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^2t	@ 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	°C

Description/Features

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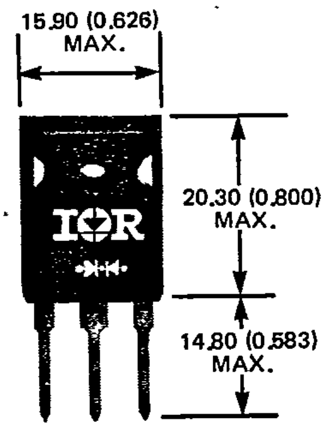
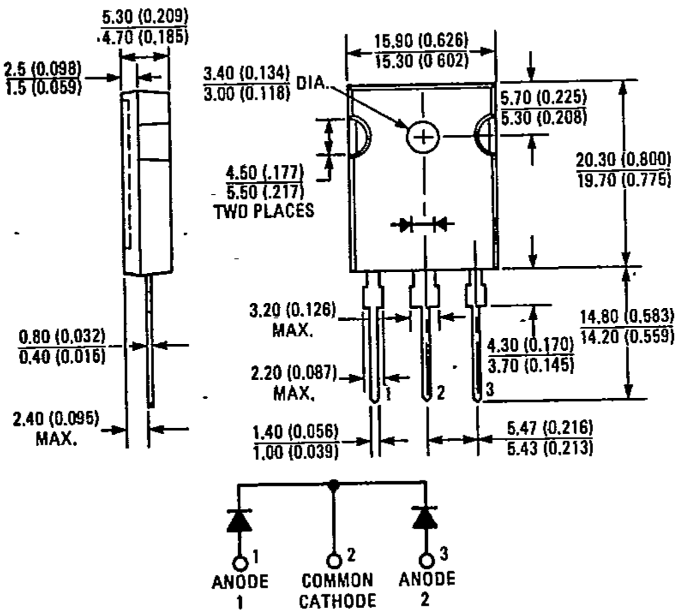
A dual Schottky rectifier in the TO-218 (plastic TO-3) package. It is rated at 28 amp continuous output current and up to 60 Volts. The 28CPQ is ideally suited for 100 watt switching power supplies, where a light weight, compact, center tap rectifier is required.

Features

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

CASE STYLE AND DIMENSIONS





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

VOLTAGE RATINGS PER JUNCTION

Part Numbers	V_{RRM} – Max. Repetitive Peak Reverse Voltage (V) (1)	V_{RSM} – Max. Non-Repetitive Peak Reverse Voltage (V) (2)	V_R – Max. Direct Reverse Voltage (V) (3)
28CPQ030	30	35	30
28CPQ040	40	45	40
28CPQ050	50	55	50
28CPQ060	60	65	60

ELECTRICAL SPECIFICATIONS

		28CPQ030 28CPQ040	28CPQ050 28CPQ060	Units	Conditions	
I_O	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.	
I_{FSM}	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 V_{RRM} 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 V_{RRM} = 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^2s	t = 10 ms	With rated V_{RRM} applied following surge, initial T_J = 125°C.
		665	425		t = 8.3 ms	
	Max. I^2t for individual junction fusing, per junction	1030	660		t = 10 ms	With V_{RRM} = 0 following surge, initial T_J = 125°C.
		940	600		t = 8.3 ms	
$I^2\sqrt{t}$	Max. $I^2\sqrt{t}$ for individual (4) junction fusing, per junction	10,300	6,600	$A^2\sqrt{s}$	With V_{RRM} = 0 following surge, initial T_J = 125°C. t = 0.1 to 10 ms.	
V_{FM}	Max. peak forward voltage, per junction	0.54	0.64	V	T_J = 25°C 1/2 rated $I_{F(AV)}$ (14A peak)	180° conduction rectangular waveform
		0.68	0.85		T_J = 25°C Rated $I_{F(AV)}$ (28A peak)	
		0.61	0.74		T_J = 125°C Rated $I_{F(AV)}$ (28A peak)	
I_{RM}	Max. peak reverse current, per junction	15	15	mA	T_J = 25°C V_{RM} = rated V_{RRM}	
		100	100		T_J = 125°C V_{RM} = rated V_{RRM}	
C_t	Max. capacitance, per junction	950	800	pF	T_C = 25°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°C, V_{RM} = rated V_{RRM}.	

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	deg. C/W	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 $t_x = I^2\sqrt{t} \cdot \sqrt{t_x}$.

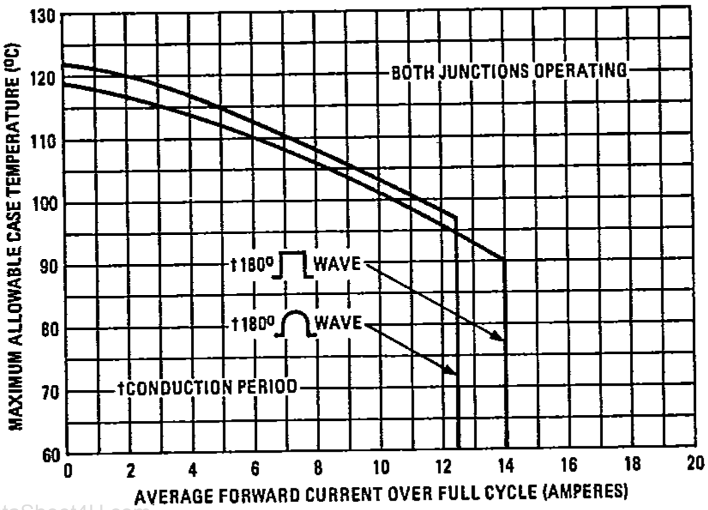


Fig. 1 — Average Forward Current Vs. Maximum Allowable Case Temperature, Per Junction, 28CPQ030 & 40

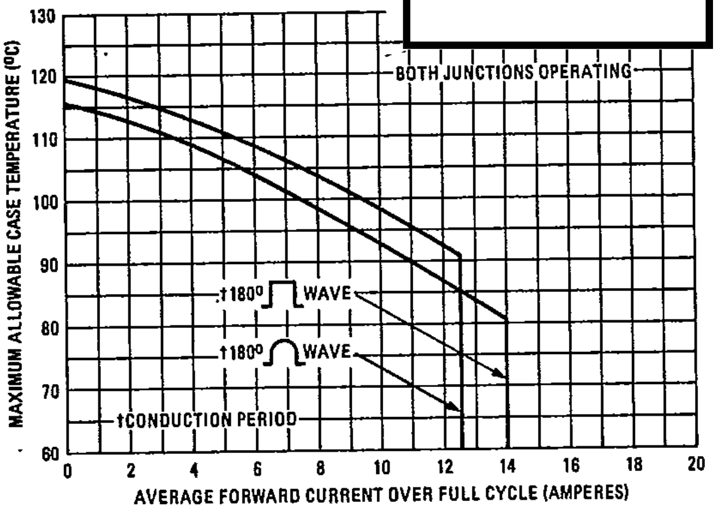


Fig. 2 — Average Forward Current Vs. Maximum Allowable Case Temperature, Per Junction, 28CPQ050 & 60

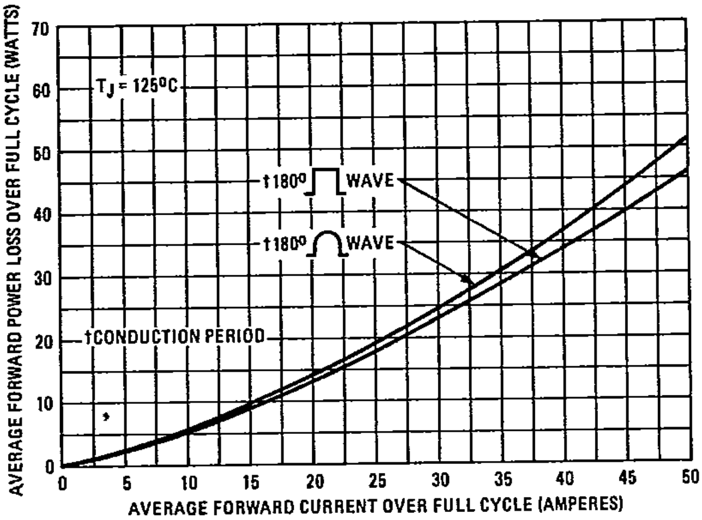


Fig. 3 — Maximum Forward Power Loss Vs. Average Forward Current, Per Junction, 28CPQ030 & 40

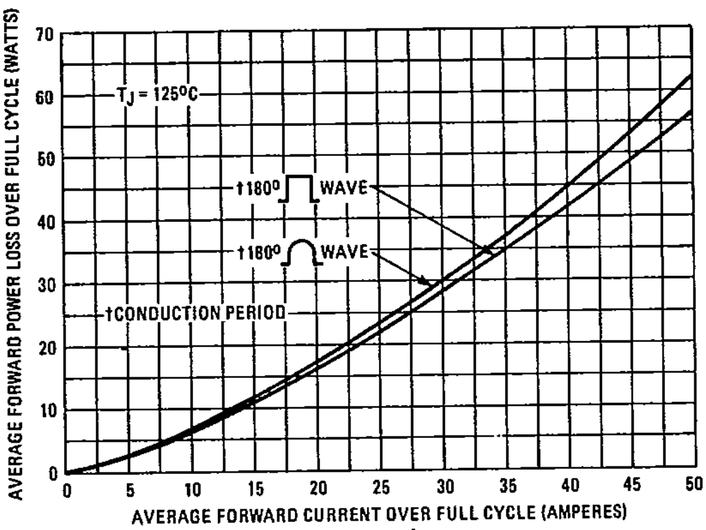


Fig. 4 — Maximum Forward Power Loss Vs. Average Forward Current, Per Junction, 28CPQ050 & 60

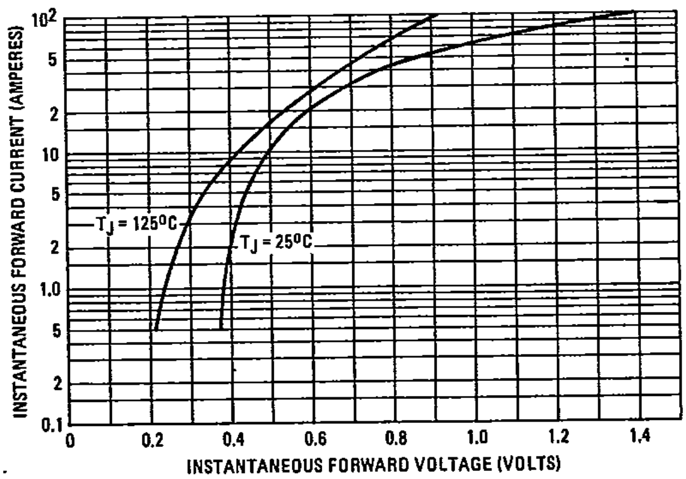


Fig. 5 — Maximum Instantaneous Forward Voltage Vs. Instantaneous Forward Current, Per Junction, 28CPQ030 & 40

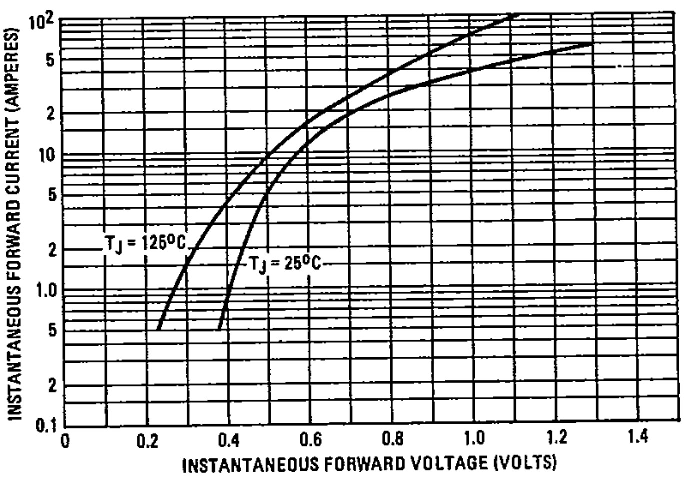


Fig. 6 — Maximum Instantaneous Forward Voltage Vs. Instantaneous Forward Current, Per Junction, 28CPQ050 & 60

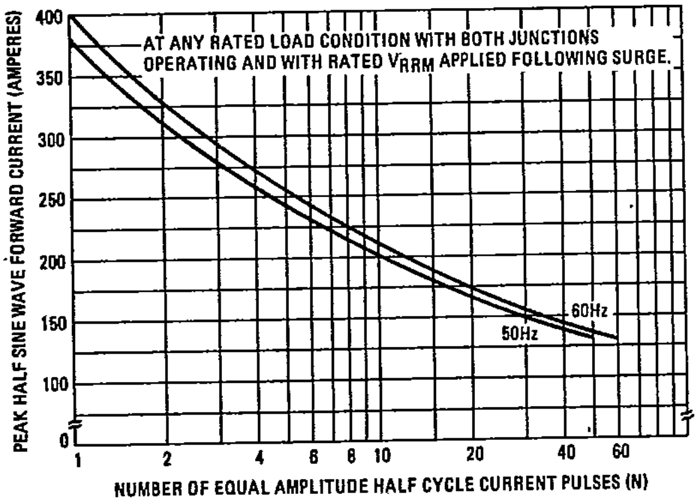


Fig. 7 – Maximum Non-Repetitive Surge Current Vs. Number of Cycles, Per Junction, 28CPQ030 & 40

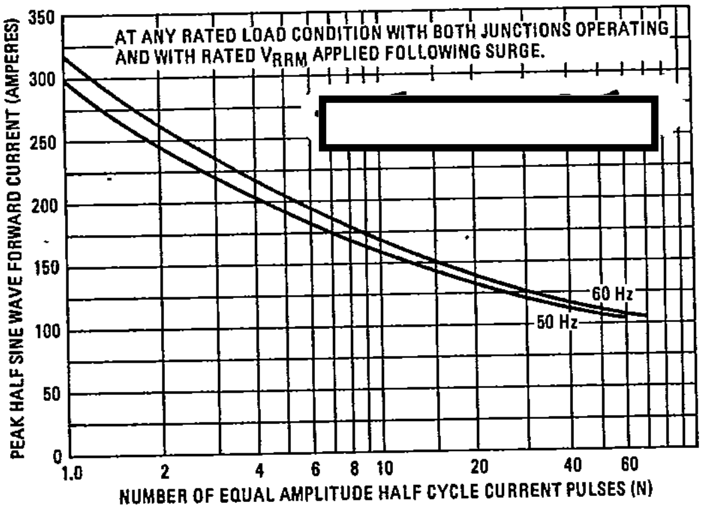


Fig. 8 – Maximum Non-Repetitive Surge Current Vs. Number of Cycles, Per Junction, 28CPQ050 & 60

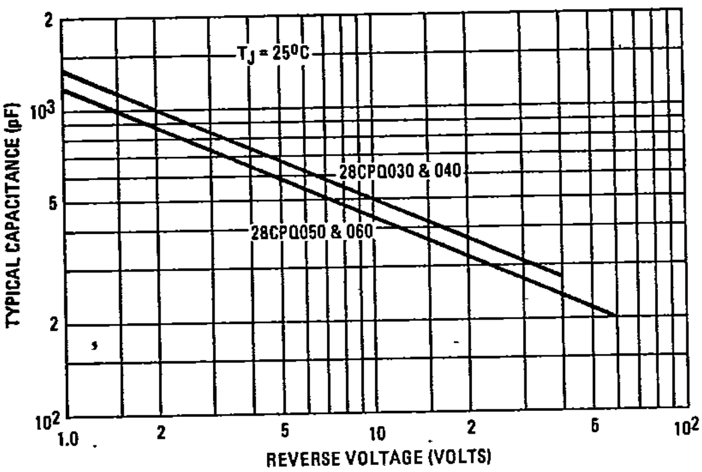


Fig. 9 – Typical Capacitance Vs. Reverse Voltage, Per Junction, All Devices

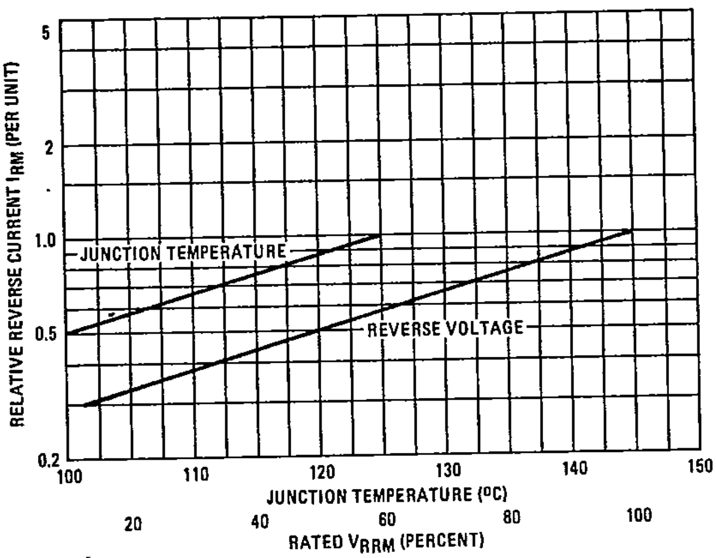


Fig. 10 – Typical Variation of Reverse Current Vs. Junction Temperature and Reverse Voltage, Per Junction, All Devices