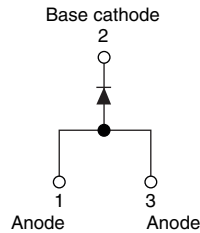


Schottky Rectifier, 65 A


TO-247AC


FEATURES

- TO-247 package
- 125 °C T_J operation ($V_R < 5$ V)
- Single diode configuration
- Optimized for OR-ing applications
- Ultralow forward voltage drop
- Guard ring for enhanced ruggedness and long term reliability
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Designed and qualified for industrial level

DESCRIPTION

The 65PQ015 Schottky rectifier module has been optimized for ultralow forward voltage drop specifically for the OR-ing of parallel power supplies. The proprietary barrier technology allows for reliable operation up to 125 °C junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

PRODUCT SUMMARY

$I_{F(AV)}$	65 A
V_R	15 V
I_{RM}	870 mA at 100 °C

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	65	A
V_{RRM}		15	V
I_{FSM}	$t_p = 5 \mu s$ sine	1500	A
V_F	65 Apk, $T_J = 125$ °C	0.46	V
T_J	Range	- 55 to 125	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	65PQ015	UNITS
Maximum DC reverse voltage	V_R	$T_J = 100$ °C	15	V
		$T_J = 125$ °C	5	

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	50 % duty cycle at $T_C = 83$ °C, rectangular waveform	65	A
Maximum peak one cycle non-repetitive surge current	I_{FSM}	5 μs sine or 3 μs rect. pulse	1500	
		10 ms sine or 6 ms rect. pulse	400	
Non-repetitive avalanche energy	E_{AS}	$T_J = 25$ °C, $I_{AS} = 2$ A, $L = 4.5$ mH	9	mJ
Repetitive avalanche current	I_{AR}	Current decaying linearly to zero in 1 μs Frequency limited by T_J maximum $V_A = 1.5 \times V_R$ typical	2	A



ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Forward voltage drop	$V_{FM}^{(1)}$	65 A	$T_J = 25\text{ }^\circ\text{C}$	0.50	V
		130 A		0.71	
		65 A	$T_J = 125\text{ }^\circ\text{C}$	0.46	
		130 A		0.76	
Reverse leakage current	$I_{RM}^{(1)}$	$T_J = 125\text{ }^\circ\text{C}$	$V_R = 5\text{ V}$	1.2	A
		$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	18	mA
		$T_J = 100\text{ }^\circ\text{C}$		870	
Threshold voltage	$V_{F(TO)}$	$T_J = T_J \text{ maximum}$		0.137	mV
Forward slope resistance	r_t			4.9	$m\Omega$
Maximum junction capacitance	C_T	$V_R = 5\text{ V}_{DC}$ (test signal range 100 kHz to 1 MHz) $25\text{ }^\circ\text{C}$		4300	pF
Typical series inductance	L_S	Measured lead to lead 5 mm from package body		8	nH
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	$V/\mu\text{s}$

Note(1) Pulse width < 300 μs , duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS								
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS			
Maximum junction temperature range	T_J			- 55 to 125	$^\circ\text{C}$			
Maximum storage temperature range	T_{Stg}			- 55 to 150				
Maximum thermal resistance, junction to case	R_{thJC}	DC operation		0.8	$^\circ\text{C/W}$			
Typical thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth and greased		0.3				
Approximate weight				6	g			
				0.21	oz.			
Mounting torque	<table border="0"> <tr> <td style="text-align: center;">minimum</td> <td rowspan="2"> </td> <td rowspan="2">maximum</td> </tr> <tr> <td style="text-align: center;">maximum</td> </tr> </table>	minimum		maximum	maximum	Non-lubricated threads	6 (5)	kgf · cm (lbf · in)
		minimum					maximum	
maximum								
12 (10)								
Marking device		Case style TO-247AC (JEDEC)		65PQ015				

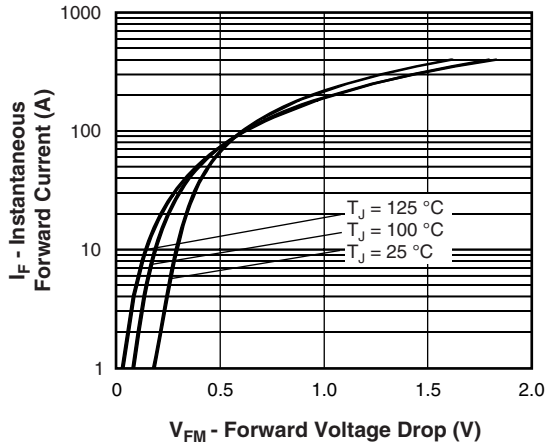


Fig. 1 - Maximum Forward Voltage Drop Characteristics

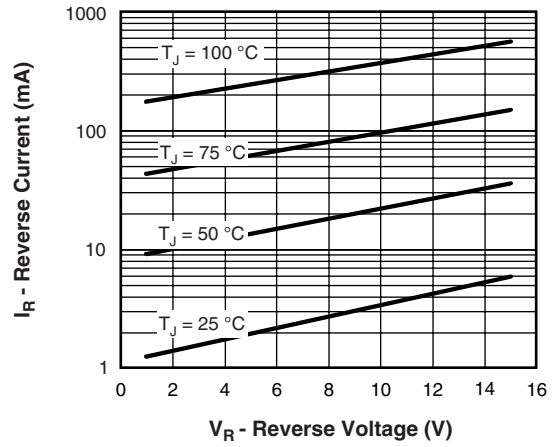


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

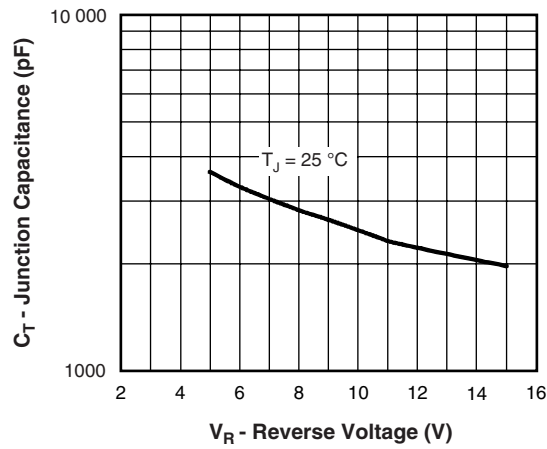


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

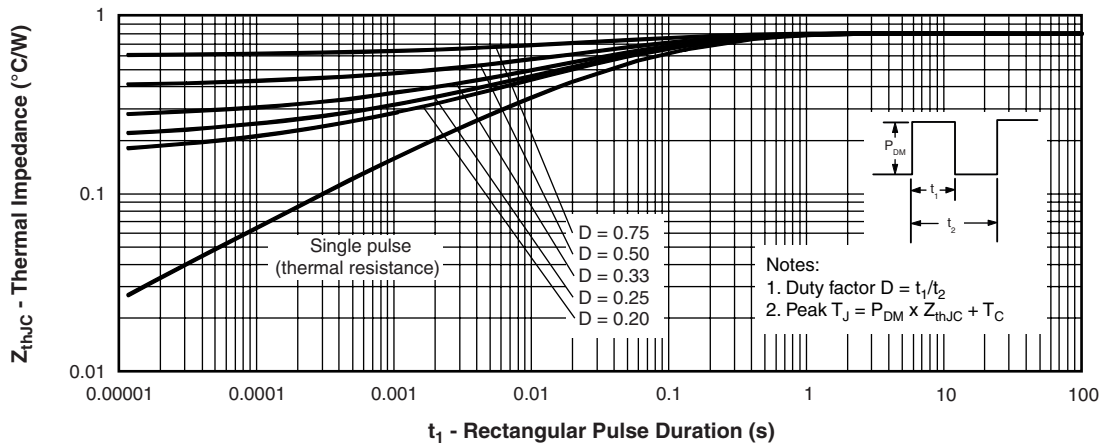


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

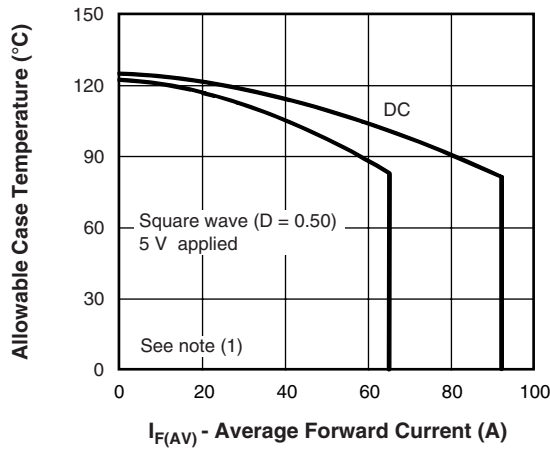


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

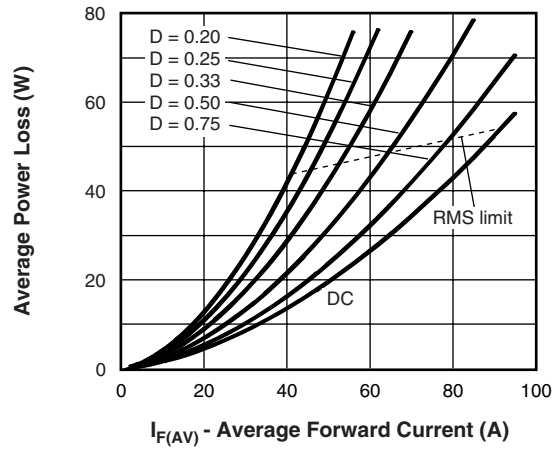


Fig. 6 - Forward Power Loss Characteristics

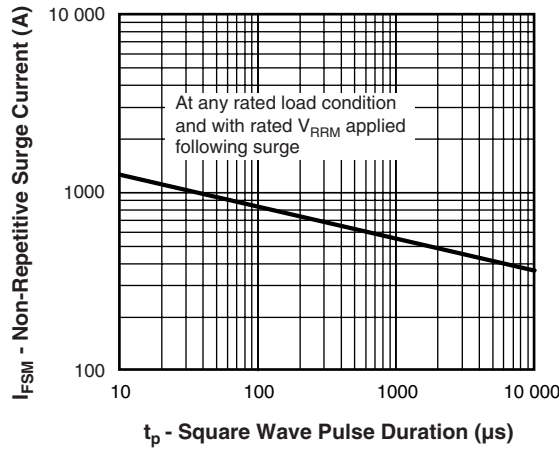


Fig. 7 - Maximum Non-Repetitive Surge Current

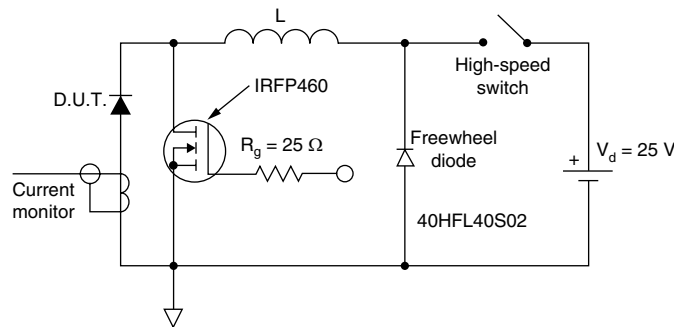


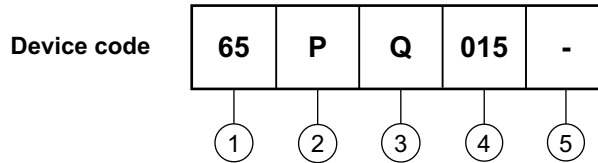
Fig. 8 - Unclamped Inductive Test Circuit

Note

- (1) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;
 P_d = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6);
 $P_{d_{REV}}$ = Inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at $V_{R1} = 5 V$



ORDERING INFORMATION TABLE



- 1** - Current rating (65 = 65 A)
- 2** - Package:
P = TO-247
- 3** - Schottky "Q" series
- 4** - Voltage code (015 = 15 V)
- 5** -
 - None = Standard production
 - PbF = Lead (Pb)-free

Tube standard pack quantity: 25 pieces

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95223
Part marking information	http://www.vishay.com/doc?95226
SPICE model	http://www.vishay.com/doc?95306



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