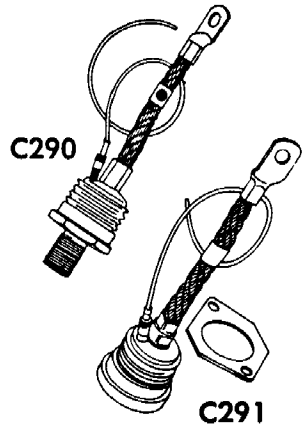
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C290 – C291 SERIES

Type	Repetitive Peak Off-State (Forward or Reverse) Voltage (T_J = −40°C to +125°C)	Non-repetitive Peak Reverse Voltage (T_J = +25°C to +125°C, < 5 Milliseconds)	Peak Forward Voltage (Non-destructive) (T_J = +25°C to +125°C, < 5 Milliseconds)
C290F	50 Volts	100 Volts	400 Volts
C290A	100	200	400
C290B	200	300	400
C290C	300	400	400
C290D	400	500	500
C290E, C291E	500	600	600
C290M, C291M	600	700	700
C290S, C291S	700	800	800
C290N, C291N	800	900	900
C290T, C291T	900	1000	1000
C290P, C291P	1000	1100	1100
C290PA, C291PA	1100	1200	1200
C290PB, C291PB	1200	1300	1300

MAXIMUM ALLOWABLE RATINGS

RMS Forward Current, On-State.....470 amperes (all conduction angles)
Average Forward Current, On-State.....Depends on conduction angle (see Charts 3 and 5)
Peak One-cycle Surge Forward Current, I_{FSM}.....5500 amperes
I^2t (for fusing).....Up to 120,000 ampere^2 seconds (for times $\geqq$ 8.3 milliseconds)
Up to 41,000 ampere^2 seconds (for times $\geqq$ 1.5 milliseconds)
Peak Gate Power Dissipation, P_{GM}.....16 watts
Average Gate Power Dissipation, $P_{G(AV)}$.....3 watts
Peak Forward Gate Voltage, V_{GFM}.....20 volts
Peak Reverse Gate Voltage, V_{GRM}.....5 volts
Operating Temperature & Storage Temperature, T_J & T_{STG}.....−40°C to +125°C
Stud Torque (C290).....300 in.-lbs.
(346 kg-cm)

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Quality Semi-Conductors

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TEST	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
Gate Trigger Current	I_{GT}	— — — —	100 150 50 250	150 200 — —	mAdc	T_J = + 25°C T_J = 0°C T_J = +125°C T_J = − 40°C } V_D = 12 Vdc, R_L = 50 ohms
Gate Trigger Voltage	V_{GT}	— 0.15	— —	3.5 —	Vdc	T_J = − 40°C to +125°C T_J = +125°C } V_D = 6 Vdc, R_L = 50 ohms
Peak On-Voltage	V_{TM}			1.21	V	T_J = +25°C, I_{TM} = 500 A peak
Holding Current	I_H		25	100	mAdc	T_J = +25°C, Anode Supply = 22 Vdc
Turn-On Time (Delay Time + Rise Time)	$t_d + t_r$	—	10	—	μsec	T_J = +25°C, I_F = 5Adc, V_{DRM} = 50 Volts Gate Supply: 10 volts open circuit, 10 ohm, 0.1 μsec maximum rise time.[1]
Circuit Commutated Turn-Off Time	t_q	—	250	—	μsec	T_J = +125°C, I_{TM} = 250 A, V_R = 50 V max. V_{DRM} (reapplied) = Rated. Rate of rise of reapplied forward blocking voltage = 20 volts/μsec linear.
Effective Thermal Resistance DC	$R_{\theta JC}$			.118	°C/Watt	Junction to Case, Maximum. DC = .118, 1φ = .13, 3φ = .138, 6φ = .158
Linear Rate of Rise of Forward Blocking Voltage	dv/dt	100	—	—	V/μsec	T_J = +125°C. Gate open circuited. V_{DRM} = 80% Rated.
Max. Allowable Rise of Forward Current (Sinusoidal Waveform)	di/dt	—	—	50	A/μsec	T_J = +125°C, Rep rate = 60 Hz. max. I_{TM} = 600 A peak (1000 Volts turned on)[2]

(1) Selected Turn-On Times are available. Consult factory.

(2) di/dt rating is a function of the voltage being turned on, the frequency, and the temperature (rating decreases as these parameters are increased). For pulse operation at a repetitive rate of 3 p.p.s. or lower, this rating is approximately an order of magnitude higher and can even be negotiated for 1000 amps/μ sec. A shunt RC network will also influence the result. A proved acceptable condition, guaranteed by factory test on all units, follows:

For V = 0.8 V_{DRM} being turned on,

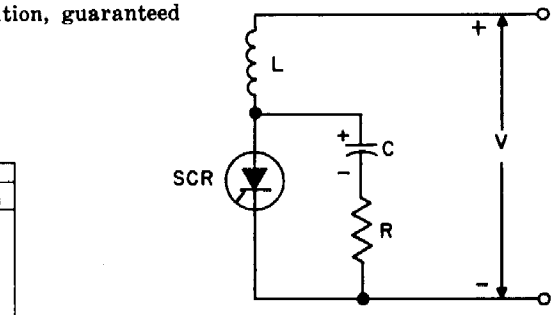
L = 22 μH (in series with SCR)

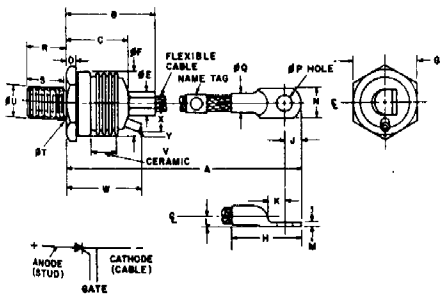
T_J = 125°C

f = 60 Hz.

R = 20 Ω, C = 0.5 μF } Shunt RC Network

I_{TM} = 600 amps. peak



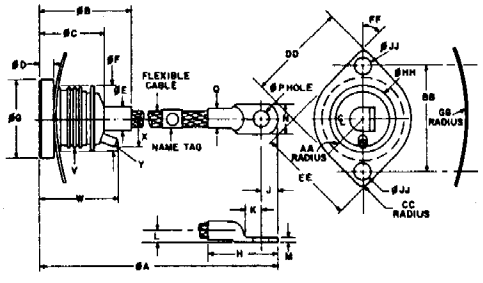


C290

TABLE OF DIMENSIONS

SYMBOL	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX	NOTES
A	7.500	8.000	190.50	203.20	
ØA	7.625	8.125	193.68	206.38	
B		2.375		60.32	
ØB		2.500		63.50	
C		1.625		41.28	
ØC		1.750		44.45	
D	.235	.265	5.97	6.73	
ØD	.525	.585	8.25	9.01	
ØE		.750		19.05	
ØF		1.625		41.28	
G	1.605	1.640	40.77	41.66	
ØG	1.865	1.885	47.37	47.88	
H	1.625	2.000	41.28	50.80	
J	.375	.438	9.52	11.12	
K	.375		9.52		
L	.250	.297	6.35	7.54	
M	.094	.125	2.39	3.18	
N		.766		19.46	
ØP	.391	.422	9.93	10.72	
ØQ		.562		14.27	
R	1.037	1.087	26.34	27.61	
S	.912	1.009	23.16	25.63	
ØT	.660	.670	16.76	17.02	
ØU					5
V					1
W		2.000		50.80	
X		.750		19.05	
Y					4
AA	1.178	1.198	29.92	30.43	3
BB	2.484	2.516	63.09	63.91	3
CC	.172	.203	4.37	5.16	3
DD	2.355	2.395	59.82	60.83	3
EE	2.355	2.395	59.82	60.83	3
FF					2,3
GG	5.500	6.500	139.70	165.10	3
ØHH	1.610	1.630	40.89	41.40	3
ØJJ	.370	.380	9.40	9.65	3

NOTES
1. 1.000" (25.40mm) MIN. INSULATION CREEP.
2. 44° MIN., 46° MAX.
3. DIMENSIONS OF CLAMP BEFORE FORMING TO 8.000" (212.40mm) RADIUS.
4. COAX RECEPTACLE WILL MATE WITH AMP INC. COAXICON PLUG TNC TYPE (E.G. #52036)
5. 5/4"−16UNF−2A



C291

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