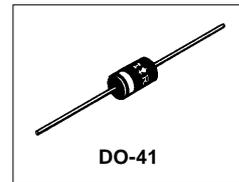


# International IOR Rectifier

## 21DQ04

### SCHOTTKY RECTIFIER

2 Amp



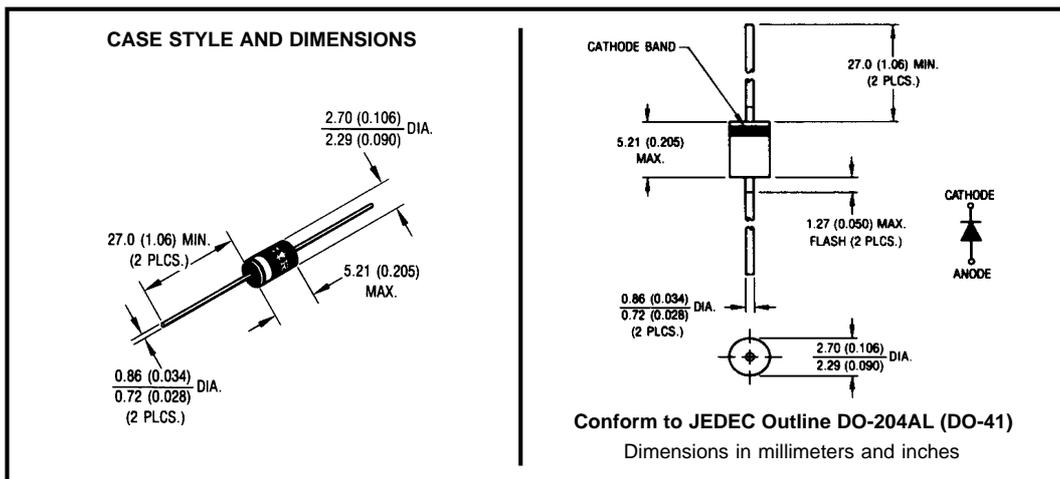
#### Major Ratings and Characteristics

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

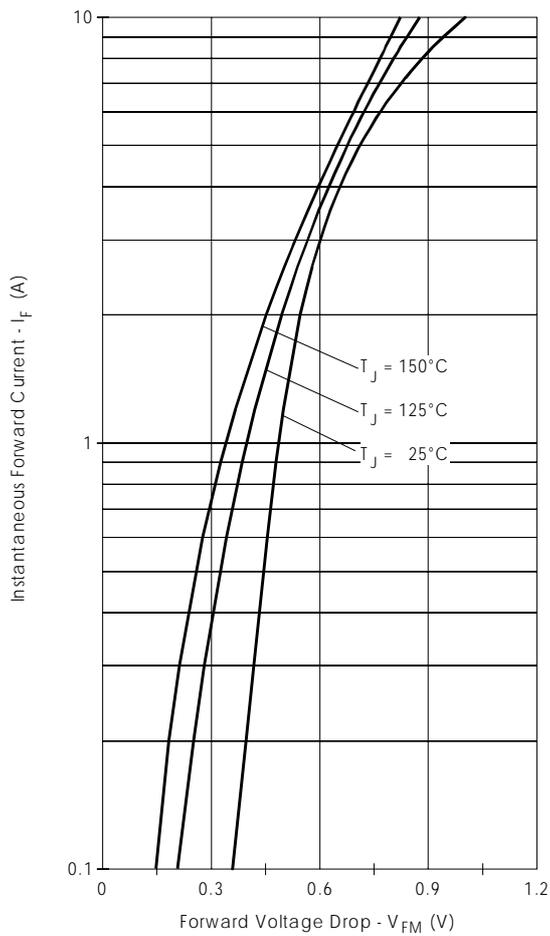


Fig. 1 - Maximum Forward Voltage Drop Characteristics

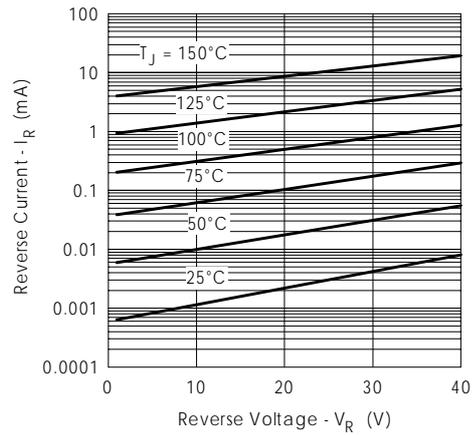


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

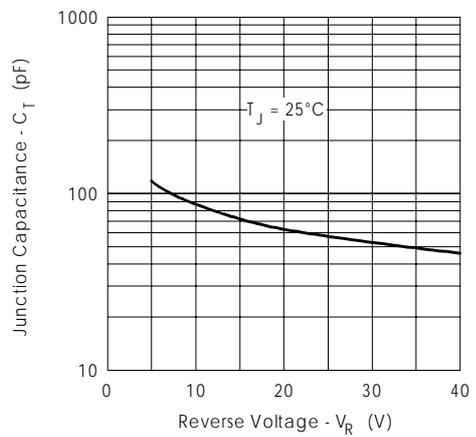


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

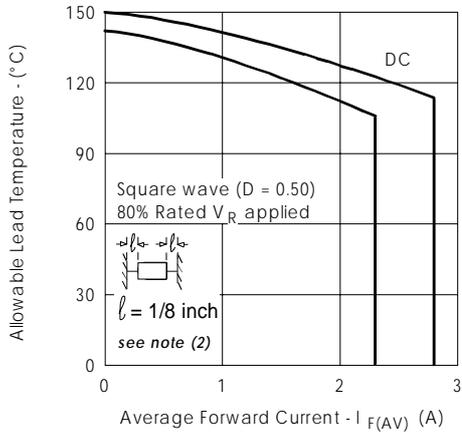


Fig. 4 - Maximum Allowable Lead Temperature Vs. Average Forward Current

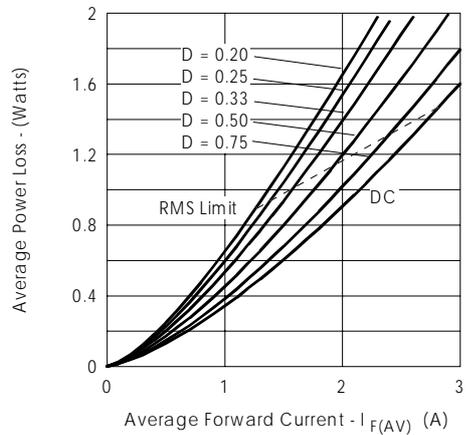


Fig. 5 - Forward Power Loss Characteristics

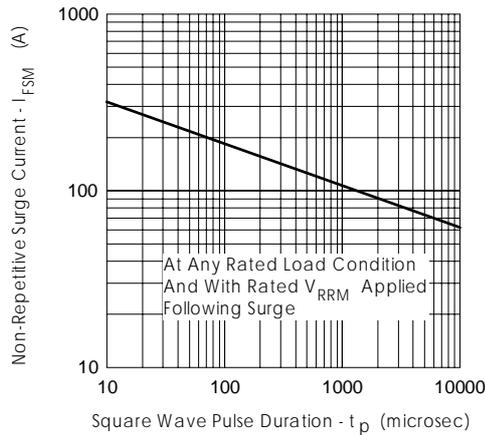


Fig. 6 - Maximum Non-Repetitive Surge Current

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

### Ordering Information Table

Device Code											
	<table><tr><td><b>21</b></td><td><b>D</b></td><td><b>Q</b></td><td><b>04</b></td><td><b>TR</b></td></tr><tr><td>①</td><td>②</td><td>③</td><td>④</td><td>⑤</td></tr></table>	<b>21</b>	<b>D</b>	<b>Q</b>	<b>04</b>	<b>TR</b>	①	②	③	④	⑤
<b>21</b>	<b>D</b>	<b>Q</b>	<b>04</b>	<b>TR</b>							
①	②	③	④	⑤							
<b>1</b>	- 21 = 2.1A (Axial and small packages - Current is x10)										
<b>2</b>	- D = DO-41 package										
<b>3</b>	- Q = Schottky Q.. Series										
<b>4</b>	- 04 = Voltage Rating : 40V										
<b>5</b>	- 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.

This datasheet has been download from:

[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.