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RELAYS
A Teledyne Technologies Company

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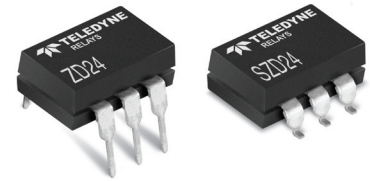
FEATURES/BENEFITS
• Short-circuit protected
• Overload protected
• Trip status
• Low off-state leakage
• Optical isolation
• Compact 6-pin package

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 (≤0.4 Vdc)
Not Tripped	High (open collector)

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ZD24CC Series
500mA, 80 Vdc Optically Isolated
Short-Circuit Protected with Trip Status

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 θ_{JA}		125	°C/W
Dielectric Strength	1000		Vac
Insulation Resistance (@500 Vdc)	10^9		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.

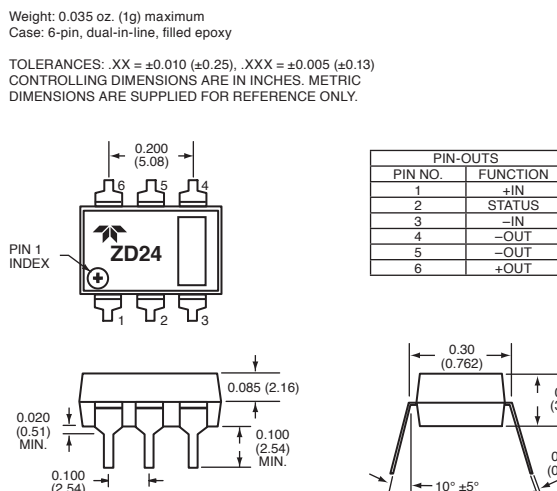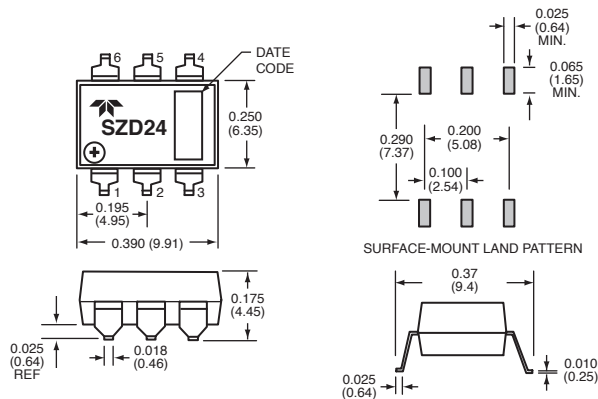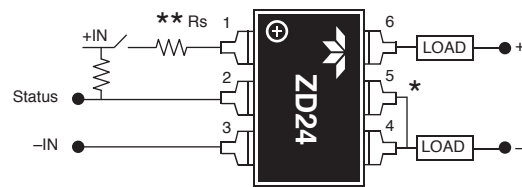| PIN-OUTS	
PIN NO.	FUNCTION
1	+IN
2	STATUS
3	−IN
4	−OUT
5	−OUT
6	+OUT

Figure 1

TYPICAL WIRING DIAGRAM

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

Figure 2
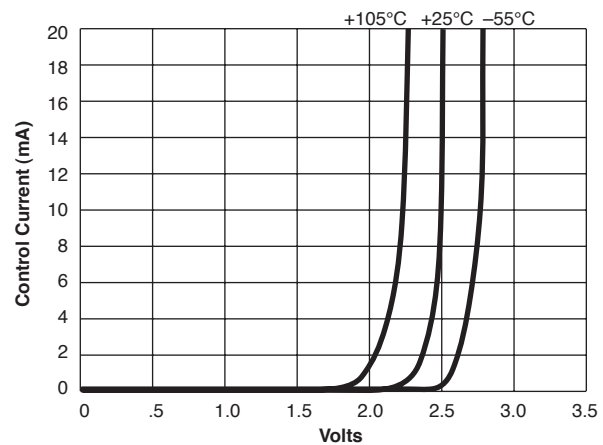
CONTROL CURRENT VS. INPUT VOLTAGE

Figure 3

TURN-ON TIME VS. INPUT CURRENT

Figure 4

ZD24CC Series
500mA, 80 Vdc Optically Isolated
Short-Circuit Protected with Trip Status

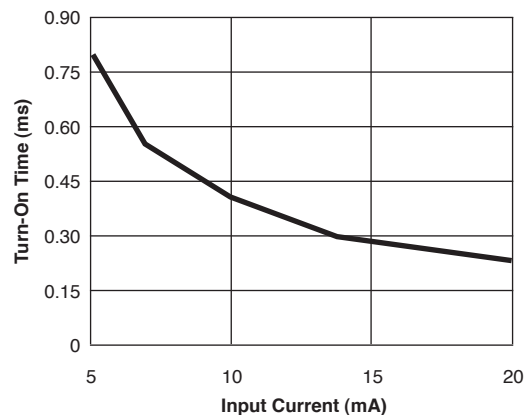TELEDYNE
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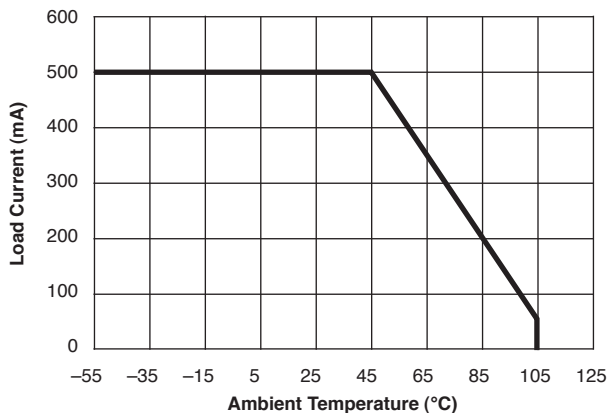## LOAD CURRENT VS. AMBIENT TEMPERATURE

Figure 5
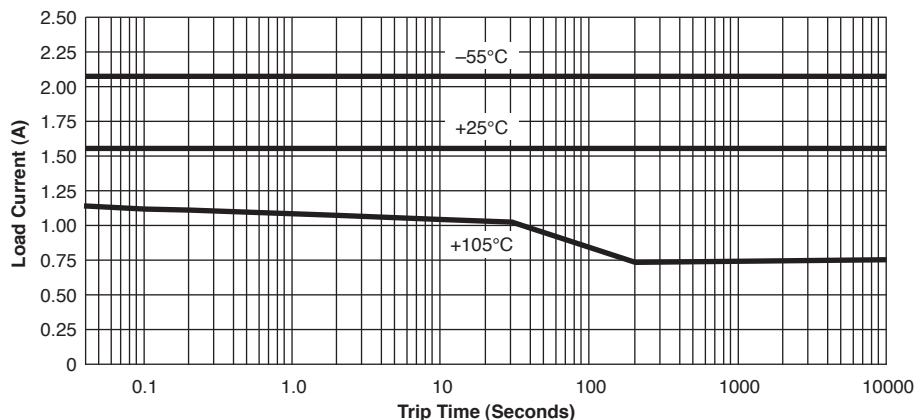
TYPICAL OVERLOAD TRIP CURRENT VS. TIME

Figure 6

FUNCTIONAL BLOCK DIAGRAM

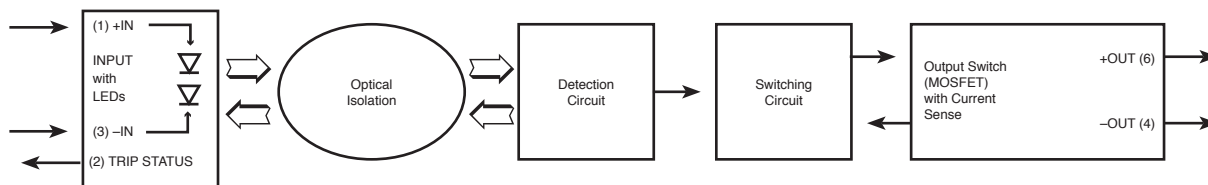*Figure 7*

NOTES:
1. The ZD24CC relay's input current should be limited to between 8 and 20mA. An external resistor whose value =(VIN – 2.5 volts) ÷ 0.012 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.

Mouser Electronics

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