POWERPLUS DC SERIES | 100 VDC

PANEL MOUNT SOLID STATE RELAYS



Features

- Ratings from 10 A to 100 A @ 100 VDC
- LED Status Indicator
- Relays are easily paralleled for higher-current applications
- UL Approved, CE Compliant to EN60950-1
- Improved SEMS screw and washer
- Redesigned housing with anti-rotation barriers
- MOSFET Output
- DC control
- EMC Compliant to Level 3
- Epoxy Free Design
- Optional IP20 Cover
- PWM up to 1 kHz

PRODUCT SELECTION

Control Voltage	10 A	20 A	40 A	60 A	80 A	100 A
4-32 VDC	DC100D10	DC100D20	DC100D40	DC100D60	DC100D80	DC100D100

SPECIFICATIONS

Output Voltage [1]

Description	10 A	20 A	40 A	60 A	80 A	100 A
Recommended Operating Voltage [Vdc]	1-72	1-72	1-72	1-72	1-72	1-72
Absolute Maximum Rating [Vdc]	100	100	100	100	100	100
Maximum Off-State Leakage Current @ Rated Voltage [mA]	0.1	0.1	0.1	0.1	0.1	0.1
Maximum Load Current [Adc] [2][3]	10	20	40	60	80	100
Minimum Load Current [mA] [4]	2.5	2.5	2.5	2.5	2.5	2.5
Maximum Surge Current (10msec) [Adc]	66	91	136	180	220	330
Maximum On-State Voltage Drop @ Rated Current [Vdc]	0.13	0.24	0.28	0.36	0.40	0.4
Maximum On-State Resistance [RDS-ON] [mΩ]	13	12	7	6	5	4
Thermal Resistance Junction to Case (Rjc) [°C/W]	1.27	0.73	0.58	0.45	0.34	0.27
Minimum Heat Sink for Rated Current @ 40°C [°C/W]	N/R	5	2	1	0.5	0.5
Maximum Pulse Width Modulation Frequency [Hz] [5]	1000	1000	900	900	700	700

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Input [1]

Description	DC Control
Control Voltage Range	4-32 VDC
Maximum Reverse Voltage	-32 VDC
Minimum Turn-On Voltage [6]	4 VDC
Must Turn-Off Voltage	1 VDC
Minimum Input Current (for on-state)	11 mA
Maximum Input Current	14 mA
Nominal Input Impedance	Current Regulated
Maximum Turn-On Time [µsec]	75
Maximum Turn-Off Time [µsec]	150

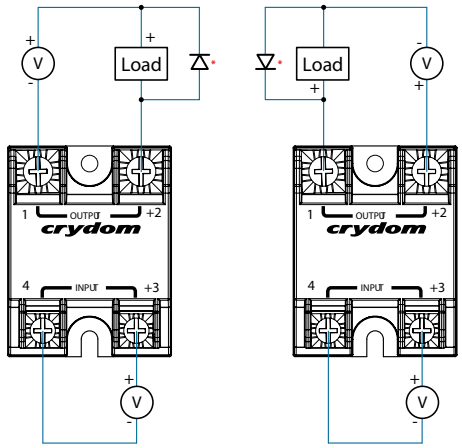
General [1]

Description	Parameters
Dielectric Strength, Input/Output/Base (50/60 Hz)	3750 Vrms
Minimum Insulation Resistance (@ 500 VDC)	10^9 Ohms
Maximum Capacitance, Input/Output	8 pF
Ambient Operating Temperature Range [7]	-40 to 100 °C
Ambient Storage Temperature Range	-40 to 125 °C
Weight (typical)	2.53 oz (72 g)
Housing Material	UL94 V-0
Hardware Finish	Nickel Plating
Baseplate Material	Aluminum
Input Terminal Screw Torque Range (lb-in/Nm)	13-15 /1.5-1.7
Load Terminal Screw Torque Range (lb-in/Nm)	18-20 / 2-2.2
SSR Mounting Screw Torque Range (lb-in/Nm)	18-20 / 2-2.2
Input/Load Terminal Screw Torque Range (lb-in/Nm) [2]	w/"K" option 8-10 / 0.9-1.13
Input/Output Terminal Screw Thread Size	#6-32 UNC / #8-32 UNC
Humidity per IEC60068-2-78	85% non-condensing
LED Input Status Indicator	Green
MTBF (Mean Time Between Failures) at 40°C ambient temperature [8]	21,395,130 hours (2,441 years)
MTBF (Mean Time Between Failures) at 60°C ambient temperature [8]	11,545,504 hours (1,317 years)

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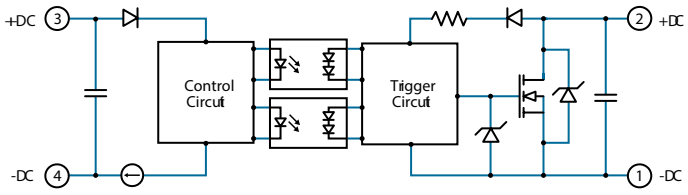
WIRING DIAGRAM

* Inductive loads must be diode suppressed.

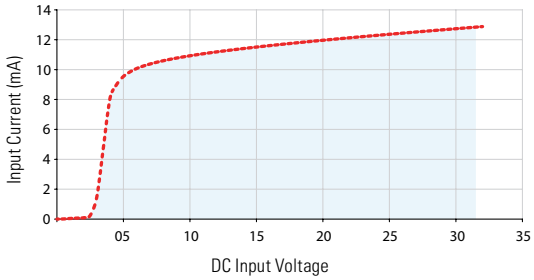


Recommended Wire Sizes		
Terminals	**Wire Size (Solid / Stranded)**	**Wire Pull-Out Strength (lb)[N]**
Input	24 AWG (0.2 mm^2) / 0.2 [minimum]	10 [44.5]
	2 x 12 AWG (3.3 mm^2) / 3.3 [maximum]	90 [400]
Output	20 AWG (0.5 mm^2) / 0.518 [minimum]	30 [133]
	2 x 10 AWG (5.3 mm^2) / 5.3	110 [490]
	2 x 8 AWG (8.4 mm^2) / 8.4 [maximum]	90 [400]

EQUIVALENT CIRCUIT BLOCK DIAGRAMS



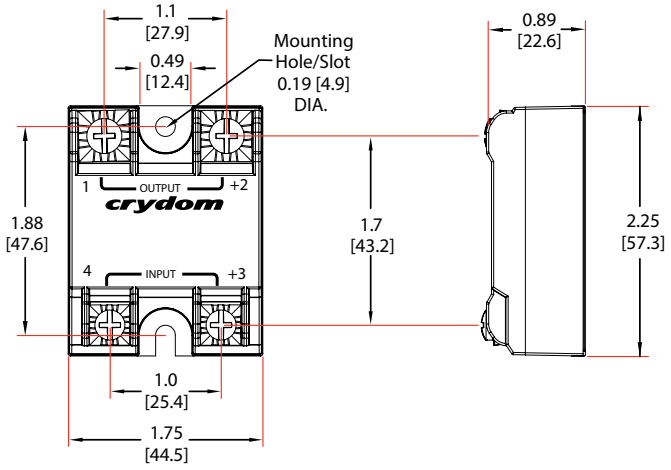
Input Current vs Input Voltage
Standard Regulated "DC" Inputs



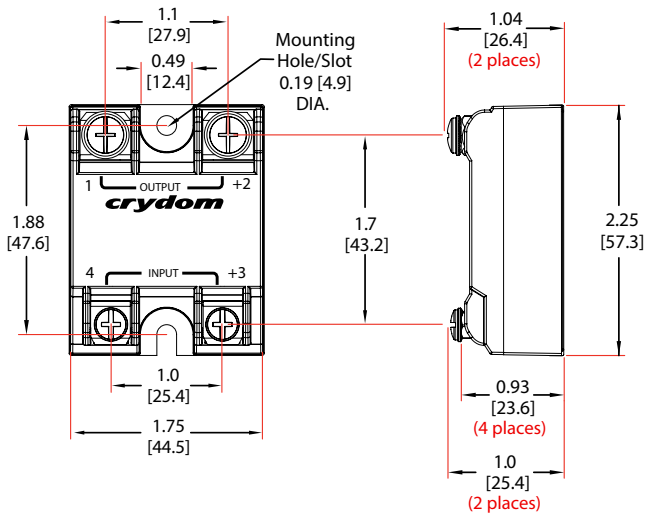
MECHANICAL SPECIFICATIONS (1)

*Tolerances: ±0.02 in / 0.5 mm All dimensions are in: inches [millimeters]

Screw Termination

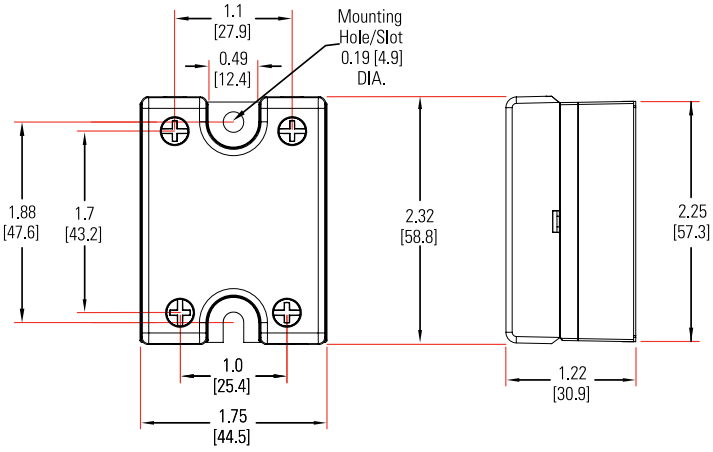


Hex Standoff Termination ("K" Option) (2)

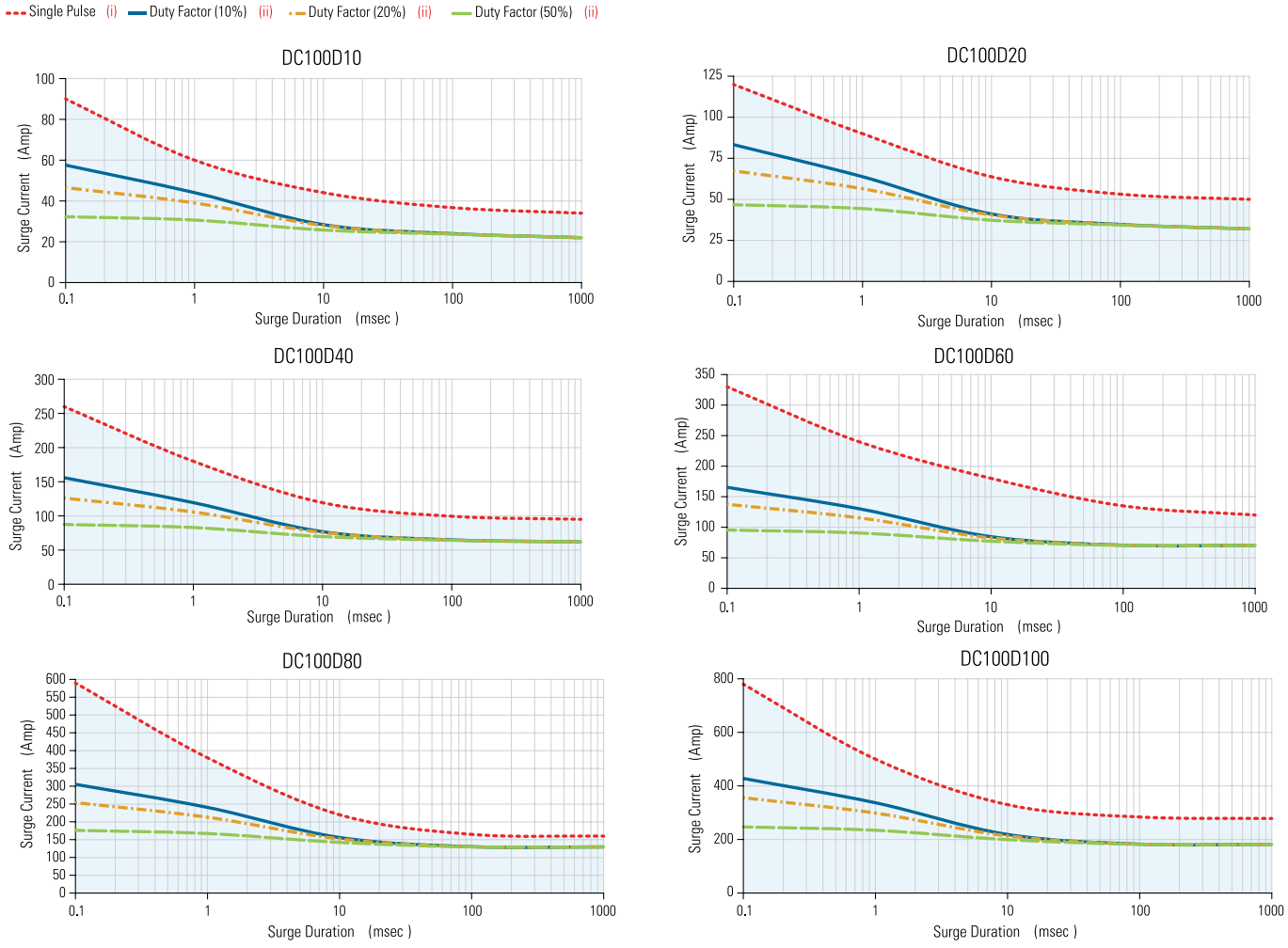


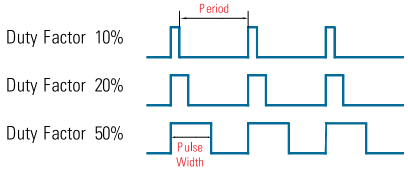
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Screw Termination, IP20



SURGE CURRENT INFORMATION





For Pulse Width Modulation applications select the curve according duty factor and pulse duration as following.

$$\text{Duty Factor} = \frac{\text{Pulse Width}}{\text{Period}} \times 100\ (\%)$$

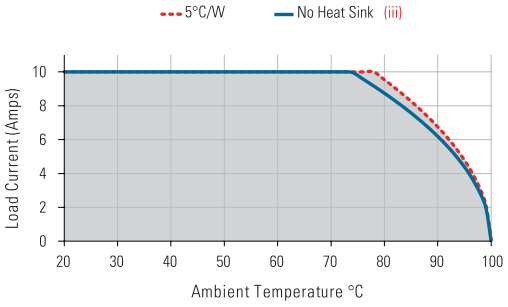
(i) for Single Surge Pulse Tc=40°C ;Tj 175°C
(ii) for Repetitive Surge Pulse Tc=40°C ;Tj 130°C

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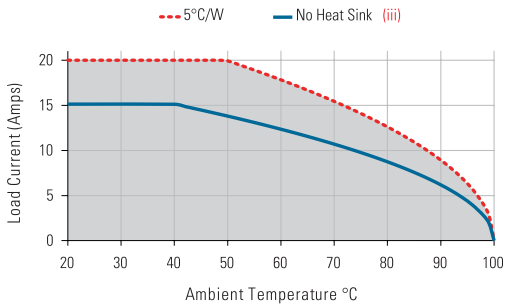
THERMAL DERATE INFORMATION

(iii) SSR metal base plate acting as heat sink, it must be exposed to free ambient air.

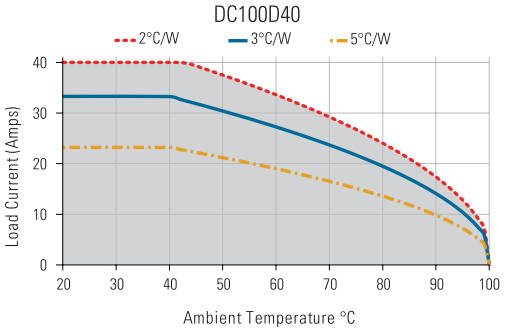
DC100D10



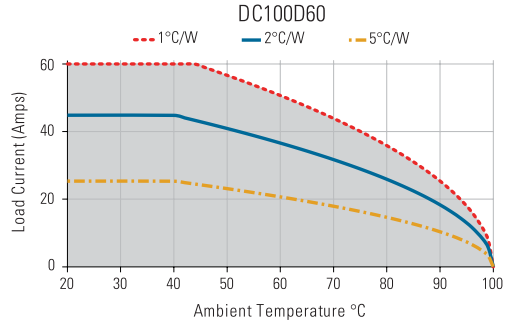
DC100D20



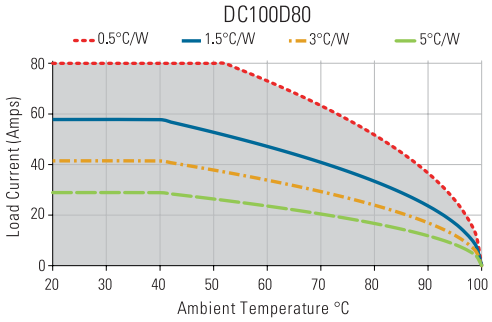
DC100D40



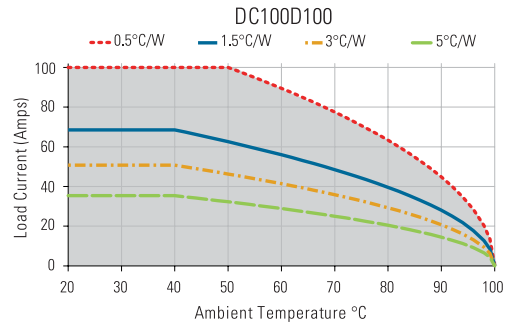
DC100D60



DC100D80



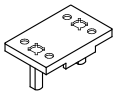
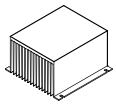
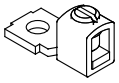
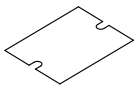
DC100D100



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ACCESSORIES

Recommended Accessories

 Cover	 Hardware Kit	 Heat Sink Part No.	Thermal Resistance [°C/W]	 Lug Terminal	 Thermal Pad
KS101	HK1 HK4	HS501DR HS301 / HS301DR HS251 HS201 / HS201DR HS202 / HS202DR HS172 HS151 / HS151DR HS122 / HS122DR HS103 / HS103DR HS101 HS073 HS072 HS053 HS033 HS023	5.0 3.0 2.5 2.0 2.0 1.7 1.5 1.2 1.0 1.0 0.7 0.7 0.5 0.36 0.25	TRM1 TRM6	HSP-1 HSP-2

ORDERING OPTIONS

Example : DC100D40CH

Not all part number combinations are available.
Contact Technical Support for information on the availability of a specific part number.

DC	100	D	40	K	C	H

Series

DC

Operating Voltage

100: 1-100 VDC

Control Voltage

D: 4-32 VDC

Rated Load Current

10: 10 Amps
20: 20 Amps
40: 40 Amps
60: 60 Amps
80: 80 Amps
100: 100 Amps

Termination

Blank: Screws & clamps
K: Installed standoffs with [2] screws for PC Board mounting (IP00 only)

Cover

Blank: Not Included (IP00)
C: Included (IP20)

Thermal Pad

Blank: Not Included
H: Included

— Required for valid part number
☐ For options only and not required for valid part number

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GENERAL NOTES

(1) All parameters at Tc=25°C unless otherwise specified.
(2) Option "K" is designed and tested for use with printed circuit boards or ring/fork terminals having a thickness between 0.031 and 0.093 inches (0.79 to 2.36 mm), and loads rated up to 50 Amps.
For higher load currents, the "K" standoff temperature must not exceed 105°C. For additional application assistance please contact Technical Support.
(3) Heat sinking required, see derating curves.
(4) Low current loads and high ambient temperature can affect turn-on time.
(5) 8 VDC Minimum control voltage. Resistive loads only. Consider switching losses; at maximum frequency reduce to 75% output current.
(6) Increase minimum voltage by 1V for operations from -20 to -40°C.
(7) Decrease maximum control voltage 1.35V/°C above 80°C ambient temperature.
(8) All parameters at 50% power rating and 100% duty cycle.

For additional information or specific questions, contact Technical Support

AGENCY APPROVALS & CERTIFICATIONS

EN60950-1: Meets the requirements of sections1.5: 1,7: 2.9: 2.10.5.3: 4.2: 4.5: 4.7:
IEC 61000-4-2 Electrostatic Discharge Level 3
IEC 61000-4-4 Electrically Fast Transients Level 3
IEC 61000-4-5 Electrical Surges Level 3

c US E116950 CE UK CA RoHS 50

WARNINGS



RISK OF MATERIAL DAMAGE AND HOT ENCLOSURE
- The product's side panels may be hot, allow the product to cool before touching
- Follow proper mounting instructions including torque values
- Do not allow liquids or foreign objects to enter this product

Failure to follow these instructions can result in serious injury, or equipment damage.



HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH
- Disconnect all power before installing or working with this equipment
- Verify all connections and replace all covers before turning on power

Failure to follow these instructions will result in death or serious injury.

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