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[Vishay Semiconductor/Diodes Division](#)
[10WQ045FN](#)

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sales@integrated-circuit.com

International IOR Rectifier

10WQ045FN

SCHOTTKY RECTIFIER

10 Amp

$$I_{F(AV)} = 10\text{Amp}$$

$$V_R = 45\text{V}$$

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	10	A
V_{RRM}	45	V
I_{FSM} @tp=5µs sine	400	A
V_F @10Apk, $T_J=125^\circ\text{C}$	0.53	V
T_J range	-40 to 175	°C

Description/ Features

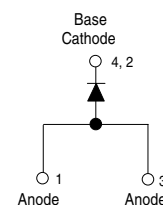
The 10WQ045FN surface mount Schottky rectifier has been designed for applications requiring low forward drop and small foot prints on PC board. Typical applications are in disk drives, switching power supplies, converters, free-wheeling diodes, battery charging, and reverse battery protection.

- Popular D-PAK outline
- Small foot print, surface mountable
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

Case Styles



D-PAK (TO-252AA)



10WQ045FN

Bulletin PD-20530 rev. H 05/06

 International

Voltage Ratings

Part number	10WQ045FN
V_R Max. DC Reverse Voltage (V)	45
V_{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	10WQ...	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5	10	A	50% duty cycle @ $T_C = 157^\circ\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repet. Surge Current * See Fig. 7	400	A	5 μs Sine or 3 μs Rect. pulse
	75		10ms Sine or 6ms Rect. pulse
E_{AS} Non-Repetitive Avalanche Energy	20	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 3.0$ Amps, $L = 4.40$ mH
I_{AR} Repetitive Avalanche Current	3.0	A	Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	10WQ...	Units	Conditions
V_{FM} Max. Forward Voltage Drop * See Fig. 1 (1)	0.630	V	@ 10A $T_J = 25^\circ\text{C}$
	0.800	V	@ 20A $T_J = 25^\circ\text{C}$
	0.530	V	@ 10A $T_J = 125^\circ\text{C}$
	0.710	V	@ 20A $T_J = 125^\circ\text{C}$
I_{RM} Max. Reverse Leakage Current * See Fig. 2 (1)	1	mA	$T_J = 25^\circ\text{C}$ $V_R = \text{rated } V_R$
	15	mA	$T_J = 125^\circ\text{C}$ $V_R = \text{rated } V_R$
$V_{F(TO)}$ Threshold Voltage	0.255	V	$T_J = T_J \text{ max.}$
r_t Forward Slope Resistance	22	m Ω	
C_T Typical Junction Capacitance	760	pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) 25°C
L_S Typical Series Inductance	5.0	nH	Measured lead to lead 5mm from package body

 (1) Pulse Width < 300 μs , Duty Cycle < 2%

Thermal-Mechanical Specifications

Parameters	10WQ...	Units	Conditions
T_J Max. Junction Temp. Range (*)	- 40 to 175	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	- 40 to 175	$^\circ\text{C}$	
R_{thJC} Max. Thermal Resistance Junction to Case	2.0	$^\circ\text{C}/\text{W}$	DC operation * See Fig. 4
R_{thJA} Max. Thermal Resistance Junction to Ambient	50	$^\circ\text{C}/\text{W}$	
wt Approximate Weight	0.3(0.01)	g(oz.)	
Case Style	D - PAK		Similar to TO-252AA
Marking Device	10WQ045FN		

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

International
IOR Rectifier

10WQ045FN

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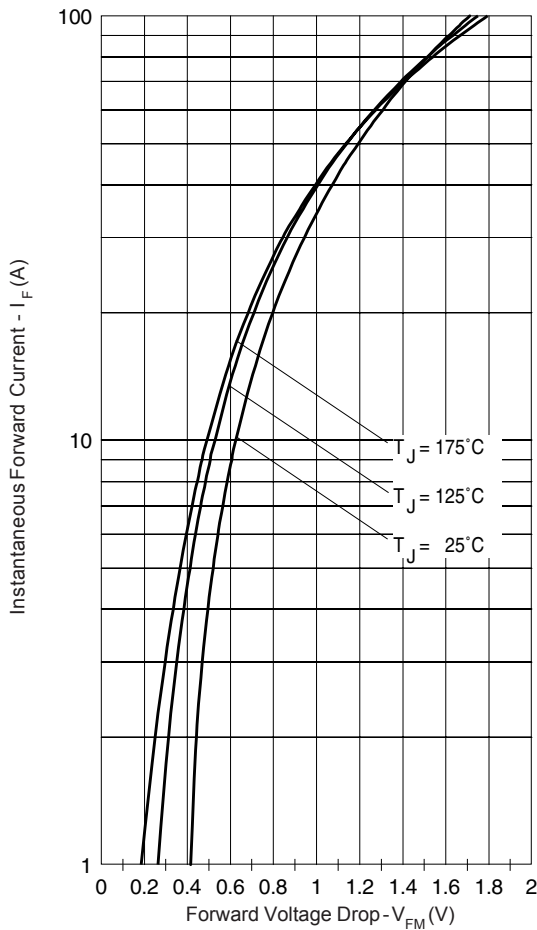


Fig. 1 - Maximum Forward Voltage Drop Characteristics

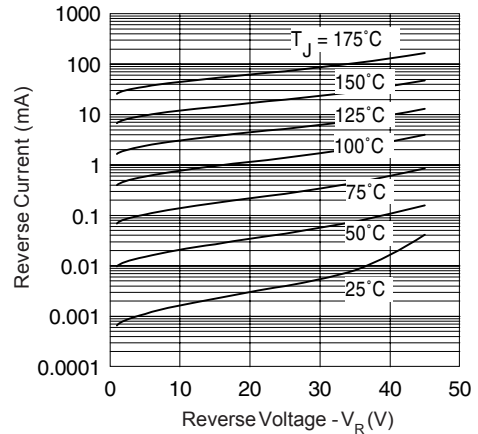


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

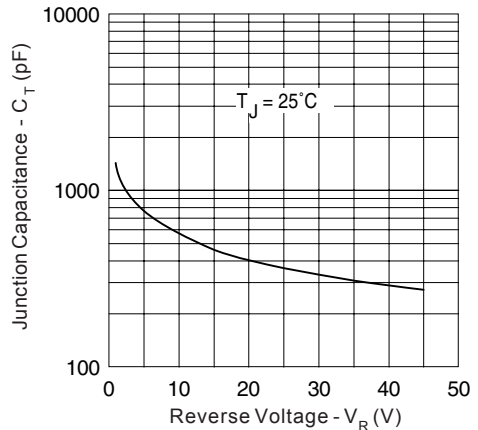


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

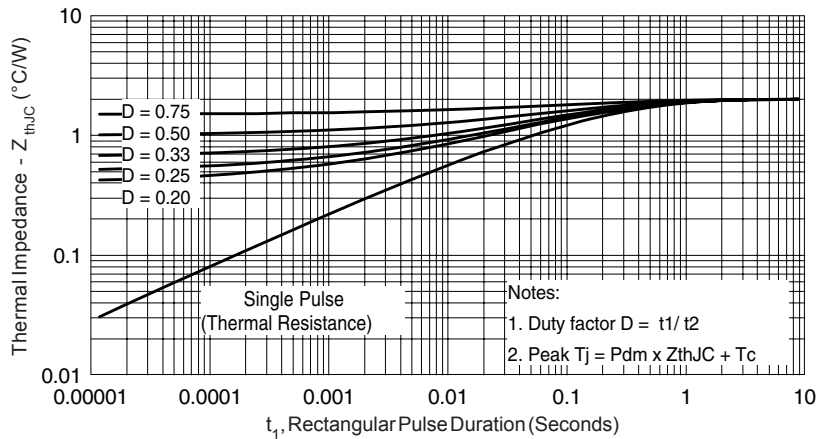


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

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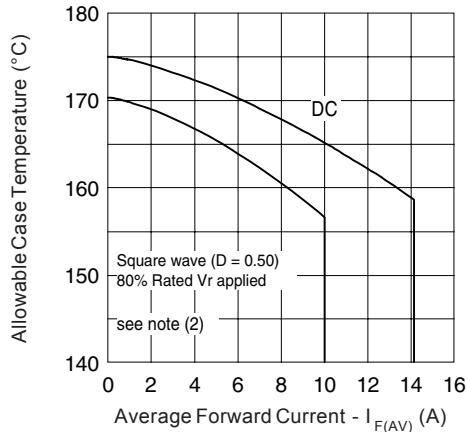


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

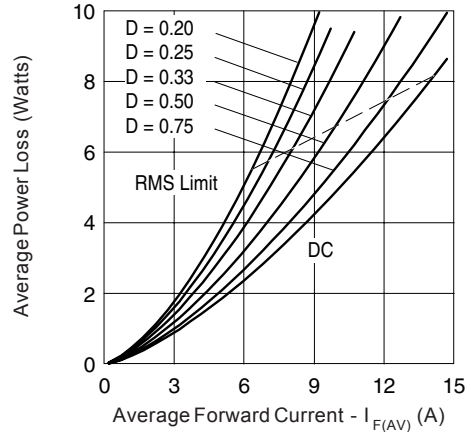


Fig. 6 - Forward Power Loss Characteristics

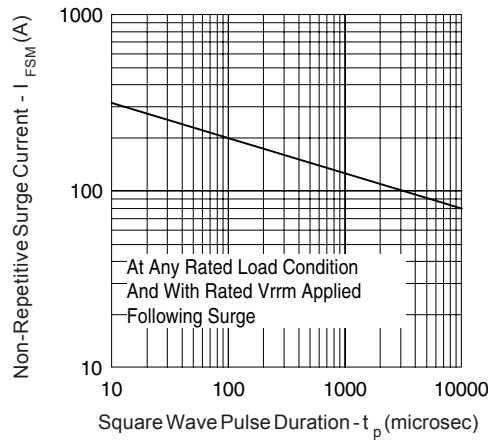


Fig. 7 - Maximum Non-Repetitive Surge Current

(2) Formula used: $T_c = T_j - (Pd + Pd_{REV}) \times R_{thJC}$;

Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 80\%$ rated V_R

Outline Table

NOTES:
 1- DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994
 2- DIMENSION ARE SHOWN IN INCHES [MILLIMETERS]
 3- LEAD DIMENSION UNCONTROLLED IN L.S.
 4- DIMENSION D1, E1, L3 & R3 ESTABLISH A MINIMUM MOUNTING SURFACE FOR THERMAL PAD.
 5- SECTION C-C DIMENSIONS APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN .005 AND 0.10 [0.125 AND 0.25] FROM THE LEAD TIP.
 6- DIMENSION D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED .005 [0.125] PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTMOST EXTREMES OF THE PLASTIC BODY.
 7- DIMENSION H1 & e1 APPLIED TO BASE METAL ONLY.
 8- DATUM A & B TO BE DETERMINED AT DATUM PLANE X.
 9- OUTLINE CONFORMS TO JEDEC OUTLINE TO-252AA.

S M C	DIMENSIONS		DIMENSIONS		D I S T A N C E
	MIN.	MAX.	MIN.	MAX.	
A	2.18	2.39	.086	.094	
A1	-	0.15	-	.005	
B	0.64	0.89	.025	.035	
B1	0.60	0.79	.020	.031	7
B2	0.76	1.14	.030	.045	
B3	4.95	5.45	.190	.210	4
C	0.46	0.61	.018	.024	7
e1	0.41	0.66	.016	.022	
e2	0.46	0.89	.018	.030	
D	5.97	6.22	.235	.245	6
D1	5.21	-	.205	-	4
E	6.55	6.75	.260	.265	6
E1	4.32	-	.170	-	4
e	2.72 BSC	-	.090 BSC	-	
H	9.40	10.41	.370	.410	
L	1.40	1.76	.055	.070	
L1	2.74 BSC	-	.108 BSC	-	
L2	0.91 BSC	-	.030 BSC	-	
L3	0.99	1.27	.039	.050	4
L4	-	1.02	-	.040	
L5	1.14	1.52	.045	.060	3
w	0"	10"	0"	10"	
w1	0"	16"	0"	16"	
w2	25"	30"	25"	30"	

LEAD ASSIGNMENTS
 HEXSECT
 1- GATE
 2- DRAIN
 3- SOURCE
 4- DRAIN

ISRL & CoP&K
 1- GATE
 2- COLLECTOR
 3- EMITTER
 4- COLLECTOR

Modified JEDEC outline TO-252AA
 Dimensions in millimeters and (inches)

Part Marking Information

THIS IS A 10WQ045FN
 LOT CODE 8024
 ASSEMBLED ON WW 02, 2000

INTERNATIONAL
 RECTIFIER
 LOGO

ASSEMBLY
 LOT CODE

10WQ045FN
IOR 002X
 80 24

PART NUMBER

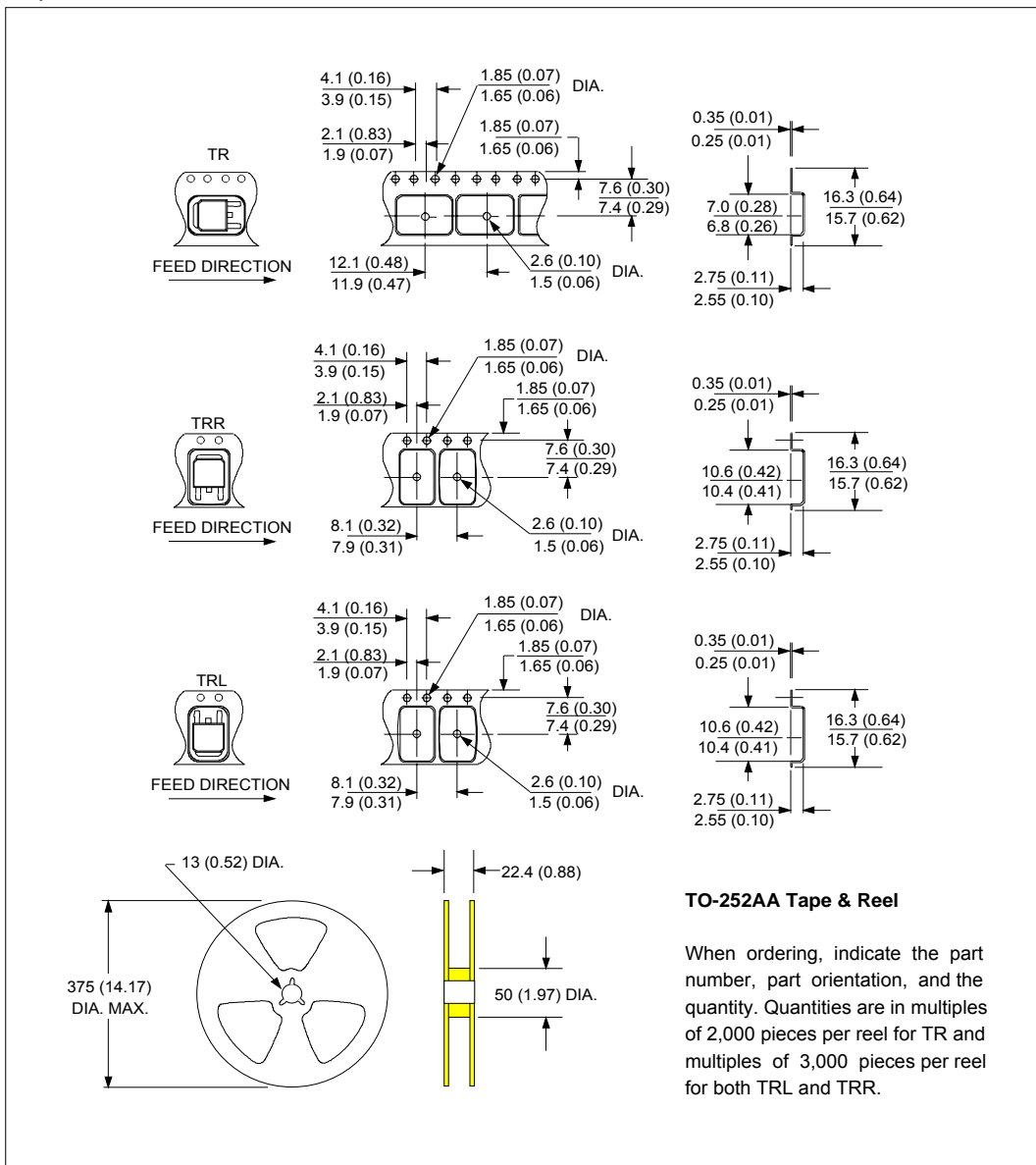
DATE CODE
 YEAR 0 = 2000
 WEEK 02
 X = SITE ID

10WQ045FN

Bulletin PD-20530 rev. H 05/06

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Tape & Reel Information



Ordering Information Table

Device Code						
10	W	Q	045	FN	TRL	-
①	②	③	④	⑤	⑥	⑦
1	- Current Rating (10A)					
2	- Package Identifier W = D-Pak					
3	- Schottky "Q" Series					
4	- Voltage Rating (045 = 45V)					
5	- FN = TO-252AA					
6	- • none = Tube (50 pieces) • TR = Tape & Reel • TRL = Tape & Reel (Left Oriented) • TRR = Tape & Reel (Right Oriented)					
7	- • none = Standard Production • PbF = Lead-Free					

Data and specifications subject to change without notice.
 This product has been designed and qualified for AEC Q101 Level.
 Qualification Standards can be found on IR's Web site.



Legal Disclaimer Notice

Vishay

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