



30CTQ...GS
30CTQ...G-1

SCHOTTKY RECTIFIER

30 Amp

$I_{F(AV)} = 30 \text{ Amp}$ $V_R = 80 - 100V$

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	30	A
V_{RRM}	80 - 100	V
I_{FSM} @ tp = 5 μ s sine	850	A
V_F @ 15 Apk, $T_J = 125^\circ\text{C}$ (per leg)	0.69	V
T_J range	-55 to 175	$^\circ\text{C}$

Description/ Features

This center tap Schottky rectifier series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175°C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 175° C T_J operation
- Center tap configuration
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

Case Styles

30CTQ...GS

Base
Common
Cathode

1 2 3

Anode Common Cathode Anode

D²PAK

30CTQ...G-1

Base
Common
Cathode

1 2 3

Anode Common Cathode Anode

TO-262

Voltage Ratings

Parameters	30CTQ80GS 30CTQ80G-1	30CTQ100GS 30CTQ100G-1
V_R Max. DC Reverse Voltage (V)	80	100
V_{RWM} Max. Working Peak Reverse Voltage (V)		

Absolute Maximum Ratings

Parameters	Values	Units	Conditions
$I_{F(AV)}$ Max. Average Forward (Per Leg) Current * See Fig. 5 (Per Device)	15 30	A	50% duty cycle @ $T_C = 129^\circ\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	850 275	A	5 μs Sine or 3 μs Rect. pulse 10ms Sine or 6ms Rect. pulse
E_{AS} Non-Repetitive Avalanche Energy (Per Leg)	7.50	mJ	Following any rated load condition and with rated V_{RRM} applied $T_J = 25^\circ\text{C}$, $I_{AS} = 0.50$ Amps, $L = 60$ mH
I_{AR} Repetitive Avalanche Current (Per Leg)	0.50	A	Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	Values	Units	Conditions
V_{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.86	V	@ 15A $T_J = 25^\circ\text{C}$
	1.05	V	@ 30A
	0.69	V	@ 15A $T_J = 125^\circ\text{C}$
	0.82	V	@ 30A
I_{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	0.55	mA	$T_J = 25^\circ\text{C}$ $V_R = \text{rated } V_R$
	7.0	mA	$T_J = 125^\circ\text{C}$
C_T Max. Junction Capacitance (Per Leg)	500	pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) 25°C
L_S Typical Series Inductance (Per Leg)	8.0	nH	Measured lead to lead 5mm from package body
dv/dt Max. Voltage Rate of Change (Rated V_R)	10000	V/ μs	

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

Thermal-Mechanical Specifications

Parameters			Values	Units	Conditions	
T _J	Max. Junction Temperature Range		-55 to 175	°C		
T _{stg}	Max. Storage Temperature Range		-55 to 175	°C		
R _{thJC}	Max. Thermal Resistance Junction to Case (Per Leg)		3.25	°C/W	DC operation	
R _{thJC}	Max. Thermal Resistance Junction to Case (Per Package)		1.63	°C/W	DC operation	
R _{thCS}	Typical Thermal Resistance, Case to Heatsink		0.50	°C/W	Mounting surface ,smooth and greased (only for TO-220)	
wt	Approximate Weight		2 (0.07)	g (oz.)		
T	Mounting Torque	Min.	6 (5)	Kg-cm (lbf-in)		
		Max.	12 (10)			
Device Marking			30CTQ...GS	Case style D ² -Pak		
			30CTQ...G-1	Case style TO-262		

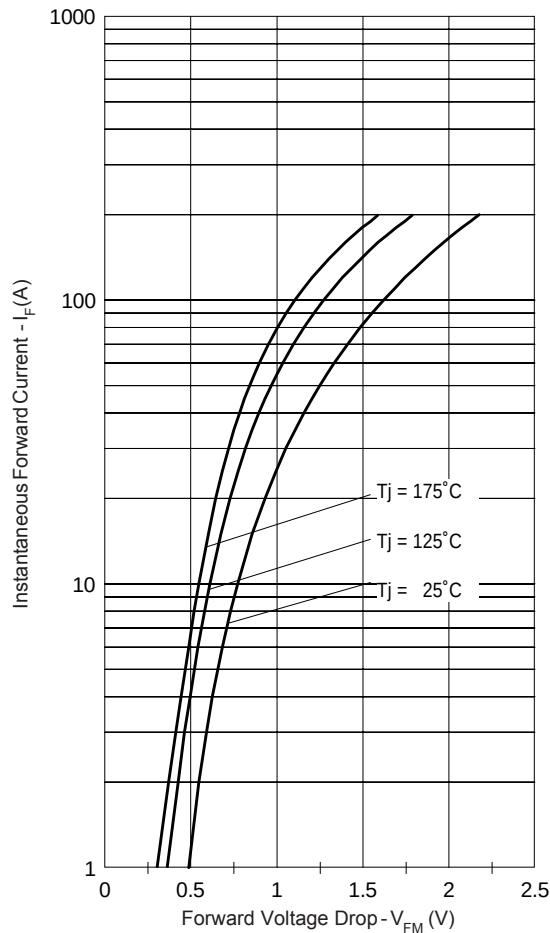


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

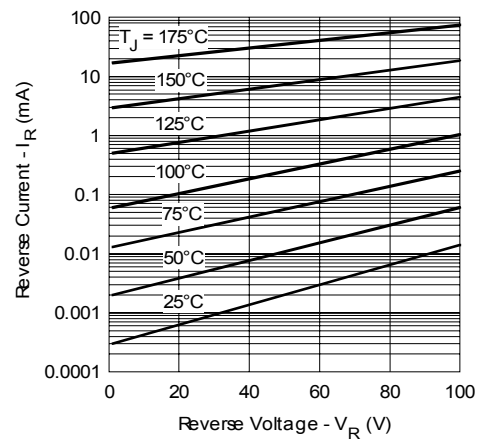


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

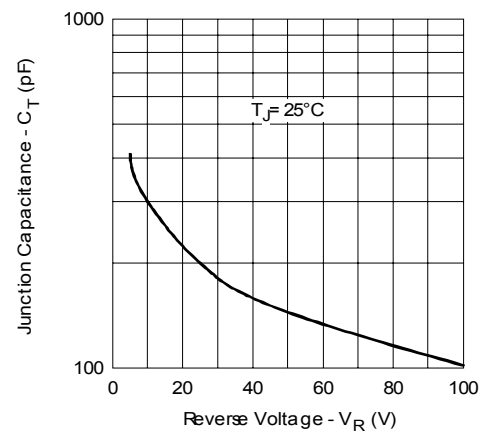


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

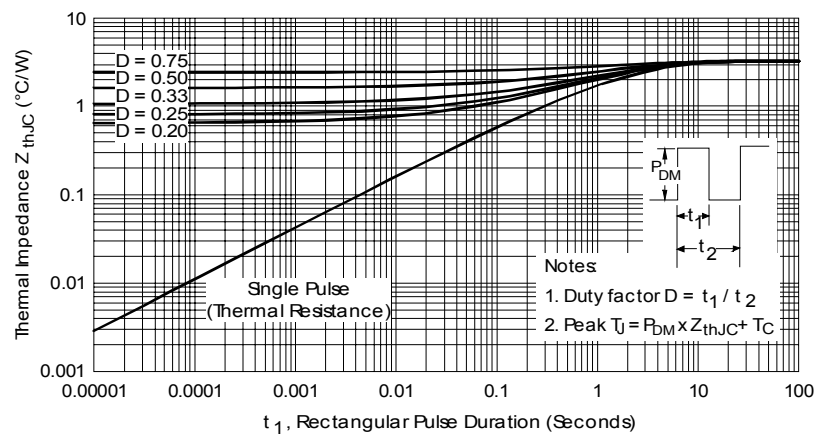


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

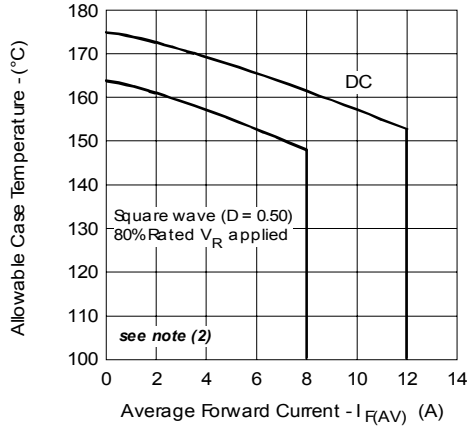


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

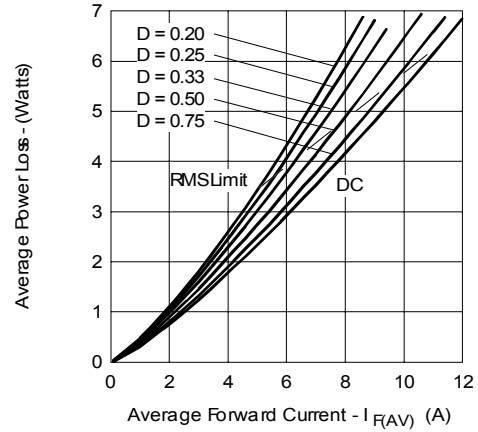


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

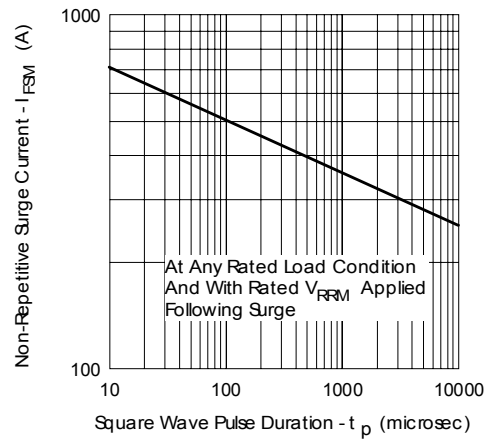


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

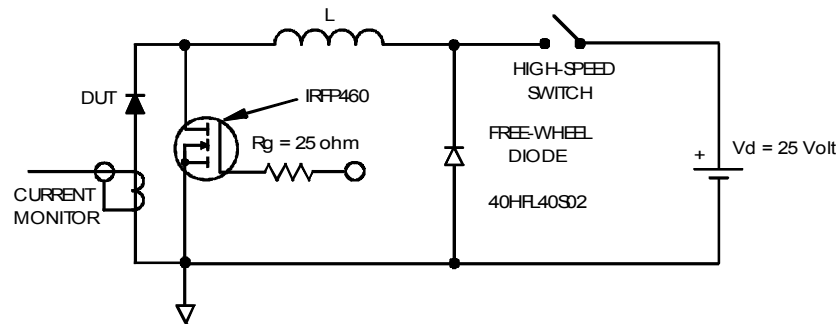


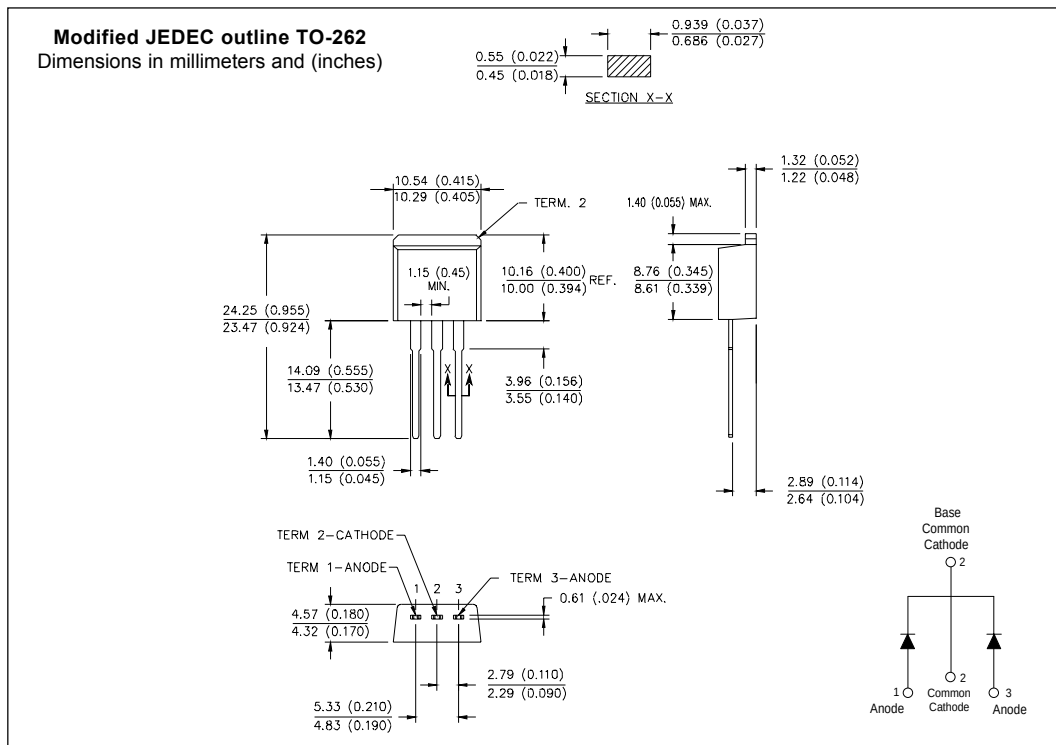
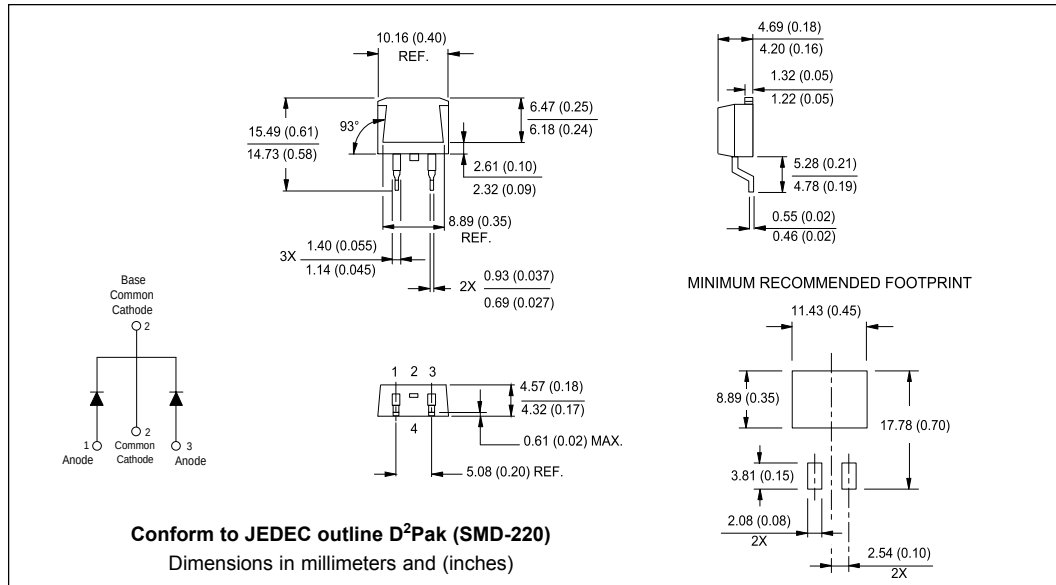
Fig. 8 - Unclamped Inductive Test Circuit

(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 = $V_{R1} \times I_{R1} (1 - D)$; $I_{R1} @ V_{R1} = 10$ V

Outline Table

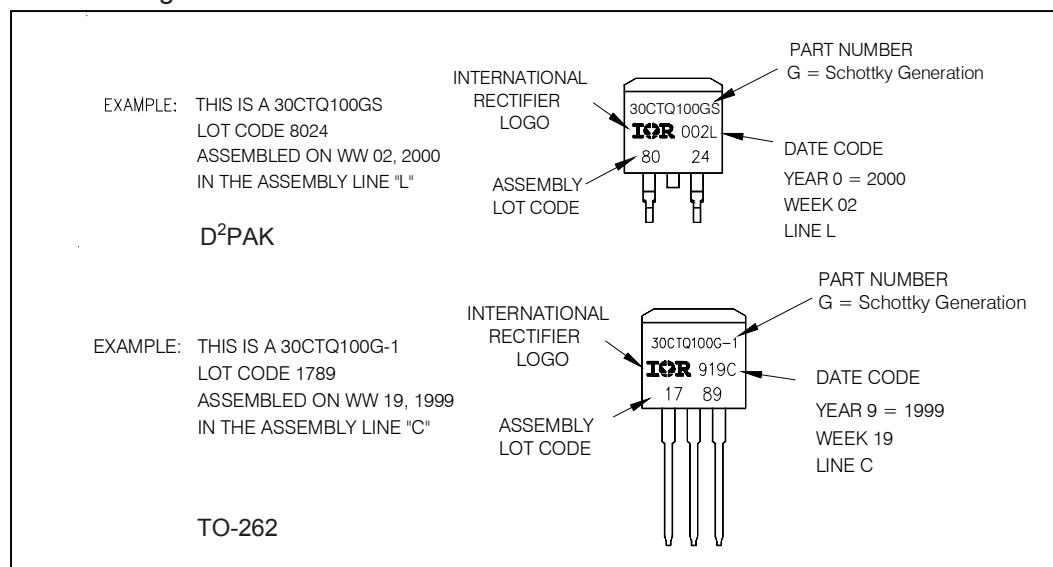


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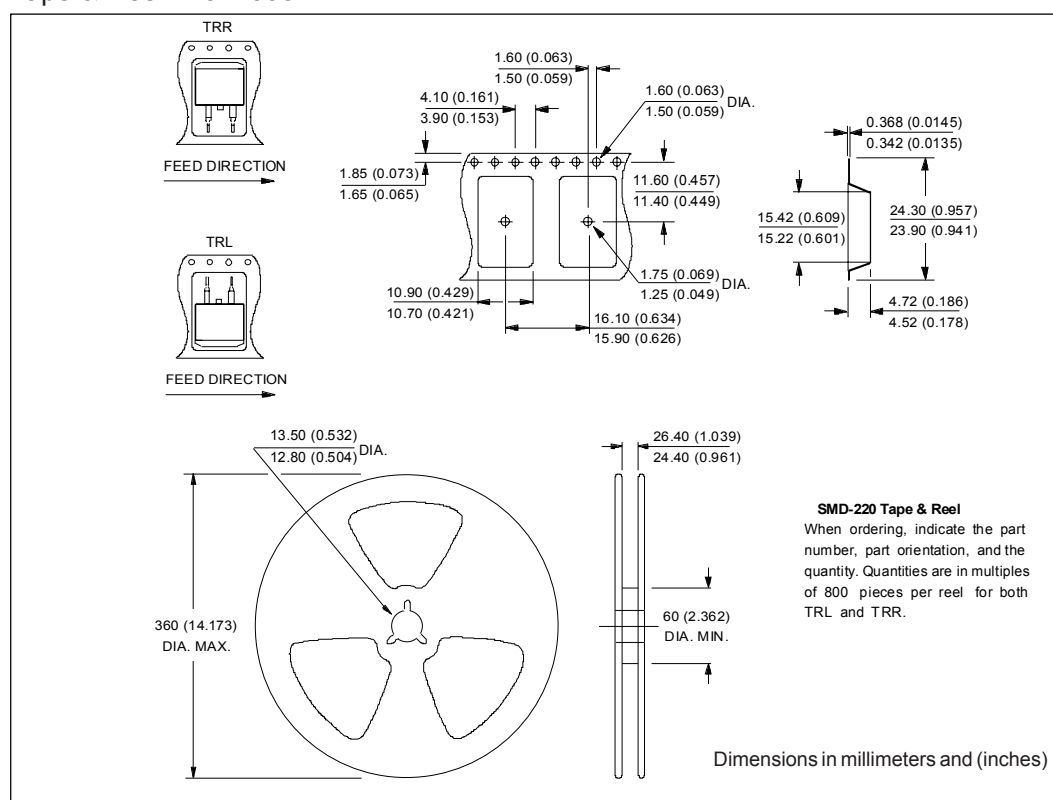
Preliminary Data Sheet PD-20835 09/04

International
IOR Rectifier

Part Marking Information



Tape & Reel Information



Ordering Information Table

Device Code							
30	C	T	Q	100	G	S	TRL
①	②	③	④	⑤	⑥	⑦	⑧
1	-	Current Rating (30 = 30A)					
2	-	C = Common Cathode					
3	-	T = TO-220					
4	-	Q = Schottky Q Series					
5	-	Voltage Rating					
6	-	G = Schottky Generation					
7	-	• -1 = TO-262 • S = D²Pak					
8	-	• none = Tube (50 pieces) • TRL = Tape & Reel (Left Oriented - for D²Pak only) • TRR = Tape & Reel (Right Oriented - for D²Pak only)					

080 = 80V
 100 = 100V

Data and specifications subject to change without notice.
 This product has been designed for Industrial Level.
 Qualification Standards can be found on IR's Web site.