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Schottky Rectifier, Ultra-Low VF, 10 A, 45 V FSV1045V

Description

The FSV1045V Schottky rectifier offers break−through size and performance. The device is optimized for mobile charger applications. It sinks only 18 mA reverse current at high temperature and provides forward voltage drop of 0.18 V at 1 A operating current in a charger design.

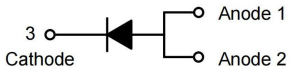
All this capability is packed into a small, flat−lead, TO−277 package, optimized for space−constrained applications. The FSV1045V supports a typical Z height of 1.1 mm. It is RoHS compliant and halogen free. It is also qualified for a wave soldering process.

Features

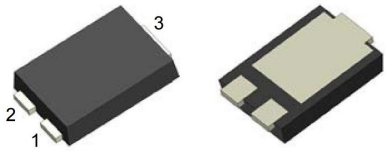
- Ultra−Low Forward Voltage Drop:
  - 0.41 V Typical at 10 A, T_A = 25°C
  - 0.44 V Maximum at 10 A, T_A = 25°C
- Low Thermal Resistance
- Very Low Profile: Typical Height of 1.1 mm
- Meets MSL 1 per JESD22−A111 Full−Body Solder Immersion
- Non−DAP Option Only
- This Device is Pb−Free, Halogen Free and is RoHS Compliant

Applications

- Mobile Charger
- Solar Panel
- Reverse Polarity Protection

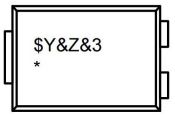


Schottky Rectifier



TO−277−3LD
CASE 340BQ

MARKING DIAGRAM



$Y	= OM SENI
&Z	= Assembly Plant Code
&3	= Data Code (Year & Week)
*	= Specific Device Code FSV1045

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ABSOLUTE MAXIMUM RATINGS (Note 1)

Symbol	Parameter		Value	Unit
V_{RRM}	Peak Repetitive Reverse Voltage		45	V
V_{RWM}	Working Peak Reverse Voltage		45	V
V_{RMS}	RMS Reverse Voltage		32	V
V_R	DC Blocking Voltage		45	V
I_O	Average Rectified Output Current (Note 2)	T_L = 105°C	10	A
I_{FSM}	Non−Repetitive Peak Forward Surge Current (Note 3)		300	A
C_J	Typical Junction Capacitance	V_R = 4 V, 1 MHz	820	pF
T_J	Operating Junction Temperature Range		−55 to +150	°C
T_{STG}	Storage Temperature Range		−55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. All test conducted at $T_A = T_J = 25°C$ unless otherwise noted
2. Mounted on 30 mm x 30 mm FR4 PCB
3. Pulse condition: 8.3 ms half−sine wave. Test method is compliant with MIL standard (MIL−STD−750E)

THERMAL CHARACTERISTICS (T_A = 25°C unless otherwise noted) (Note 4)

Symbol	Parameter	Minimum Land Pattern	Maximum Land Pattern	Unit
$R_{\theta JA}$	Junction−to−Ambient Thermal Resistance	100	40	°C/W
Ψ_{JL}	Junction−to−Lead Thermal Characteristics, Thermocouple Soldered to Anode	15	12	°C/W
	Junction−to−Lead Thermal Characteristics, Thermocouple Soldered to Cathode	6	5	

4. The thermal resistances ($R_{\theta JA}$ & Ψ_{JL}) are characterized with device mounted on the following FR4 printed circuit boards, as shown in Figure 1 and Figure 2. PCB size: 76.2 x 114.3 mm. Minimum land pattern size: 4.9 x 4.8 mm (big pattern, x1), 1.4 x 1.52 mm (small pattern, x2). Maximum land pattern size: 30 x 30 mm (pattern, x2). Force line trace size = 55 mils, sense line trace size = 4 mils.



Figure 1. Minimum Land Pattern of 2 oz Copper

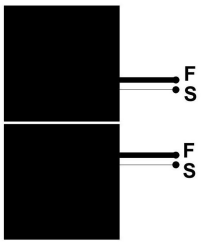

Figure 2. Maximum Land Pattern of 2 oz Copper

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{BR}	Breakdown Voltage	I_T = 500 μA		45			V
V_F	Forward Voltage Drop	I_F = 1 A	T_A = 25°C		0.28		V
		I_F = 10 A			0.41	0.44	
		I_F = 1 A	T_A = 125°C		0.18		
		I_F = 10 A			0.36	0.39	
I_R	Maximum Leakage	V = V_{RWM}	T_A = 25°C		0.065	0.220	mA
			T_A = 125°C		19	32	

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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TYPICAL PERFORMANCE CHARACTERISTICS

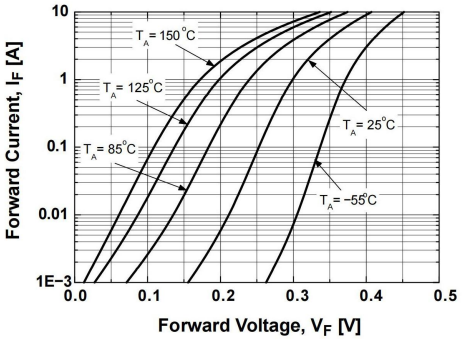

Figure 3. Forward Current Characteristics

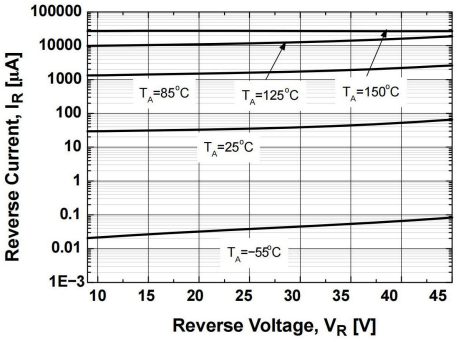

Figure 4. Typical Reverse Characteristics

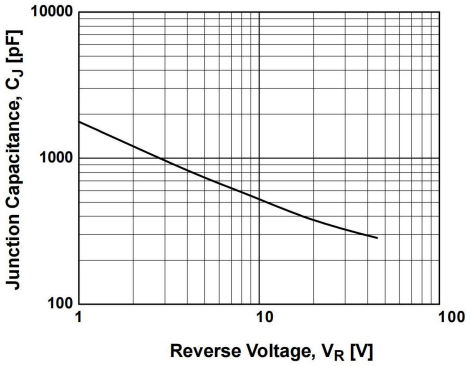

Figure 5. Typical Junction Capacitance

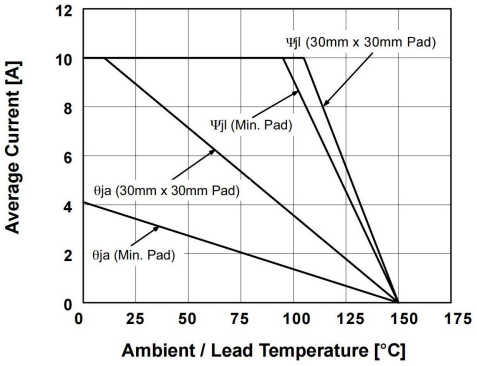

Figure 6. Forward Current Derating

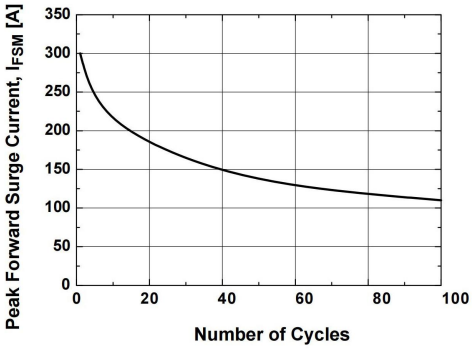

Figure 7. Surge Current Derating Curve

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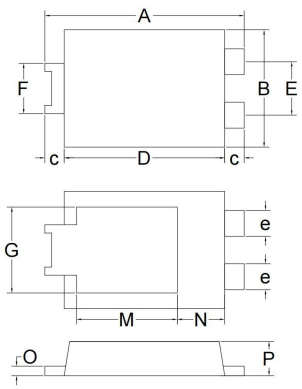
Ordering Information

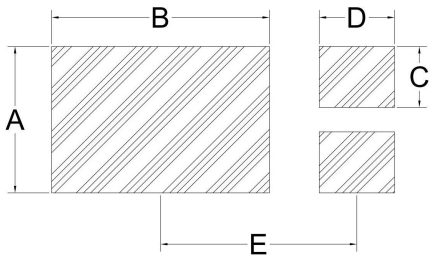
PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
TO-277	R3	0.090	5000	10000	100000	13''

Package Outline Dimensions (TO-277)



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	6.300	6.700	0.248	0.264
B	3.950	4.300	0.156	0.169
c	0.410	0.710	0.016	0.028
D	5.280	5.880	0.208	0.231
E	1.760	1.960	0.069	0.077
e	0.850	0.960	0.033	0.038
F	1.750	1.850	0.069	0.073
G	2.850	3.150	0.112	0.124
M	3.390	3.690	0.133	0.145
N	1.440	1.740	0.057	0.069
O	0.250	0.350	0.010	0.014
P	0.950	1.250	0.037	0.049

Suggested Pad Layout



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	3.400	3.800	0.134	0.150
B	4.500	4.900	0.177	0.193
C	1.200	1.600	0.047	0.063
D	0.600	1.00	0.024	0.039
E	3.670	4.070	0.144	0.160