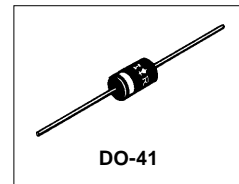


# International IOR Rectifier

## 21DQ04

### SCHOTTKY RECTIFIER

2 Amp



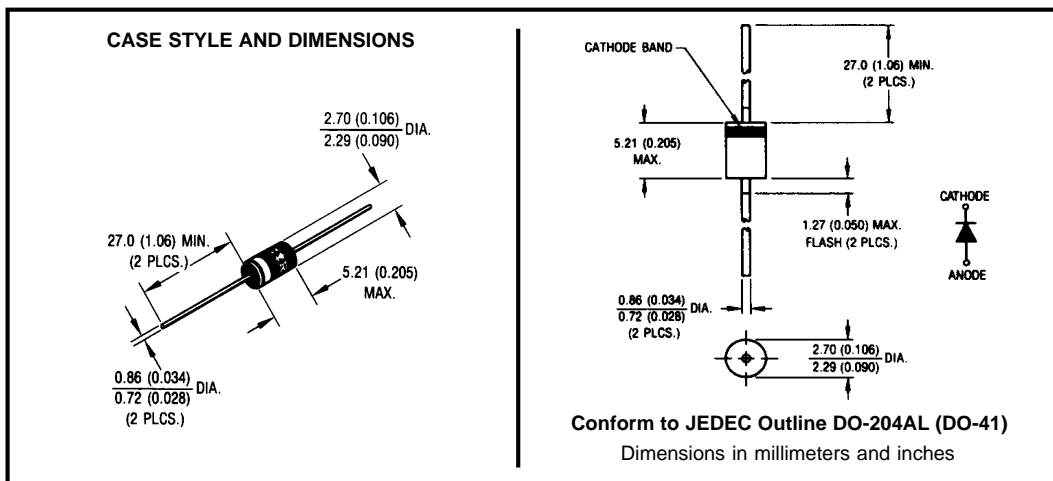
#### Major Ratings and Characteristics

Characteristics	21DQ04	Units
$I_{F(AV)}$ Rectangular waveform	2	A
$V_{RRM}$	40	V
$V_F$ @ 2 Apk, $T_J = 125^\circ\text{C}$	0.5	V
$T_J$ range	-40 to 150	$^\circ\text{C}$

#### Description/Features

The 21DQ04 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	21DQ04
$V_R$ Max. DC Reverse Voltage (V)	40
$V_{RWM}$ Max. Working Peak Reverse Voltage (V)	

## Absolute Maximum Ratings

Parameters	21DQ04	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 4	2	A	50% duty cycle @ $T_C = 112^\circ\text{C}$ , rectangular wave form
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 6	420	A	5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse
	70		10ms Sine or 6ms Rect. pulse
$E_{AS}$ Non-Repetitive Avalanche Energy	5.0	mJ	$T_J = 25^\circ\text{C}$ , $I_{AS} = 1.0$ Amps, $L = 10$ mH
$I_{AR}$ Repetitive Avalanche Current	1.0	A	Current decaying linearly to zero in 1 $\mu\text{sec}$ Frequency limited by $T_J$ max. $V_A = 1.5 \times V_R$ typical

## Electrical Specifications

Parameters	21DQ04		Units	Conditions	
	Typ.	Max.			
$V_{FM}$ Max. Forward Voltage Drop (1)	0.49	0.55	V	@ 2A	$T_J = 25^\circ\text{C}$
	0.60	0.65	V	@ 4A	
	0.42	0.5	V	@ 2A	$T_J = 125^\circ\text{C}$
	0.56	0.62	V	@ 4A	
$I_{RM}$ Max. Reverse Leakage Current (1)	0.01	0.50	mA	$T_J = 25^\circ\text{C}$	$V_R = \text{rated } V_R$
	5.2	10	mA	$T_J = 125^\circ\text{C}$	
$C_T$ Typical Junction Capacitance	130		pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) $25^\circ\text{C}$	
$L_S$ Typical Series Inductance	8.0		nH	Measured lead to lead 5mm from package body	

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

## Thermal-Mechanical Specifications

Parameters	21DQ04	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	100	$^\circ\text{C}/\text{W}$	DC operation Without cooling fin
$R_{thJL}$ Typical Thermal Resistance Junction to Lead	25	$^\circ\text{C}/\text{W}$	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

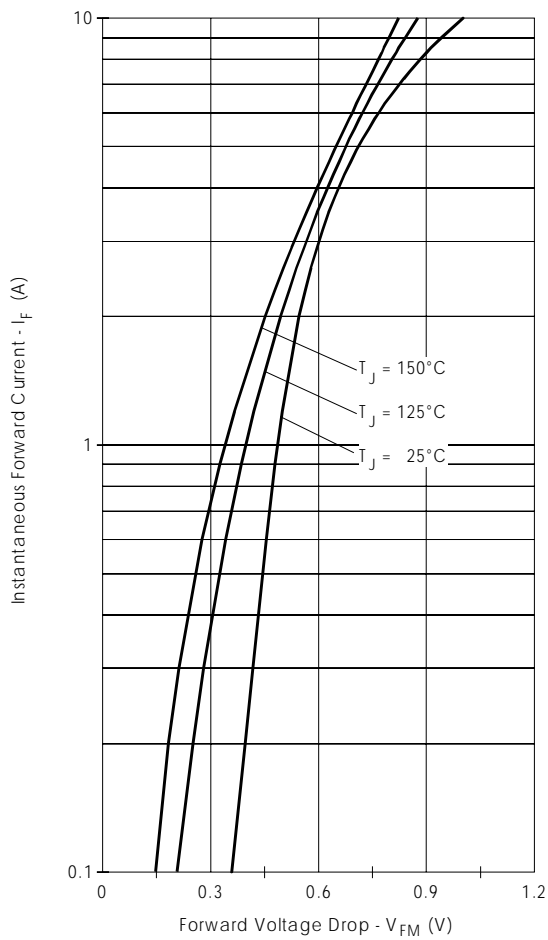


Fig. 1 - Maximum Forward Voltage Drop Characteristics

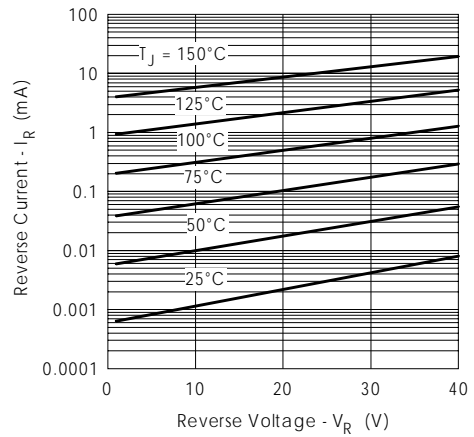


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

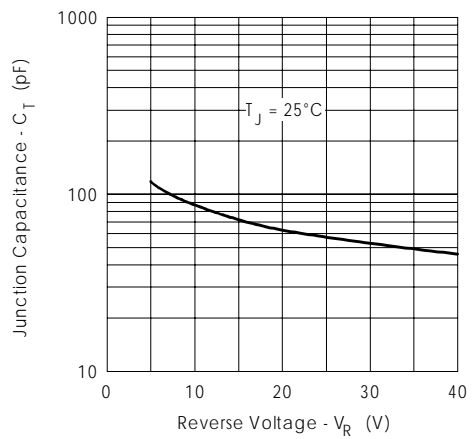


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

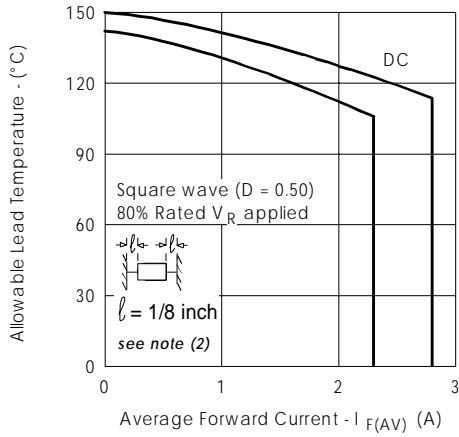


Fig. 4 - Maximum Allowable Lead Temperature Vs. Average Forward Current

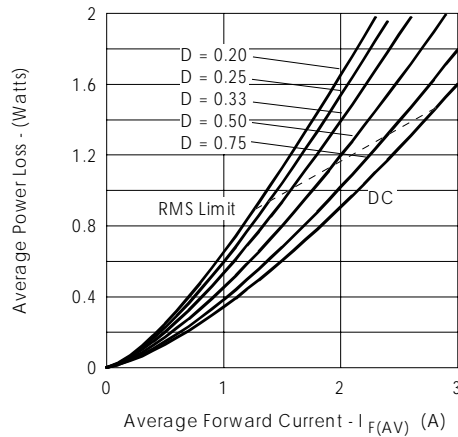


Fig. 5 - Forward Power Loss Characteristics

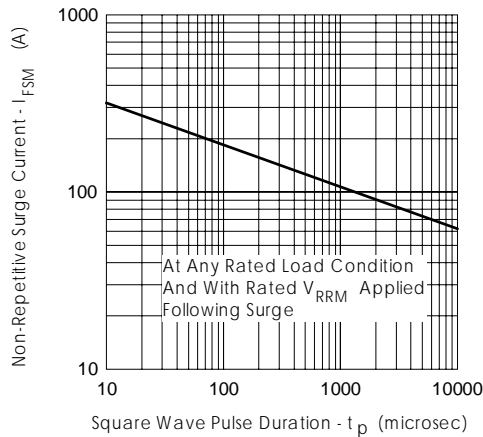


Fig. 6 - Maximum Non-Repetitive Surge Current

- (2) Formula used:  $T_L = T_J - (Pd + Pd_{REV}) \times R_{thJL}$ ;  
 $Pd = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$  (see Fig. 5);  
 $Pd_{REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D)$ ;  $I_R @ V_{R1} = 80\% \text{ rated } V_R$

### Ordering Information Table

Device Code						
	<table border="1"><tr><td>21</td><td>D</td><td>Q</td><td>04</td><td>TR</td></tr></table>	21	D	Q	04	TR
21	D	Q	04	TR		
	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table>	1	2	3	4	5
1	2	3	4	5		
<table><tr><td>1</td></tr><tr><td>2</td></tr><tr><td>3</td></tr><tr><td>4</td></tr><tr><td>5</td></tr></table>	1	2	3	4	5	<ul style="list-style-type: none"><li>- 21 = 2.1A (Axial and small packages - Current is x10)</li><li>- D = DO-41 package</li><li>- Q = Schottky Q.. Series</li><li>- 04 = Voltage Rating : 40V</li><li>- TR = Tape &amp; Reel package ( 5000 pcs)</li><li>- TB = Tape &amp; Box package (Ammunition -3000 pcs)</li><li>- = Box package (1000 pcs)</li></ul>
1						
2						
3						
4						
5						

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.