

4855452 INTERNATIONAL RECTIFIER

55C 05083 D

Data Sheet No. PD-2.068A

T-23-07

INTERNATIONAL RECTIFIER **IR**

28CPQ SERIES

28 Amp Dual Schottky Center Tap Rectifiers

Major Ratings and Characteristics

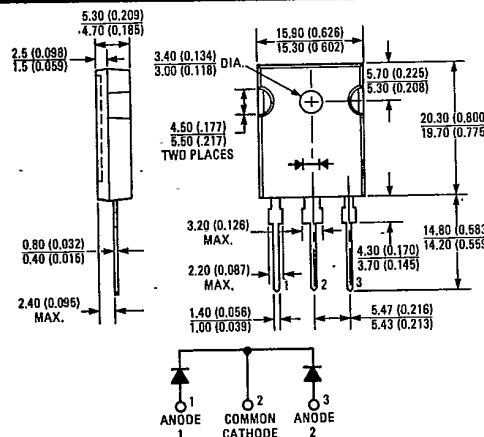
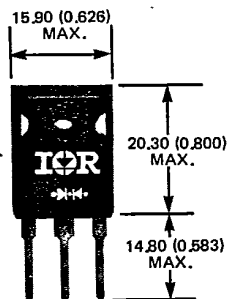
Characteristics	28CPQ030 28CPQ040	28CPQ050 28CPQ060	Units
I_O Rectangular Waveform	28	28	A
Sinusoidal Waveform	25	25	
I_{FSM} @ 50 Hz	380	300	A
@ 60 Hz	400	320	
i^2_t @ 50 Hz	730	465	A^2s
@ 60 Hz	665	425	
$i^2 \sqrt{t}$	10,300	6,600	$A^2 \sqrt{s}$
V_{RRM}	30 & 40	50 & 60	V
C_t @ -5V	950	800	pF
T_J	-40 to 125	-40 to 125	$^{\circ}C$

Description/Features*Description*

A dual Schottky rectifier in the TO-218 (plastic TO-3) package. It is rated at 28 amp continuous output current and up to 60 Volts. The 28CPQ is ideally suited for 100 watt switching power supplies, where a light weight, compact, center tap rectifier is required.

Features

- 28 Amp Continuous Output Current
- Low Voltage Drop
- Low Reverse Leakage
- Compact Package

C**CASE STYLE AND DIMENSIONS**

IR Case Style D-48 (Conforms to JEDEC Outline TO-247AA)
Dimensions in Millimeters and (Inches)

28CPQ Series

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55C 05084 D

VOLTAGE RATINGS PER JUNCTION

Part Numbers	VRRM — Max. Repetitive Peak Reverse Voltage (V) ①	VRS — Max. Non-Repetitive Peak Reverse Voltage (V) ②	VR — Max. Direct Reverse Voltage (V) ③
28CPQ030	30	35	30
28CPQ040	40	45	40
28CPQ050	50	55	50
28CPQ060	60	65	60

ELECTRICAL SPECIFICATIONS

T-23-07

	28CPQ030 28CPQ040	28CPQ050 28CPQ060	Units	Conditions
IO Max. average output current from center tap circuit	28	28	A	180° conduction, rectangular waveform. 28CPQ030 & 040 @ $T_C = -40$ to 90°C . 28CPQ050 & 060 @ $T_C = -40$ to 81°C .
	25	25		180° conduction, sinusoidal waveform. 28CPQ030 & 040 @ $T_C = -40$ to 97°C . 28CPQ050 & 060 @ $T_C = -40$ to 91°C .
IFSM Max. peak one cycle, non-repetitive surge current, per junction	380	300	A	50 Hz half cycle sine wave or 6 ms rectangular pulse Following any rated load condition and with rated VRRM applied following surge.
	400	320		60 Hz half cycle sine wave or 5 ms rectangular pulse
	455	360		50 Hz half cycle sine wave or 6 ms rectangular pulse Following any rated load condition and with VRRM = 0 following surge.
	475	380		60 Hz half cycle sine wave or 5 ms rectangular pulse
I_{2t} Max. I _{2t} for fusing, per junction	730	465	A ² s	$t = 10$ ms With rated VRRM applied following surge, initial $T_J = 125^\circ\text{C}$.
	665	425		$t = 8.3$ ms
Max. I _{2t} for individual junction fusing, per junction	1030	660		$t = 10$ ms With VRRM = 0 following surge, initial $T_J = 125^\circ\text{C}$.
	940	600		$t = 8.3$ ms
I²√t Max. I ² √t for individual junction fusing, per junction ④	10,300	6,600	A ² √s	With VRRM = 0 following surge, initial $T_J = 125^\circ\text{C}$. $t = 0.1$ to 10 ms.
V_{FM} Max. peak forward voltage, per junction	0.54	0.64	V	$T_J = 25^\circ\text{C}$ 1/2 rated I _{F(AV)} (14A peak) 180° conduction rectangular waveform
	0.68	0.85		$T_J = 25^\circ\text{C}$ Rated I _{F(AV)} (28A peak)
	0.61	0.74		$T_J = 125^\circ\text{C}$
I_{RM} Max. peak reverse current, per junction	15	15	mA	$T_J = 25^\circ\text{C}$ V _{RM} = rated VRRM
	100	100		$T_J = 125^\circ\text{C}$
C_t Max. capacitance, per junction	950	800	pF	$T_C = 25^\circ\text{C}$, V _R = 5 Vdc (Test signal in the range of 100 kHz to 1 MHz).
dv/dt Max. rate of application of reverse voltage, per junction	1000	1000	V/μs	$T_C = 25^\circ\text{C}$, V _{RM} = rated VRRM.

THERMAL-MECHANICAL SPECIFICATIONS

T_J Max. operating junction temperature range	-40 to 125	°C	
T_{stg} Max. storage temperature range	-40 to 125	°C	
R_{thJC} Max. thermal resistance, junction-to-case, DC operation	2.4	deg. C/W	Based on power dissipated in one junction, both junctions operating.
Max. composite thermal resistance, junction-to-case, DC operation	1.2		Based on power dissipated in both junctions.
wt Approximate weight	6.0 (0.21)	g (oz.)	
Case style	D-48		Similar to JEDEC outline TO-218AB ("TO-3P") Terminals 1 and 3: Anodes 1 and 2 Terminals 2 and Tab: Common Cathodes

① 180° conduction, rectangular waveform: 28CPQ030 & 040: $T_C = -40$ to 119°C
28CPQ050 & 060: $T_C = -40$ to 116°C

② 180° conduction, rectangular waveform: 28CPQ030 & 040: $T_C = 0$ to 119°C
28CPQ050 & 060: $T_C = 0$ to 116°C

③ 28CPQ030 & 040: $T_C = -40$ to 115°C
28CPQ050 & 060: $T_C = -40$ to 110°C

④ I_{2t} for time $t_X = I^2 \sqrt{t} \cdot \sqrt{t_X}$

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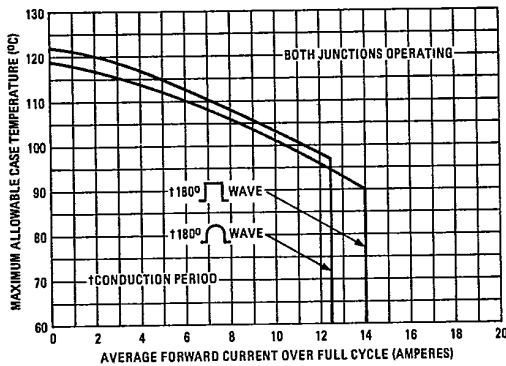


Fig. 1 - Average Forward Current Vs. Maximum Allowable Case Temperature, Per Junction, 28CPQ030 & 40

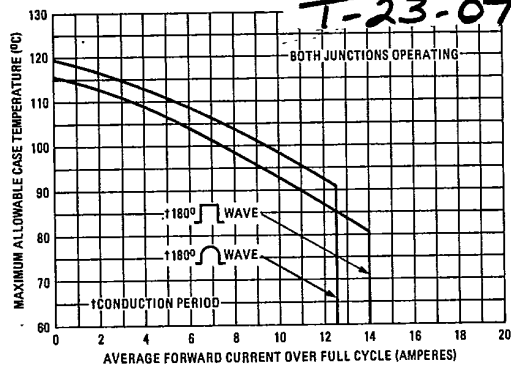


Fig. 2 - Average Forward Current Vs. Maximum Allowable Case Temperature, Per Junction, 28CPQ050 & 60

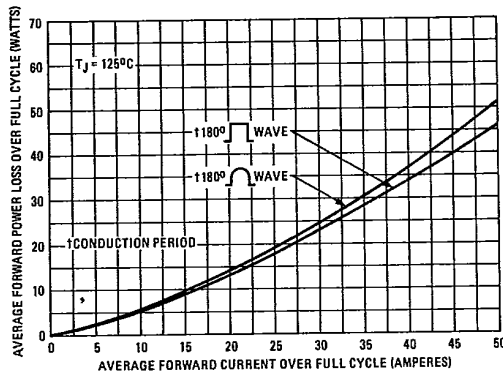


Fig. 3 - Maximum Forward Power Loss Vs. Average Forward Current, Per Junction, 28CPQ030 & 40

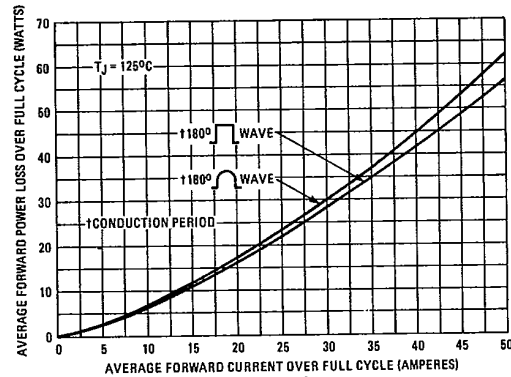


Fig. 4 - Maximum Forward Power Loss Vs. Average Forward Current, Per Junction, 28CPQ050 & 60

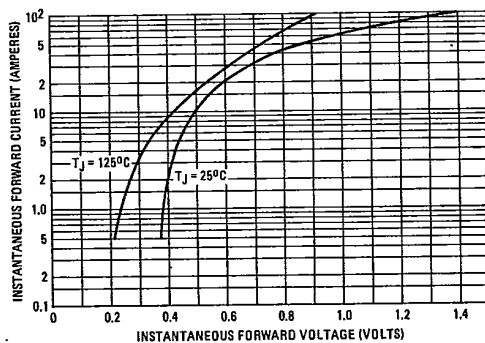


Fig. 5 - Maximum Instantaneous Forward Voltage Vs. Instantaneous Forward Current, Per Junction, 28CPQ030 & 40

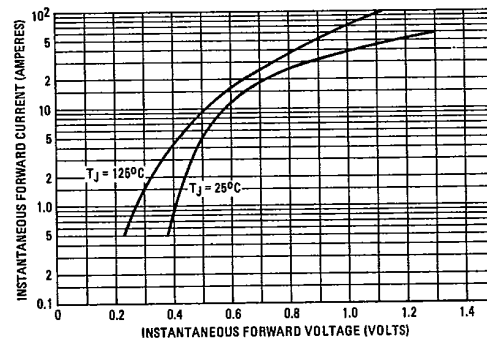


Fig. 6 - Maximum Instantaneous Forward Voltage Vs. Instantaneous Forward Current, Per Junction, 28CPQ050 & 60

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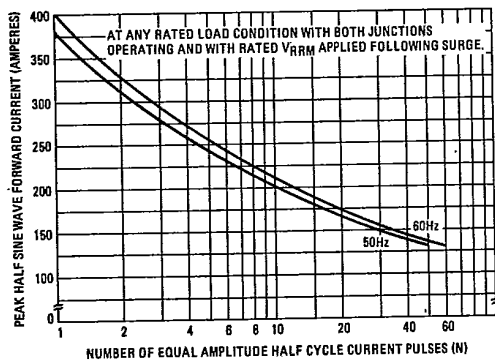


Fig. 7 - Maximum Non-Repetitive Surge Current
Vs. Number of Cycles, Per Junction,
28CPQ030 & 40

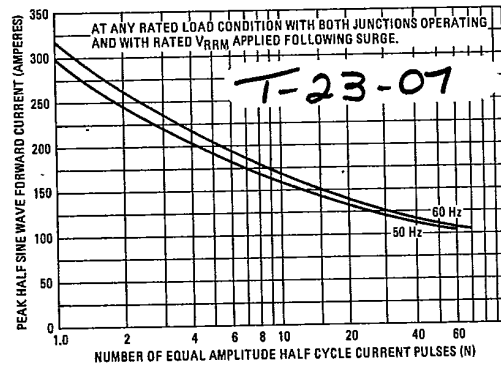


Fig. 8 - Maximum Non-Repetitive Surge Current
Vs. Number of Cycles, Per Junction,
28CPQ050 & 60

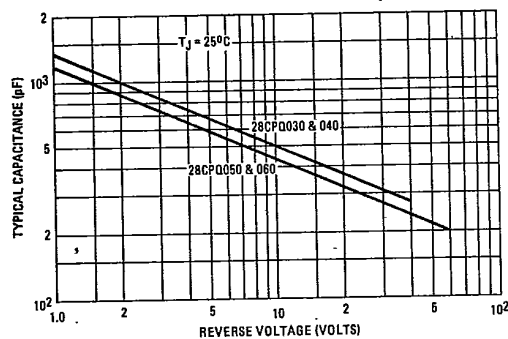


Fig. 9 - Typical Capacitance Vs. Reverse
Voltage, Per Junction, All Devices

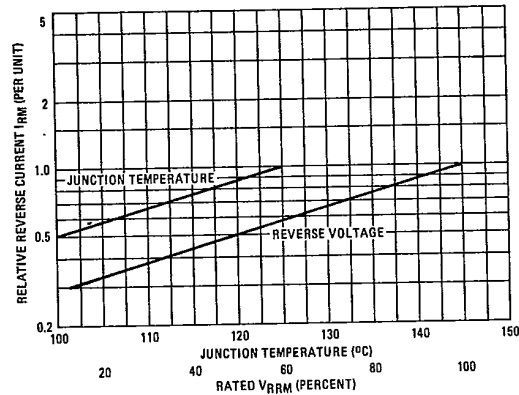


Fig. 10 - Typical Variation of Reverse Current Vs.
Junction Temperature and Reverse Voltage,
Per Junction, All Devices