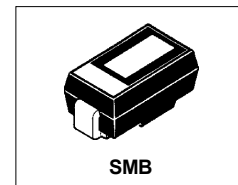


International  
**IOR** Rectifier

10BQ030

SCHOTTKY RECTIFIER

1 Amp



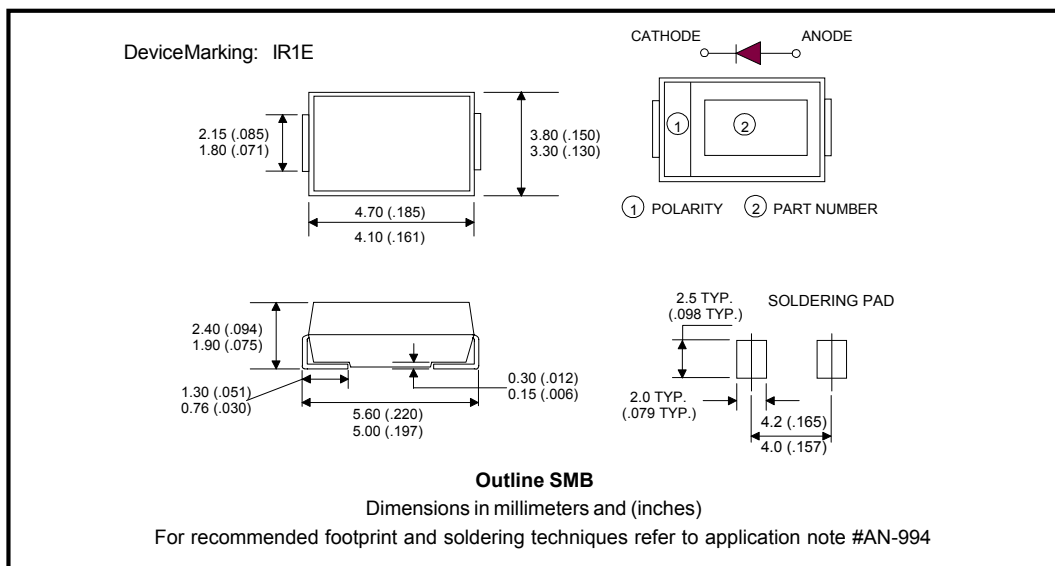
#### Major Ratings and Characteristics

Characteristics	10BQ030	Units
$I_{F(AV)}$ Rectangular waveform	1.0	A
$V_{RRM}$	30	V
$I_{FSM}$ @ $t_p=5$ ms sine	430	A
$V_F$ @ 1.0Apk, $T_J=125^\circ\text{C}$	0.30	V
$T_J$ range	- 55 to 150	$^\circ\text{C}$

#### Description/Features

The 10BQ030 surface-mount Schottky rectifier has been designed for applications requiring low forward drop and small foot prints on PC boards. Typical applications are in disk drives, switching power supplies, converters, free-wheeling diodes, battery charging, and reverse battery protection.

- Small foot print, surface mountable
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability



## Voltage Ratings

Part number	10BQ030
$V_R$ Max. DC Reverse Voltage (V)	30
$V_{RWM}$ Max. Working Peak Reverse Voltage (V)	

## Absolute Maximum Ratings

Parameters	10BQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	1.0	A	50% duty cycle @ $T_L = 106^\circ\text{C}$ , rectangular waveform.
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 6	430		5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse
	90		10ms Sine or 6ms Rect. pulse
$E_{AS}$ Non-Repetitive Avalanche Energy	9.0	mJ	$T_J = 25^\circ\text{C}$ , $I_{AS} = 1.0\text{A}$ , $L = 10\text{mH}$
$I_{AR}$ Repetitive Avalanche Current	1.0	A	

## Electrical Specifications

Parameters	10BQ	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop (1)	0.420	V	@ 1A
	0.470	V	@ 2A
$V_{FM}$ Max. Forward Voltage Drop (1)	0.300	V	@ 1A
	0.370	V	@ 2A
$I_{RM}$ Max. Reverse Leakage Current (1)	0.5	mA	$T_J = 25^\circ\text{C}$
	5.0	mA	$T_J = 100^\circ\text{C}$
	15	mA	$T_J = 125^\circ\text{C}$
$C_T$ Max. Junction Capacitance	200	pF	$V_R = 5V_{DC}$ , (test signal range 100KHz to 1Mhz) $25^\circ\text{C}$
$L_S$ Typical Series Inductance	2.0	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	10BQ	Units	Conditions
$T_J$ Max. Junction Temperature Range (*)	-55 to 150	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
$R_{thJL}$ Max. Thermal Resistance Junction to Lead (**)	25	$^\circ\text{C/W}$	DC operation
$R_{thJA}$ Max. Thermal Resistance Junction to Ambient	80	$^\circ\text{C/W}$	
wt Approximate Weight	0.10(0.003)	g(oz.)	
Case Style	SMB		Similar DO-214AA
Device Marking	IR1E		

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

(\*\*) Mounted 1 inch square PCB

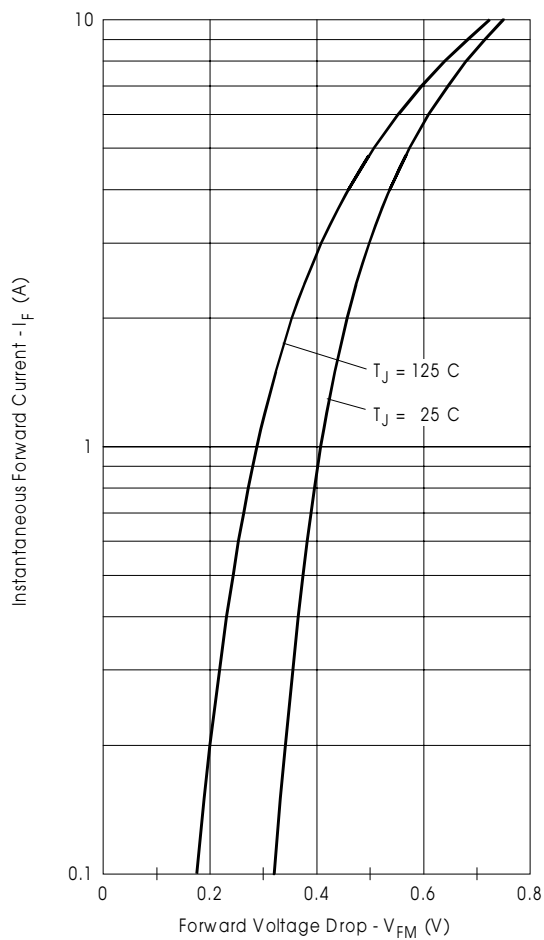


Fig. 1 - Maximum Forward Voltage Drop Characteristics

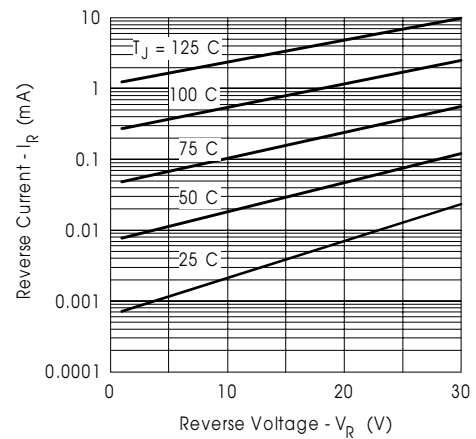


Fig. 2 - Typical Peak Reverse Current Vs. Reverse Voltage

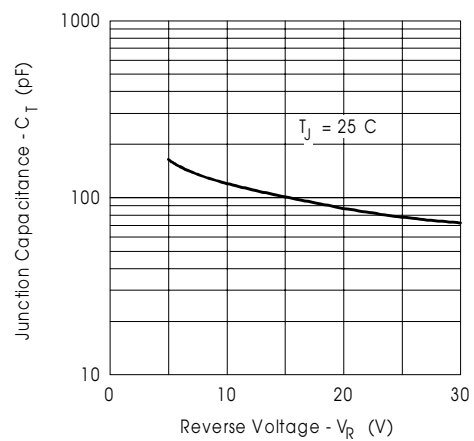


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

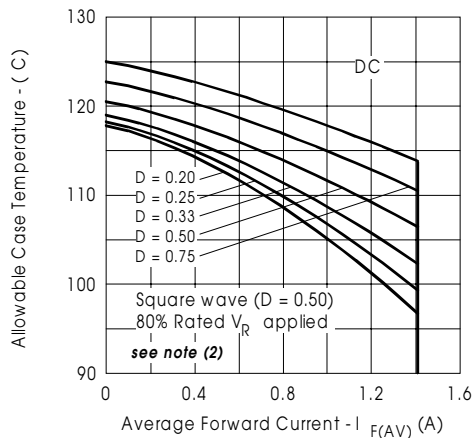


Fig. 4 - Maximum Average Forward Current  
Vs. Allowable Lead Temperature

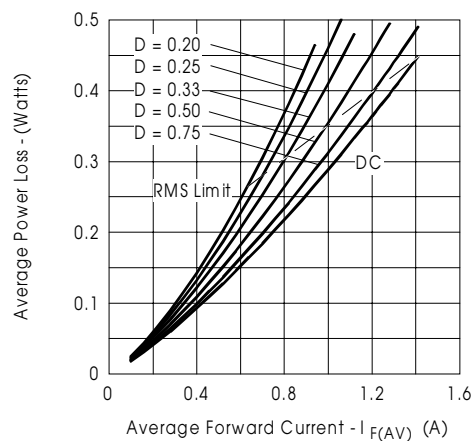


Fig. 5 - Maximum Average Forward Dissipation  
Vs. Average Forward Current

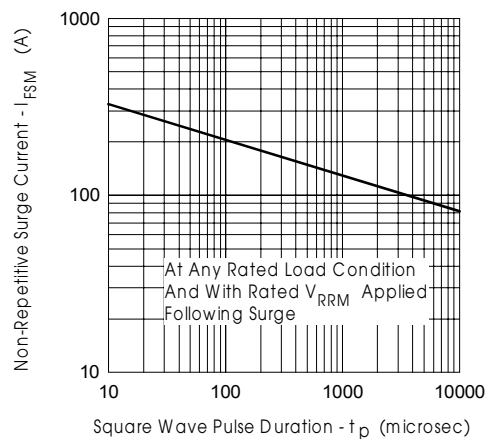


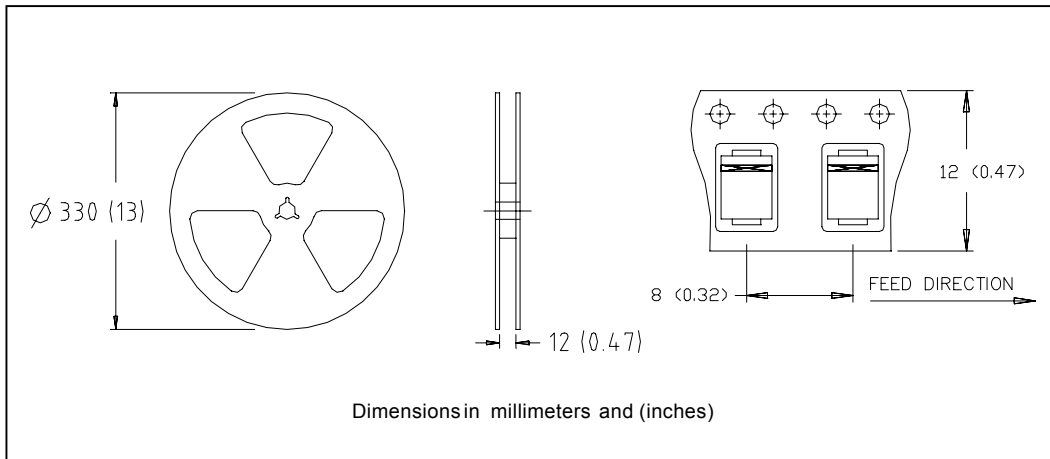
Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

(2) Formula used:  $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$ ;

$P_d$  = Forward Power Loss =  $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$  (see Fig. 6);

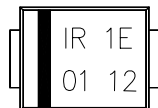
$P_{d_{REV}}$  = Inverse Power Loss =  $V_{R1} \times I_R (1 - D)$ ;  $I_R @ V_{R1} = 80\%$  rated  $V_R$

## Tape & Reel Information



## Marking & Identification

Each device has 8 characters, configured 4 digits on two rows, for identification. The first row designates the device as manufactured by International Rectifier as indicated by the letters "IR", and the Part Number (indicates the current rating and voltage/process). The second row indicates the year and the week of manufacturing.



IR 1E

Current Rating (1A) Voltage/ Process

IR logo

C = 15 V  
E = 30 V  
F = 40 V  
H = 60 V  
J = 100 V

YY WW (Date Code)

Year Week

## Ordering Information

### 10BQ SERIES - TAPE AND REEL

WHEN ORDERING, INDICATE THE PART NUMBER AND THE QUANTITY ( IN MULTIPLES OF 3000 PIECES).

EXAMPLE: 10BQ030TR - 6000 PIECES

### 10BQ SERIES - BULK QUANTITIES

WHEN ORDERING, INDICATE THE PART NUMBER AND THE QUANTITY (IN MULTIPLES OF 250 PIECES).

EXAMPLE: 10BQ030 - 500 PIECES

10BQ030

Bulletin PD-20708 rev. D 02/02

International  
**IOR** Rectifier

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.

International  
**IOR** Rectifier

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