

Series T/Triac Output Solid-State, Photo-Isolated Power Relays (SPST*)

- Low Cost
- Zero Voltage Switching
- U.L. Recognized, CSA Certified
- VDE Conformance
- AC and DC Control
- *Form A and B Output Switching

General Description

The Series T Crydom solid-state power relays incorporate an economical TRIAC output device in the original standard Crydom package with the same highly reliable, noise-immune, drive circuitry used in most other Crydom photo-isolated relays. Snubbers are included for high dv/dt applications and inductive loads, together with zero-voltage switching to reduce high inrush currents and electrical noise.

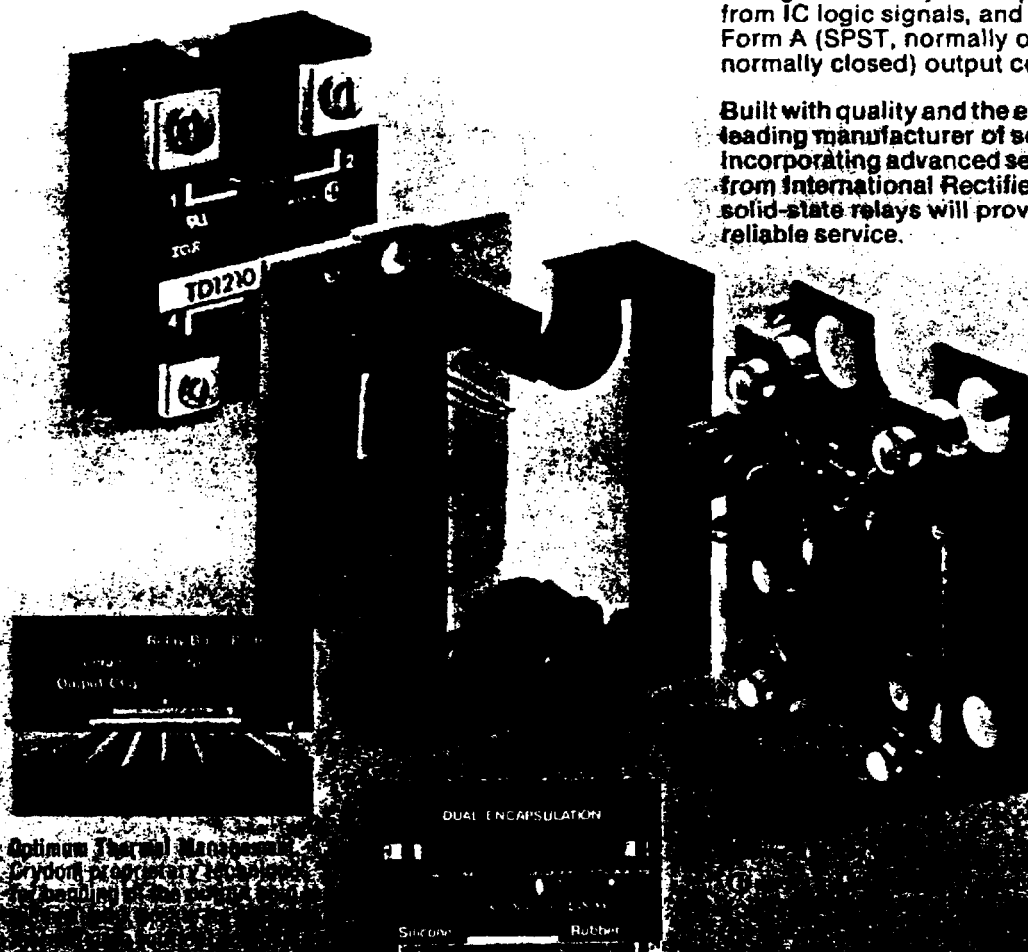
The inherent zero-current turn-off characteristic of triacs and the total absence of arcing mechanical contacts, substantially reduces electro-magnetic interference and back EMF transients. AC input models can be controlled from a wide range of AC signal sources (90-280 VAC), and are available in Form A (normally open) configuration only. DC input versions will operate from IC logic signals, and are available in either Form A (SPST, normally open) or Form B (SPST, normally closed) output configurations.

Built with quality and the experience of the world's leading manufacturer of solid-state relays, incorporating advanced semiconductor technology from International Rectifier Corporation, these solid-state relays will provide long, consistent and reliable service.

The Field-proven Crydom Circuit provides photo-isolation and zero voltage switching for utmost EMI suppression with lowest emissions.

Internal RC Snubber Network assures maximum load range performance, eliminates add-ons.

Tested Reliability. All key parameters of every circuit are 100% tested 3 times during production. Random QC audits made on finished devices verify consistent quality.



Optimum Thermal Management
Crydom proprietary technology
for handling high power

DUAL ENCAPSULATION

Silicone Rubber

NOTE: Models TD1205, TD2405, TA1205 and TA2405 have been discontinued as of December 31, 1982.

Electrical Specifications (25°C unless otherwise specified)

OUTPUT CHARACTERISTICS		MODEL NUMBERS						UNITS
	AC Control	TA1205	TA1210	TA1225	TA2405	TA2410	TA2425	
	DC Control	TD1205	TD1210	TD1225	TD2405	TD2410	TD2425	
Operating Voltage Range 47-63 Hz ⑦		24-140			48-280			V RMS
Max. Load Current (See derating curves) ①		5	10	25	5	10	25	A RMS
Min. Load Current		50			50			mA RMS
Transient Overvoltage ③		300			500			V peak
Max. Surge Current (Non-Repetitive) 16.6 ms (see surge curves)		50	100	250	50	100	250	A peak
Max. Over Current (Non-Repetitive) 1 sec.		12	24	40	12	24	40	A RMS
Max. On State Voltage Drop @ Rated Current		1.6			1.6			V peak
Max. I ² T for Fusing (8.3 ms)		10	42	260	10	42	260	A ² sec
Thermal Resistance, Junction-to-Case, R _{θJC} (T _J Max. = 105°C)		3.0	2.1	1.3	3.0	2.1	1.3	°C/W
Power Dissipation @ Max. Current (See dissipation curves)		7.0	14	31	7.0	14	31	Watts
Max. Zero Voltage Turn-on ①		15			35			V peak
Max. Peak Repetitive Turn-On Voltage		10			12			V peak
Max. Off-State Leakage Current @ Rated Voltage (-30°C ≤ T _A ≤ 80°C)		8			10			mA RMS
Min. Off-State dv/dt (Static) @ Max. Rated Voltage ③		200						V/μs

INPUT CHARACTERISTICS		DC INPUT MODELS (with "TD" Prefix)	AC INPUT MODELS (with "TA" Prefix)
Control Voltage Range		3 to 32 VDC	90 to 280 V RMS (47-63 Hz)
Max. Reverse Voltage		-32 VDC	—
Max. Turn-On Voltage (-30°C ≤ T_A ≤ 80°C)		3.0 VDC	90 V RMS
Min. Turn-Off Voltage (-30°C ≤ T_A ≤ 80°C)		1.0 VDC	10 V RMS
Min. Input Impedance		1500 Ohms	60K Ohms
Max. Input Current	5 VDC	4 mA DC	—
	28 VDC	20 mA DC	—
	120 VAC	—	2 mA RMS
	240 VAC	—	4 mA RMS
Max. Turn-On Time (@ 60 Hz)		8.3 msec	10 msec
Max. Turn-Off Time (@ 60 Hz)		8.3 msec	40 msec

GENERAL CHARACTERISTICS		ALL MODELS
Dielectric Strength ① ③ 50/60 Hz		2500 V RMS
Insulation Resistance @ 500 VDC ①		10 ¹¹ Ohms
Max. Capacitance Input/Output		8 pF
Ambient Temperature Range	Operating	-30°C to 80°C
	Storage	-30°C to 100°C

Crydom Series T Solid-State Power Relays

Mechanical Specifications

Weight: 4 oz. Max.

Case Material: Fire retardant polyester

Encapsulant: Alumina filled epoxy

Case Color: Black

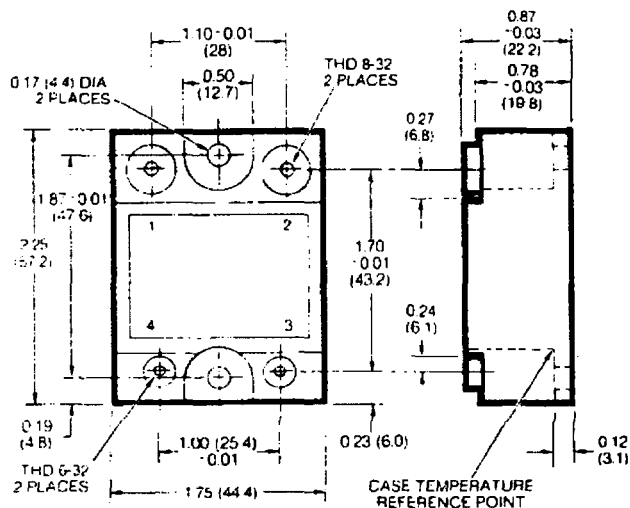
Base Plate: Aluminum (Some models nickel-plated)

Terminals: Tin-plated Brass. Nickel-plated steel screws & saddle clamps supplied unmounted

Tolerances: ± 0.02 (0.50) (unless otherwise noted)

Dimensions: Inches (mm)

Dimensional Drawing



Part Numbering

(Description does not represent an actual Crydom part number)

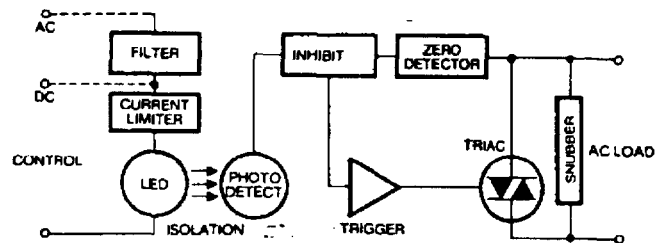
T	A	12	10	B	-13
Triac	Input: A = AC D = DC	Line Voltage: 12 = 120 VAC 24 = 240 VAC	Current Rating (Amps)	B = Form B,* Normally Closed (Form A Normally Open, standard; no designation needed)	-13 = 600V Peak Blocking -14 = 400V Peak Blocking

*Available with

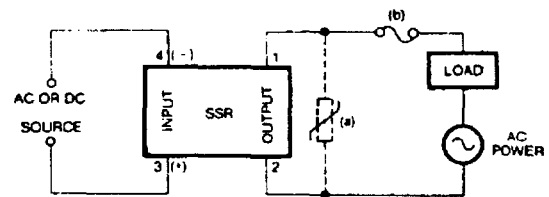
"D" prefix only (PC input). For phase control applications call factory.

Data and specifications subject to change without notice.

Block Diagram



Wiring Diagram



(a) Transient Protection

For transient and dv/dt protection, all models are fitted with an internal snubber. See table for details of additional transient overvoltage protection. If required, a Metal Oxide Varistor (MOV) may be connected across terminals 1 and 2 externally.

Max. Applied Line Voltage (VRMS)	Min. Transient Peak Rating of Relay (Vpeak)	Suggested IR MOV Part Number
130	400	Z10L221
250	600	Z10L441
	See Note ①	

(b) Fusing

Table shows suggested fuses suitable for most applications.

Max. Applied Line Voltage (VRMS)	Max. Current Rating of Relay (ARMS)	Suggested IR Fuse Part Number
130	10	SF13X10
130	25	SF13X25
250	10	SF25X10
250	25	SF25X20*

*Does not permit full rating of relay.

CRYDOM

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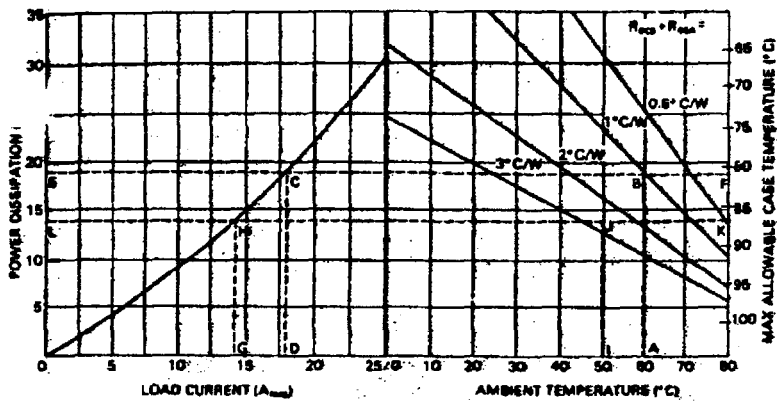


Figure 3. Use of Thermal Derating Curves (Examples)

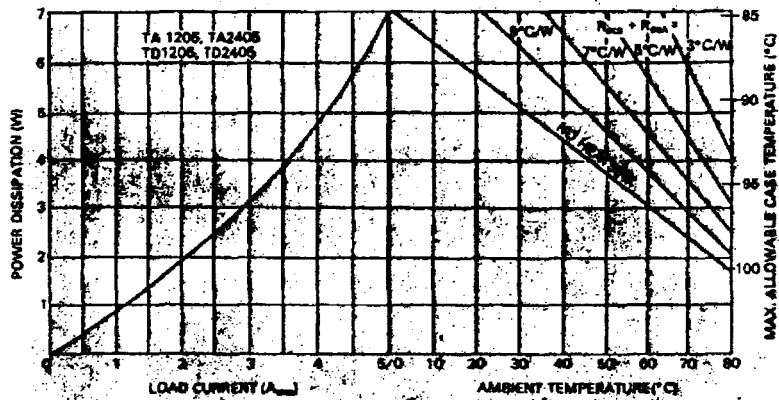


Figure 4. Thermal Derating Curves (5 Amp)

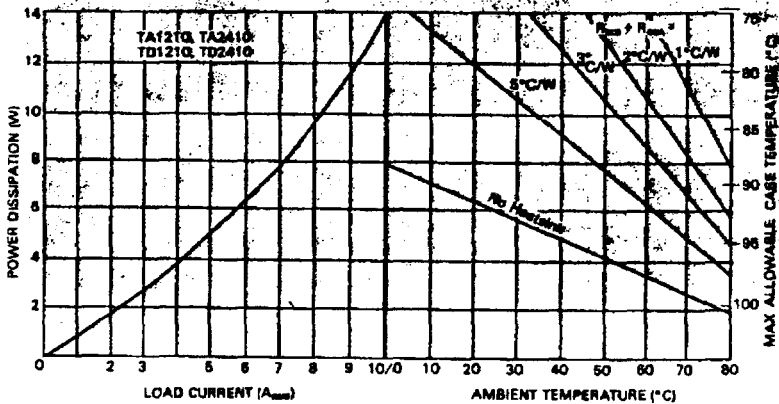


Figure 5. Thermal Derating Curves (10 Amp)

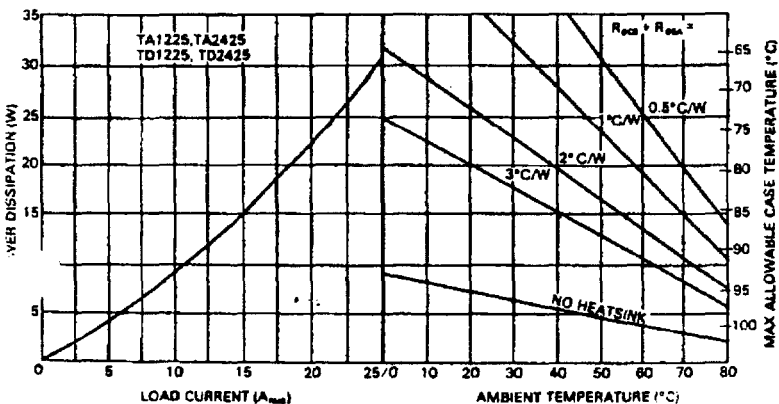


Figure 6. Thermal Derating Curves (25 Amp)

Surge Characteristics (see text)

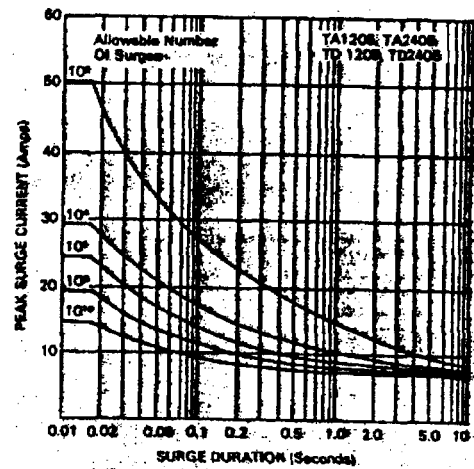


Figure 7. Peak Surge Current vs Duration (5 Amp)

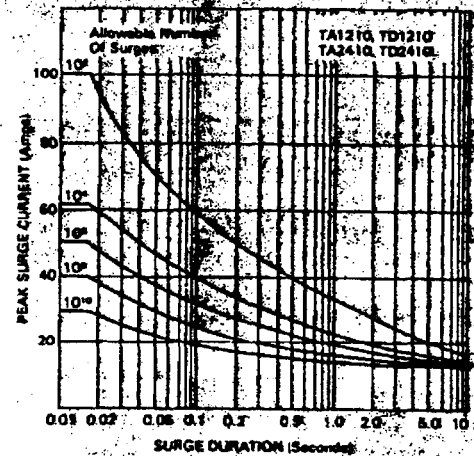


Figure 8. Peak Surge Current vs Duration (10 Amp)

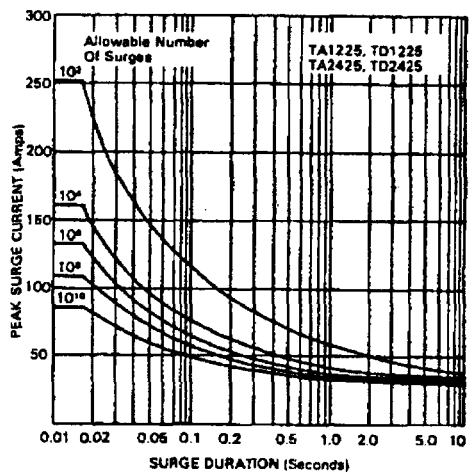


Figure 9. Peak Surge Current vs Duration (25 Amp)