

International **IR** Rectifier

SCHOTTKY RECTIFIER

**11DQ09
11DQ10**

1.1 Amp

Major Ratings and Characteristics

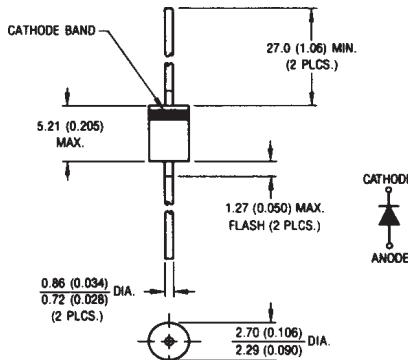
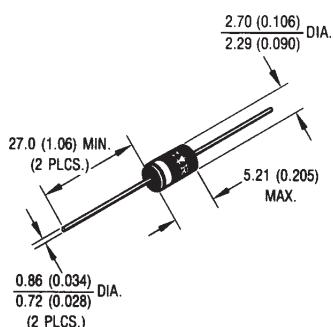
Characteristics	11DQ..	Units
$I_{F(AV)}$ Rectangular waveform	1.1	A
V_{RRM}	90 / 100	V
I_{FSM} @ $t_p = 5 \mu s$ sine	85	A
V_F @ 1 Apk, $T_J = 25^\circ C$	0.85	V
T_J range	-40 to 150	°C

Description/ Features

The 11DQ.. axial leaded Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- Low profile, axial leaded outline
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

CASE STYLE AND DIMENSIONS



Conform to JEDEC Outline DO-204AL (DO-41)

Dimensions in millimeters and inches

11DQ09, 11DQ10

Bulletin PD-2.289 rev. F 06/03

International
 Rectifier

Voltage Ratings

Part number	11DQ09	11DQ10
V_R Max. DC Reverse Voltage (V)	90	100
V_{RWM} Max. Working Peak Reverse Voltage (V)		

Absolute Maximum Ratings

Parameters	11DQ..	Units	Conditions		
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 4	1.1	A	50% duty cycle @ $T_J = 75^\circ\text{C}$, rectangular wave form		
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 6	85	A	5μs Sine or 3μs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied	
	14		10ms Sine or 6ms Rect. pulse		
E_{AS} Non-Repetitive Avalanche Energy	1.0	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 0.5$ Amps, $L = 8$ mH		
I_{AR} Repetitive Avalanche Current	0.5	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	11DQ..	Units	Conditions		
V_{FM} Max. Forward Voltage Drop * See Fig. 1 (1)	0.85	V	@ 1A	$T_J = 25^\circ\text{C}$	
	0.96	V	@ 2A		
	0.68	V	@ 1A	$T_J = 125^\circ\text{C}$	
	0.78	V	@ 2A		
I_{RM} Max. Reverse Leakage Current * See Fig. 2 (1)	0.5	mA	$T_J = 25^\circ\text{C}$	$V_R = \text{rated } V_R$	
	1.0	mA	$T_J = 125^\circ\text{C}$		
C_T Typical Junction Capacitance	35	pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) 25°C		
L_S Typical Series Inductance	8.0	nH	Measured lead to lead 5mm from package body		
dv/dt Max. Voltage Rate of Change	10000	V/μs	(Rated V_R)		

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

Thermal-Mechanical Specifications

Parameters	11DQ..	Units	Conditions	
T_J Max. Junction Temperature Range (*)	-40 to 150	°C		
T_{stg} Max. Storage Temperature Range	-40 to 150	°C		
R_{thJA} Max. Thermal Resistance Junction to Ambient	100	°C/W	DC operation Without cooling fin	
R_{thJL} Typical Thermal Resistance Junction to Lead	81	°C/W	DC operation (See Fig. 4)	
wt Approximate Weight	0.33(0.012)	g(oz.)		
Case Style	DO-204AL(DO-41)			

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

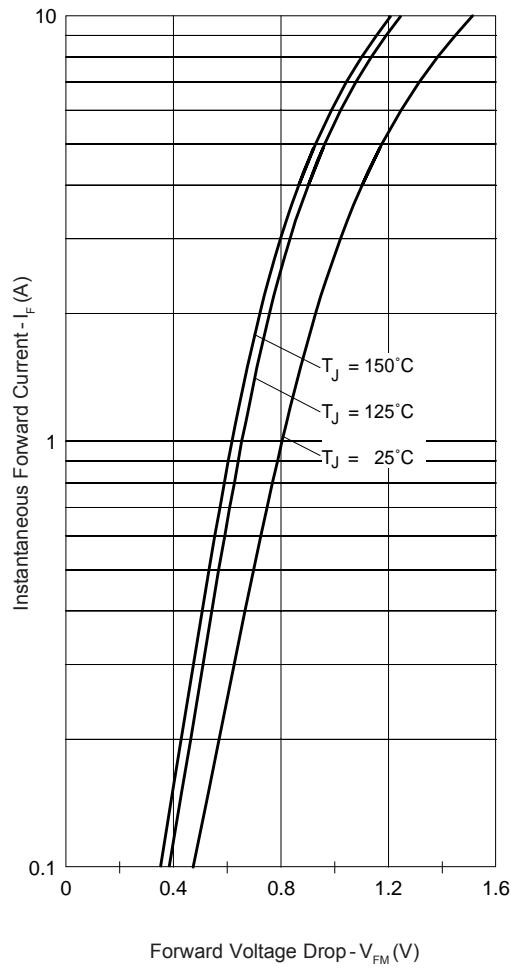


Fig. 1 - Max. Forward Voltage Drop Characteristics

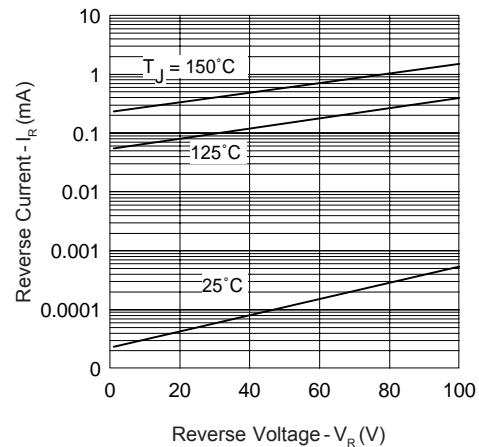


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage

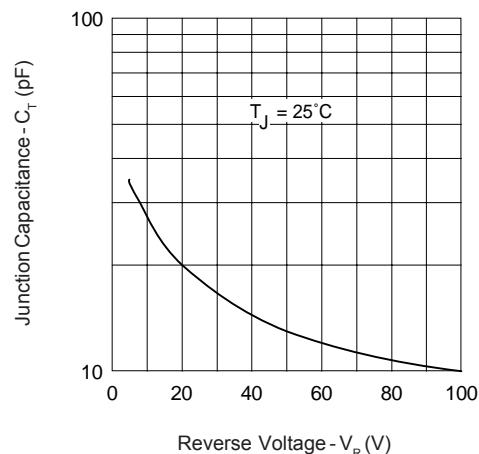


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

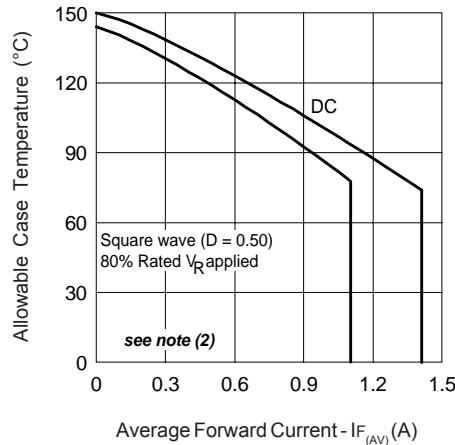


Fig. 4 - Max. Allowable Case Temperature Vs. Average Forward Current

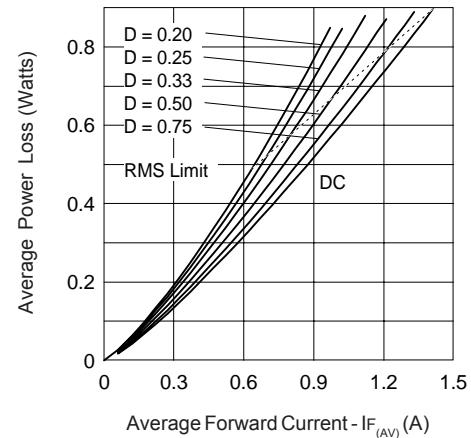


Fig. 5 - Forward Power Loss Characteristics

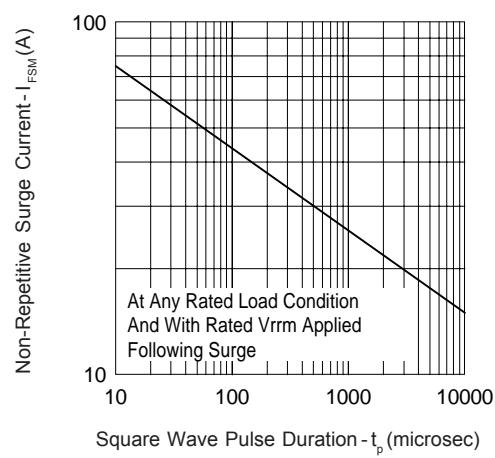


Fig. 6 - Max. Non-Repetitive Surge Current

(2) Formula used: $T_C = T_J - (P_d + P_{d,REV}) \times R_{thJC}$;
 $P_d = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);
 $P_{d,REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1-D); I_R @ V_{R1} = 80\% \text{ rated } V_R$

Ordering Information Table

Device Code	11	D	Q	10	TR
	(1)	(2)	(3)	(4)	(5)
1	- 11 = 1.1A (Axial and small packages - Current is x10)				
2	- D = DO-41 package				
3	- Q = Schottky Q.. Series				
4	- 10 = Voltage Ratings				
5	- TR = Tape & Reel package (5000 pcs) - = Box package (1000 pcs)				
	10 = 100V 09 = 90V				

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

International
IR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 06/03