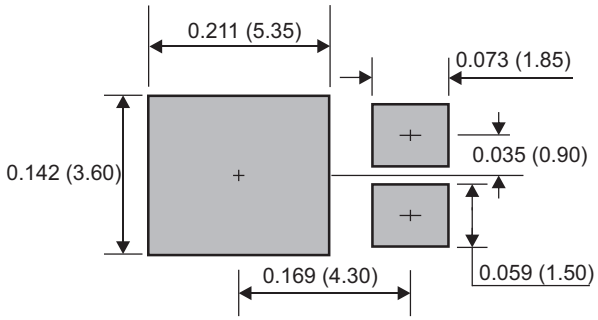
Pin	Simplified outline	Symbol
PIN 1 anode PIN 3 anode PIN 2 cathode		

Marking

Type number	Marking code
FM20L40-T7B	SL2040
FM20L45-T7B	SL2045
FM20L50-T7B	SL2050
FM20L60-T7B	SL2060
FM20L80-T7B	SL2080
FM20L100-T7B	SL20100

Suggested solder pad layout

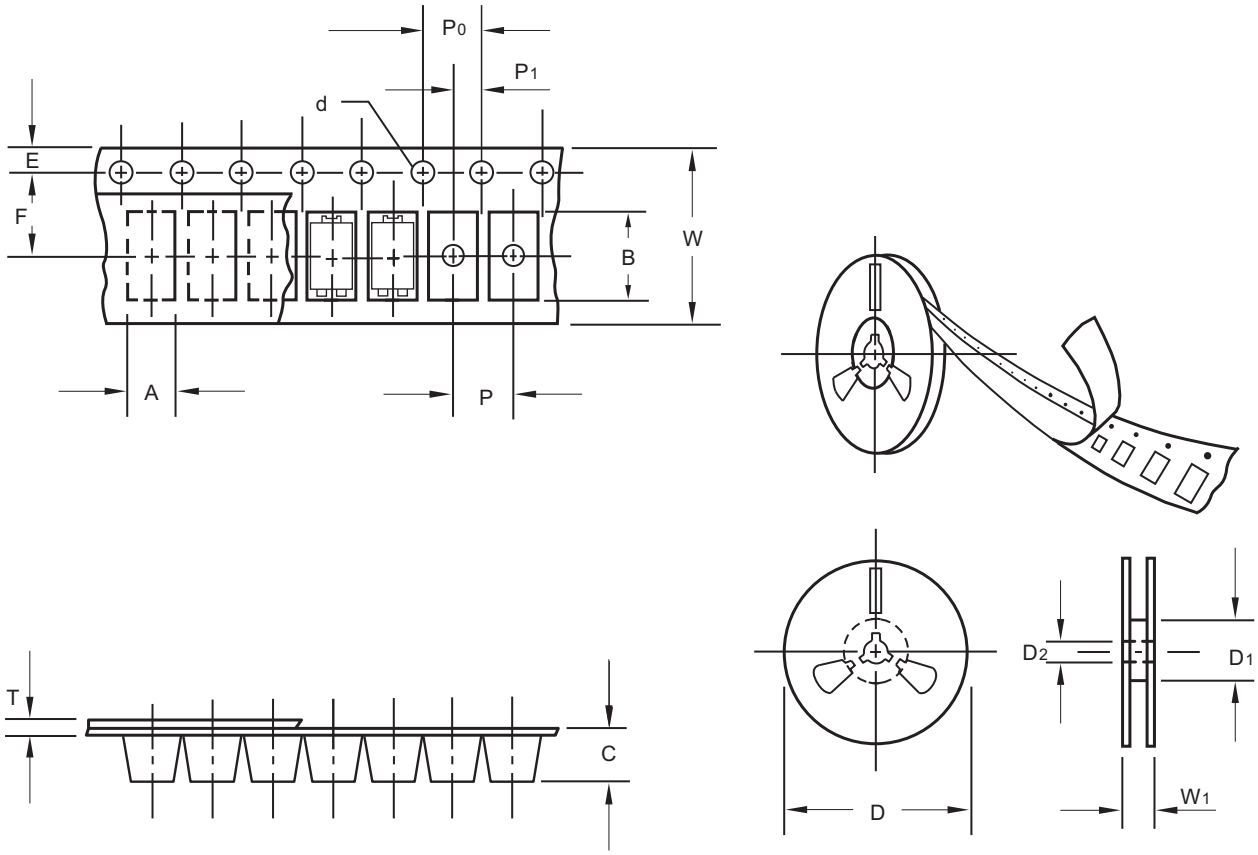
TO-277B



Dimensions in inches and (millimeters)

FM20L40-T7B THRU FM20L100-T7B

Packing information



unit:mm

Item	Symbol	Tolerance	TO-277B
Carrier width	A	0.1	4.40
Carrier length	B	0.1	6.90
Carrier depth	C	0.1	1.30
Sprocket hole	d	0.1	1.55
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D_1	min	50.00
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	7.50
Punch hole pitch	P	0.1	8.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.25
Tape width	W	0.3	12.00
Reel width	W_1	1.0	14.00

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

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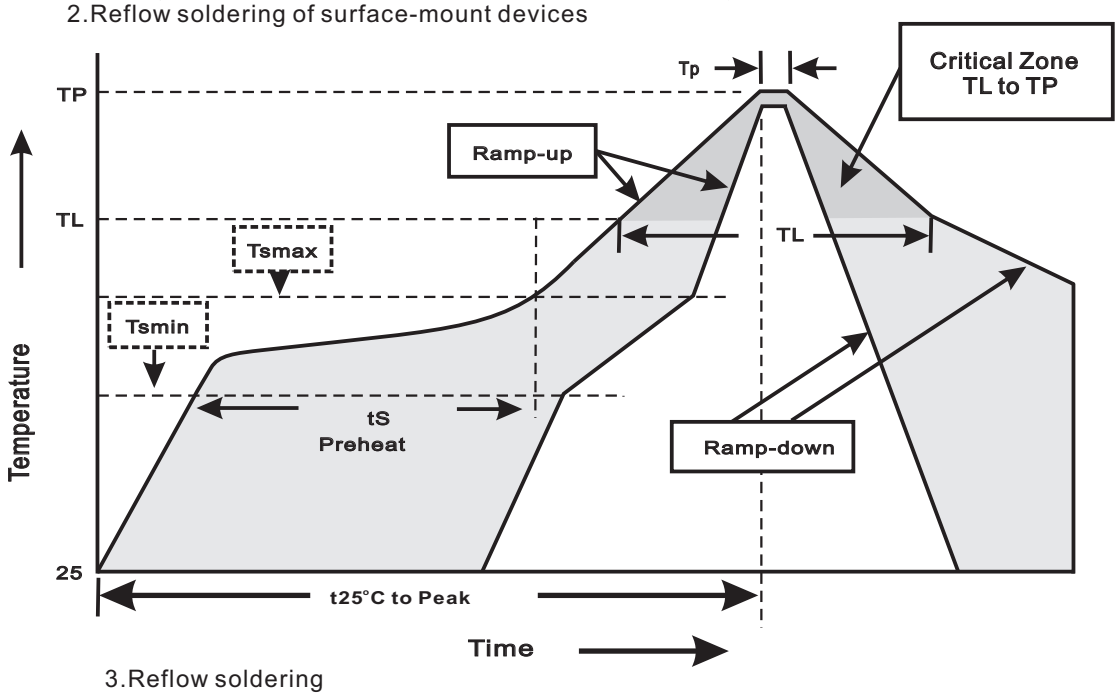
Reel packing

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)
TO-277B	13"	5,000	8.0	10,000	335*335*38	330	350*330*360	80,000	18.0

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	<3°C/sec
Time 25°C to Peak Temperature	<6minutes

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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=150°C for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at T_A=25°C for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	T_A = 25°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°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	8.3ms single half sine-wave , one surge.	MIL-STD-750D METHOD-4066-2
9. Humidity	at T_A=85°C, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
10. High Temperature Storage Life	at 150°C for 1000 hrs.	MIL-STD-750D METHOD-1031