TELEDYNE RELAYS

28 VDC SSPC

Part Number *	Description
PC02802-47XX	2 Amp, 28 Vdc Solid State Power Controller
PC02805-47XX	5 Amp, 28 Vdc Solid State Power Controller
PC02807.5-47XX	7.5 Amp, 28 Vdc Solid State Power Controller
PC02810-47XX	10 Amp, 28 Vdc Solid State Power Controller
PC02815-47XX	15 Amp, 28 Vdc Solid State Power Controller
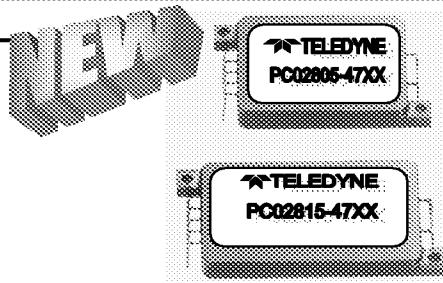
ELECTRICAL SPECIFICATION
(-55°C to 105°C CASE TEMPERATURE)

Input (Control) Specification

Parameter	MIN	TYP	MAX	UNITS
Bias Voltage	4.50	5.00	5.50	Vdc
Bias Current (on) Vbias= 5Vdc, Vctrl= 2.4 Vdc			45	mAdc
Control Voltage (High)			2.00	Vdc
Control Voltage (low)	0.80			Vdc
Control Current (High) Vctrl=2.4 Vdc			50	uAdc
Control Current (Low) Vctrl=0.8 Vdc			10	uAdc

Output (Load) Specification

Parameter	MIN	TYP	MAX	UNITS
Rated Line Voltage		28		Vdc
Rated Load Current				
PC02802-47XX			2.00	Adc
PC02805-47XX			5.00	Adc
PC02807.5-47XX			7.50	Adc
PC02810-47XX			10	Adc
PC02815-47XX			15	Adc
Output Leakage Current			200	uAdc
Output On-Resistance				
PC02802-47XX			0.08	ohm
PC02805-47XX			0.04	ohm
PC02807.5-47XX			0.04	ohm
PC02810-47XX			0.02	ohm
PC02815-47XX			0.02	ohm
Voltage Drop				
PC02802-47XX			0.20	Vdc
PC02805-47XX			0.20	Vdc
PC02807.5-47XX			0.30	Vdc
PC02810-47XX			0.20	Vdc
PC02815-47XX			0.30	Vdc
Transient Voltage			50.00	Vdc
Electrical System Spike			± 600	Vpk

MIL-R-28750 z= 80 ohms, pw= 10usec

* The last two digits in the part number denote the screen level in conformance test.
XX = 00 is a W level screened
XX= 01 is a Y level screened
(EXAMPLE: PC02805-4701 is "Y "level screened) (For Y, W level screen chart , Contact us !)

FEATURES/BENEFITS

➢ Temperature-independent current rating and overload protection
➢ Surge tolerant short circuit protection
➢ Optical isolation
➢ Low On-Resistance
➢ Flow Or Load Voltage status
➢ TTL and CMOS compatible control
➢ Meets surge and spike requirements of MIL-STD-704E

DESCRIPTION

These state of the art solid state power controllers (SSPCs) are designed for use in Power Controller applications. These SSPCs utilize the latest technology to provide low On-resistance output with complete short circuit and overload current protection. In addition, status output lines for trip, and load voltage are provided to monitor the load and provide BIT (built-in-test) feature.

SSPCs are electronic replacements for the conventional electromechanical circuit breakers. The remote features allow the SSPC to replace these circuit breakers as well as a load switching relay. They reduce component count, system weight and cost and increase system reliability.

Output (Load) Specification (Continued)

Parameter	MIN	TYP	MAX	UNITS
Capacitive Load				
@ Rated Line Voltage with Rated Resistive Load				
PC02802-47XX			60	uF
PC02805-47XX			150	uF
PC02807.5-47XX			225	uF
PC02810-47XX			300	uF
PC02815-47XX			450	uF
Turn-on Time			1	msec
Turn-off Time			1	msec
Trip Point @ 150% of Rated Load Current				
PC02802-47XX	2.80			sec
PC02805-47XX	2.80			sec
PC02807.5-47XX	2.80			sec
PC02810-47XX	2.80			sec
PC02815-47XX	2.80			sec
Trip Point @ 250% of Rated Load Current				
PC02802-47XX	1.50		6.50	sec
PC02805-47XX	1.50		6.50	sec
PC02807.5-47XX	1.50		6.50	sec
PC02810-47XX	1.50		6.50	sec
PC02815-47XX	1.50		6.50	sec
Trip Point @ Upper Limit Must Not Trip (600%)				
PC02802-47XX	0.50		1.90	sec
PC02805-47XX	0.50		1.90	sec
PC02807.5-47XX	0.50		1.90	sec
PC02810-47XX	0.50		1.90	sec
PC02815-47XX	0.50		1.90	sec
Trip Time at Short Circuit			1.00	msec
Overload Trip time	See Figure 4			
Trip Reset Time			50.00	msec
Vcc Initialization			100	V/usec
Vline=rated, Vctrl=0Vdc, Vbias=0 to 5Vdc, Ouput Shall remain Off				
Line Voltage dv/dt				
Per Mil-R-28750			100	V/usec

MECHANICAL OUTLINE
FIGURE 1
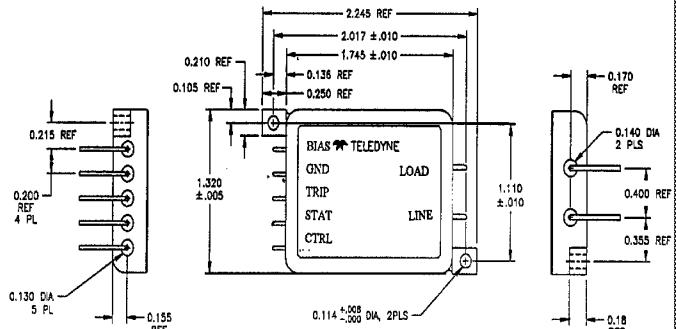
2,5,7.5 Amp, 28 Vdc Package
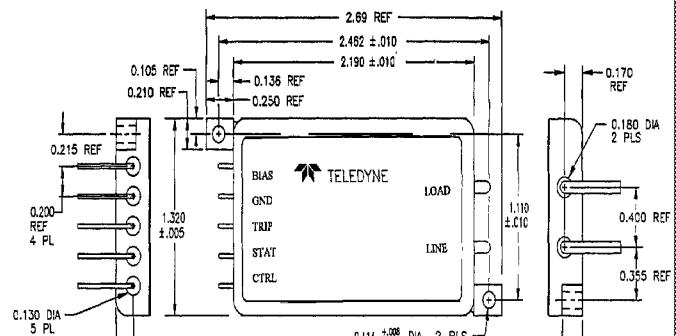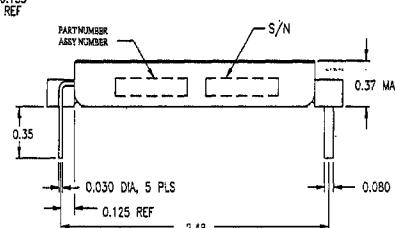
10, 15 Amp, 28 Vdc Package

| Parameter	MIN	TYP	MAX	UNITS
STATUS TABLE				
Status Output High				
Isource = 4 mA	3.7			Vdc
Status Output Low				
Jsink = 4 mA			0.4	Vdc
Load Status Turn-On Time			2	msec
Trip Status Turn-On Time			0.15	msec
Load Status Turn-Off Time			2	msec
Trip Status Turn-Off Time			0.15	msec
ENVIRONMENTAL SPECIFICATION				
Input to Output & Case Isolation			100	pF
Dielectric Withstanding Voltage				
Input to Output & Case			750	Vac
Insulation Resistance				
Input to Output & Case @				
500 Vdc		10^8		Ohm
Thermal Resistance, Junction to Case				
PC02802-47XX			1	°C/W
PC02805-47XX			0.5	°C/W
PC02807.5-47XX			0.5	°C/W
PC02810-47XX			0.25	°C/W
PC02815-47XX			0.25	°C/W
Thermal Resistance, Junction to Ambient				
PC02802-47XX			21	°C/W
PC02805-47XX			21	°C/W
PC02807.5-47XX			21	°C/W
PC02810-47XX			19	°C/W
PC02815-47XX			19	°C/W
Operating Temperature	-55		105	°C
Storage Temperature	-55		125	°C
Constant Acceleration	MIL-R-28750			
Seal	MIL-R-28750			
Weight				
PC02802-47XX			65	gm
PC02805-47XX			65	gm
PC0287.5-47XX			65	gm
PC02810-47XX			70	gm
PC02815-47XX			70	gm
Package Body Finish: Nickel Plate Covered by Electroplate gold				
Pin Finish: Nickel Plate covered by electroplate gold				

FUNCTIONAL BLOCK DIAGRAM
FIGURE 2
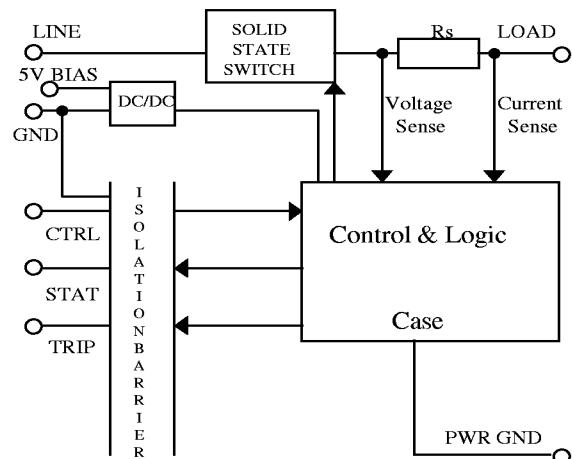
TIMING WAVE FORMS
FIGURE 3
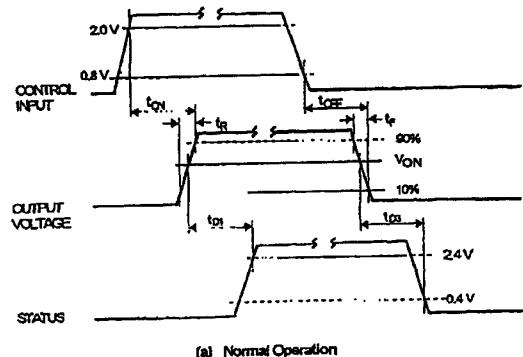
(a) Normal Operation
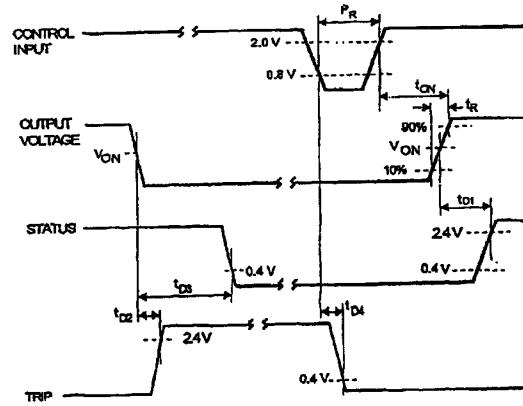
(b) Trip Operation

SPECIFICATION SUBJECT TO CHANGE WITHOUT NOTICE

CURRENT TRIP
CHARACTERISTICS
FIGURE 4
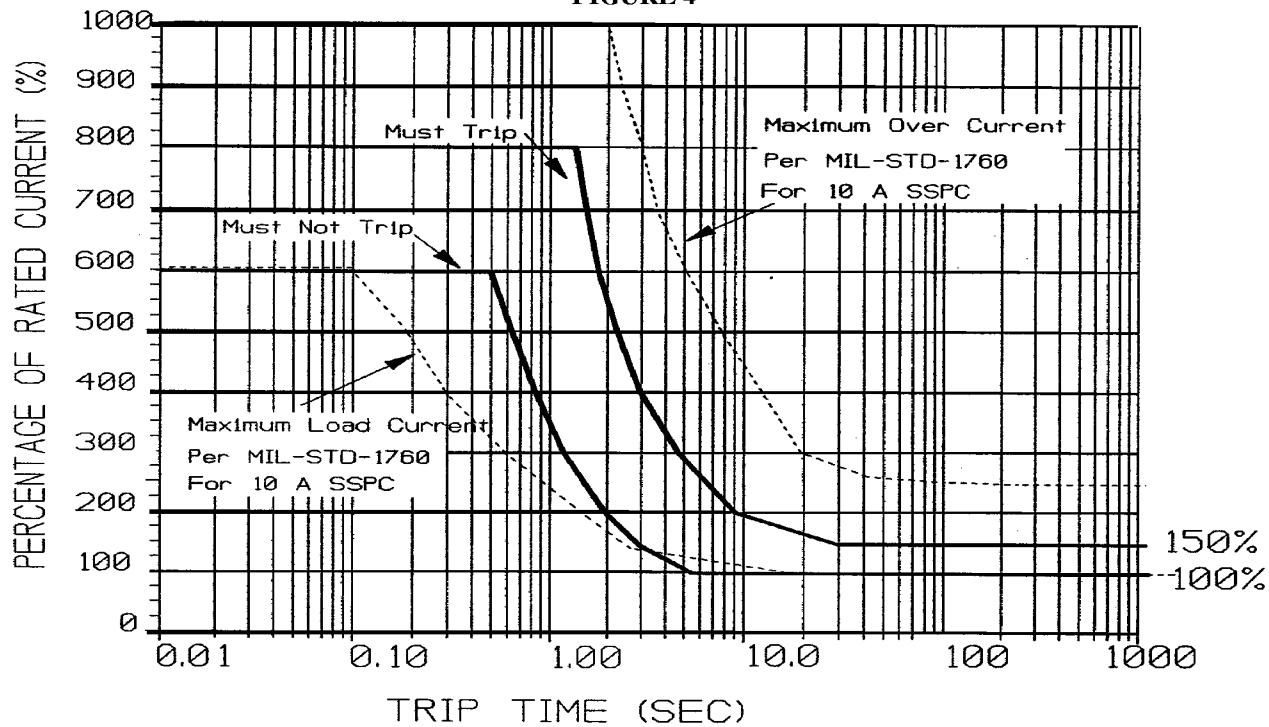
SSPC Functional Requirements:

- CASE GROUND: In order for the LOAD STATUS to function properly, the case must be connected to the LINE VOLTAGE RETURN with impedance of 10 ohms maximum.
- The CONTROL input is CMOS/TTL Compatible Logic. The device is commanded ON, OFF and RESET by a CMOS/TTL signal at the CONTROL pin. A HIGH signal will turn the device ON. A LOW signal or an OPEN condition will turn the device OFF. If the device trips OFF, the device is reset by cycling the CONTROL to OFF then ON with a pulse width of greater than 50 msec.
- LOAD STATUS output. A CMOS/TTL HIGH at the LOAD STATUS output indicates that the device is ON and the output (load) voltage is present. A CMOS/TTL LOW at the LOAD STATUS output indicates that the device is OFF and the output (load) voltage is not present.
- TRIP STATUS output. A CMOS/TTL HIGH at the TRIP STATUS output indicates that the device has tripped due to an overcurrent condition. TRIP STATUS output is a CMOS/TTL LOW during normal operation. A TRIP STATUS will change to CMOS/TTL HIGH in response to an overcurrent trip. TRIP STATUS will remain HIGH until the overcurrent condition has cleared and the device is reset.
- Overcurrent operation. The device will trip (i.e., turn off) if the load current exceeds the requirement of FIGURE 4. Once the device is tripped, it will remain OFF indefinitely, until the overcurrent condition has cleared and the device is reset.

NOTES:

- Unless otherwise noted: All tests shall be performed with Vcc= 5.0 V, Vline = Rated Voltage, Istatus = $\pm$ 4 ma, I load = Rated current
- The transistion time for the control signal shall be less than 0.1 mS in application
- Inductive loads must be diode suppressed. System series inductance in the short circuit mode shall be less than 30 micorhenry