

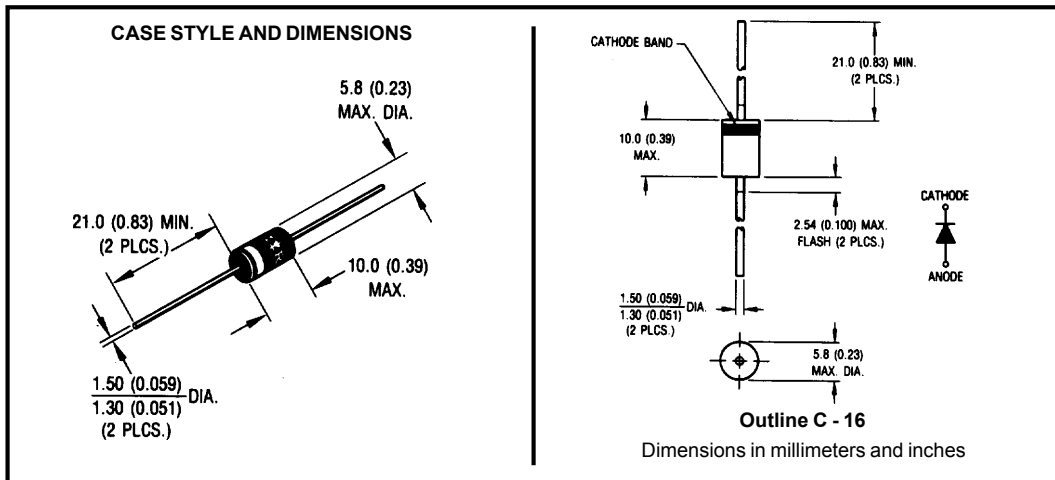
**Major Ratings and Characteristics**

Characteristics	31DQ..	Units
$I_{F(AV)}$ Rectangular waveform	3.3	A
$V_{RRM}$	50/60	V
$I_{FSM}$ @tp = 5 $\mu$ s sine	340	A
$V_F$ @3 Apk, $T_J = 25^\circ\text{C}$	0.62	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	31DQ05	31DQ06
$V_R$ Max. DC Reverse Voltage (V)	50	60
$V_{RWM}$ 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 @ $T_L = 40^\circ\text{C}$ , rectangular waveform With cooling fins
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 6	340	A	Following any rated load condition and with rated $V_{RWM}$ applied
	55		

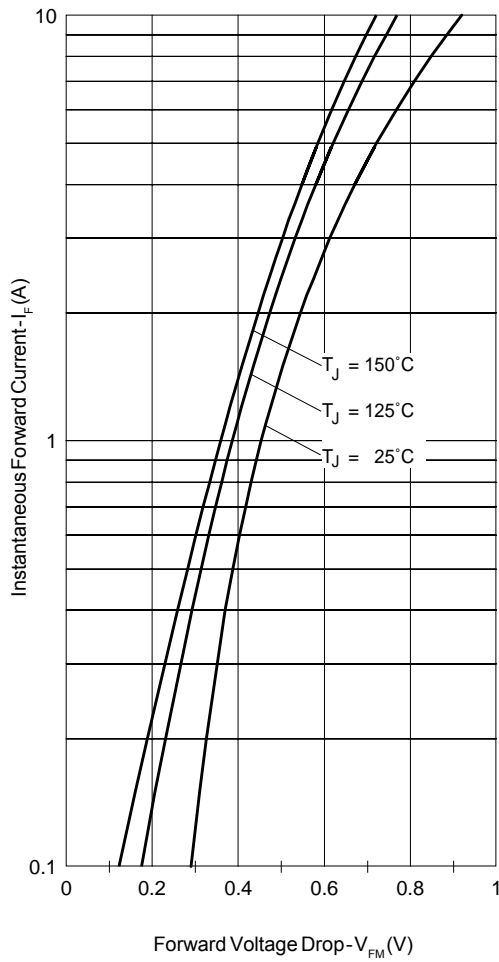
### Electrical Specifications

Parameters	31DQ..	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop * See Fig. 1 (1)	0.62	V	@ 3A $T_J = 25^\circ\text{C}$
	0.78	V	@ 6A
	0.54	V	@ 3A $T_J = 125^\circ\text{C}$
	0.65	V	@ 6A
$I_{RM}$ Max. Reverse Leakage Current * See Fig. 2 (1)	2	mA	$T_J = 25^\circ\text{C}$ $V_R = \text{rated } V_R$
	15	mA	$T_J = 125^\circ\text{C}$
$C_T$ Typical Junction Capacitance	160	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/ $\mu\text{s}$	

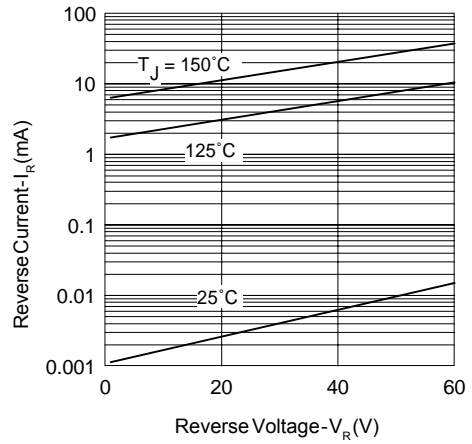
(1) Pulse Width < 300 $\mu\text{s}$ , Duty Cycle <2%

### Thermal-Mechanical Specifications

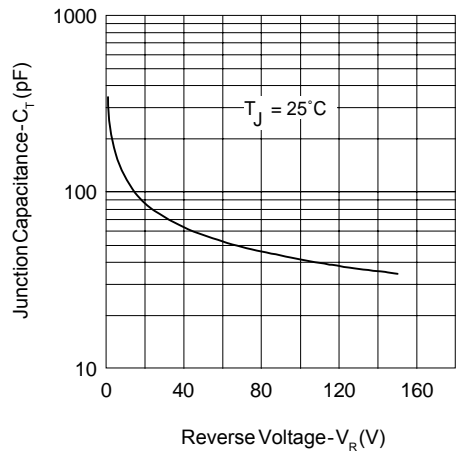
Parameters	31DQ..	Units	Conditions
$T_J$ Max. Junction Temperature Range	-40 to 150	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-40 to 150	$^\circ\text{C}$	
$R_{thJA}$ Max. Thermal Resistance Junction to Ambient	80	$^\circ\text{C/W}$	DC operation Without cooling fins
$R_{thJL}$ Typical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



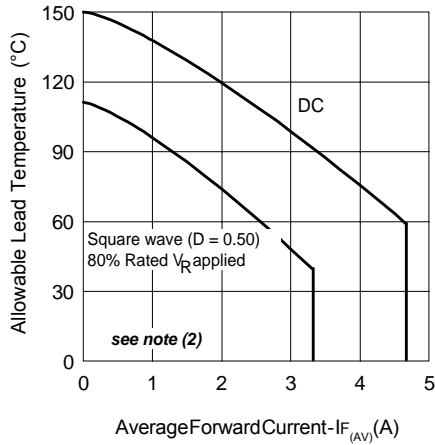
**Fig. 1 - Max. Forward Voltage Drop Characteristics**



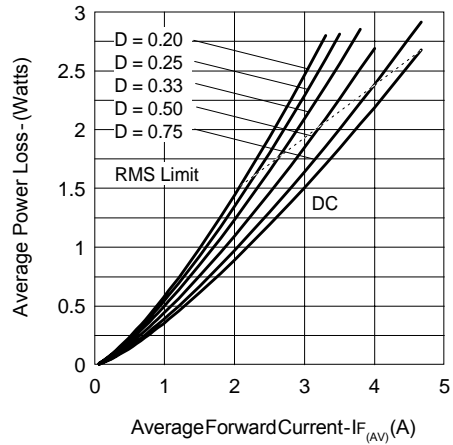
**Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage**



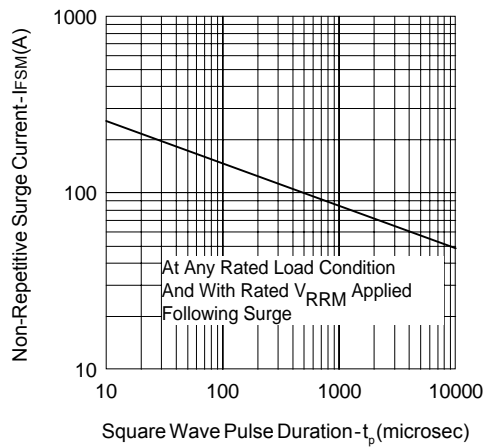
**Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage**



**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>06</b>	<b>TR</b>
①	②	③	④	⑤

- 1** - 31 = 3.1A (Axial and small packages - Current is x10)
- 2** - D = DO-41 package
- 3** - Q = Schottky Q.. Series
- 4** - 06 = Voltage Ratings 06 = 60V  
05 = 50V
- 5** - TR = Tape & Reel package ( 5000 pcs)  
 TB = Tape & Box package (Ammunition -3000 pcs)  
 - = Box package (1000 pcs)

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.