

$$I_{F(AV)} = 30\text{Amp}$$

$$V_R = 80 - 100\text{V}$$

**Major Ratings and Characteristics**

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	30	A
$V_{RRM}$	80-100	V
$I_{FSM}$ @tp = 5 $\mu$ s sine	920	A
$V_F$ @ 15 Apk, $T_J = 125^\circ\text{C}$ (per leg)	0.67	V
$T_J$	-55 to 175	$^\circ\text{C}$

**Description/ Features**

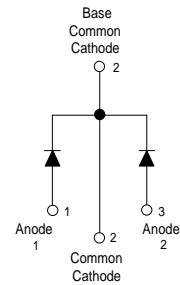
The 30CPQ... center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 175° C  $T_J$  operation
- Center tap TO-247 package
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

**Case Styles**



TO-247AC



### Voltage Ratings

Part number	30CPQ080	30CPQ100
$V_R$ Max. DC Reverse Voltage (V)	80	100
$V_{RWM}$ Max. Working Peak Reverse Voltage (V)		

### Absolute Maximum Ratings

Parameters	30CPQ...	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5	30	A	50% duty cycle @ $T_C = 140^\circ\text{C}$ , rectangular wave form
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	920	A	Following any rated load condition and with rated $V_{RRM}$ applied
	240		
$E_{AS}$ Non-Repetitive Avalanche Energy (Per Leg)	7.50	mJ	$T_J = 25^\circ\text{C}$ , $I_{AS} = 0.50$ Amps, $L = 60$ mH
$I_{AR}$ Repetitive Avalanche Current (Per Leg)	0.50	A	Current decaying linearly to zero in 1 $\mu\text{sec}$ Frequency limited by $T_J$ max. $V_A = 1.5 \times V_R$ typical

### Electrical Specifications

Parameters	30CPQ...	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.86	V	@ 15A
	1.05	V	@ 30A
	0.67	V	@ 15A
	0.81	V	@ 30A
$I_{RM}$ Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	0.55	mA	$T_J = 25^\circ\text{C}$
	7	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) $25^\circ\text{C}$
$L_S$ Typical Series Inductance (Per Leg)	7.5	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	30CPQ...	Units	Conditions
$T_J$ Max. Junction Temperature Range	-55 to 175	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-55 to 175	$^\circ\text{C}$	
$R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Leg)	2.20	$^\circ\text{C}/\text{W}$	DC operation * See Fig. 4
$R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Package)	1.10	$^\circ\text{C}/\text{W}$	DC operation
$R_{thCS}$ Typical Thermal Resistance, Case to Heatsink	0.24	$^\circ\text{C}/\text{W}$	Mounting surface, smooth and greased
wt Approximate Weight	6 (0.21)	g (oz.)	
T Mounting Torque	Min. 6 (5)	Kg-cm (lbf-in)	Non-lubricated threads
	Max. 12 (10)		
Case Style	TO-247AC(TO-3P)	JEDEC	
Device Marking	30CPQ080		
	30CPQ100		

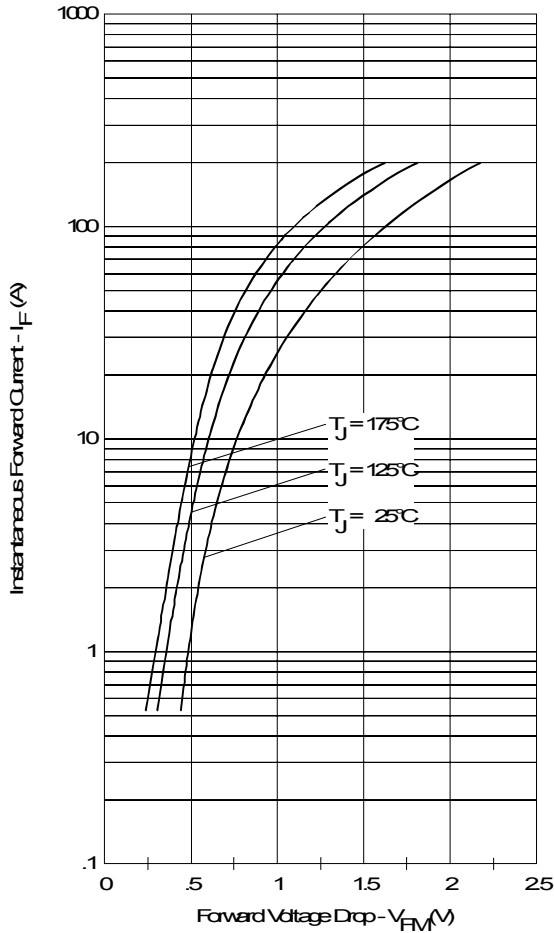


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

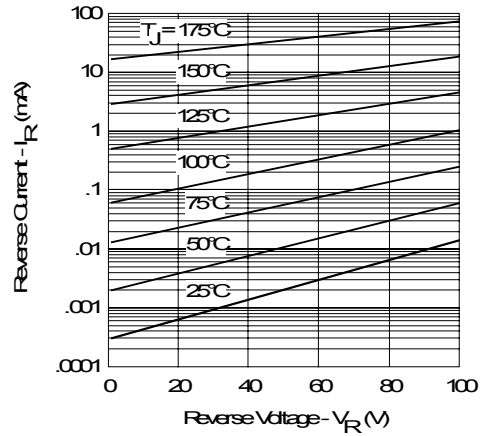


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

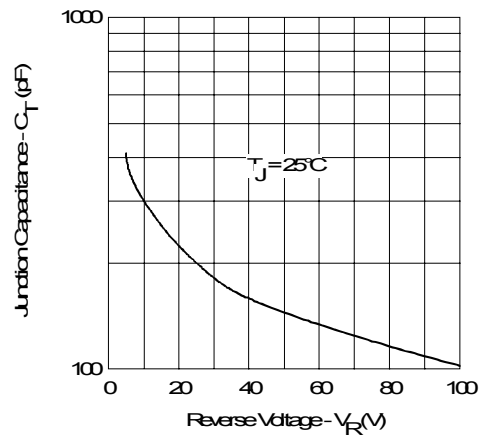


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

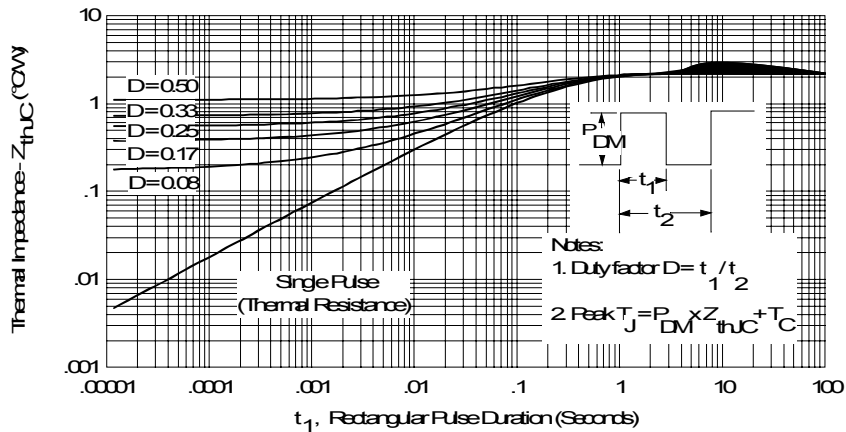


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

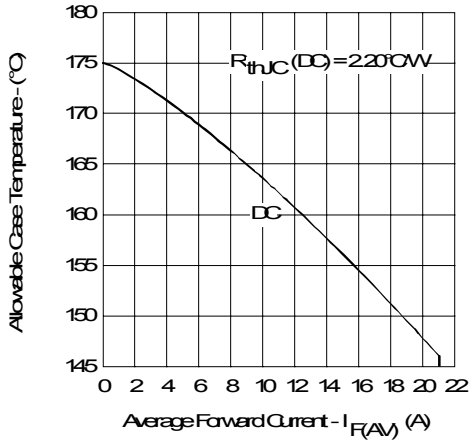


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

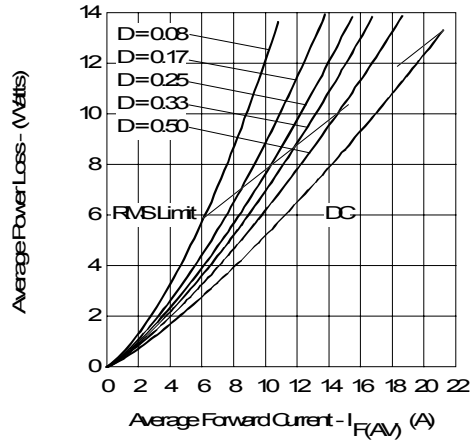


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

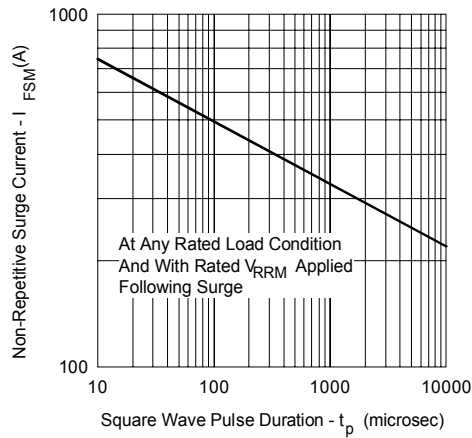


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

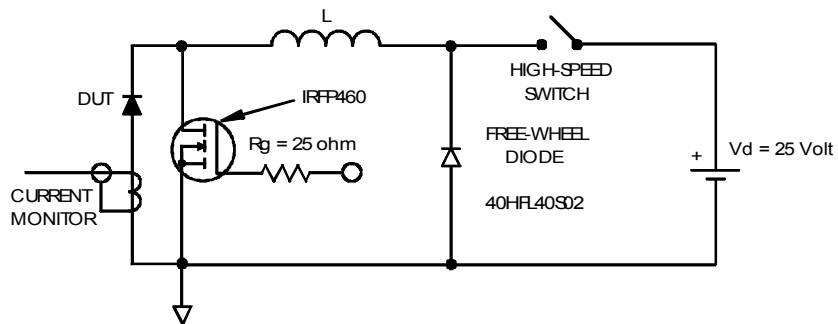


Fig. 8 - Unclamped Inductive Test Circuit

Outline Table

**NOTES**

1. DIMENSIONING AND TOLERANCING AS PER ASME Y14.5M 1994.
2. DIMENSIONS ARE SHOWN IN INCHES.
3. CONTOUR OF SLOT OPTIONAL.
4. DIMENSION D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED .003" (0.075) PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
5. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS D1 & E1.
6. LEAD FINISH UNCONTROLLED IN L1.
7. MP TO HAVE A MAXIMUM DRAFT ANGLE OF 1.5° TO THE TOP OF THE PART WITH A MAXIMUM HOLE DIAMETER OF .154 INCH.
8. OUTLINE CONFORMS TO JEDEC OUTLINE TO-247AC.

SYMBOL	DIMENSIONS				NOTES
	INCHES		MILLIMETERS		
A	.185	.209	4.65	5.31	
A1	.087	.102	2.21	2.59	
A2	.090	.098	1.60	2.49	
b	.039	.006	0.99	1.42	
b1	.039	.051	0.99	1.28	
b2	.065	.084	1.65	2.39	
b3	.060	.092	1.66	2.34	
b4	.102	.120	2.59	3.03	
b5	.102	.133	2.59	3.38	
c	.015	.025	0.38	0.69	
c1	.015	.025	0.38	0.64	4
d	.776	.819	19.71	20.70	4
D1	.515	-	13.08	-	5
D2	.020	.065	0.51	1.65	
E	.602	.629	15.29	16.07	4
E1	.530	-	13.46	-	
E2	.178	.256	4.52	6.49	
e	.219 BSC		5.46 BSC		
h	.025				
L	.569	.634	14.20	16.10	
L1	.148	.189	3.71	4.79	
MP	.140	.144	3.56	3.66	
Q	.209	.291	5.31	7.39	
S	.217 BSC		5.51 BSC		

**LEAD ASSIGNMENTS**

**HEXLET**

- 1 - GATE
- 2 - COLLECTOR
- 3 - SOURCE
- 4 - DRAIN

**DRILL SPECS**

- 1 - GATE
- 2 - COLLECTOR
- 3 - EMITTER
- 4 - COLLECTOR

**DIODES**

- 1 - ANODE/OPEN
- 2 - CATHODE
- 3 - ANODE

**Conform to JEDEC outline TO-247AC (TO-3P)**  
Dimensions in millimeters and (inches)

Marking Information

EXAMPLE: THIS IS A 30CPQ100  
WITH ASSEMBLY  
LOT CODE 5657  
ASSEMBLED ON WW 35, 2000  
IN ASSEMBLY LINE "H"

INTERNATIONAL  
RECTIFIER  
LOGO

ASSEMBLY  
LOT CODE

PART NUMBER

DATE CODE  
YEAR 0 = 2000  
WEEK 35  
LINE H

### Ordering Information Table

Device Code					
30	C	P	Q	100	-
①	②	③	④	⑤	⑥

<b>1</b>	-	Current Rating
<b>2</b>	-	Circuit Configuration C = Common Cathode
<b>3</b>	-	Package P = TO-247
<b>4</b>	-	Schottky "Q" Series
<b>5</b>	-	Voltage Code
<b>6</b>	-	• none = Standard Production • PbF = Lead-Free

080 = 80V  
100 = 100V

Tube Standard Pack Quantity : 25 pieces

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.