



# CT2100

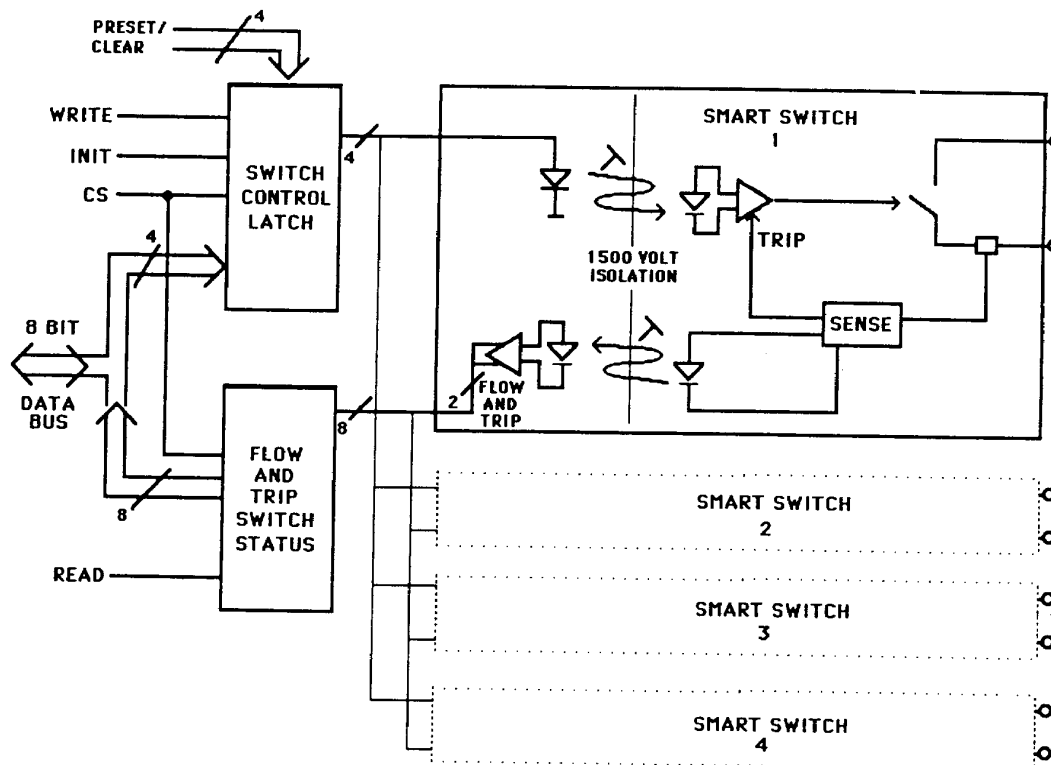
Microprocessor Controlled Quad  
Solid State Relay

## GENERAL DESCRIPTION

The CT2100 is a microprocessor controlled quad, solid state relay that incorporates fully isolated switch status and built-in-test. The hybrid provides 1500V isolation between control inputs and switch outputs. Internal control and status registers provide analog switch function which operates via simple I/O commands. Functions and operates from -55°C to +125°C in military environments.

## FEATURES

- 4 Independent 1.5 AMP Switches
- 1500V Isolation Between Switches
- Operates from a 5V Logic Supply and 14 - 32 Volt Bias Supply
- Trip Level 2 -3 Amps.
- Sense Current Flow of 2.5mA Max.
- Switches are Designed to Withstand Electro-Magnetic Pulse (EMP)



## DESCRIPTION

The CT2100 is a quad solid state relay. The device has been designed to provide an interface which operates as a simple computer I/O port. The switches are controlled by a single data word which the processor writes to an internal control latch. In addition to the basic switch function Flow and Trip flags provide the operational status of each of the four switches. These signals are internally contained in an 8 bit status register which is accessible by an I/O read command. The switches may also be controlled asynchronously (without write strobes) by use of separate initialization pins. These may also be used for Power-Up control in a microprocessor based system.

## SWITCH CONTROL

The CT2100 has four independent fully isolated switches which may be used as high line or low line drivers. The isolated design allows the user to parallel devices or place them in series as required for the specific application. Control of the switch is via I/O write or asynchronous control lines. The CT2100 has an internal switch control latch which is updated via subsystem I/O write as illustrated in Figure 1. Once the I/O write is completed the switch is latched into the off or on state. The switch may also be controlled via individual preset and clear lines. These lines asynchronously drive the switch control latch without the need for a write strobe. The preset/clear inputs are enabled by the initialize pin.

## SWITCH STATUS

Each switch in the CT2100 is monitored for circuit Trip and Flow. This data is contained in a 8 bit status register which is accessible via an I/O read command. The timing for the I/O read is shown in Figure 2. The Trip and Flow flags are provided to the system to assess the operational capability of the switch versus the status of the controlled load. The Trip bit is set high when the switch has conducted between 2 to 3 amps of current (over current trip point is typically 2.5 AMPS). The Flow bit is set when the switch senses current flow from 2.5mA up to the trip level. The table and circuit drawing in Figure 3 illustrate the diagnostic capability of a system utilizing the CT2100 for load control.

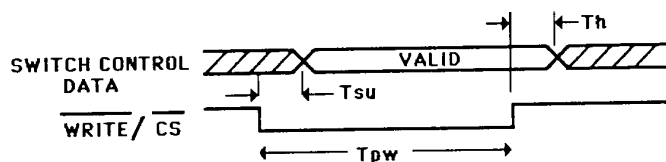


Figure 1

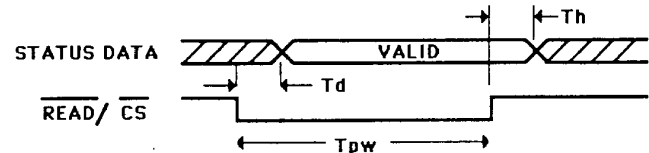
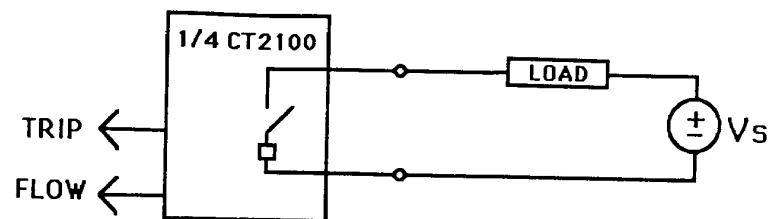


Figure 2

## Timing Data

Read Cycle				Write Cycle			
Parameter	Min.	Max.	Units	Parameter	Min.	Max.	Units
Tpw pulse width	100	-	nsec	Tpw pulse width	100	-	nsec
Td data delay	-	50	nsec	Tsu set-up time	25	-	nsec
Th hold time	10	-	nsec	Th hold time	10	-	nsec



STATUS			
SWITCH CONTROL	TRIP	FLOW	CONCLUSION
1	0	1	NORMAL
1	0	0	SHORTED SWITCH
1	1	1	SHORTED LOAD
1	1	0	SHORTED SWITCH AND LOAD
0	0	1	SWITCH OPEN
0	0	0	NORMAL
0	1	1	SHORTED LOAD
0	1	0	SHORTED LOAD, SWITCH

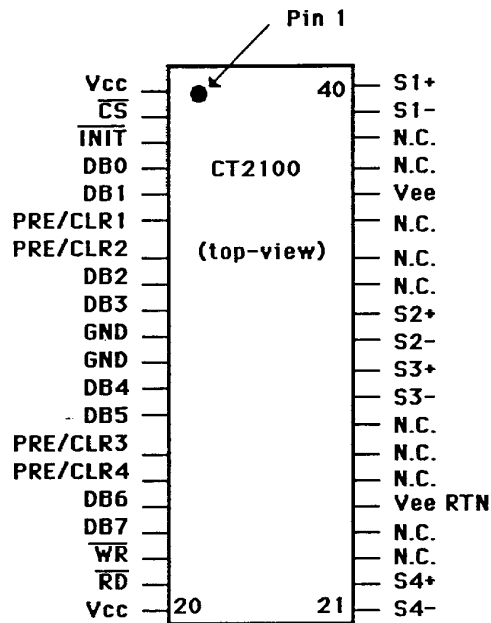
Figure 3

#### Switch Data

Parameter	Min.	Max.	Units	Parameter	Min.	Max.	Units
I <sub>ot</sub> trip current	2	3	Amps	V <sub>iso</sub> Isolation	1500	-	Volts
I <sub>s</sub> flow sense	1	2.5	mA	T <sub>sd</sub> switch delay		2	msec
R <sub>on</sub> on Resist	-	1	Ohm @125°C	R <sub>on</sub> on resist	-	0.6	Ohm @25°C

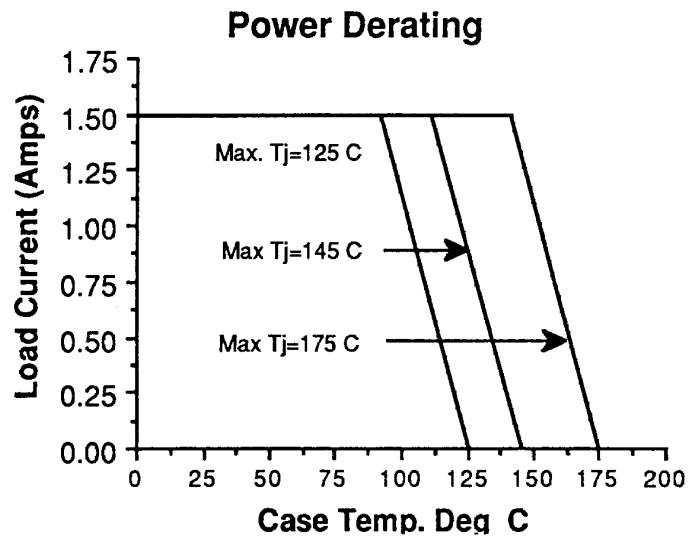
#### BUS BIT DEFINITION

BIT	WRITE CYCLE	READ CYCLE
D0	S1 on/off 0=on	S1 Flow (Bit =0 when current > 2.5mA)
D1	Not used	S1 Trip (Bit =1 when s.c. prot active)
D2	S2 on/off 0=on	S2 Flow
D3	Not used	S2 Trip
D4	S3 on/off 0=on	S3 Flow
D5	Not used	S3 Trip
D6	S4 on/off 0=on	S4 Flow
D7	Not used	S4 Trip



#### Package Data

Dimensions: 2.1x1.2x0.3 in.  
Plug-in Type Package  
Row Separation: 0.9 in.  
Pin Centers: 0.1 in.



# CTI

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