

# CR1MT2804D1R



- Random Solid State Relay for printed circuit board designed for motor(AC-53) loads.
- Operating range: 48 to 280VAC 4A.
- Large control range: 4-15VDC.
- Very low leakage current.
- Designed in conformity with IEC/ EN60947-4-2, 3, IEC/EN61000-4-4, 5, IEC/EN62314.



### Product Model Specification

Model: CR1MT2804D1R

CR CHORDN Relay Factory Code

1MT single-phase T series micro Solid State Relay

28 nominal voltage 280VAC

4 nominal current 4A

D1 control voltage(4-15VDC)

R random



### Control characteristics (at 25°C)

DC		Min	Typ	Max	Unit
Parameter					
Control voltage		4	5-12	15	V
Control current (@ U <sub>c</sub> ) I <sub>c</sub>				40	mA
Turn on voltage		4			V
Turn off voltage			1		V
Input immunity: EN61000-4-4			2		KV
Input immunity: EN61000-4-5			2		KV

### Output characteristics (at 25°C)

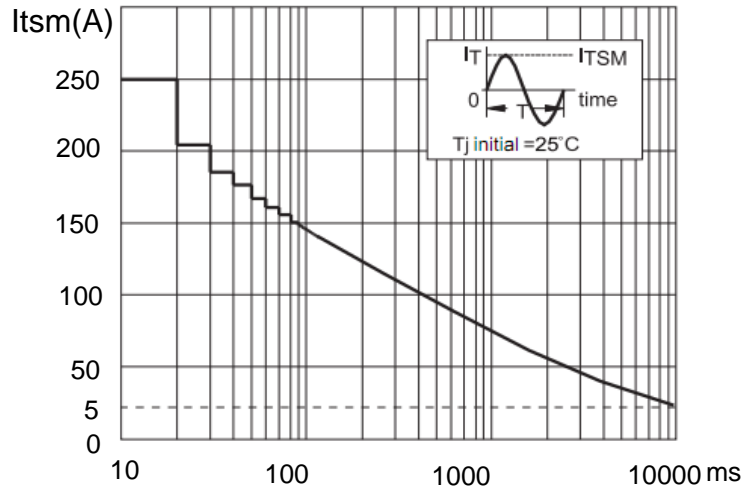
Parameter	Min	Typ	Max	Unit
Operating voltage range	48	230	280	V rms
Peak voltage		600		V
Zero cross level		Random		
Nominal current (AC-51)		4	5	A rms
Nominal current (AC-53)			1.5	A rms
Non repetitive overload current t <sub>p</sub> =10ms (Fig. 2)I <sub>t</sub> sm			250	A
On state voltage drop (I <sub>e</sub> = nominal current)			1.2	V
On state Threshold voltage			1	V
Output power dissipation (max value)			7.5	W
Thermal resistance between junction to case		24		K/W
Off state leakage current @U <sub>e</sub> typ, 50Hz			1.5	mA
Minimum load current I <sub>emin</sub>	100			mA
Turn on time @U <sub>e</sub> typ, 50Hz T <sub>on</sub> max			1	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	200			V/μs
Maximum di/dt non repetitive			50	A/μs
Value for fusing I <sup>2</sup> t (<10ms)		310		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		

### 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	%
Weight	20	g
Conformity IEC/ EN60947-4-3	CE	
max soldering terminals temperature	300°C/5s 260°C/10s	
Housing Material	PA 6 UL94-V0	

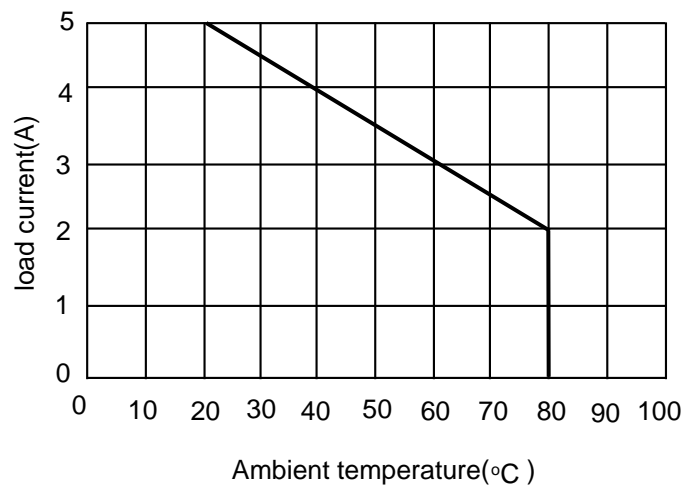
All technical characteristics are subject to change without previous notice.

fig 2: Overload currents

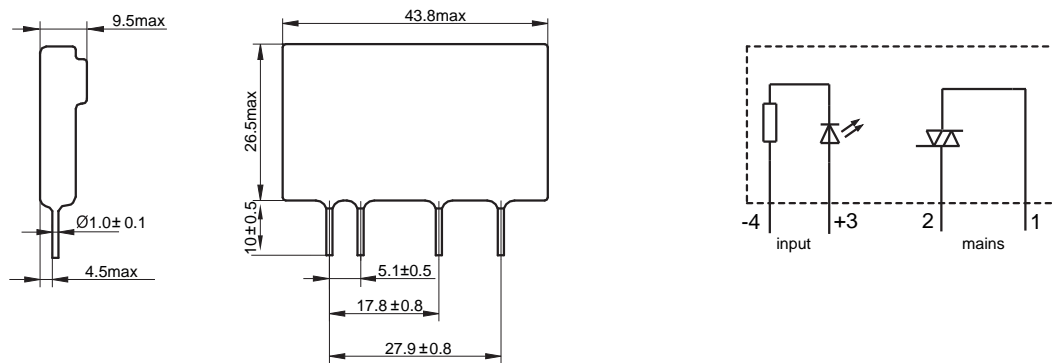


**Warning!** semiconductor relays don't provide any galvanic insulation between the load and the mains. Always use in conjunction with an adapted circuit breaker with isolation feature or a similar device in order to ensure a reliable insulation in the event of wrong function and when the relay must be insulated from the mains (maintenance; if not used for a long duration ....)  
It is important that the solid state relay is subject to correct installation, maintenance and use conforming to its intended regulations and standards, to the supplier's instructions and to accepted rules of art.

fig 3: Thermal curves



### Dimensions(mm)



### Typical LOADS

-> CR1MT products are designed for most types of loads.

We give in our data-sheet the AC-51 current value corresponding to resistive loads.

For other loads, check the inrush current at turn ON and possible overvoltages at turn OFF:

\* AC-55b: Incandescent lamps: Inrush current is generally 10 times  $I_n$  during few 10ms.

\* AC-55a: Electric discharge lamp: These loads often have overcurrent at turn ON and overvoltage at turn OFF, so we advise to use 400VAC SSR on 230VAC mains.

### Protection:

-> To protect a SSR against a short-circuit of the load, use a fuse with a  $I^2 t$  value =  $1/2 I^2 t$ .

### EMC:

-> Immunity: We give in our data-sheets immunity level according to the main standards for these products: IEC/EN61000-4-4 & IEC/EN61000-4-5.

But we are also in conformity with other standards IEC/EN61000-4-2, IEC/EN61000-4-6, .... in compliance with IEC/EN60947-4-3.

-> Emission: 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 advice. Tests can be performed in our laboratory.