

FM540-T7B-Q1 Thru FM5200-T7B-Q1

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FM540-T7B-Q1 Thru FM5200-T7B-Q1

5.0A Surface Mounted Schottky Barrier Rectifiers : 40V ~ 200V

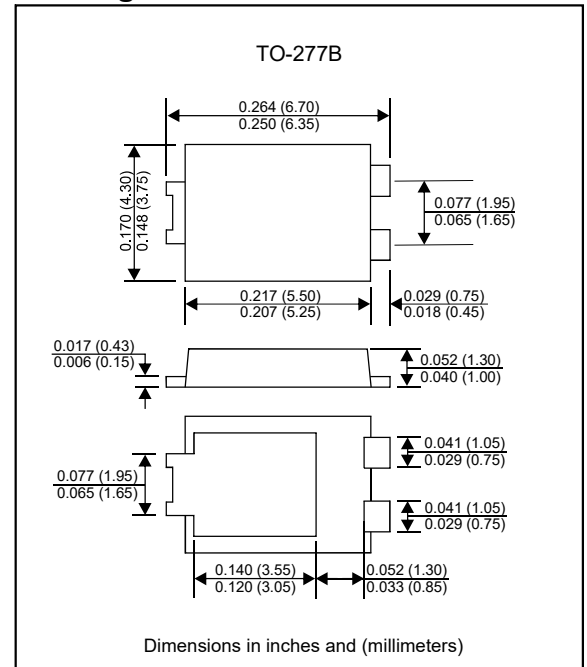
Features

- The plastic package carries Underwriters Laboratory Flammability Classification 94V-0.
- For surface mounted applications.
- Built-in strain relief, Ideal for automated placement.
- Low reverse leakage.
- High forward surge current capability.
- AEC-Q 101 qualified.
- Lead free finish, RoHS compliant.
- Suffix "-H" indicates Halogen free parts, ex. FM540-T7B-Q1-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, TO-277B.
- Terminals : Solder plated, solder able per MIL-STD-750, Method 2026.
- Polarity : Polarity symbol marking on body.
- Mounting Position : Any
- Weight : Approximated 0.07gram

Package outline



Maximum ratings and electrical characteristics (At $T_A=25^\circ\text{C}$ unless otherwise noted)

Rating at 25°C ambient temperature unless otherwise specified.

Single phase half-wave 60Hz, resistive or inductive load, for capacitive load current derate by 20%.

Parameter	Symbol	FM540 -T7B-Q1	FM545 -T7B-Q1	FM560 -T7B-Q1	FM580 -T7B-Q1	FM5100 -T7B-Q1	FM5150 -T7B-Q1	FM5200 -T7B-Q1	Unit
Maximum repetitive peak reverse voltage	V _{RRM}	40	45	60	80	100	150	200	V
Maximum RMS voltage	V _{RMS}	28	31.5	42	56	70	105	140	V
Maximum DC blocking voltage	V _{DC}	40	45	60	80	100	150	200	V
Maximum average forward rectified current at T _L =100°C	I _(AV)	5.0							A
Peak forward surge current 8.3ms single half sine wave superimposed on rated load (JEDEC Method)	I _{FSM}	120.0							A
Maximum instantaneous forward voltage at 5.0A	V _F	0.55		0.7	0.85		0.95		V
Maximum DC reverse current T _A =25°C	I _R	0.2			0.05				mA
At rated DC blocking voltage T _A =100°C		10			5				
Typical thermal resistance	R _{θJA}	60.0							°C/W
Operating junction temperature range	T _J	+150							°C
Storage temperature range	T _{STG}	-55 to +150							°C

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Rating and characteristic curves

FIG. 1- DERATING CURVE OUTPUT RECTIFIED CURRENT

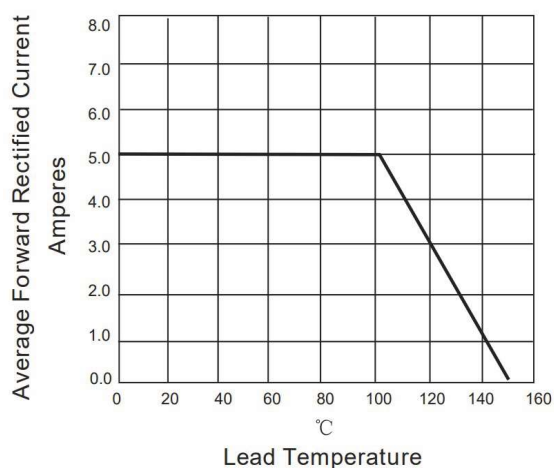


FIG. 2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT PERLEG

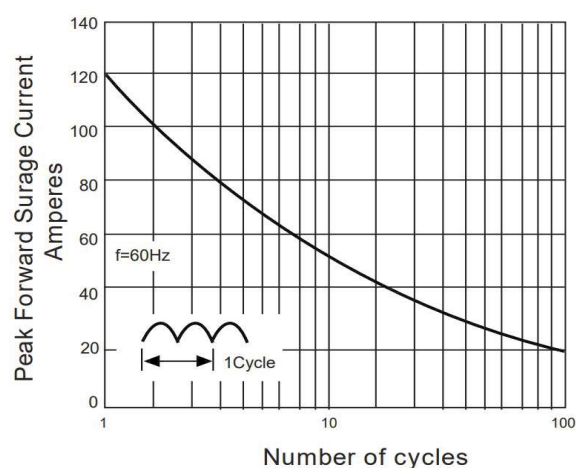


FIG. 3-TYPICAL FORWARD VOLTAGE CHARACTERISTICS

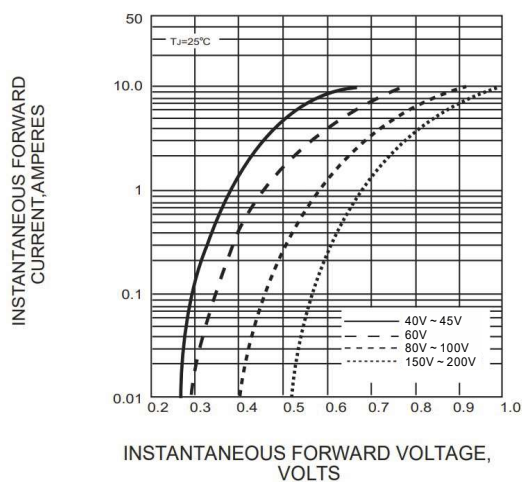
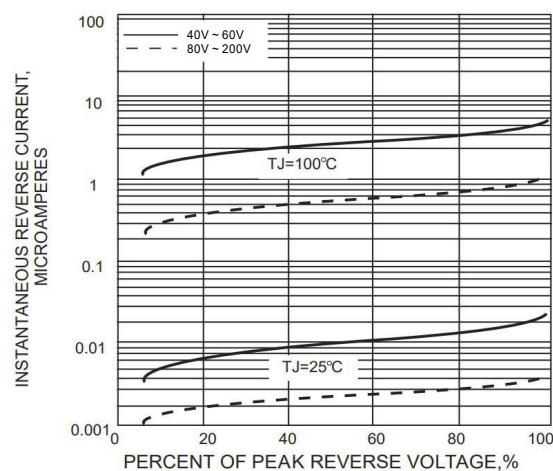
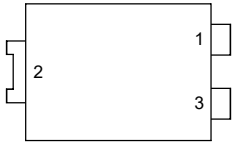
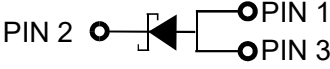


FIG. 4-TYPICAL REVERSE LEAKAGE CHARACTERISTICS

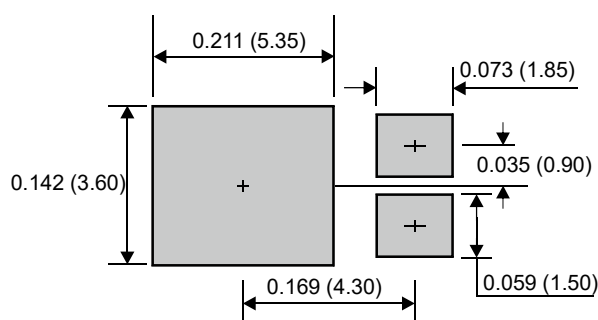


FM540-T7B-Q1 Thru FM5200-T7B-Q1**Pinning information**

Pin	Simplified outline	Symbol
PIN 1 Anode PIN 3 Anode PIN 2 Cathode		

Marking

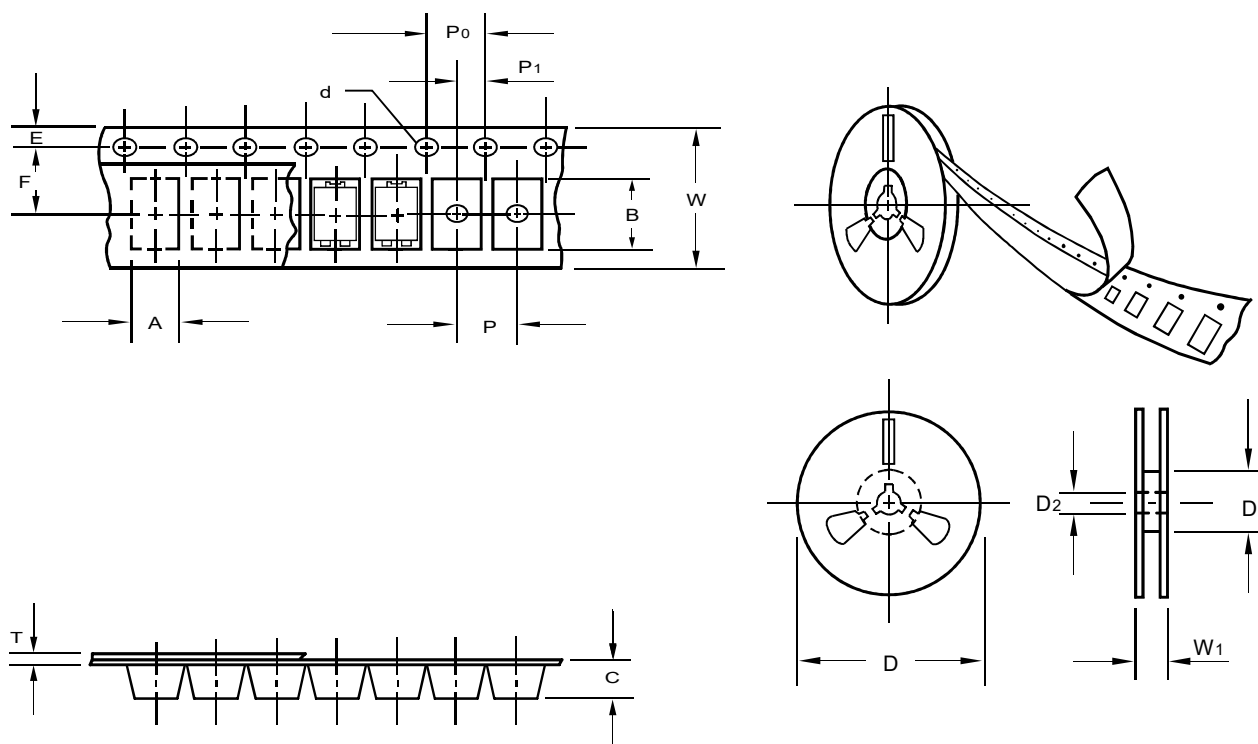
Type Number	Marking Code
FM540-T7B-Q1	SS54V
FM540-T7B-Q1	SS545V
FM560-T7B-Q1	SS56V
FM580-T7B-Q1	SS58V
FM5100-T7B-Q1	SS510V
FM5150-T7B-Q1	SS515V
FM5200-T7B-Q1	SS520V

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

Dimensions in inches and (millimeters)

FM540-T7B-Q1 Thru FM5200-T7B-Q1

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	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	7.50
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	0.25
Tape width	W	0.3	12.00
Reel width	W1	1.0	14.00

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

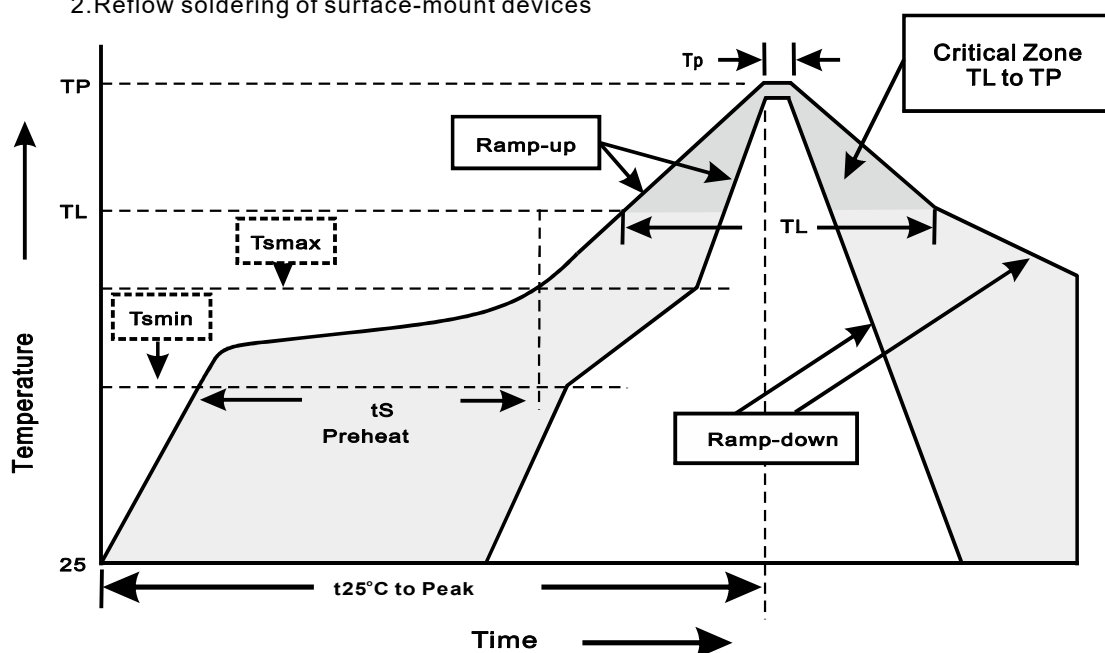
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Reel packing

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)
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

FM540-T7B-Q1 Thru FM5200-T7B-Q1**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^{\circ}\text{C}$ for $10 \pm 2\text{sec.}$	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 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031