



31DQ09  
31DQ10

SCHOTTKY RECTIFIER

3.3 Amp

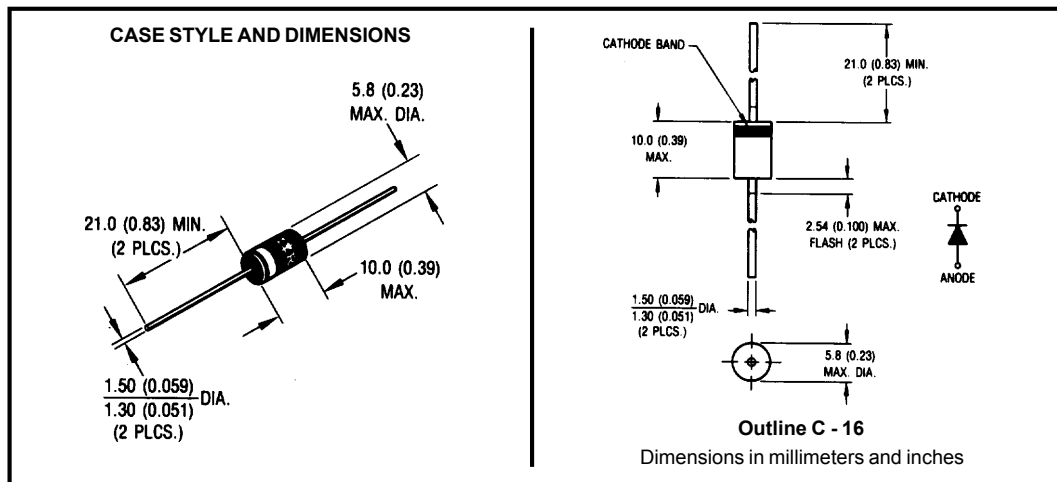
**Major Ratings and Characteristics**

Characteristics	31DQ..	Units
$I_{F(AV)}$ Rectangular waveform	3.3	A
$V_{RRM}$	90/100	V
$I_{FSM}$ @tp = 5 $\mu$ s sine	210	A
$V_F$ @3Apk, $T_J = 25^\circ\text{C}$	0.85	V
$T_J$	-40 to 150	$^\circ\text{C}$

**Description/Features**

The 31DQ.. 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



## Voltage Ratings

Part number	31DQ09	31DQ10
$V_R$ Max. DC Reverse Voltage (V)	90	100
$V_{RWM}$ Max. Working Peak Reverse Voltage (V)		

## Absolute Maximum Ratings

Parameters	31DQ..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 4	3.3	A	50% duty cycle @ $T_L = 53.4^\circ\text{C}$ , rectangular waveform With cooling fins
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 6	210	A	Following any rated load condition and with rated $V_{RWM}$ applied
	35		

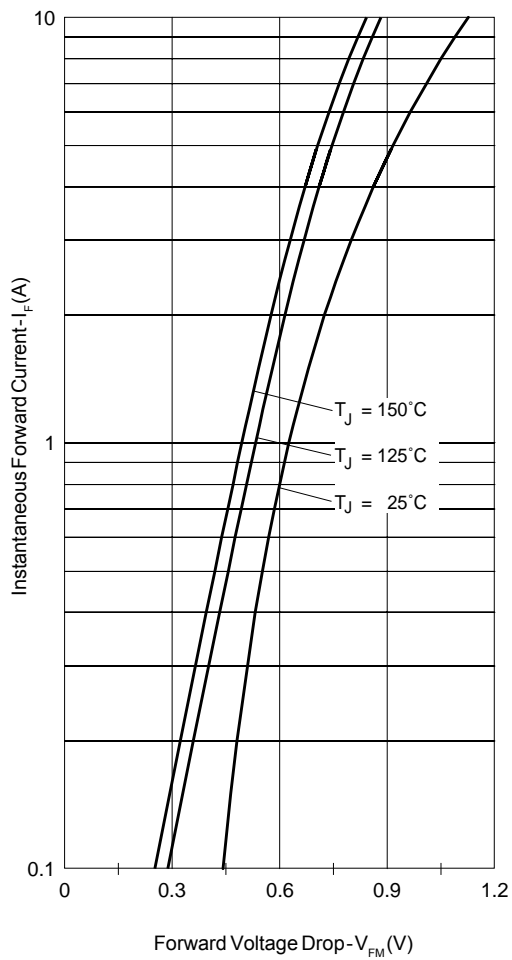
## Electrical Specifications

Parameters	31DQ..	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop * See Fig. 1 (1)	0.85	V	@ 3A $T_J = 25^\circ\text{C}$
	0.97	V	@ 6A
	0.69	V	@ 3A $T_J = 125^\circ\text{C}$
	0.80	V	@ 6A
$I_{RM}$ Max. Reverse Leakage Current * See Fig. 2 (1)	1	mA	$T_J = 25^\circ\text{C}$
	3	mA	$T_J = 125^\circ\text{C}$ $V_R = \text{rated } V_R$
$C_T$ Typical Junction Capacitance	110	pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) $25^\circ\text{C}$
$L_S$ Typical Series Inductance	9.0	nH	Measured lead to lead 5mm from package body
$dv/dt$ Max. Voltage Rate of Change (Rated $V_R$ )	10000	V/ $\mu\text{s}$	

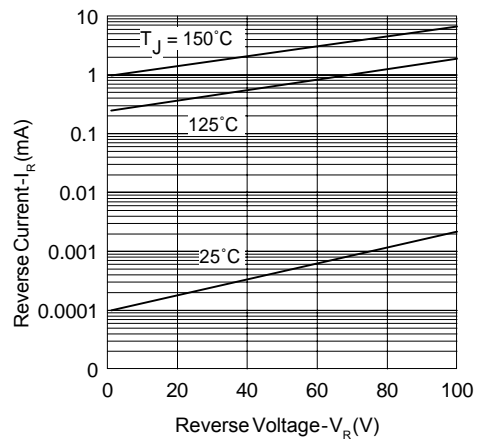
(1) Pulse Width < 300 $\mu\text{s}$ , Duty Cycle <2%

## Thermal-Mechanical Specifications

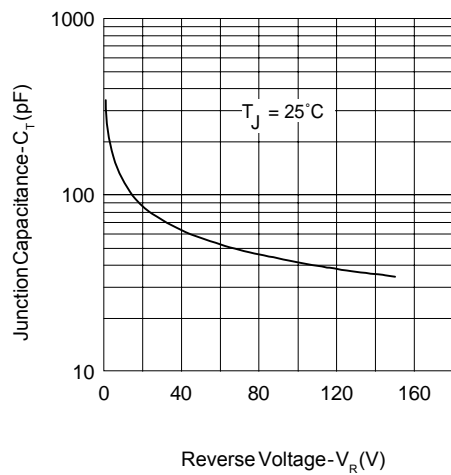
Parameters	31DQ..	Units	Conditions
$T_J$ Max. Junction Temperature Range	-40 to 150	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-40 to 150	$^\circ\text{C}$	
$R_{thJA}$ Max. Thermal Resistance Junction to Ambient	80	$^\circ\text{C}/\text{W}$	DC operation Without cooling fins
$R_{thJL}$ Typical Thermal Resistance Junction to Lead	34	$^\circ\text{C}/\text{W}$	DC operation
wt Approximate Weight	1.2(0.042)	g(oz.)	
Case Style	C-16		



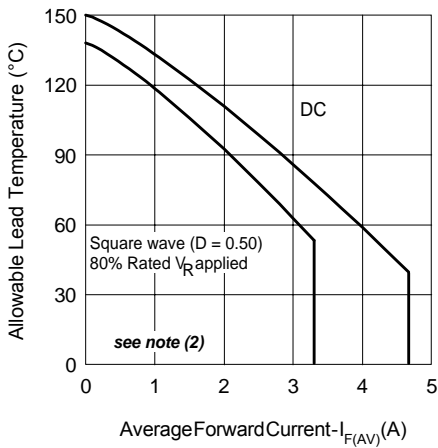
**Fig. 1 - Max. Forward Voltage Drop Characteristics**



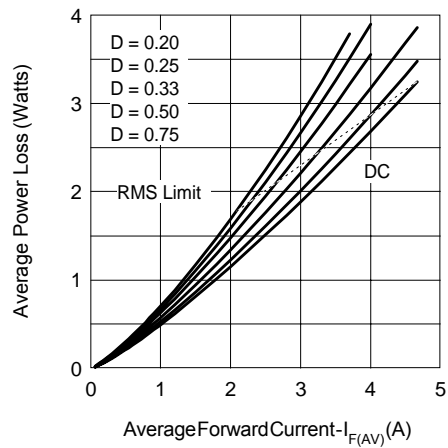
**Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage**



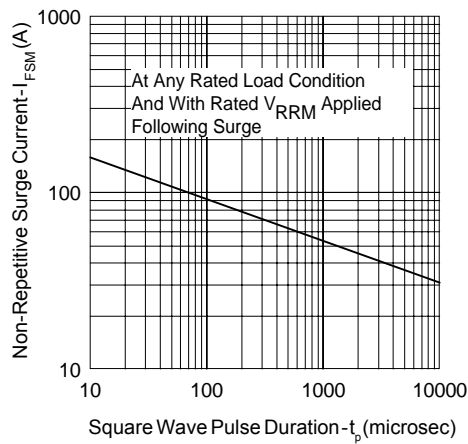
**Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage**



**Fig. 4 - Max. Allowable Lead Temperature Vs. Average Forward Current**



**Fig. 5 - Forward Power Loss Characteristics**



**Fig. 6 - Max. Non-Repetitive Surge Current**

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

Ordering Information Table

Device Code	
<b>31</b>	<b>D</b>
<b>Q</b>	<b>10</b>
<b>TR</b>	
①	②
③	④
⑤	
<b>1</b>	- 31 = 3.3A (Axial and small packages - Current is x10)
<b>2</b>	- D = DO-41 package
<b>3</b>	- Q = Schottky Q.. Series
<b>4</b>	- 10 = Voltage Ratings
<b>5</b>	- TR = Tape & Reel package ( 5000 pcs)
	TB = Tape & Box package (Ammunition -3000 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.