FM10L45-T7B

List

FM10L45-T7B

10.0A Surface Mount Schottky Barrier Rectifiers-45V

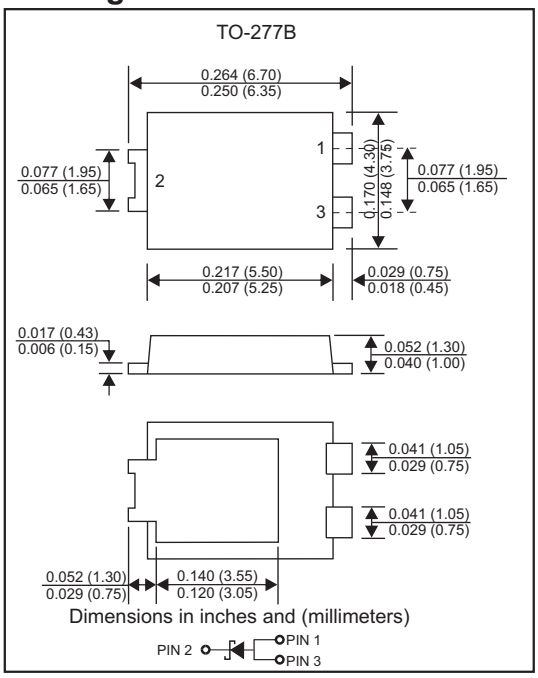
Features

- High Current Density Schottky.
- Low Forward Voltage Drop
- Excellent High Temperature Stability
- Soft, Fast Switching Capability
- Lead Free Finish,RoHS Compliant
- Suffix "-H" indicates Halogen free parts, ex. FM10L45-T7B-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : TO-277B ,molded Plastic
- Terminals: Matte Tin Finish Annealed Over Copper Leadframe. Solderable Per MIL-STD-202,Method 208
- Weight:0.1 grams(approx)

Package outline



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

Parameter	Symbol	FM10L45-T7B	Unit
DC Blocking Voltage Working Peak Reverse Voltage Repetitive Peak Reverse Voltage	V_{DC} V_{RWM} V_{RRM}	45	V
RMS Reverse Voltage	V_{RMS}	31.5	V
Average Forward Rectified Current	$I_{F(AV)}$	10.0	A
Peak Forward Surge Current,8.3ms single half sine-wave(TA=25°C)	I_{FSM}	180	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	Test Conditions	Symbol	MIN.	TYP.	MAX.	Unit
Reverse Breakdown Voltage	I_R=0.5mA,T_J=25°C	V_B	45	-	-	V
Forward voltage	I_F=1.0A,T_J=25°C	V_F	-	0.28	-	V
	I_F=2.0A,T_J=25°C		-	0.32	-	
	I_F=3.0A,T_J=25°C		-	0.34	-	
	I_F=5.0A,T_J=25°C		-	0.38	-	
	I_F=10.0A,T_J=25°C		-	0.46	0.48	
	I_F=1.0A,T_J=125°C		-	0.16	-	
	I_F=2.0A,T_J=125°C		-	0.21	-	
	I_F=3.0A,T_J=125°C		-	0.25	-	
	I_F=5.0A,T_J=125°C		-	0.31	-	
	I_F=10.0A,T_J=125°C		-	0.44	-	
Reverse current	V_R=45V,T_J=25°C	I_R	-	0.1	0.5	mA
	V_R=45V,T_J=125°C		-	60	-	

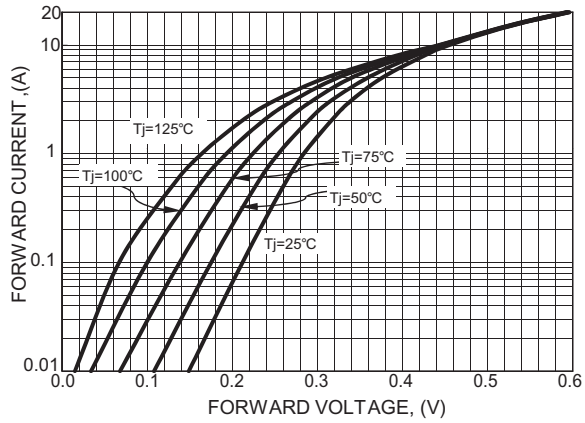
Thermal Characteristics

Parameter	Symbol	FM10L45-T7B	Unit
Typical thermal resistance junction to ambient (Note 1) Typical thermal resistance junction to case (Note 1)	$R_{\theta JA}$ $R_{\theta JC}$	17 3	°C/W °C/W

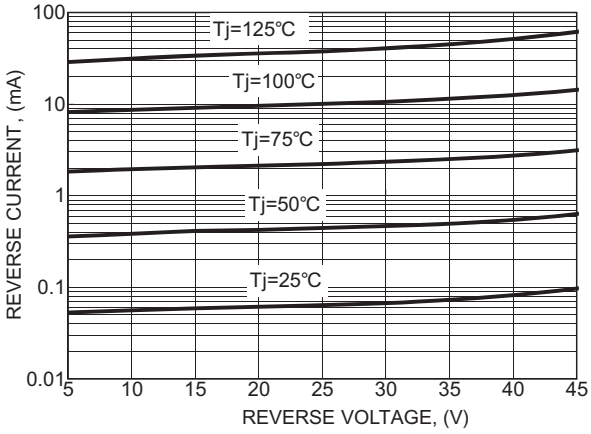
Note 1: Mounted on FR-4 PCB copper pad area. Cathode pad dimensions 4.95mm x 3.4mm. Anode pad dimensions 1.55mm x 5.0mm.

Rating and characteristic curves

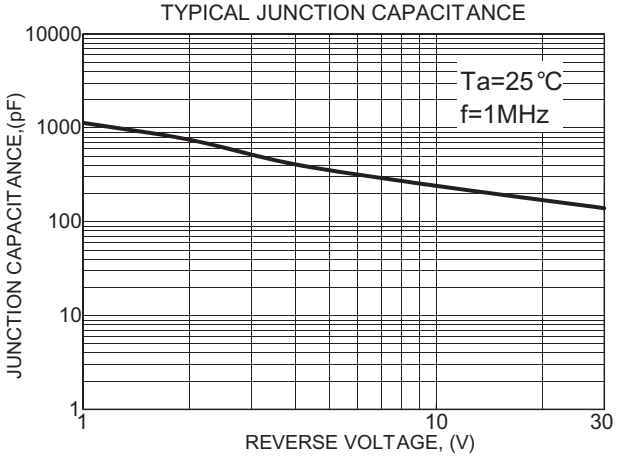
TYPICAL FORWARD CHARACTERISTICS



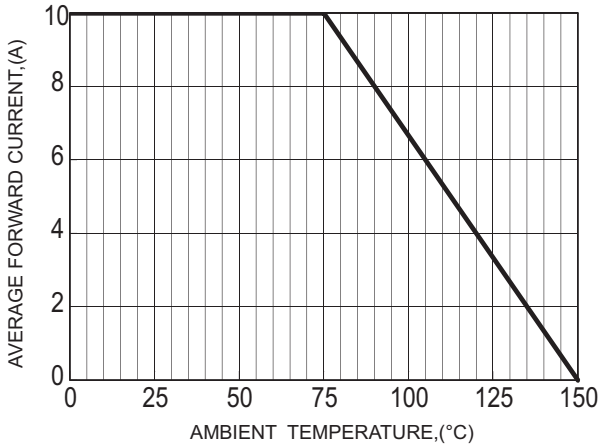
TYPICAL REVERSE LEAKAGE CHARACTERISTICS



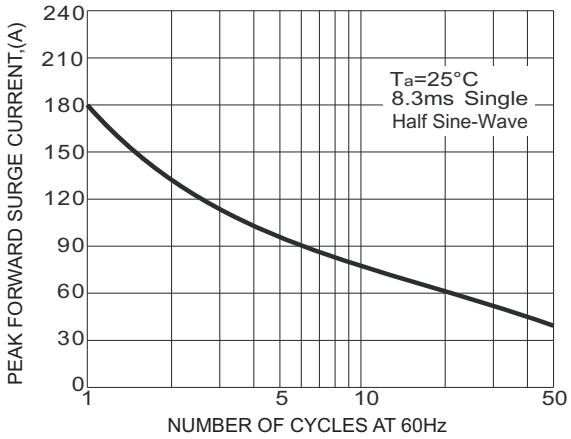
TYPICAL JUNCTION CAPACITANCE



TYPICAL FORWARD CURRENT DERATING CURVE



MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT



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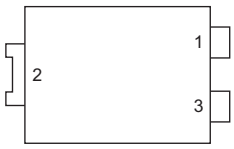
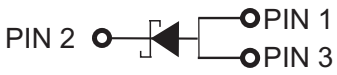
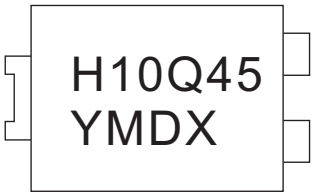
Pinning information

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

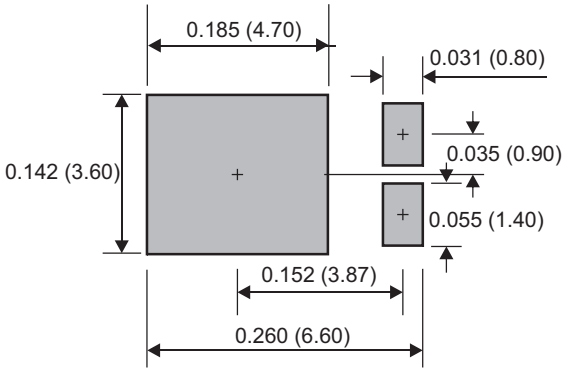
Marking



Note 1: YMDX= Date code

Suggested solder pad layout

TO-277B



Dimensions in inches and (millimeters)

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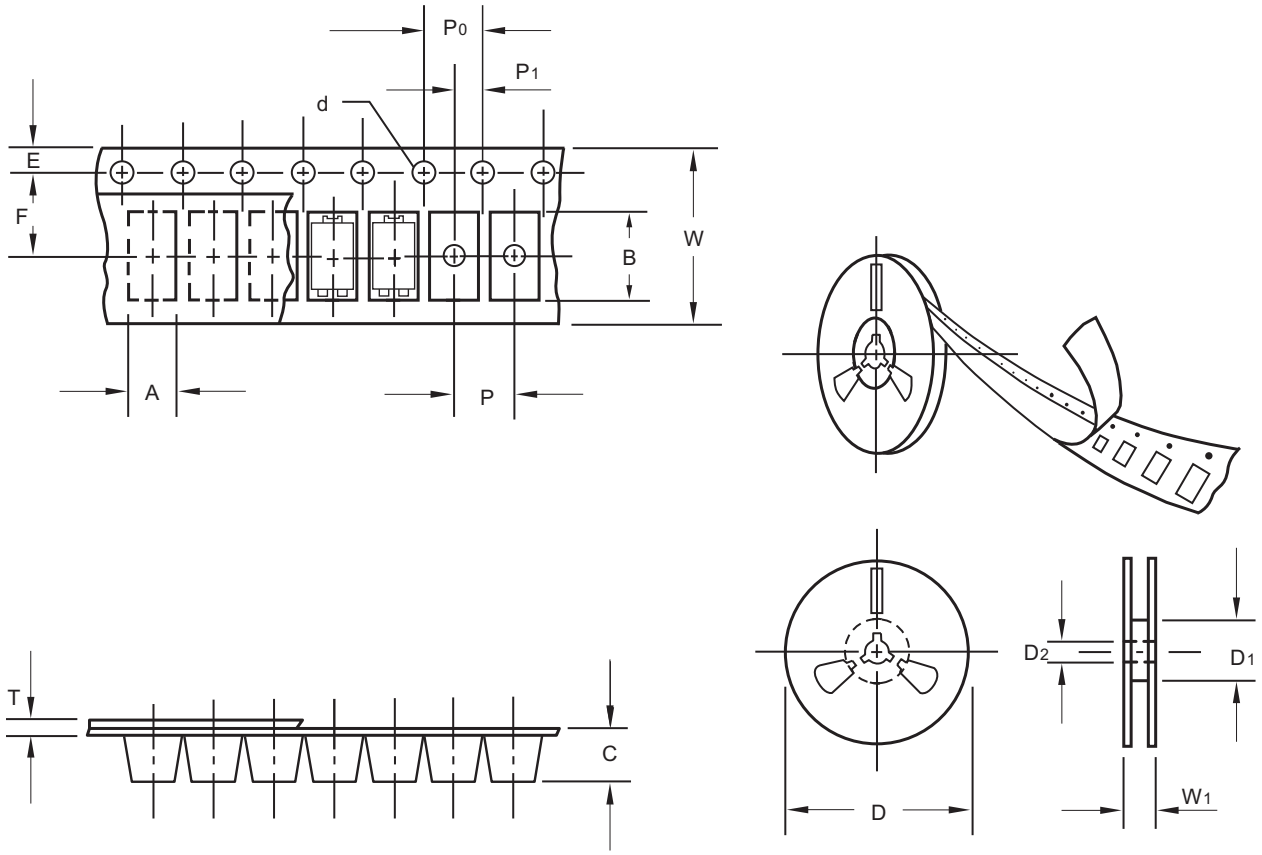
Packing information



unit:mm

Item	Symbol	Tolerance	TO-277B
Carrier width	A	0.1	4.54
Carrier length	B	0.1	6.80
Carrier depth	C	0.1	1.33
Sprocket hole	d	0.1	1.50
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	5.50
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	0.23
Tape width	W	0.3	12.00
Reel width	W_1	1.0	18.00

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

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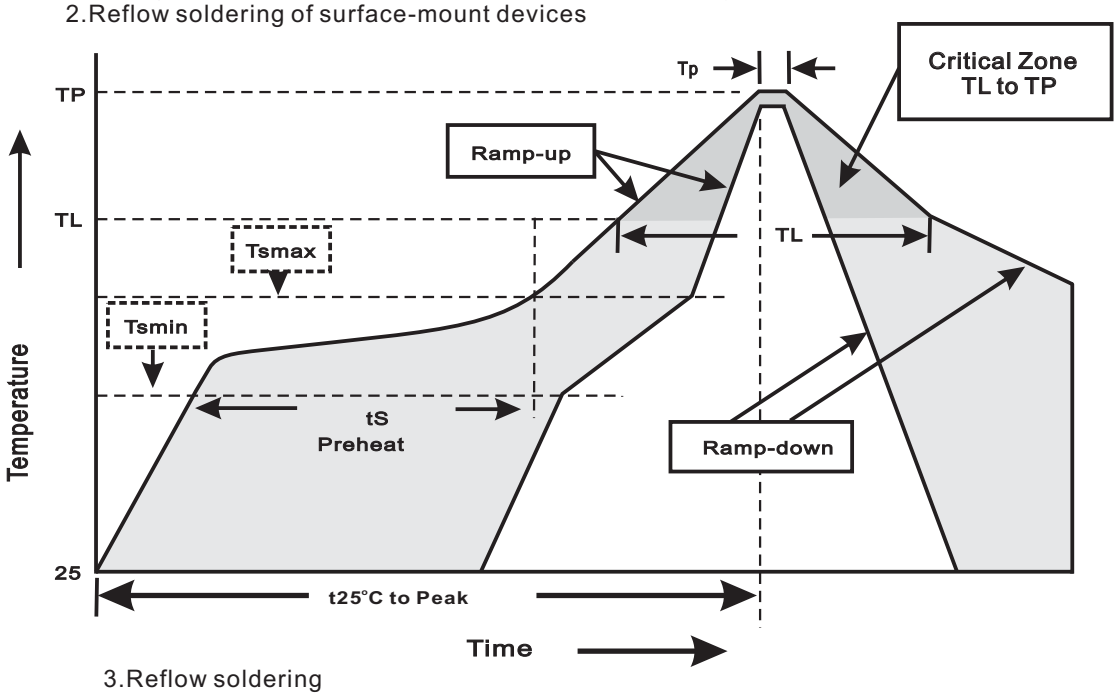
Reel packing

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	337*337*37	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. immerse body into solder 1/16"±1/32"	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 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031