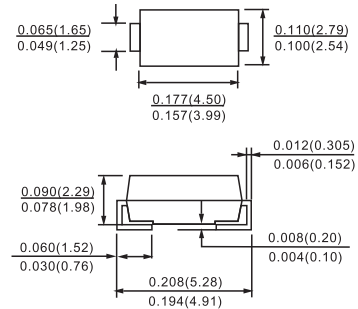


**FEATURES**

- Switching power supplies
- Meter protection
- Reverse protection for power input to PC board circuits
- Battery isolation and charging
- Low threshold voltage diode
- Free-wheeling or by-pass diode
- Low voltage clamp

DO-214AC(SMA)



Dimensions in inches and (millimeters)

**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

Absolute Maximum Ratings

| Parameters   | 15MQ       | Units | Conditions   |
|--|------------|-------|--|
| $I_{F(AV)}$ Max. Average Forward Current<br>* See Fig. 4                   | 2.1        | A     | 50% duty cycle @ $T_L = 105^\circ\text{C}$ , rectangular wave form.<br>On PC board 9mm <sup>2</sup> island(.013mm thick copper pad area) |
| $I_{FSM}$ Max. Peak One Cycle Non-Repetitive<br>Surge Current * See Fig. 6 | 330<br>140 | A     | 5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse<br>10ms Sine or 6ms Rect. pulse  |
| $E_{AS}$ Non-Repetitive Avalanche Energy                                   | 6.0        | mJ    | $T_J = 25^\circ\text{C}$ , $I_{AS} = 1\text{A}$ , $L = 12\text{mH}$  |
| $I_{AR}$ Repetitive Avalanche Current                                      | 1.0        | A     | Following any rated load condition and with rated $V_{RRM}$ applied  |

Electrical Specifications

| Parameters  | 15MQ                         | Units            | Conditions  |
|---|------------------------------|------------------|---|
| $V_{FM}$ Max. Forward Voltage Drop (1)<br>* See Fig. 1    | 0.42<br>0.49<br>0.34<br>0.43 | V                | @ 1A<br>@ 2A<br>@ 1A<br>@ 2A<br>$T_J = 25^\circ\text{C}$<br>$T_J = 125^\circ\text{C}$ |
| $I_{RM}$ Max. Reverse Leakage Current (1)<br>* See Fig. 2 | 0.5<br>20                    | mA               | $T_J = 25^\circ\text{C}$<br>$T_J = 125^\circ\text{C}$<br>$V_R = \text{rated } V_R$    |
| $V_{F(TO)}$ Threshold Voltage                             | 0.26                         | V                | $T_J = T_J \text{ max.}$  |
| $r_t$ Forward Slope Resistance                            | 64.6                         | m $\Omega$       |   |
| $C_T$ Typical Junction Capacitance                        | 134                          | pF               | $V_R = 10V_{DC}$ , $T_J = 25^\circ\text{C}$ , test signal = 1Mhz                      |
| $L_S$ Typical Series Inductance                           | 2.0                          | nH               | Measured lead to lead 5mm from package body   |
| dv/dt Max. Voltage Rate of Change                         | 10000                        | V/ $\mu\text{s}$ | (Rated $V_R$ )  |

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

Thermal-Mechanical Specifications

| Parameters   | 15MQ        | 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 |
| wt Approximate Weight                                  | 0.07(0.002) | g (oz.)            |              |
| Case Style   | SMA         |                    | Similar D-64 |
| Device Marking   | IR3F        |                    |              |

(\*)  $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{th(j-a)}}$  thermal runaway condition for a diode on its own heatsink

**RATINGS AND CHARACTERISTIC CURVES**

**15MQ040N**

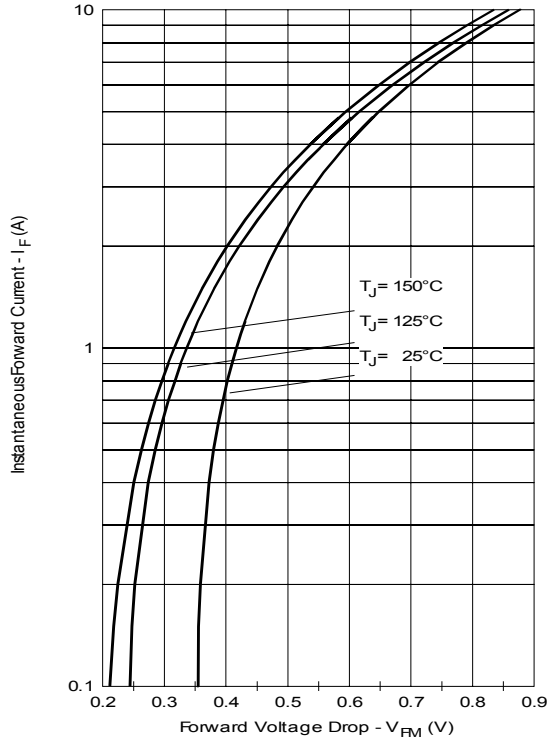


Fig. 1 - Maximum Forward Voltage Drop Characteristics

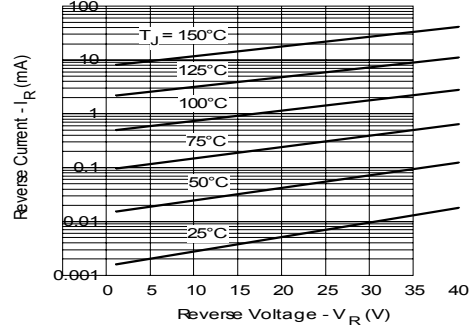


Fig. 2 - Typical Peak Reverse Current Vs. Reverse Voltage

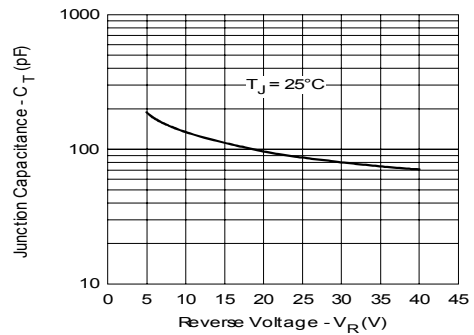


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

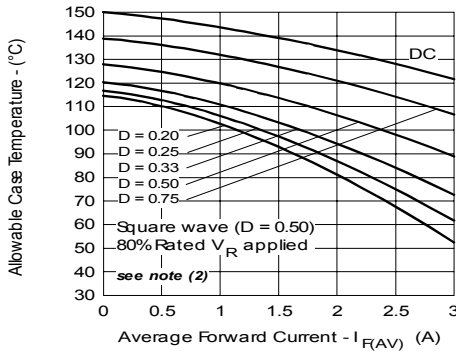


Fig. 4 - Maximum Average Forward Current Vs. Allowable Lead Temperature

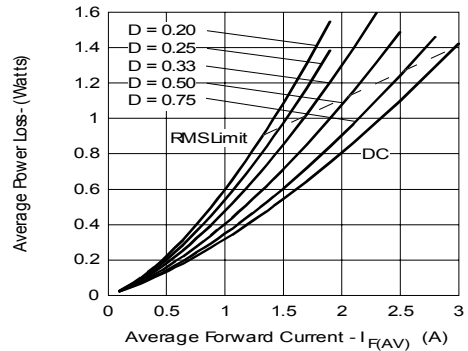


Fig. 5 - Maximum Average Forward Dissipation Vs. Average Forward Current

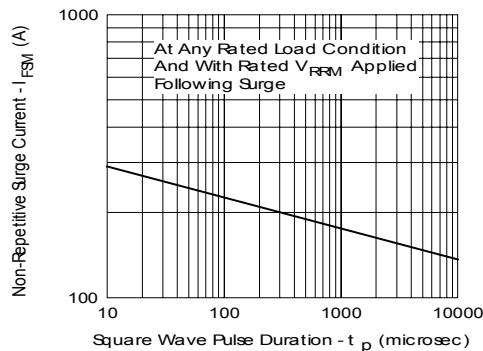


Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration