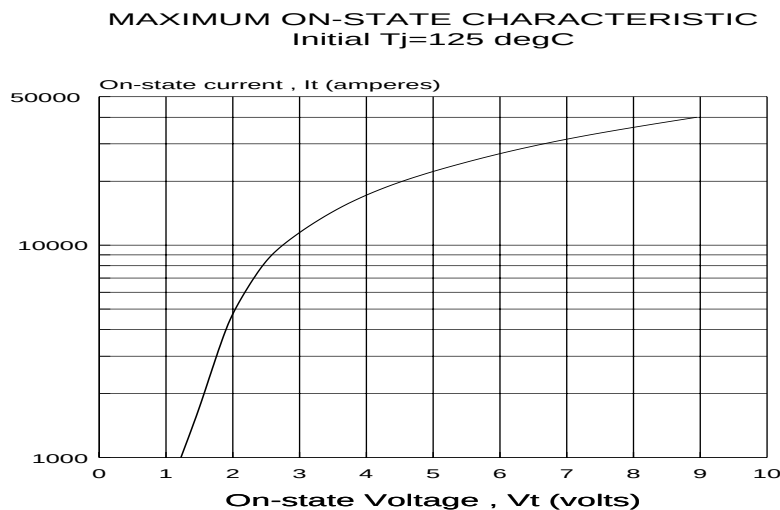
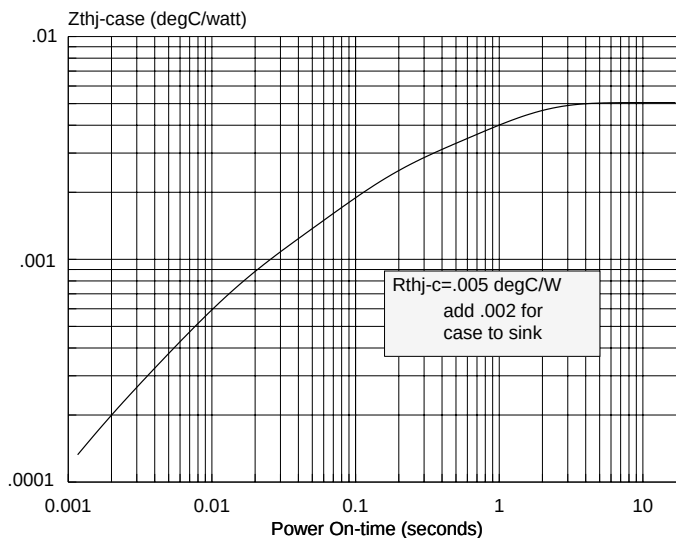


Type C791A thyristor is suitable for phase control applications such as for HVDC valves, static VAR compensators and synchronous motor drives. The silicon junction design utilizes a second generation pilot gate and a unique orientation of emitter shorts which promote the lateral expansion of conducting plasma resulting in lower spreading losses while achieving high dv/dt withstand. It is supplied in an industry accepted disc-type package, ready to mount using commercially available heat dissipators and mechanical clamping hardware.



Thermal Impedance



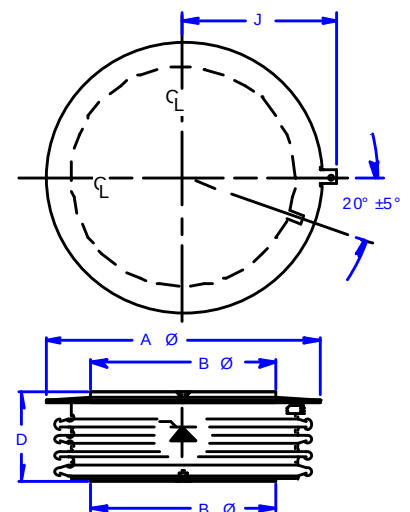
o1a:t305tau

REPETITIVE PEAK REVERSE AND OFF-STATE BLOCKING VOLTAGE

$T_j = 0 \text{ to } 125^\circ\text{C}$

MODEL	V_{DRM} (volts)	V_{RRM} (volts)
C791ADE	4500	4500
C791ADD	4400	4400
C791ADC	4300	4300
C791ADB	4200	4200
C791ADA	4100	4100
C791ADP	4000	4000

MECHANICAL OUTLINE



$A \varnothing = 5.65 \text{ in (143.5 mm)}$
 $B \varnothing = 3.92 \text{ in (99.4 mm)}$
 $D = 1.45 \text{ in (36.8 mm)}$

ELECTRICAL CREEPAGE / STRIKE

1.6 / 1.0 in

40.6 / 25.4 mm

CLAMPING FORCE (range)

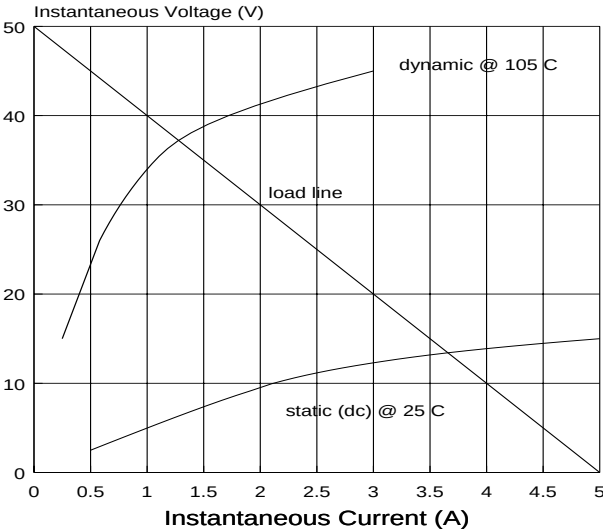
17000 - 19000 lb

75 - 84 kN

LIMITING CHARACTERISTICS AND RATINGS

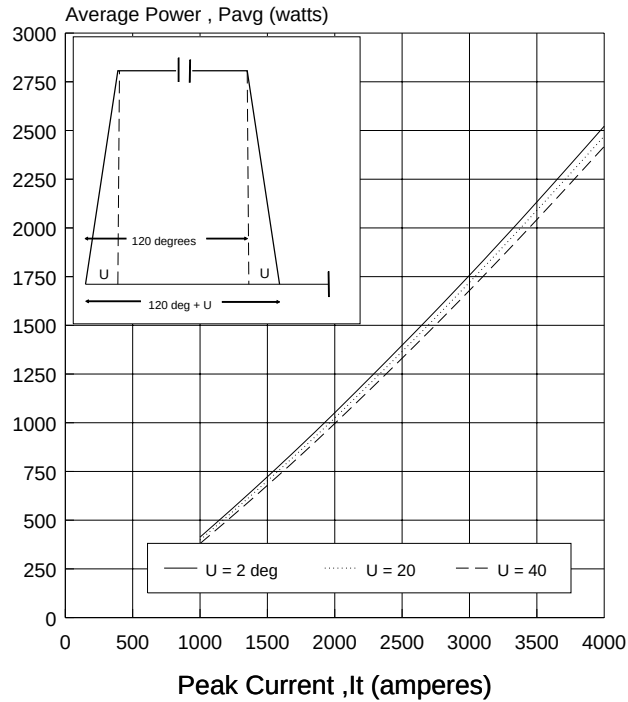
Repetitive peak off-state & reverse volts	V_{DRM} V_{RRM}	$T_J = 0$ to 125°C	up to 4500	V
Repetitive working crest voltage	V_{DWM} V_{DRM}	$T_J = 0$ to 125°C	$0.8V_{DRM}$ $0.8V_{RRM}$	
Off-state & reverse leakage current	I_{DRM} I_{RRM}	$T_J = 0$ to 125°C	450 350	ma
Average on-state current	$I_{T(AV)}$	$T_{case} = 70^\circ\text{C}$	3250	A
Peak half-cycle non-rep surge current	I_{TSM}	60 Hz 50 Hz	42 38	kA
On-state voltage	V_{TM}	$I_T = 4000\text{A}$ $t_p = 8.3\text{ms}$ $T_J = 125^\circ\text{C}$	2.00	V
Critical rate of rise of on-state current	di/dt_{rep}	$T_J = 125^\circ\text{C}$ 60 Hz	100	A/us
Critical rate of rise of off-state voltage	dv/dt	$T_J = 125^\circ\text{C}$ $V_D = .67V_{DRM}$	1000	V/us
Recovery current	I_{RM}	$T_J = 105^\circ\text{C}$ 2A/us 5A/us	90 195	A
Turn-on delay	t_d	$V_d = .5V_{DRM}$	4	us
Turn-off time	T_{off}	5A/us, -100V 20V/us to 2000V	500	us
Thermal resistance	R_{thjc}		.007	c/w
Externally applied clamping force	F		17000 -19000	lb

Gate Characteristics and Gate Supply Requirements



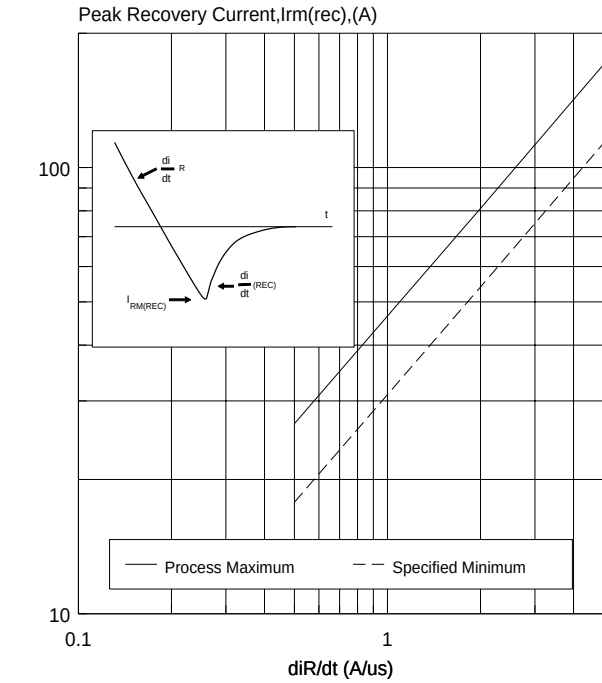
- **THYRISTOR GATE IMPEDANCE**
Enhanced by fast rising gate voltage, increasing anode bias and junction temperature. It is at a minimum for dc current, zero anode bias and low temperature.
- **GATE SUPPLY**
Prefer 50V/10 ohm for supporting the di/dt rating and life expectancy. The short circuit current risetime should be nominally 0.5us and the duration longer than the expected delay time for all magnitudes of anode bias. Practically 10-30us is recommended followed by a back porch of 750ma if needed to sustain conduction.
- **MINIMUM ACCEPTABLE GATE CURRENT**
The intersection of the load line and gate impedance characteristic indicates the minimum value of actual current needed during the delay time interval to support di/dt. A different load line meeting this criterion may be used.
- **MAXIMUM GATE RATINGS**
Peak gate power, $P_{gm}(100\text{us}) = 300\text{ W}$
Average gate power, $P_{g(av)} = 50\text{ W}$
Peak gate current, $I_{gfm} = 25\text{ A}$
Peak reverse voltage, $V_{grm} = 25\text{ V}$

FULL CYCLE AVERAGE POWER DISSIPATION
120-deg Conduction -includes spread loss
as function of Overlap Angle , U



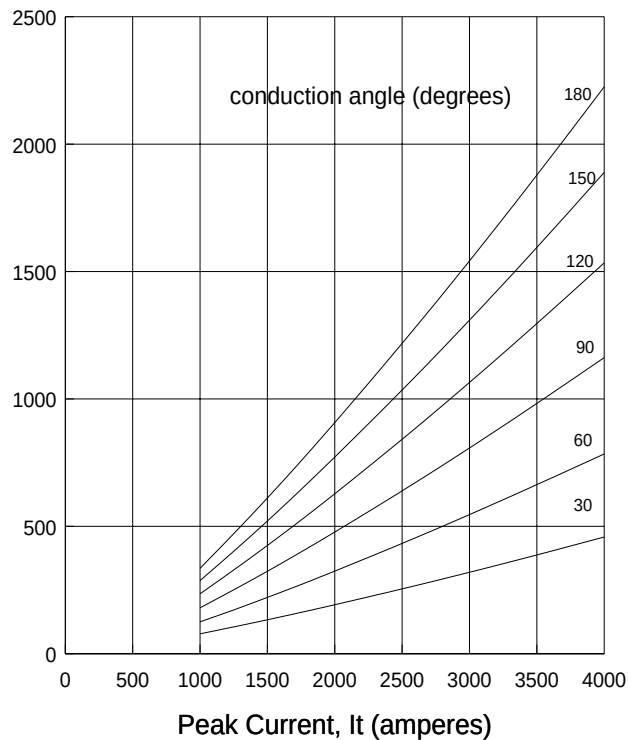
4500V 100mm

PEAK RECOVERY CURRENT
versus
COMMUTATING di/dt



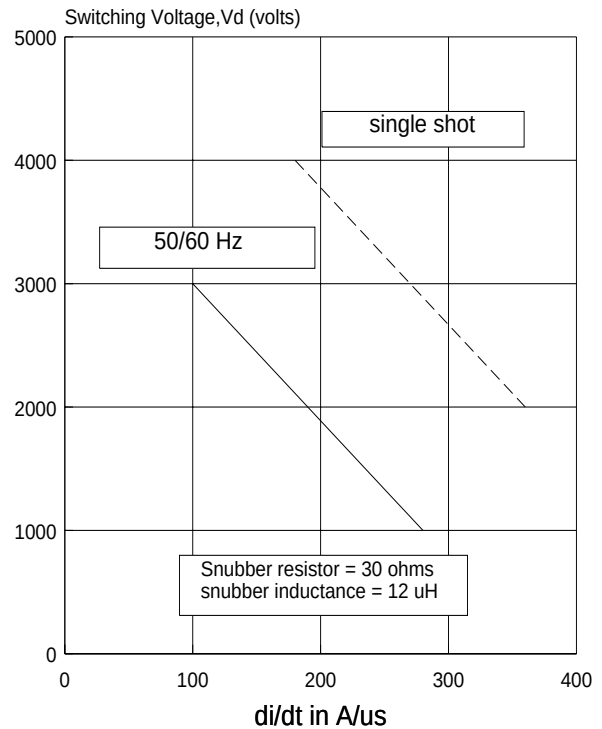
6RT302

FULL CYCLE AVERAGE POWER DISSIPATION
Sine Wave - includes spread loss
as function of conduction angle



4.5kv 100mm

INRUSH CURRENT (di/dt) RATING
versus
SWITCHING VOLTAGE



T302