

FM12L40-T7B THRU FM12L100-T7B

List

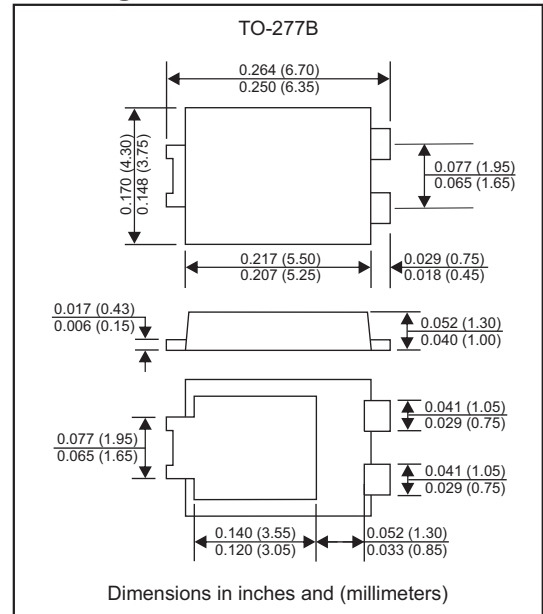
List.....	1
Package outline.....	2
Features.....	2
Mechanical data.....	2
Maximum ratings and Electrical characteristics	2
Rating and characteristic curves.....	3
Pinning information.....	4
Marking.....	4
Suggested solder pad layout.....	4
Packing information.....	5
Reel packing.....	6
Suggested thermal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

FM12L40-T7B THRU FM12L100-T7B**12.0A 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. FM12L40-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
- Mounting Position : Any
- Weight: 0.092 grams (approx)

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

PARAMETER	SYMBOLS	FM12L40-T7B	FM12L45-T7B	FM12L50-T7B	FM12L60-T7B	FM12L80-T7B	FM12L100-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	12						A
Non-repetitive peak forward surge current 8.3ms single half sine-wave	I_{FSM}	200						A
Operating junction temperature range	T_J	-55 to +150						$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-55 to +150						$^{\circ}\text{C}$

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

PARAMETER	SYMBOLS	FM12L40-T7B	FM12L45-T7B	FM12L50-T7B	FM12L60-T7B	FM12L80-T7B	FM12L100-T7B	UNIT
Maximum forward voltage at $I_F=2.0\text{A}$ at $I_F=12.0\text{A}$	V_F	0.35 0.48			0.40 0.55	0.45 0.70		V
Maximum reverse current at rated V_R	I_R	0.5 50				0.2 20		mA

Thermal characteristics

PARAMETER	SYMBOLS	FM12L40-T7B	FM12L45-T7B	FM12L50-T7B	FM12L60-T7B	FM12L80-T7B	FM12L100-T7B	UNIT
Typical thermal resistance junction to ambient	$R_{\theta JA}$	60.0						$^{\circ}\text{C/W}$

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(FM12L40-T7B THRU FM12L100-T7B)

Fig.1 TYPICAL FORWARD CHARACTERISTICS

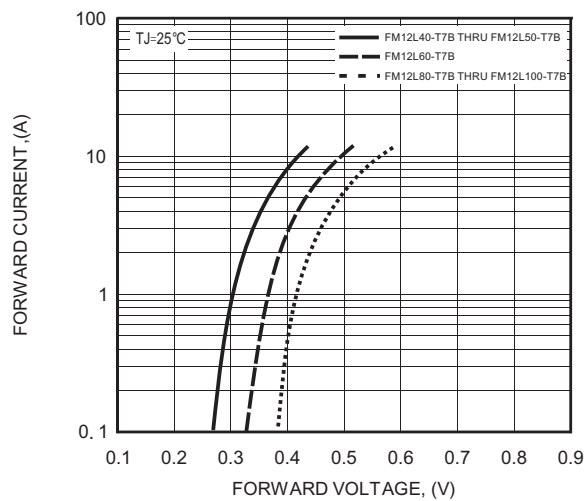


Fig.2 MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

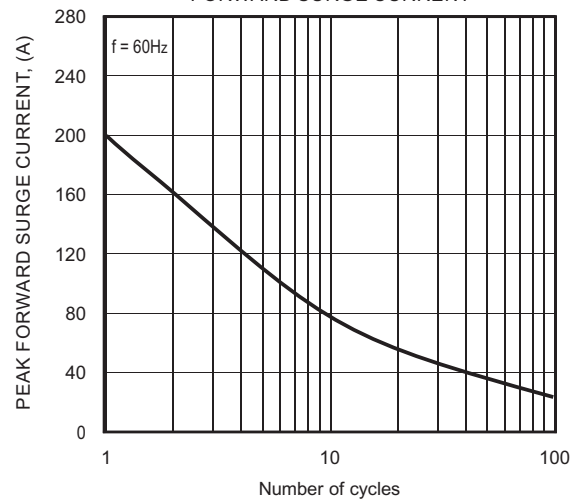


Fig.3 TYPICAL REVERSE LEAKAGE CHARACTERISTICS

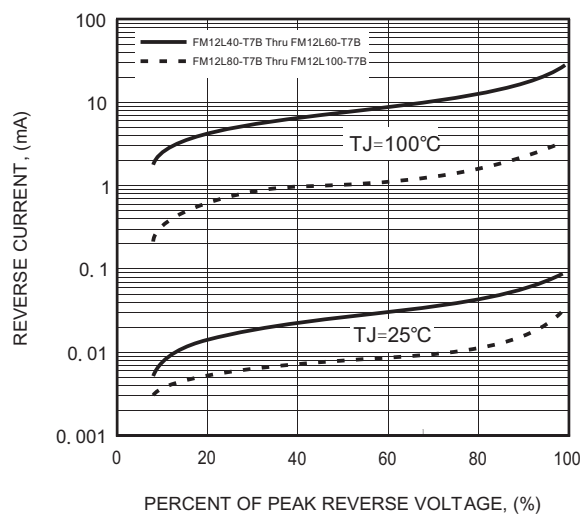
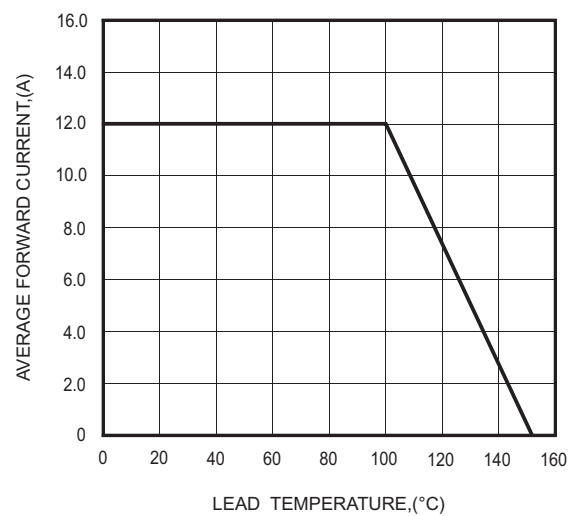


Fig.4 TYPICAL FORWARD CURRENT DERATING CURVE

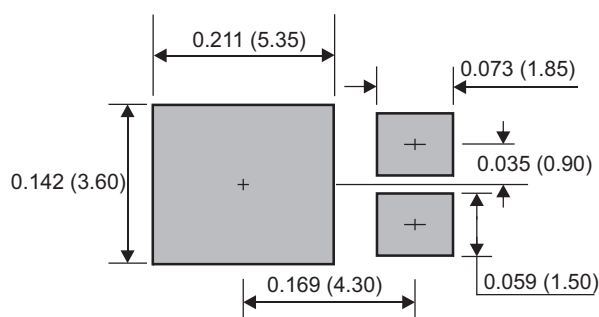


FM12L40-T7B THRU FM12L100-T7B**Pinning information**

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

Marking

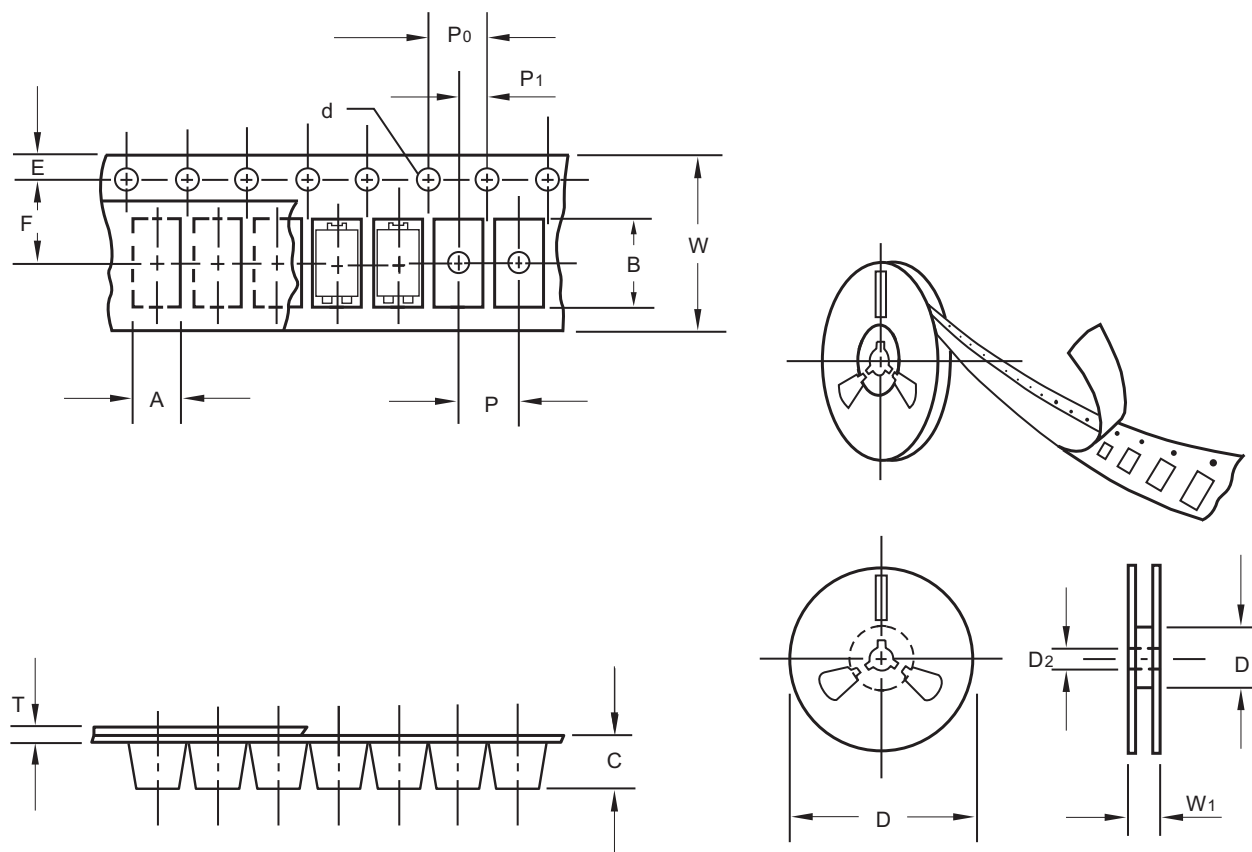
Type number	Marking code
FM12L40-T7B	SL1240
FM12L45-T7B	SL1245
FM12L50-T7B	SL1250
FM12L60-T7B	SL1260
FM12L80-T7B	SL1280
FM12L100-T7B	SL12100

Suggested solder pad layout**TO-277B**

Dimensions in inches and (millimeters)

FM12L40-T7B THRU FM12L100-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 accordance with EIA standard RS-481-A and specifications listed above.

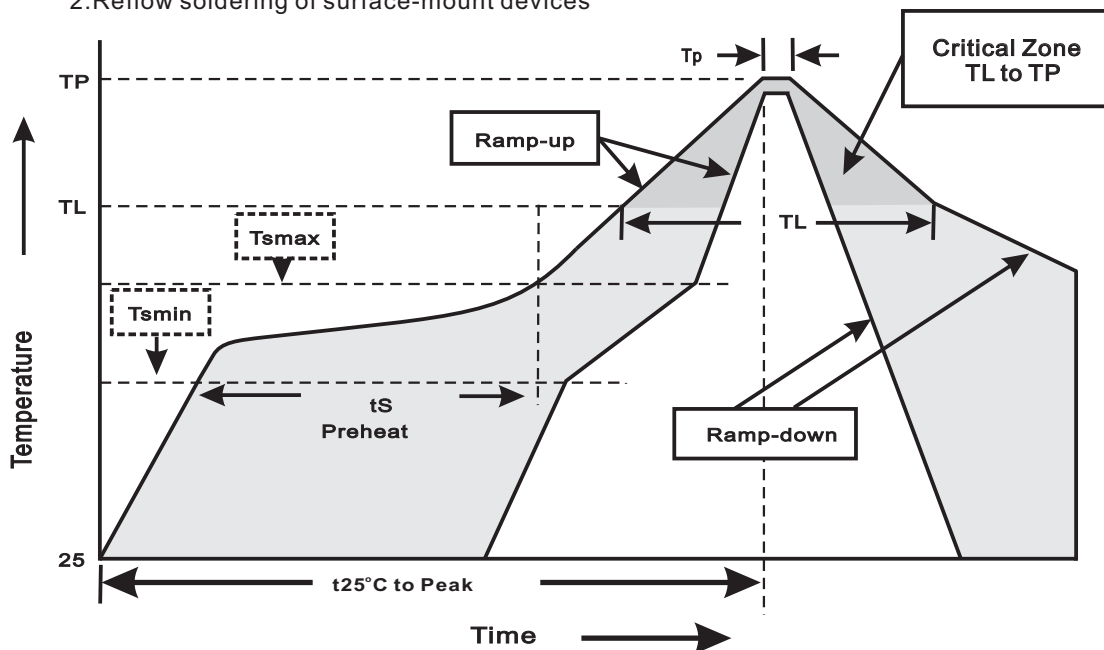
FM12L40-T7B THRU FM12L100-T7B

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(T _{smmin}) -Temperature Max(T _{smmax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smmax} 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

FM12L40-T7B THRU FM12L100-T7B**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^\circ\text{C}$ for 10 ± 2 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 $T_J = 150^\circ\text{C}$ 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 150°C for 1000 hrs.	MIL-STD-750D METHOD-1031