

**Schottky Rectifier, 3.0 A**

SMC

**FEATURES**

- 125 °C T_J operation (V_R < 5 V)
- Optimized for OR-ing applications
- Ultra low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Lead (Pb)-free ("PbF" suffix)
- Designed and qualified for industrial level

Available
RoHS*
COMPLIANT**PRODUCT SUMMARY**

I _{F(AV)}	3.0 A
V _R	15 V
I _{RM}	50 mA at 100 °C

DESCRIPTION

The 30BQ015PbF surface mount Schottky rectifier has been designed for applications requiring low forward drop and very small foot prints on PC boards. The proprietary barrier technology allows for reliable operation up to 125 °C junction temperature. Typical applications are in disk drives, switching power supplies, converters, freewheeling diodes, battery charging, and reverse battery protection.

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
I _{F(AV)}	Rectangular waveform	3.0	A
V _{RRM}		15	V
I _{FSM}	t _p = 5 μs sine	650	A
V _F	1.0 Apk, T _J = 75 °C	0.30	V
T _J	Range	- 55 to 125	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	30BQ015PbF	UNITS
Maximum DC reverse voltage	V _R	15	V
Maximum working peak reverse voltage	V _{RWM}	25	

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	I _{F(AV)}	50 % duty cycle at T _L = 83 °C, rectangular waveform	3.0	A
		50 % duty cycle at T _L = 78 °C, rectangular waveform	4.0	
Maximum peak one cycle non-repetitive surge current	I _{FSM}	5 μs sine or 3 μs rect. pulse	650	
		10 ms sine or 6 ms rect. pulse	75	
Non-repetitive avalanche energy	E _{AS}	T _J = 25 °C, I _{AS} = 0.5 A, L = 12 mH	1.5	mJ
Repetitive avalanche current	I _{AR}	Current decaying linearly to zero in 1 μs Frequency limited by T _J maximum V _A = 1.5 x V _R typical	0.5	A

* Pb containing terminations are not RoHS compliant, exemptions may apply

30BQ015PbF



Vishay High Power Products Schottky Rectifier, 3.0 A

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	$V_{FM}^{(1)}$	3 A	$T_J = 25\text{ }^\circ\text{C}$	0.35	V
		6 A		0.40	
		3 A	$T_J = 75\text{ }^\circ\text{C}$	0.30	
		6 A		0.35	
Maximum reverse leakage current	$I_{RM}^{(1)}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	4	mA
		$T_J = 100\text{ }^\circ\text{C}$		50	
Maximum junction capacitance	C_T	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) $25\text{ }^\circ\text{C}$		1120	pF
Typical series inductance	L_S	Measured lead to lead 5 mm from package body		3.0	nH
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	V/ μ s

Note

(1) Pulse width < 300 μ s, duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction temperature range	$T_J^{(1)}$			- 55 to 125	$^\circ\text{C}$
Maximum storage temperature range	T_{Stg}			- 55 to 150	
Maximum thermal resistance, junction to lead	$R_{thJL}^{(2)}$	DC operation		12	$^\circ\text{C/W}$
Maximum thermal resistance, junction to ambient	R_{thJA}			46	
Approximate weight			0.24		g
			0.008		oz.
Marking device	Case style SMC (similar to DO-214AB)		V3C		

Notes

(1) $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{thJA}}$ thermal runaway condition for a diode on its own heatsink

(2) Mounted 1" square PCB

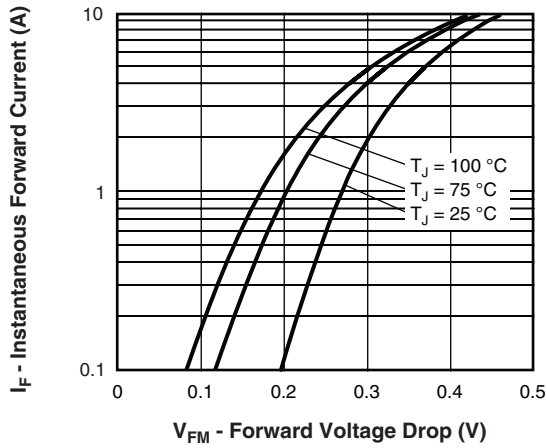


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

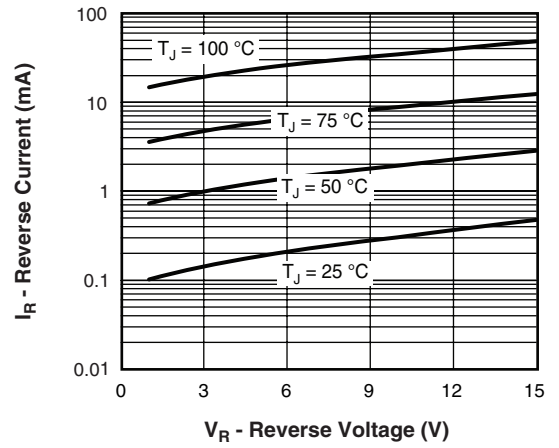


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

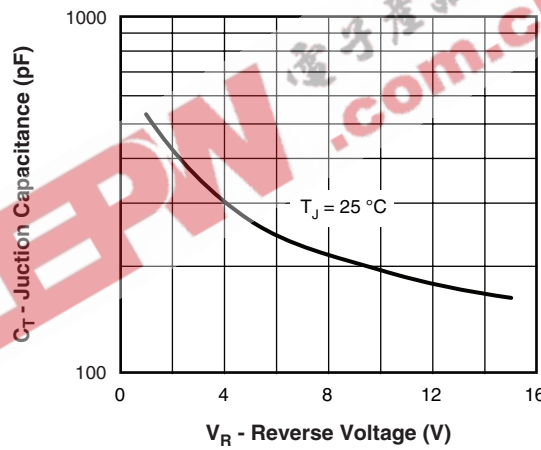


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

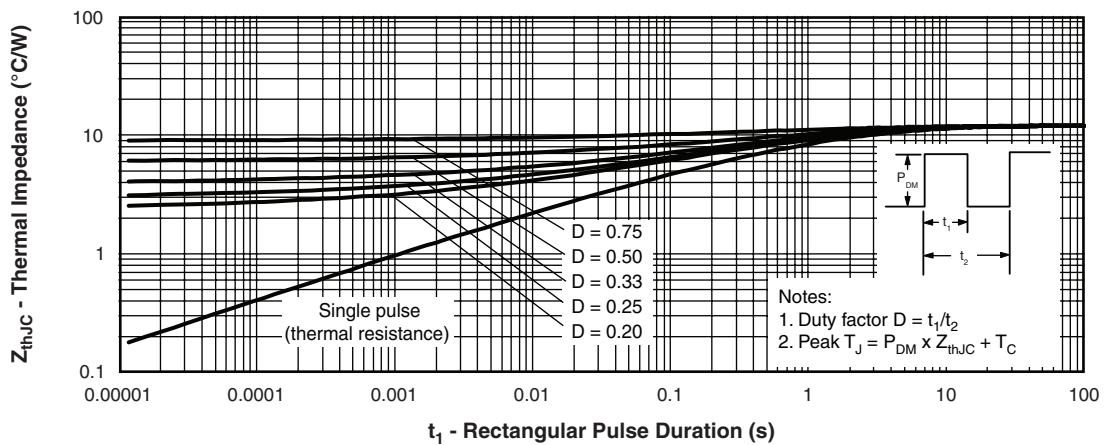


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

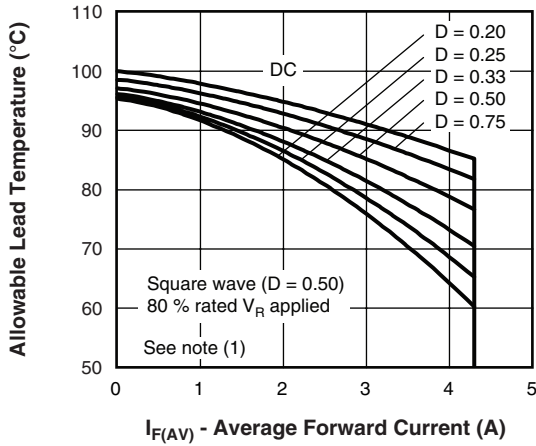


Fig. 5 - Maximum Average Forward Current vs. Allowable Lead Temperature

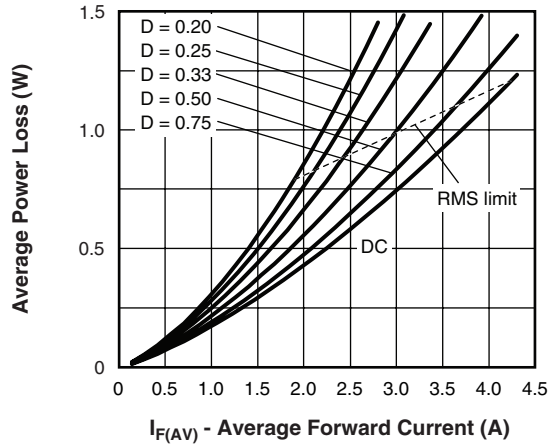


Fig. 6 - Maximum Average Forward Dissipation vs. Average Forward Current

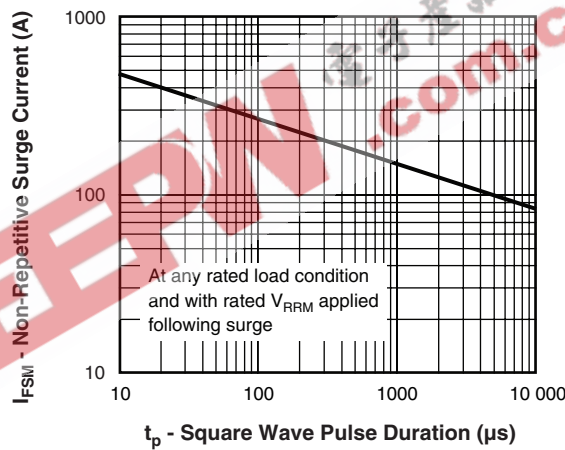


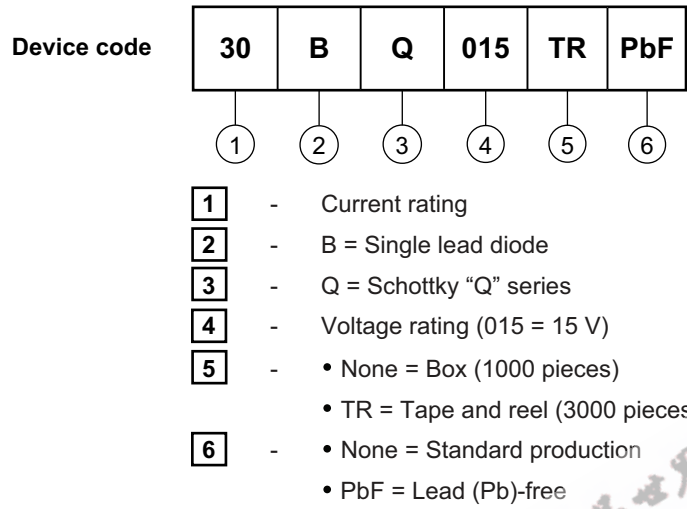
Fig. 7 - Maximum Peak Surge Forward Current vs. Pulse Duration

Note

- (1) Formula used: $T_C = T_J - (P_d + P_{dREV}) \times R_{thJC}$;
 P_d = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6);
 P_{dREV} = Inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at $V_{R1} = 80\%$ rated V_R



ORDERING INFORMATION TABLE



LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95023
Part marking information	http://www.vishay.com/doc?95029
Packaging information	http://www.vishay.com/doc?95034



Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.