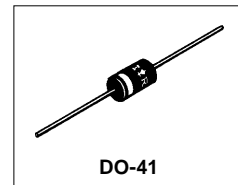


SCHOTTKY RECTIFIER

2 Amp



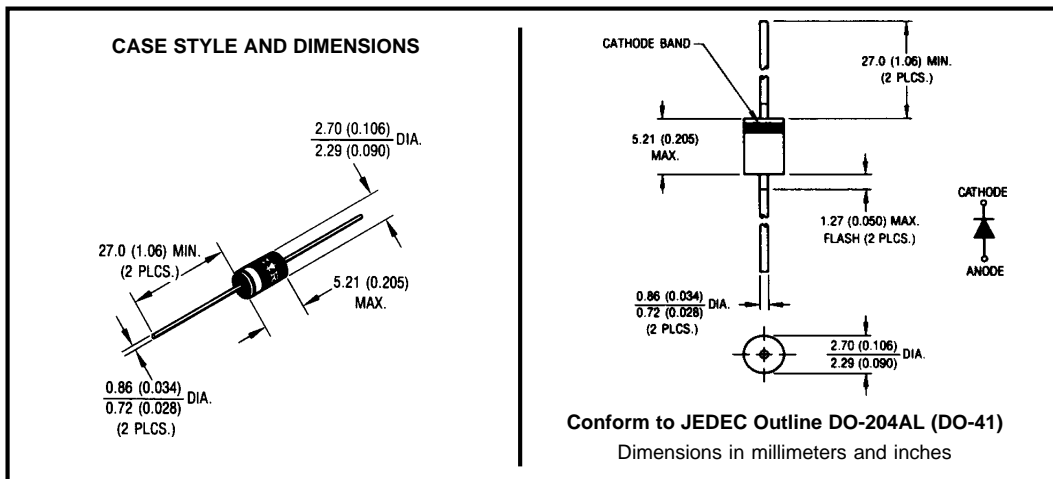
Major Ratings and Characteristics

| Characteristics                          | 21DQ06     | Units            |
|--|------------|------------------|
| $I_{F(AV)}$ Rectangular waveform         | 2          | A                |
| $V_{RRM}$                                | 60         | V                |
| $V_F$ @ 2 Apk, $T_J = 125^\circ\text{C}$ | 0.55       | V                |
| $T_J$ range                              | -40 to 150 | $^\circ\text{C}$ |

Description/Features

The 21DQ06 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                                     | 21DQ06 |
|---|--------|
| $V_R$ Max. DC Reverse Voltage (V)               | 60     |
| $V_{RWM}$ Max. Working Peak Reverse Voltage (V) |        |

## Absolute Maximum Ratings

| Parameters  | 21DQ06 | Units | Conditions   |
|---|--------|-------|--|
| $I_{F(AV)}$ Max. Average Forward Current<br>* See Fig. 4                | 2      | A     | 50% duty cycle @ $T_C = 106^\circ\text{C}$ , rectangular wave form   |
| $I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 6 | 340    | A     | 5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse  |
|   | 60     |       | 10ms Sine or 6ms Rect. pulse   |
| $E_{AS}$ Non-Repetitive Avalanche Energy                                | 4.0    | mJ    | $T_J = 25^\circ\text{C}$ , $I_{AS} = 1$ Amps, $L = 8$ mH   |
| $I_{AR}$ Repetitive Avalanche Current                                   | 0.5    | A     | Current decaying linearly to zero in 1 $\mu\text{sec}$<br>Frequency limited by $T_J$ max. $V_A = 1.5 \times V_R$ typical |

## Electrical Specifications

| Parameters                                   | 21DQ06 |      | Units | Conditions  |                           |
|--|--------|------|-------|---|---------------------------|
|  | Typ.   | Max. |       |   |                           |
| $V_{FM}$ Max. Forward Voltage Drop<br>(1)    | 0.53   | 0.60 | V     | @ 2A  | $T_J = 25^\circ\text{C}$  |
|  | 0.67   | 0.75 | V     | @ 4A  |                           |
|  | 0.49   | 0.55 | V     | @ 2A  | $T_J = 125^\circ\text{C}$ |
|  | 0.61   | 0.67 | V     | @ 4A  |                           |
| $I_{RM}$ Max. Reverse Leakage Current<br>(1) | 0.02   | 0.50 | mA    | $T_J = 25^\circ\text{C}$  | $V_R = \text{rated } V_R$ |
|  | 7.0    | 10   | mA    | $T_J = 125^\circ\text{C}$   |                           |
| $C_T$ Typical Junction Capacitance           | 120    |      | 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   | 21DQ06          | 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<br>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

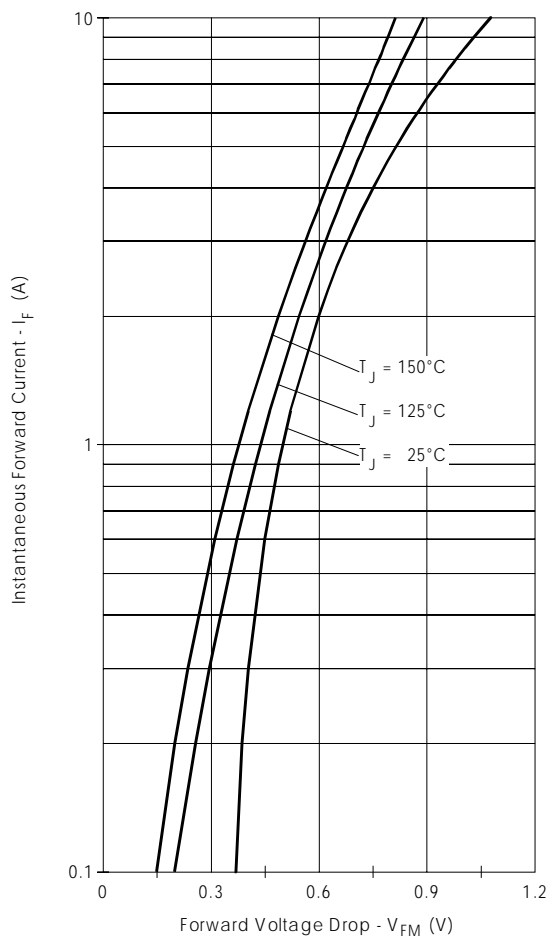


Fig. 1 - Maximum Forward Voltage Drop Characteristics

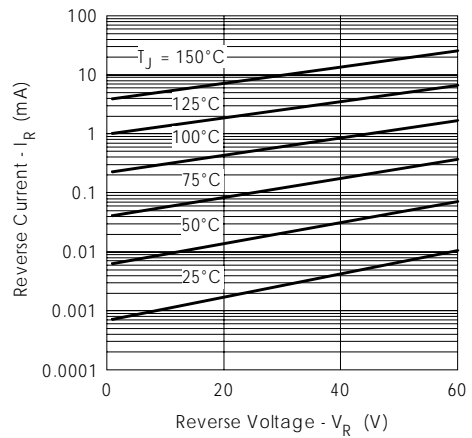


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

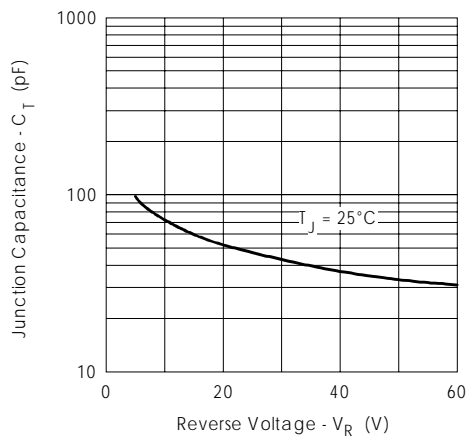


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

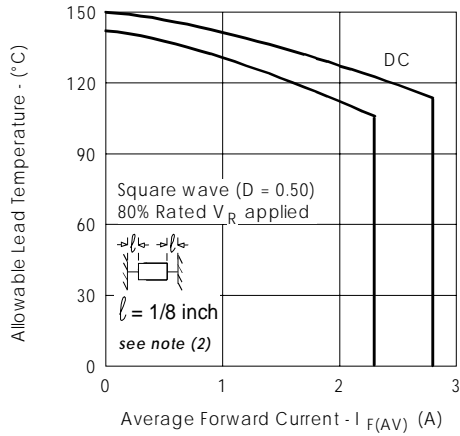


Fig. 4 - Maximum Allowable Lead Temperature Vs. Average Forward Current

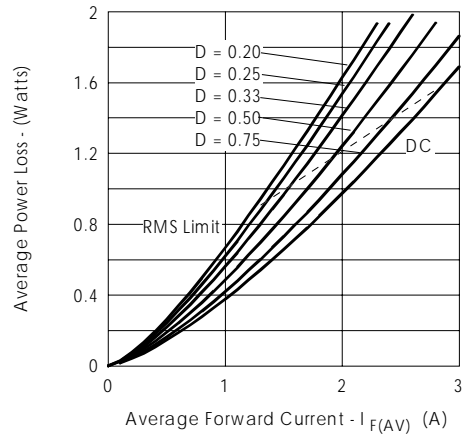


Fig. 5 - Forward Power Loss Characteristics

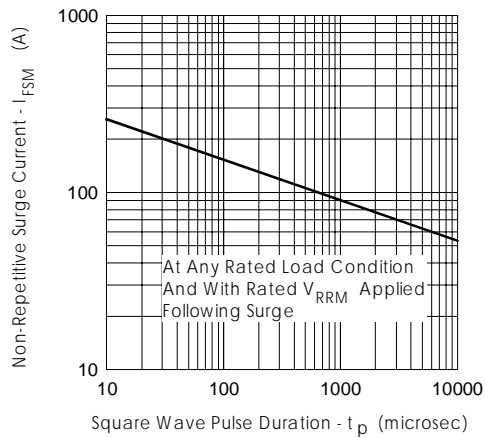


Fig. 6 - Maximum Non-Repetitive Surge Current

(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" style="margin: auto;"> <tr> <td style="padding: 5px;">21</td> <td style="padding: 5px;">D</td> <td style="padding: 5px;">Q</td> <td style="padding: 5px;">06</td> <td style="padding: 5px;">TR</td> </tr> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">③</td> <td style="text-align: center;">④</td> <td style="text-align: center;">⑤</td> </tr> </table> | 21 | D  | Q  | 06 | TR | ① | ② | ③ | ④ | ⑤ |
| 21          | D  | Q  | 06 | TR |    |    |   |   |   |   |   |
| 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>    | - 06 = Voltage Rating : 60V  |    |    |    |    |    |   |   |   |   |   |
| <b>5</b>    | - TR= Tape & Reel package ( 5000 pcs)<br>TB= Tape & Box package (Ammunition -3000 pcs)<br>- = 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.