

Part Number	Description
ZD24CC*	500mA, 80 Vdc short-circuit protected up to 60 Vdc, solid-state relay for through-hole mounting
SZD24CC*	500mA, 80 Vdc short-circuit protected up to 60 Vdc, solid-state relay for surface mount

\*No suffix: Room temperature electrical testing only  
W suffix: load conditioning, temperature cycling and 25°C parametric testing  
T suffix: load conditioning, temperature cycling, burn-in and 3-temperature parametric testing

**ELECTRICAL SPECIFICATIONS**  
(-55°C to +105°C ambient temperature unless otherwise specified)

**INPUT (CONTROL) SPECIFICATIONS**

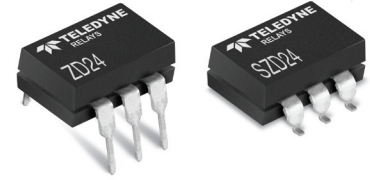
	Min	Max	Units
Input Current	8	20	mA
Input Voltage @ 10 mA	2	3	Vdc
Must Turn-On Current	8		mA
Must Turn-Off Current		100	μA
Must Turn-Off Voltage		0.8	Vdc
Reverse Polarity	-6		Vdc

**OUTPUT (LOAD) SPECIFICATIONS**

	Min	Max	Units
Load Voltage Range	0	80	Vdc
Output Current Rating (See Figure 5)		500	mA
Leakage Current at Rated Voltage		10	μA
Transient Blocking Voltage @25°C		100	Vdc
Output Capacitance @25Vdc (25°C)		600	pF
Output Voltage Drop @500mA		0.5	Vdc
On Resistance		1.0	Ohm
Turn-On Time		2.0	ms
Turn-Off Time		1.0	ms
Trip Overload (See Figure 6)			A
Short-Circuit Protection		60	Vdc

**STATUS SPECIFICATIONS**

	Min	Max	Units
Status Leakage Current @ 15 Vdc		5	μA
Status Blocking Voltage		32	Vdc
Status "On" Voltage @ 10 mAdc		0.4	Vdc
Status "On" Current		10	mA



**FEATURES/BENEFITS**

- Short-circuit protected
- Overload protected
- Trip status
- Low off-state leakage
- Optical isolation
- Compact 6-pin package

**DESCRIPTION**

ZD24CC Series Relays have optical isolation between relay input and output. Loads may be connected to either the positive or negative output terminals. ZD24CC Relays act as electronic circuit breakers that sense shorted loads or other overload events and then trip-off. Relay contacts open and no current flows through the relay and associated loads. These relays prevent overcurrent damage to the system. ZD24CC Series Relays have Trip Status to indicate a latched-off relay condition. Cycling the relay on-off removes the tripped or latched-off condition and returns the relay to the normal operating state.

**STATUS OUTPUT TRUTH TABLE**

Output (Switch) State	Status Output Level
Tripped	Low ( $\leq 0.4$ Vdc)
Not Tripped	High (open collector)

**GENERAL SPECIFICATIONS**

(+25°C ambient temperature unless otherwise specified)

**ENVIRONMENTAL SPECIFICATIONS**

	Min	Max	Units
Operating Temperature	-55	+105	°C
Storage Temperature	-55	+125	°C
Junction Temperature @0.5A		+125	°C
Thermal Resistance $\theta_{JA}$		125	°C/W
Dielectric Strength	1000		Vac
Insulation Resistance (@500 Vdc)	10 <sup>9</sup>		Ohm
Input to Output Capacitance		5	pF
Shock	MIL STD 202, method 213, cond. F, 1500 g		
Vibration	MIL STD 202, method 204, cond. F, 1500 g		
Resistance to Soldering Heat	MIL STD 202, method 210		
Solderability	MIL STD 202, method 208		
Thermal Shock	MIL STD 202, method 107		

**MECHANICAL SPECIFICATIONS**



Weight: 0.035 oz. (1g) maximum  
Case: 6-pin, dual-in-line, filled epoxy

TOLERANCES: .XX = ±0.010 (±0.25), .XXX = ±0.005 (±0.13)  
CONTROLLING DIMENSIONS ARE IN INCHES. METRIC DIMENSIONS ARE SUPPLIED FOR REFERENCE ONLY.

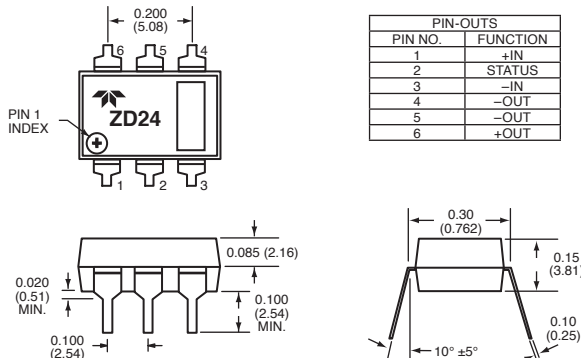
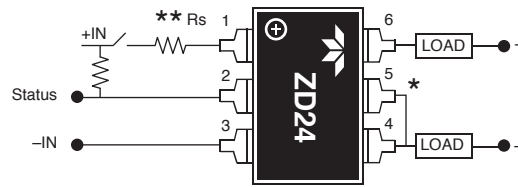


Figure 1

**TYPICAL WIRING DIAGRAM**



\*Shorted internally  
\*\*Series resistor required to limit input current to 20mA maximum

Figure 2

**CONTROL CURRENT VS. INPUT VOLTAGE**

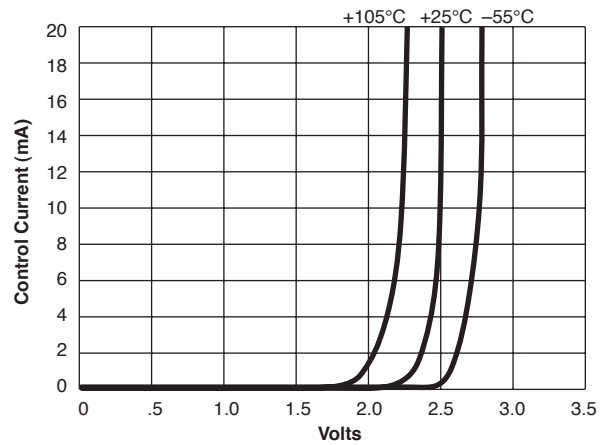


Figure 3

**TURN-ON TIME VS. INPUT CURRENT**



Figure 4

**LOAD CURRENT VS. AMBIENT TEMPERATURE**



Figure 5

**TYPICAL OVERLOAD TRIP CURRENT VS. TIME**



Figure 6

**FUNCTIONAL BLOCK DIAGRAM**



Figure 7

**NOTES:**

1. The ZD24CC relay's input current should be limited to between 8 and 20mA. An external resistor whose value =  $(V_{IN} - 2.5 \text{ volts}) \div 0.012 \text{ Amps}$  is a good choice for limiting input current.
2. Relay input transitions should be less than 1.0 millisecond.
3. Loads may be attached to either the positive or negative output terminal.
4. Maximum load current ratings are with the relay in free air and soldered to a printed circuit board.
5. Timing is measured from the input current transition to the 10% or 90% points on the output voltage transition.
6. Overload conditions (including shorted loads) are specified for load supply voltages to 60 Vdc maximum.
7. For through-hole-PCB-solder-attaching ZD24CC Series Relays, the wave-solder or solder pot operations are limited to +260°C maximum for 10 seconds, maximum.
8. For surface-mount-solder-attaching SZD24CC Series Relays, in IR heating or convection heating systems, the component temperature is limited to +235°C maximum for 10 seconds maximum.

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