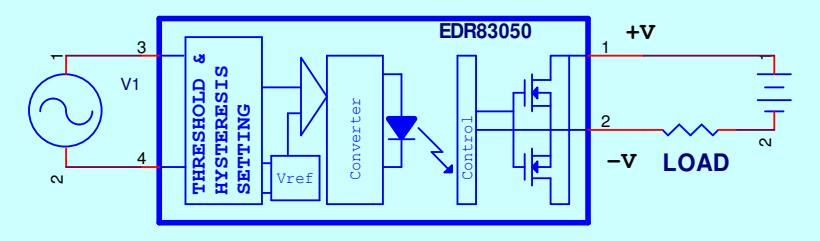
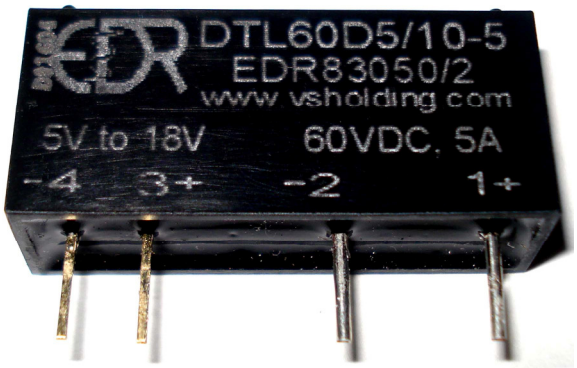
Wide Hysteresis, Precision Thresholds Powerful relays

The XTxL - family of precision threshold input solid-state relays intended for voltage monitoring applications. It incorporates a micro power, precision voltage reference and comparator for controlling high-power MOSFETs via photovoltaic. The design allows easily accommodating various thresholds setting to meet customers' requirements.



Other features: +/- 1.25% voltage threshold accuracy, immune to brief input transients, fast turn on delay within 2mS and turn-off less than 0.3mS, and various output voltage and current are offered. A threshold and hysteresis are set during the production process.



Electronic Design & Research Inc

Under management

VS Holding LLC

www.vsholding.com

Electronic Design & Research *is a pioneer in developing and manufactures high-speed, high-power relays/switches. Since 1998, we have produced vast varieties of Solid-State Modules and Devices. Our products have being used in thousand defense related and industrial applications.*

Piezo Drivers
Video Switches
½ Bridge drivers
Q-type high-pass filters
Precision F-to-V Converters
Soft-Landing Solenoid Drivers
50Hz/60Hz Comb Notch filters
Super-high Power, fast Switches
H-bridge or Full-bridge Drivers
High-power, high-speed Switches
Universal Analog Building Module
Signal Switching Separating Network
Sockets for relays, switches and drivers
Charge-Pump Wide-Band FM detectors
Low-Noise, High-Voltage DC/DC converters
DC-3phase AC resonance mode driver for EV
DC-12phase AC resonance mode driver for EV
Perpetual Pulse-width Discriminator, US Patent
½ and H Fuzzy Logic sockets for various relays
Fuzzy-Logic SPDT Relays, Switches and ½ Drivers
Fully protected, Solid-State DPST Brake, US Patent
Single Pole, Single Throw Relays and Switches, (SPST)
Power-distributing module for Motorcycles, US Patent
Single Pole, Double Throw Relays and Switches, (SPDT)
Double Pole, Single Throw Relays and Switches, (DPST)
1-Form B, SPST-NC (normally closed) Solid State Relays
Charge-and-Add, Up/Down DC/DC Converters, US patent
1-Form B and 1-Form A, DPST-NC/NO Solid State Relays
µ-Power Controller for Magnetic Latching Valves, US Patent
High Voltage, Nana-Seconds Rise/Fall time, Push-Pull Drivers
Super-low noise preamplifiers for a low and high impedance sources
µ-control, High-Power SPST-NC, normally closed relays, US Patent

We are working diligently to bring new devices to the market and to meet your requests. Above is a list of family of devices we developed and manufacturing. Most of them covered by propriety technologies and some of them so unique that we filed and receive patents. We stock an inventory of available products that exceeds several thousands in our warehouse. We keep a small number of popular devices in stock and ready to ship immediately. Our production capacities exceed 10,000 devices per months with two production robots programmed and working at a full speed.

For your unique applications that required a different voltage, current or speed, ordering instruction (on the last page) could be useful in the creation a new part and summarizing what you needed. Do not hesitate to send us an email: info@vsholding.com for any additional information, delivery schedule, and prices.

Thank you,

Vladimir A. Shvartsman, Ph.D.
V_Shvartsman@vsholding.com

Introduction

Families of "xTxL" devices with ultra-low power consumption

For years, electromechanical relays have been used in wide varieties of power control applications. Though these mechanical devices, which are made of a coil and contacts, have demonstrated considerable reliability, they suffer problems associated with having moving parts. Material fatigue shortens the life span of mechanical relay, and its reliability suffers due to shock and vibration. A mechanical relay is subject to arcing and sparking, contacts bouncing, substantial delay to react on an applied control signal, and a low switching frequency. Being a relatively low cost device, the cost of a relay capable of switching above 45VDC is rapidly increasing. In applications, where it is required to switch a high DC voltage, the cost of a mechanical relay grows very rapidly. The coil switching leads are susceptible to voltage spikes or fly-back voltage. A coil-operated device requires plenty of power to operate properly and is not available for a high switching frequency. Such a high waste of power has prohibited using many electromechanical relays in modern electronic devices where only a few milliwatts of power are available. Since semiconductor devices started flourishing, and their cost has decreased, solid-state relays (SSR) have become a valuable alternative to electromechanical relays.

Electronic Design & Research/VS Holding LLC pioneers of many innovations described in multiple US Patents held by Vladimir A. Shvartsman that were adopted in the design of a large number various Solid-State Devices. Some of them were listed on page #2.

Page #4 offers plenty of technical information about popular P/N EDR83050 relay of the xTxL family and on page #9 there are a number of devices rated at various voltage/current ratings. If none of them meets your rating requirements, please let us know and we will make it for you. There is no additional fee for accommodating your specific output requirements unless some modifications would be required to its design or to the PC Board.

Each of devices will be set at your specified threshold voltages and hysteresis.

Your order or inquire should email to info@vsholding.com. We will provide you with the best possible technical support responding on our questions.

Let us know if you might need a relay with any other configuration. Devices are available with the output contact forms as a SPST or "DTxL" (1 Form A or 1 Form B), SPDT or "TTxL" (1 Form C) and DPST and "WTxL" (2 Form A, 2 From B or 1 Form A and B).

Good luck, do not hesitate asking whatever technical question you have in mind, even it sounds rather trivial.

Electronic Design & Research
http://www.vsholding.com

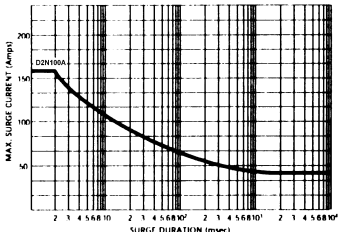
Technology for people's ideas

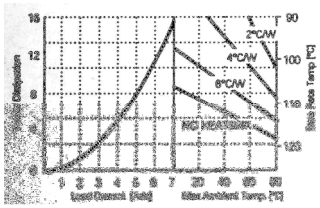
EDR83050 -- 60VDC, 5A, SPST relay with a hysterisys

10 µA – maximum stand-by current, 10 mA – input activated current

Features: **Utilizes only 0.43 sq. in. of PCB area and only 1.15" tall**
5-Amps continuously or up to 6-Amps pulse at 1 mS pulse
High sensitivity, even at high switching frequencies
Low Rds = .007 Ohm

Please specify threshold voltages





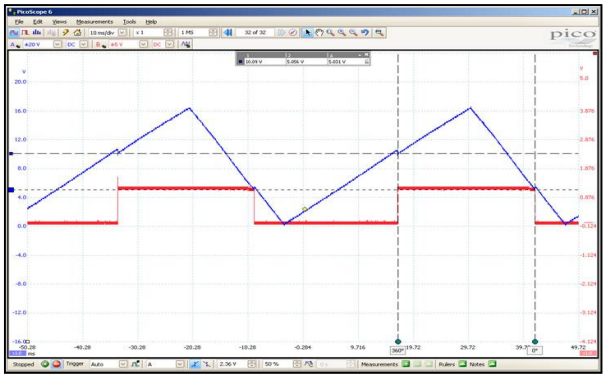
Input Specifications:

Input DC Voltage	5V to 35V
Nominal Current above threshold	10 mA
Maximum current below threshold	.01 mA
Thresholds set with 5% accuracy	**10 VDC (on) 5-VDC (off)**

Typical Output Specifications

Operating DC voltage range		0 to 60 VDC
Maximum continuous current		5.0A
Maximum surge current (IDM) - 2mS		6.0 A
Maximum on-state resistance		0.07 Ohm
Rising time	max.	.8 mS
Delay-on time	max.	.25 mS
Falling time	max.	0.1 mS
Delay-off time	max.	0.3 mS
Maximum switching frequency		300 Hz

*** Test performed at the input current equal to 10 mA**

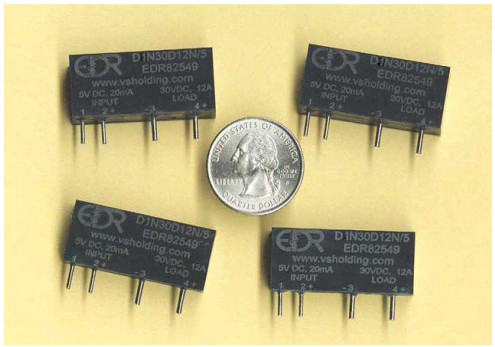


General Specifications

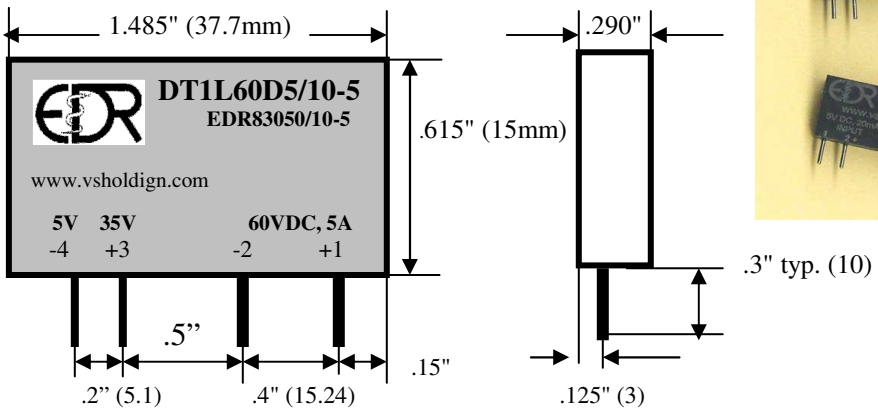
Ambient operating temperature range	-40^0 C to 85^0 C
Ambient storage temperature range	-45^0 C to 105^0 C
Dielectric Strength input-to-output	2,500VDC/1 sec

Mechanical Specifications:

Weight	.04 oz
Encapsulation	Epoxies Etc. 50-2366RFR / 50-2366CFR



Packaging information and pins-out for a mini SIP4m.



PIN 1: + LOAD
PIN 2: - LOAD
PIN 3: +V CONTROL
PIN 4: - V CONTRL

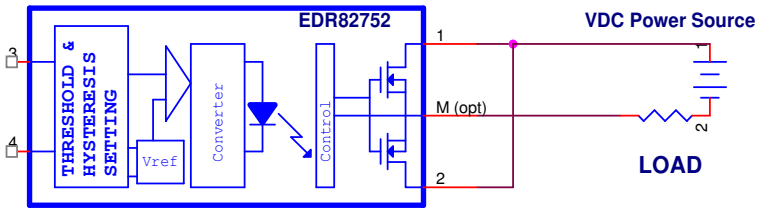
All Dimensions are in inches (millimeters). Control (input) pins D=.03", output (power) pins D=.40" (.85 mm)
All Dimensions are in inches (millimeters).
Dimensions for SIP4 package 0.615"H x1.485"L x 0.290"W
Terminals/solder for SIP4 package control-0.3", power–0.40"

Transient Protection: All loads are inductive, even ones that are not so obvious or labeled. An inductive load produces a harmful transient voltage, which is much higher than applied. A SSR built with a MOSFET output acts as an ideal switch that aid in generating from seemingly "non-inductive" load a large voltage surge, which can cause damage the SSR and other connected devices if it is not suppressed. A transient voltage suppressor and a snubbing network must be used for clamping excessive spikes.

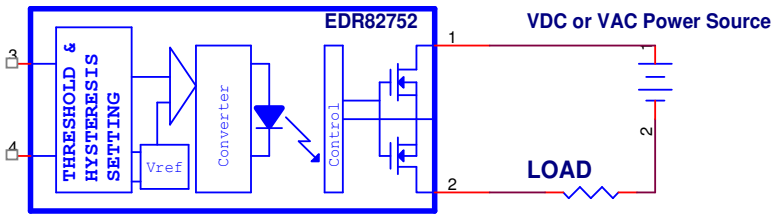
Electronic Design & Research Inc. ** 7331 Intermodal Dr. ** Louisville ** KY 40258
Tel: 502-933-8660; Fax: 502-933-3422; Sales: 800-336-1337; e-mail: vsholding@vsholding.com

P/N EDR83050 is available with three output terminals

A device manufactured with three output terminals to give a customer flexibility to control either a DC or AC/DC power. A power handling (current rating) is almost double of an AC rating.



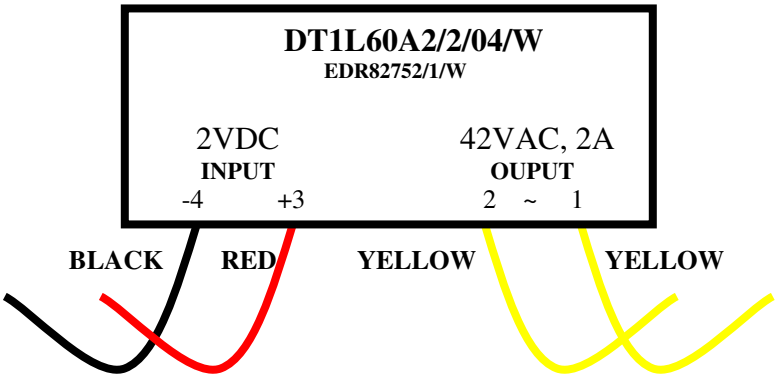
Here is an example of double current for a DC power handling applications.



A relay can be used to control either AC or DC power.

In some application, our customer solder directly our devices vie wires to their systems

We offer color-coded stripped at the end wires of any length. For an AC/DC (+/- Load), output rating an output colors are the same because there is no difference in which order connection is performed.



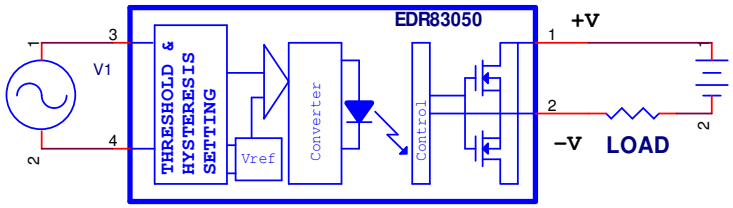
Our relays/switches manufactured with for either a pins for PC board soldering, a screw-type terminals and wires. For ordering a relay with wire, just add "W" at the end of the part number for "wire." Tell us how long does the wire should be and the length of the stripped ends.

News release

EDR/VSHOLDING announces the "xTxL" family of SSRs with high precision, wide hysteresis window comparator and varied contact forms rated at various voltages/currents

Louisville KY, USA – June 01, 2016. Electronic Design and Research, Inc., the leader in developing and MFG innovative Solid-State Modules, has announced availability of SSRs with a precision window comparator input for monitoring an input voltage and high-power output. Devices are available with the output contact forms as a SPST or "DTxL" (1 Form A or 1 Form B), SPDT or "TTxL" (1 Form C) and DPST and "WTxL" (2 Form A, 2 From B or 1 Form A and B).

The xTxL relays can work directly off a control signal, if it can provide 10 mA current. If a control signal is a low power of 10 µA or so, an external power source of any voltage from 5.0 V to 36.0 V and 10 mA is



required. A threshold and hysteresis are set during production. We will set the hysteresis to what you request for only $50.00, that is, if an order less than 250 relays. For a larger order, it is free.

Other features: These devices provide 5% voltage threshold accuracy (1.12% is available), immune to brief input transients, fast turn on delay within 2mS and turn-off less than 0.3mS, and various output voltage and current are offered.

A device cost varies and mostly depends on an output voltage/current rating. For an example, P/N EDR83050/10-5 or DT1L60D5/10-5 (SPST-NO) rated at 60VDC and 5-Amps with the hysteresis set at 10 V (on) and 5 V (off) encapsulated in a SIP4 box .61" H x 1.485" L x 0.29" W. Other boxes sizes were used for switching larger power.

We rate all our devices without considering an external heat sink, thus removing confusion in selecting a proper device for your applications. Our devices have been good candidates for energy efficient applications, while PWM abilities support enhanced design flexibility and precision control.

Small quantities of devices are available from our stock and can be shipped in couple of days. Our production capacities is of up to 10,000 per/month. A cost varies depending on devices and quantities, for an example p/n EDR83050/x-x (DT1L60D5/x-x) costs $47.84 ea/1000.

Electronic Design & Research Inc. is a small high-tech company develops and manufactures high-performance solid-state modules, such as relays/switches, high-speed push-pull drivers, several families of H-drivers, highly efficient Charge-and-Add DC/DC converters, high-current switching systems capable of delivering megawatts of power in 50 ns, power distribution switches for power back-up systems. For bio-medical applications, we offer a super-high resolution EKG for recording the His Bundle signal from a body surface on beat-by-beat basis, high-speed biases generator (DDS-701, HSBG-602, etc.) for MRI/MRS, etc. EDR's innovative solutions serve high-growth applications within the automotive market, thermo-electrical coolers/heaters, with additional focus on aviation, and industrial solutions, and various research facilities. Further information about EDR Inc. can be found at http://www.vsholding.com

Contacts:
Vladimir A Shvartsman, Ph.D.
Tel: (502) 933-8660 V_Shvartsman@vsholding.com

Solid State Relay for a high noise environment

1-Form A, SPST-NO Solid State Relays

Model Number	Package	Operating Voltage	Id (A) cont.	Idm (A)	p/n
DT1L30D12/x-x	SIP4, mini	0 – 30 VDC	12 A rms	85	EDR82740/x
DT1L30A11/x-x	SIP4, mini	+/- 30VDC (21 VAC)	11 A rms	50	EDR82750/x
DT1L30D05/x-x	SIP4, mini	0 – 30 VDC	1 A rms	4	EDR82741/x
DT1L55D10/x-x	SIP4, mini	0 – 55 VDC	10 A rms	80	EDR82742/x
DT1L55A8/x-x	SIP4, mini	+/- 55VDC (38 VAC)	8 A rms	60	EDR82751/x
DT1L60D5/x-x	SIP4, mini	0 – 60 VDC	5 A rms	40	EDR82743/x
DT1L60D5/x-x	SIP4, mini	0 – 60 VDC	5 A rms	6	EDR83050/x
DT1L60A2/x-x	SIP4, mini	+/- 60 VDC (42 VAC)	2 A rms	3	EDR82752/x
DT1L60D3/x-x	SIP4, mini	0 – 60 VDC	3 A rms	10	EDR82744/x
DT1L60D04/x-x	SIP4, mini	0 – 60 VDC	0.4 Arms	3	EDR82745/x
DT1L75A4/x-x	SIP4, mini	+/- 75 VDC (52 VAC)	4 A rms	20	EDR82753/x
DT1L100D2/x-x	SIP4, mini	0 – 100 VDC	2 A rms	30	EDR82746/x
DT1L100A2/x-x	SIP4, mini	+/- 100 VDC (70 VAC)	2 A rms	20	EDR82754/x
DT2L100D10/x-x	SIP4	0 – 100 VDC	10 A rms	60	EDR82747/x
DT2L100A5/x-x	SIP4	+/- 100 VDC (70 VAC)	5 A rms	30	EDR82755/x
DT1L200D2/x-x	SIP4, mini	0 – 200 VDC	2 A rms	28	EDR82748/x
DT1L200A2/x-x	SIP4, mini	+/- 200 VDC (140 VAC)	2 A rms	20	EDR82756/x
DT1L350A08/x-x	SIP4	+/- 350VDC (225 AVC)	0.8Arms	1.7	EDR82757/x
DT2L500D1/x-x	SIP4	0 – 500VDC	1.3 A rms	20	EDR82749/x
DT2L500A1/x-x	SIP4	+/- 500 VDC (350 VAC)	1.1 A rms	8	EDR82758/x
DT3L500A6/x-x	SIP4	+/- 500 VDC (350 VAC)	6 A rms	40	EDR82759/x
DT1L600D06/x-x	SIP4 mini	0 – 600 VDC	0.6A	.9	EDR82760/x
DT1L650D09/x-x	SIP4 mini	0 – 650 VDC	0.9 A rms	2	EDR82761/x

1-Form B, SPST-NC Solid State Relays

Model Number	Package	Operating Voltage	Id (A) cont.	P/n
RDT1L30D6/x-x	SIP4, mini	0 – 30 VDC	6 A rms	EDR82762/x
RDT1L55D2/x-x	SIP4, mini	0 – 55 VDC	2.3 A rms	EDR82763/x
RDT1L100D06/x-x	SIP4, mini	0 – 100 VDC	0.65 A rms	EDR82764/x
RDT1L250D04/x-x	SIP4 mini	0 -- 250VDC	0.4 A rms	EDR82765/x
RDT1L150A02/x-x	SIP4 mini	150AVC	0.2 A rms	EDR82766/x

All relays can be encapsulated in a panel mount box (0.82”H x 2.7”L x 2.0”W). To order, please replace “1” or “2” with “7” and add “/D” at the end of part number, like EDR83050/10-5/D.

The speed and frequency properties of the above relays resemble the p/n EDR83050. There is some differences between varies relays, and it mostly depends on the output power and possible a size of enclosure (box). Please request a specific data sheet if needed.

In the same packages, we manufacture a family of miniature, low power Solid State Relays, built with MOSFETs. Those relays designed for an extremely small input control current. Only 3.0 mA @ 2.6 VDC required to operate. Please request a data sheet 7090 for p/n EDR82804. Relays were designed as a replacement of a SSR with a TRAIC or SCR output in applications where a low power consumption and low leakage current are must. Cost of a Solid State Relay is very much tied to an ordered volume, in most cases a relay costs in low teens in order of 1000 or more. *We charge no production set-up fee for an order of 100 and above for any type (input and output specifications) Solid State Relay/Switch and Solid State Breaker.*

NOTE: **We’re keeping working on new devices, a side effect of it; a part description might change from time to time. We are running out of descriptive options and have no choice but add more letters. The part’s description will be marked according to the updated order instruction below but p/n EDRxxxxx will always stay the same. If you decided re-order something that was ordered a long time ago, it is better to use a P/N EDRxxxxx.**