

# CR1T4450DZ



- Zero Cross Solid State Relay designed for resistive loads and small inductance loads.
- Back to back thyristors on output with (SCR) technology:  
Operating range: 48 to 440VAC 50A.
- Large control range: 4-32VDC.
- Green LED visualization on the input.
- Epoxy resin encapsulation.
- IP20 protection flaps on request (option).
- Designed in conformity with EN60947-4-3 (IEC947-4-3)  
and EN60950/VDE0805 (Reinforced Insulation) -UL-cUL.



### Product Model Specification

Model: CR1T4450DZ

CR CHORDN Relay Factory Code

1T single phase Solid State Relay

44 nominal voltage 440VAC

50 nominal current 50A

D control voltage(4-32VDC)

Z zero cross



### Control characteristics (at 25°C)

DC		Min	Typ	Max	Unit
Parameter					
Control voltage		4	5-12-24	32	V
Control current (@ U <sub>c</sub> ) I <sub>c</sub>				20	mA
Release voltage		2			V
Input LED			green		
Reverse voltage			32		V
Input immunity: EN61000-4-4/EN61000-4-5			2		KV

### Output characteristics (at 25°C)

Parameter	Min	Typ	Max	Unit
Operating voltage range	48	380	440	V rms
Peak voltage		800		V
Zero cross level			35	V
Nominal current (AC-51)		50	60	A rms
Non repetitive overload current t <sub>p</sub> =10ms (Fig. 2)I <sub>t</sub> sm			600	A
On state voltage drop (I <sub>e</sub> = nominal current)			1.2	V
On state Threshold voltage			1	V
Output power dissipation (max value)			102	W
Thermal resistance between junction to case			0,4	K/W
Off state leakage current @U <sub>e</sub> typ, 50Hz			2	mA
Minimum load current I <sub>emin</sub>	100			mA
Turn on time @U <sub>e</sub> typ, 50Hz T <sub>on</sub> max			10	ms
Turn off time @U <sub>e</sub> typ, 50Hz T <sub>off</sub> max			10	ms
Mains frequency range F mains	47	50-60	63	Hz
Off state dv/dt	500			V/μs
Maximum di/dt non repetitive			150	A/μs
Value for fusing I <sup>2</sup> t (<10ms)		1800		A <sup>2</sup> s
Built-in protection		RC		
Conducted immunity level IEC/EN61000-4-4		2kV criterion B		
Conducted immunity level IEC/EN61000-4-5		2kV criterion B		
Short circuit protection		Fuse chordn aR 32A/40A 14x51		

### General characteristics (at 25°C)

Input to output insulation	4000	VRMS
Output to case insulation	2500	VRMS
Insulation resistance	1000 (@500VDC)	MΩ
Rated impulse voltage	4000	V
Protection level	IP00	
Pollution degree	2	
Vibration withstand 10 -150 Hz according to IEC 60068-2-6	10	g
Shocks withstand according to IEC 60068-2-27 @11ms	30	g
Ambient temperature (no icing, no condensation)	-30 /+80	°C
Storage temperature (no icing, no condensation)	-30/+100	°C
Ambient humidity	40 to 85	%
Recommended tightening torque@input M3 screw	0.58-0.98	N.m
Recommended tightening torque@output M4 screw	0.98-1.37	N.m
Weight	95	g
Conformity IEC/ EN60947-4-3	CE	
Conformity	UL/cUL	
Housing Material	PBT UL94-V0	
Base plate	Aluminium, Tin-plated	

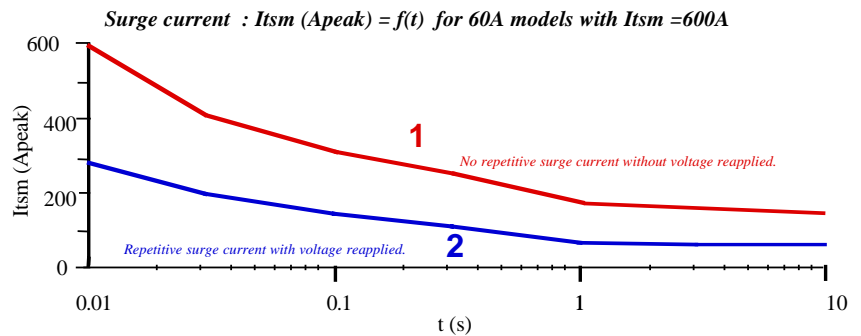
All technical characteristics are subject to change without previous notice.

fig 2 : Overload currents

No repetitive  $I_{tsm}$  is given without voltage reapplied. This curve is used to define the protection (fuses).

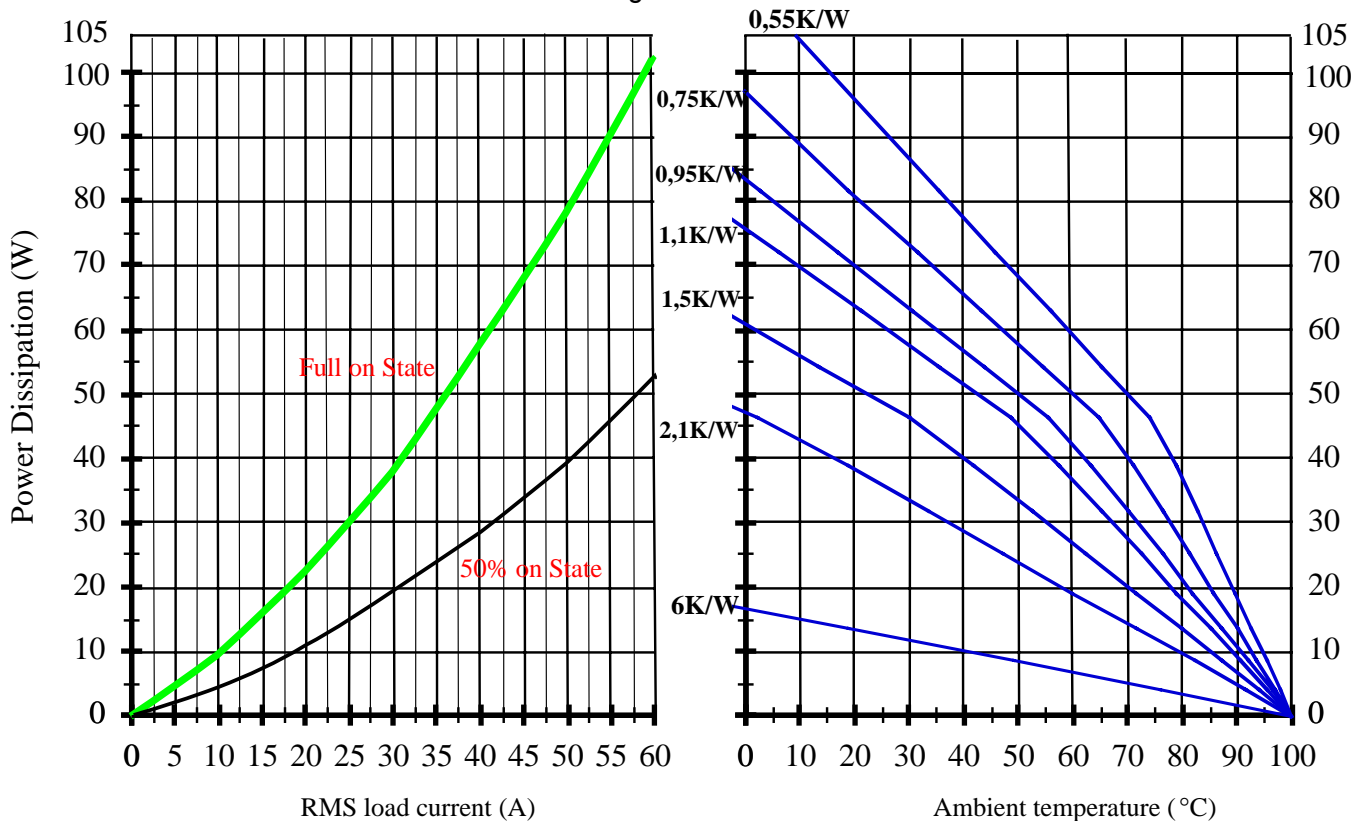
Repetitive  $I_{tsm}$  is given for inrush current with initial  $T_j = 70^\circ\text{C}$ . In normal operation, this curve mustn't be exceeded.

Be careful, the repetition of the surge current decreases the life expectancy of the SSR.



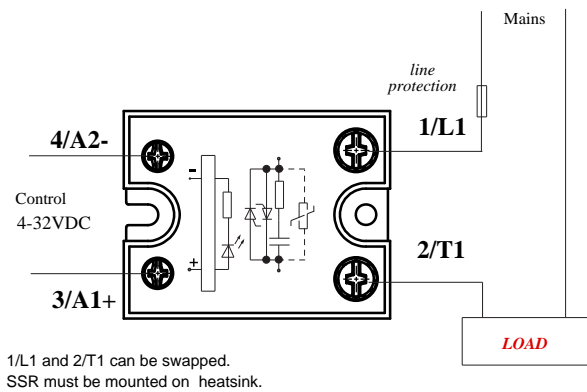
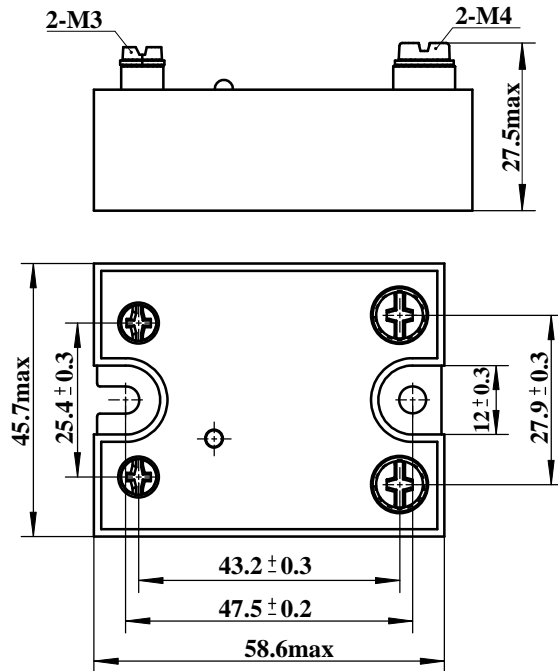
**Warning!** semiconductor relays don't provide any galvanic insulation between the load and the mains. Always use in conjunction with an adapted circuit breaker with isolation feature or a similar device in order to ensure a reliable insulation in the event of wrong function and when the relay must be insulated from the mains (maintenance; if not used for a long duration ...)

Fig.3 Thermal curves and heatsink choice



6K/W corresponds to a relay mounted on a DIN rail adaptor.

### Dimensions(mm)



- CR1T SSRs must be mounted on heatsinks. A large range of heatsinks is available. See below some examples on [www.chordn.com](http://www.chordn.com).
- For heatsink mounting, it is necessary to use thermal grease or thermal pad with high conductivity specified by chordn.
- CR1T product is specially designed for AC-51 resistive load (heating) and small inductance loads. For other loads, consult our selection guide.
- To protect the SSR against a short-circuit of the load, use a fuse with a  $I^2t$  value =  $1/2 I^2t$  value specified page 2. A test has been made with Chordn fuses. It is possible to protect SSR by MCB (miniature circuit breaker). In this case, see application note (SSR protection) and use a SSR with high  $I^2t$  value (5000A<sup>2</sup>s minimum).
- We give in our data-sheets the immunity level of our SSRs according to the main standards for these products: EN61000-4-4 & 5.
- CHORDN SSRs are mainly designed in compliance with standards for class A equipment (Industry). Use of this product in domestic environments may cause radio interference. In this case the user may be required to employ additional devices to reduce noise. SSRs are complex devices that must be interconnected with other equipment (loads, cables, etc.) to form a system. Because the other equipment or the interconnections may not be under the control of chordn, it shall be the responsibility of the system integrator to ensure that systems containing SSRs comply with the requirement of any rules and regulations applicable at the system level. Consult chordn for advices.

Accessory(option)

CR1TA

IP20 protection flap cover for CR1T.

Dimensions(mm):

