Bulletin PD-2.441 rev. B 05/00

International
IOR Rectifier

30BQ100

SCHOTTKY RECTIFIER

3 Amp

SMC

Major Ratings and Characteristics

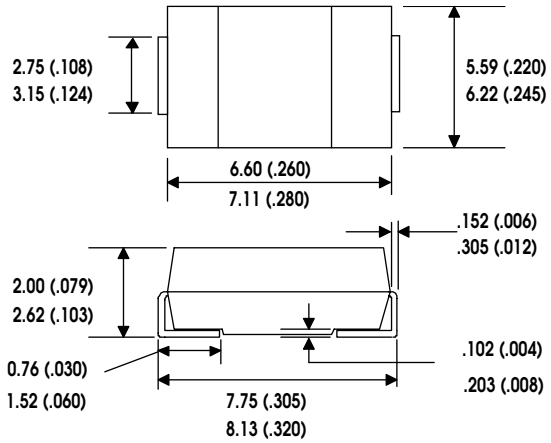
Characteristics		30BQ100	Units
$I_{F(AV)}$	Rectangular waveform	3.0	A
V_{RRM}		100	V
I_{FSM}	@ t_p= 5 µs sine	2100	A
V_F	@3.0Apk, T_J=125°C	0.62	V
T_J	range	- 55 to 175	°C

Description/Features

The 30BQ060 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

Device Marking: IR3J



Outline SMC

Dimensions in millimeters and (inches)

For recommended footprint and soldering techniques refer to Application Note # AN-994

Voltage Ratings

	Part number	30BQ100
V_R	Max. DC Reverse Voltage (V)	100
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

	Parameters	30BQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current	3.0	A	50% duty cycle @ T_C = 148 °C, rectangular waveform	
		4.0		50% duty cycle @ T_C = 138 °C, rectangular waveform	
I_{FSM}	Max. Peak One Cycle Non-Repetitive	2100	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
	Surge Current	100		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non Repetitive Avalanche Energy	50	mJ	T_J = 25 °C, I_{AS} = 2.8A, L = 10mH	
I_{AR}	Repetitive Avalanche Current	2.8	A	Current decaying linearly to zero in 1 µsec Frequency limited by T_J max. Va = 1.5 x Vr typical	

Electrical Specifications

	Parameters	30BQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (1)	0.79	V	@ 3A	T_J = 25 °C
		0.90	V	@ 6A	
		0.62	V	@ 3A	T_J = 125 °C
		0.70	V	@ 6A	
I_{RM}	Max. Reverse Leakage Current (1)	0.5	mA	T_J = 25 °C	V_R = rated V_R
		5.0	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance	115	pF	V_R = 5V_{DC} (test signal range 100KHz to 1Mhz) 25°C	
L_S	Typical Series Inductance	3.0	nH	Measured lead to lead 5mm from package body	
dv/dt	Max. Voltage Rate of Change (Rated V_R)	10.00	V/µs		

Thermal-Mechanical Specifications

	Parameters	30BQ	Units	Conditions
T_J	Max. Junction Temperature Range	-55 to 175	°C	
T_{stg}	Max. Storage Temperature Range	-55 to 175	°C	
R_{thJL}	Max. Thermal Resistance, Junction to Lead (2)	12	°C/W	DC Operation (*See Fig. 4)
R_{thJA}	Max. Thermal Resistance, Junction to Ambient	46	°C/W	DC Operation
wt	Approximate Weight	0.24	g	
	Case Style	SMC		Similar DO-214AB

(1) Pulse Width < 300µs, Duty Cycle < 2%
(2) Mounted 1 inch square PCB, Thermal Probe connected to lead 2mm from Package

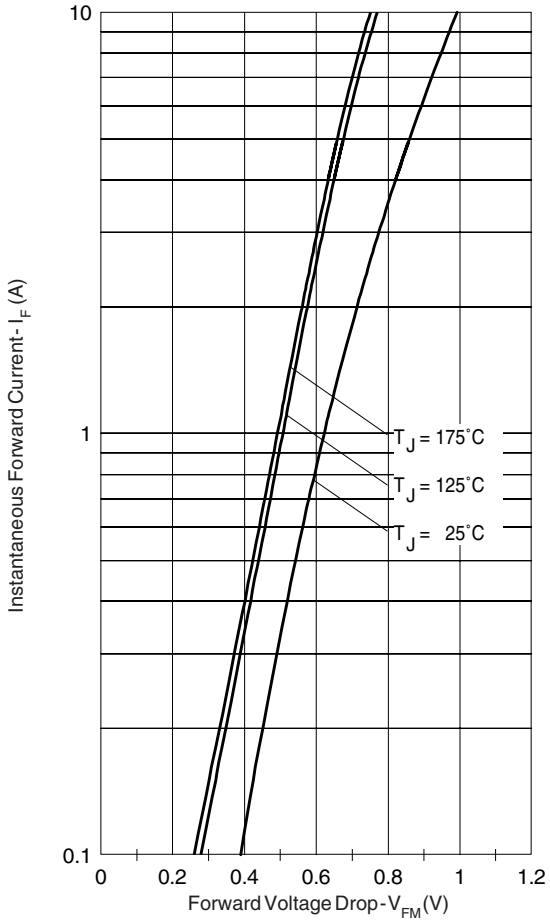


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

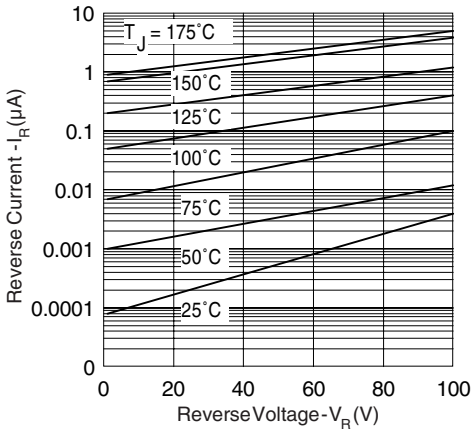


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

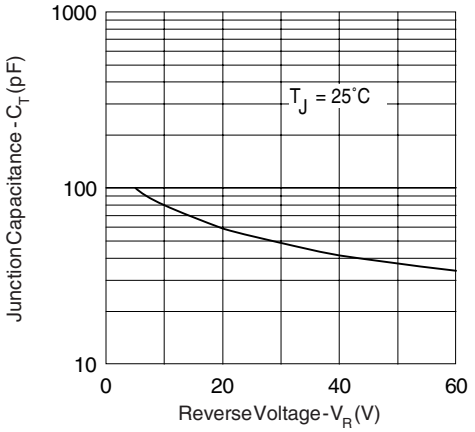


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

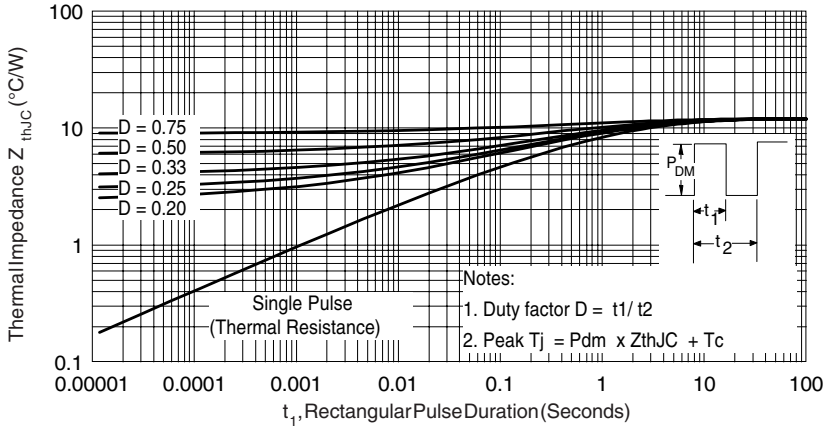


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

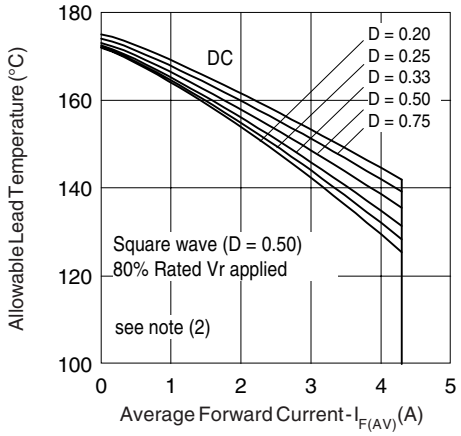


Fig. 4 - Maximum Average Forward Current Vs. Allowable Lead Temperature

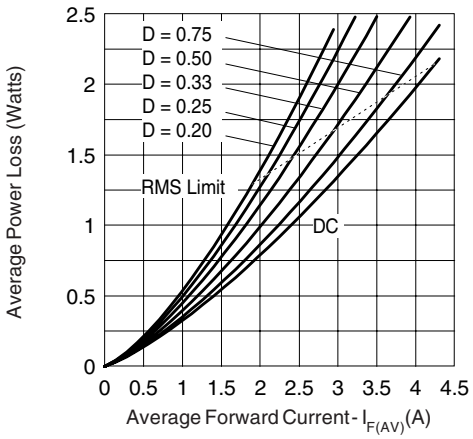


Fig. 5 - Maximum Average Forward Dissipation Vs. Average Forward Current

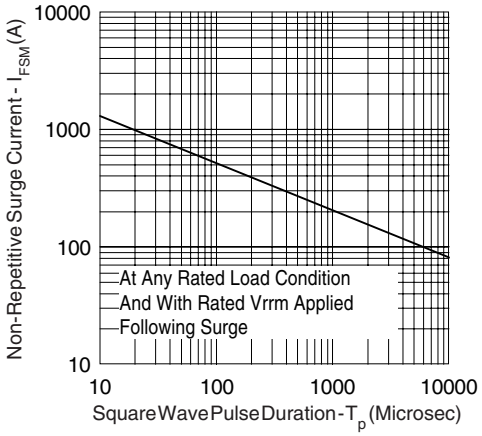
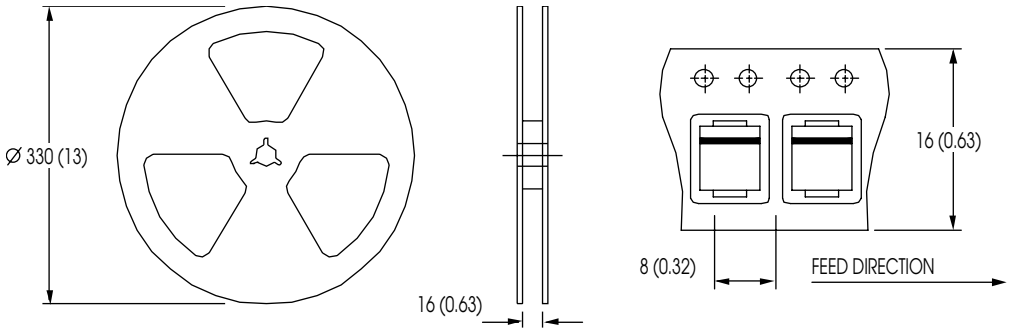


Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

(2) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM}$ @ ($I_{F(AV)}$ / D) (see Fig. 6);
Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_R$ (1 - D); I_R @ V_{R1} = 80% rated V_R

Tape & Reel Information



Dimensions in millimeters and (inches)

Marking & Identification

Each device has 4 characters, configurated two digits on two rows, for identification. The first row designates the device as manufactured by International Rectifier as indicated by the letters "IR". The second row indicates the current rating and voltage/process. See the drawing below for marking code.

FIRST ROW

IR

SECOND ROW

1st DIGIT = CURRENT RATING

2nd DIGIT = VOLTAGE/PROCESS

EXAMPLE: IR —— INTERNATIONAL RECTIFIER

1F —— 40 VOLT/STANDARD PROCESS

1 —— 1 AMP

1st DIGIT	2nd DIGIT
CURRENT	VOLTAGE/PROCESS
1 = 1 AMP	C = 15 VOLTS
	E = 30 VOLTS
	F = 40 VOLTS
	H = 60 VOLTS
	J = 100 VOLTS

Ordering Information

30BQ SERIES - TAPE AND REEL

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

EXAMPLE: 30BQ100TR - 6000 PIECES

30BQ SERIES - BULK QUANTITIES

WHEN ORDERING, INDICATE THE PART NUMBER AND THE QUANTITY (IN MULTIPLES OF 1000 PIECES).

EXAMPLE: 30BQ100 - 2000 PIECES

International
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