

International
IOR Rectifier

30BQ100

SCHOTTKY RECTIFIER

3 Amp

$$I_{F(AV)} = 3.0\text{Amp}$$

$$V_R = 100\text{V}$$

Major Ratings and Characteristics

Characteristics	30BQ100	Units
$I_{F(AV)}$ Rectangular waveform	3.0	A
V_{RRM}	100	V
I_{FSM} @ $t_p=5\mu s$ sine	800	A
V_F @ 3.0 Apk, $T_J = 125^\circ\text{C}$	0.62	V
T_J range	- 55 to 175	$^\circ\text{C}$

Description/ Features

The 30BQ100 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

Case Styles

30BQ100



SMC



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 _L = 148 °C, rectangular wave form
	4.0		50% duty cycle @ T _L = 138 °C, rectangular wave form
I _{FSM} Max. Peak One Cycle Non-Repetitive Surge Current	800	A	5μs Sine or 3μs Rect. pulse
	70		10ms Sine or 6ms Rect. pulse
E _{AS} Non Repetitive Avalanche Energy	3.0	mJ	T _J = 25 °C, I _{AS} = 1.0A, L = 6mH
I _{AR} Repetitive Avalanche Current	0.5	A	Current decaying linearly to zero in 1 μsec Frequency limited by T _J max. V _a = 1.5 x V _r typical

Electrical Specifications

Parameters	30BQ	Units	Conditions
V _{FM} Max. Forward Voltage Drop (1)	0.79	V	@ 3A
	0.90	V	@ 6A
	0.62	V	@ 3A
	0.70	V	@ 6A
I _{RM} Max. Reverse Leakage Current (1)	0.5	mA	T _J = 25 °C
	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	10000	V/μs	(Rated V _R)

(1) Pulse Width < 300μs, Duty Cycle < 2%

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 (**)	12	°C/W	DC operation
R _{thJA} Max. Thermal Resistance Junction to Ambient	46	°C/W	DC operation
wt Approximate Weight	0.24 (0.008)	g (oz.)	
Case Style	SMC		Similar to DO-214AB
Device Marking	IR3J		

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

(**) Mounted 1 inch square PCB

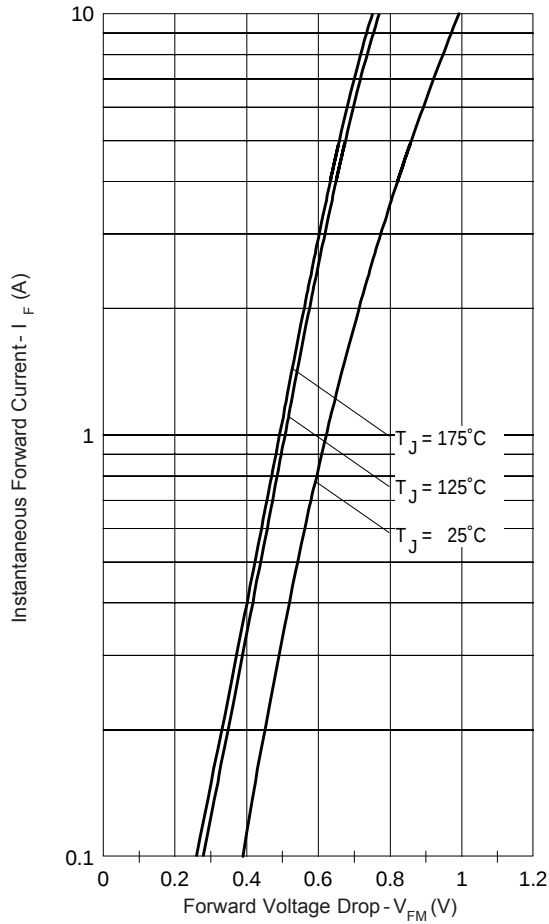


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

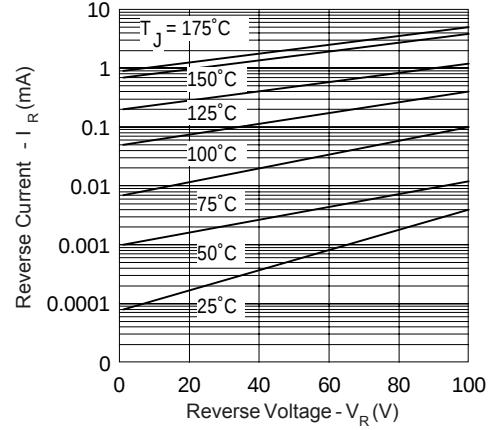


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

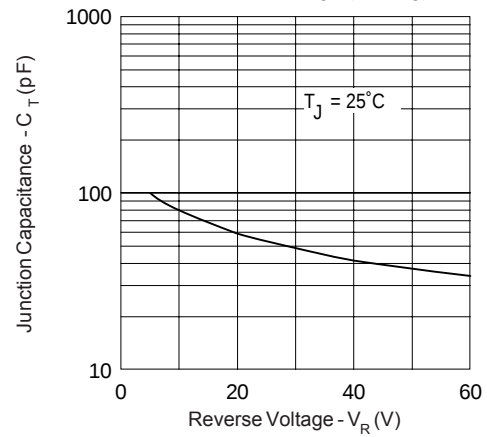


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

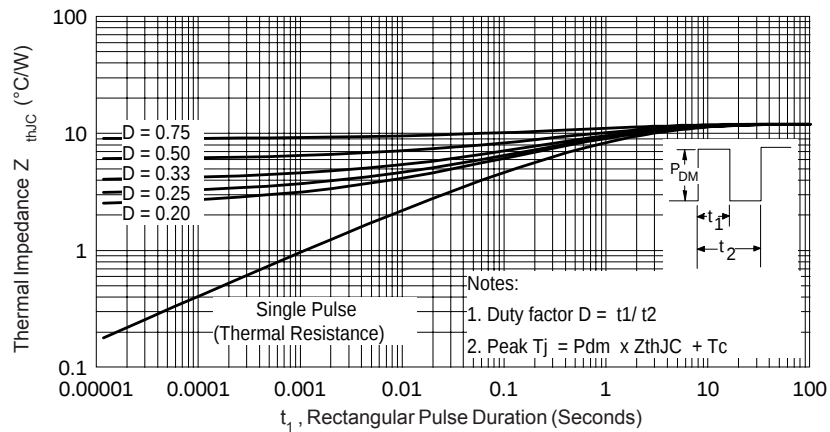


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

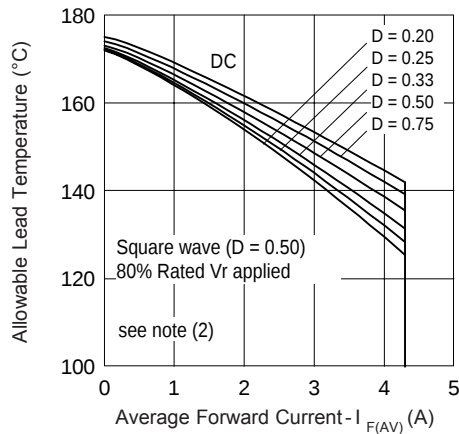


Fig. 4 - Maximum Average Forward Current Vs. Allowable Lead Temperature

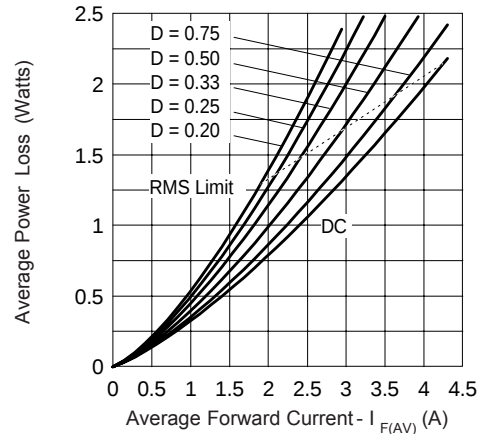


Fig. 5 - Maximum Average Forward Dissipation Vs. Average Forward Current

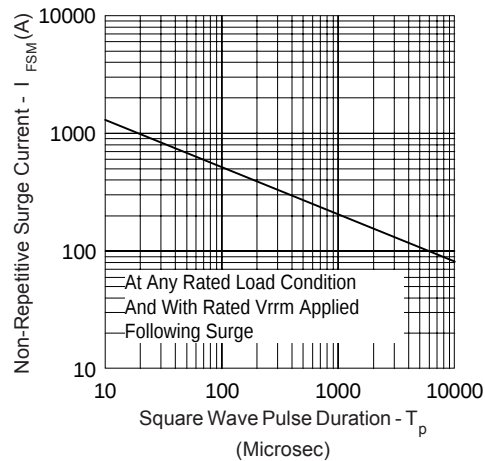


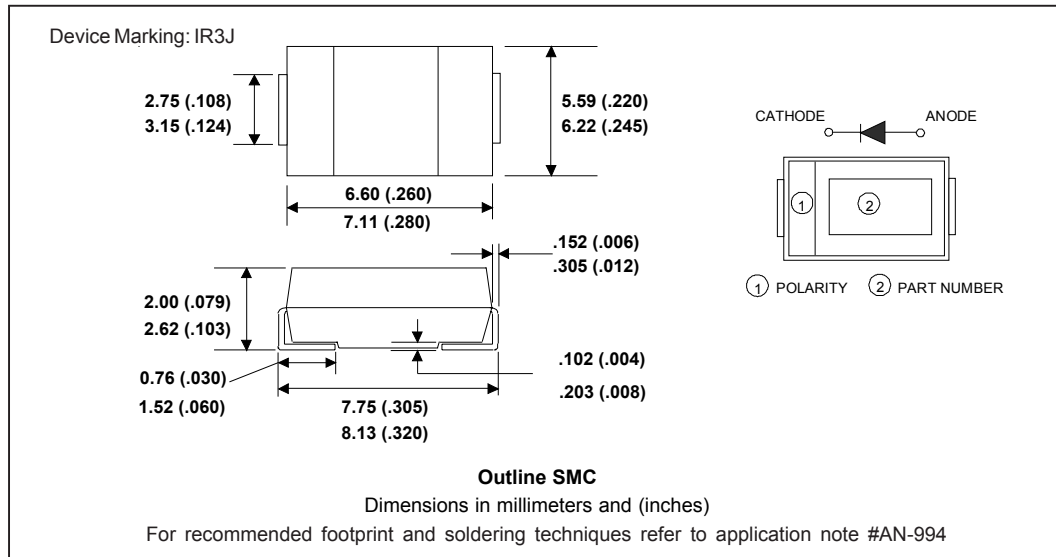
Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

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

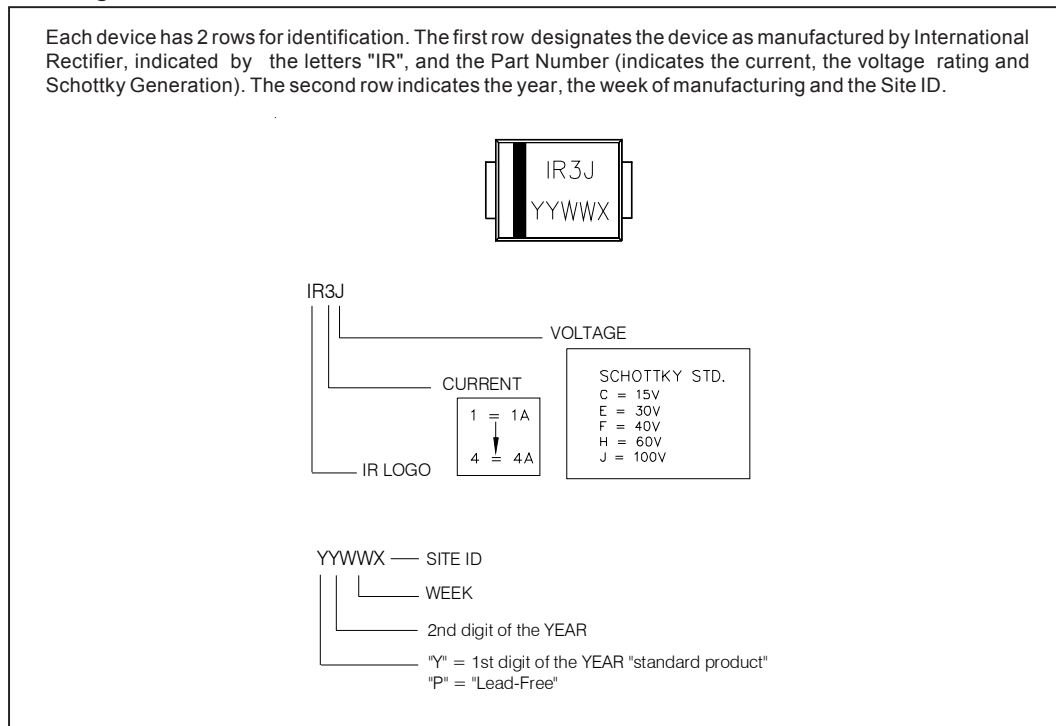
P_d = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

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

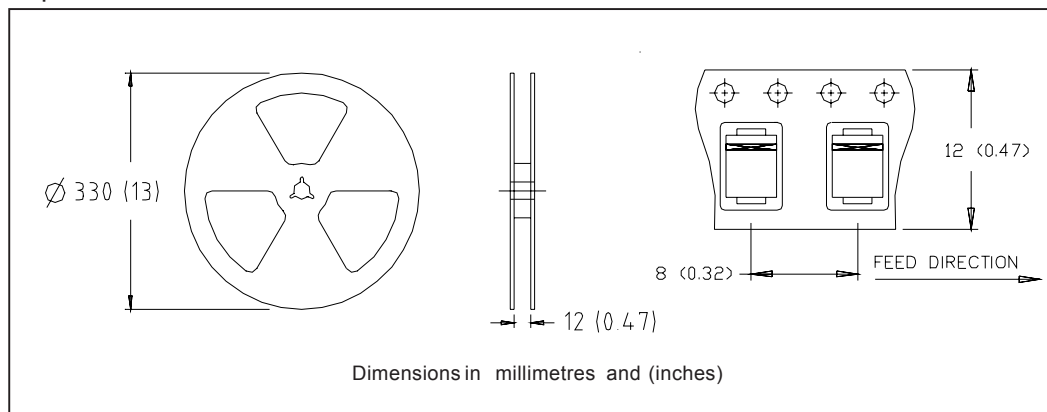
Outline Table



Marking & Identification



Tape & Reel Information



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30BQ100
*****
* SPICE Model Diode
*****
.SUBCKT 30BQ100 ANO CAT
D1 ANO 1 CAT
*Define diode model
.MODEL DMOD D (IS=100N, N=1.34718, BV=120, RS=40.3878M, CJO=158.574P, VJ=3.61795,
M=526.488M, EG=1.11, XTI=2, RL=25.6436MEG).

*****

.ENDS 30BQ100

Thermal Model Subcircuit
.SUBCKT 30BQ100 5 1

CTHERM1      5      4      6.42E-01
CTHERM2      4      3      1.03E+01
CTHERM3      3      2      1.66E+02
CTHERM4      2      1      6.78E+03

R THERM1      5      4      3.34E+00
R THERM2      4      3      4.97E+00
R THERM1      3      2      2.84E+00
R THERM1      2      1      7.75E-01

.ENDS 30BQ100

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Ordering Information Table

Device Code

30	B	Q	100	TR	-
①	②	③	④	⑤	⑥

1	-	Current Rating
2	-	B = Single Lead Diode
3	-	Q = Schottky Q Series
4	-	Voltage Rating (100 = 100V)
5	-	• none = Box (1000 pieces) • TR = Tape & Reel (3000 pieces)
6	-	• none = Standard Production • PbF = Lead-Free

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
IR Rectifier

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