



## | D06D SERIES

DC OUTPUT PANEL MOUNT SOLID STATE RELAYS



### Features

- Ratings from 60 A to 100 A @ 60 VDC
- Mosfet Output
- UL Approved, CE Compliant to EN60950-1
- Improved SEMS Screw and Washer
- Redesigned Housing with Anti-Rotation Barriers
- DC Control
- EMC Compliant to Level 3
- Epoxy Free Design

### Product Selection

Control Voltage	60A	80A	100A
3.5-32 VDC	D06D60	D06D80	D06D100

## ● SPECIFICATIONS

### Output Specifications <sup>(2)</sup>

Description	60A	80A	100A
Recommended Operating Voltage [Vdc]	1-48	1-48	1-48
Absolute Maximum Rating [Vdc]	60	60	60
Maximum Off-State Leakage Current @ Rated Voltage [mA]	0.1	0.1	0.1
Maximum Load Current [A <sub>dc</sub> ] <sup>(1) (3)</sup>	60	80	100
Minimum Load Current [mA] <sup>(4)</sup>	5	5	5
Maximum Surge Current (10 msec) [A <sub>dc</sub> ]	180	220	270
Maximum On-State Voltage Drop @ Rated Current [Vdc]	0.6	0.7	0.5
Thermal Resistance Junction to Case (R <sub>jc</sub> ) [°C/W]	0.73	0.73	0.51
Minimum Heat Sink @ Ambient (for max current = °C/W & T <sub>a</sub> )	1	0.5	0.5
Maximum Pulse Width Modulation Frequency [Hz] <sup>(5)</sup>	1000	900	700

## Input Specifications <sup>(2)</sup>

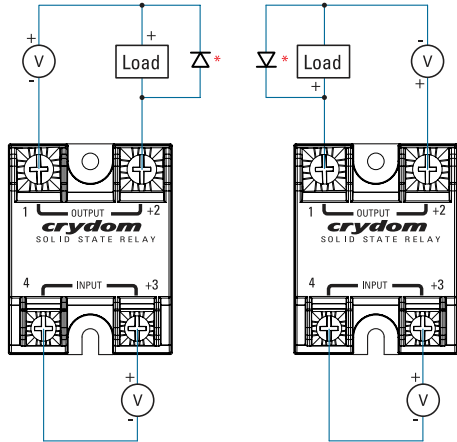
Description	DC Control
Control Voltage Range	3.5-32 VDC
Maximum Reverse Voltage	-32 VDC
Minimum Turn-On Voltage <sup>(6)</sup>	3.5 VDC
Must Turn-Off Voltage	1 VDC
Minimum Input Current (For On-State)	10 mA
Maximum Input Current	15 mA
Nominal Input Impedance	Current Regulated
Maximum Turn-On Time [μsec]	100
Maximum Turn-Off Time [μsec]	150

## General Specifications <sup>(2)</sup>

Description	Parameters
Dielectric Strength, Input/Output/Base (50/60Hz) <sup>(2)</sup>	3750 Vrms
Minimum Insulation Resistance (@500 VDC) <sup>(2)</sup>	10 <sup>9</sup> Ohm
Maximum Capacitance, Input/Output	8 pF
Ambient Operating Temperature Range <sup>(7)</sup>	-40 to 100°C
Ambient Storage Temperature Range	-40 to 125°C
Weight (typical)	2.66 oz. (75.5 g)
Housing Material	UL94 V-0
Baseplate Material	Aluminum
Input Terminal Screw Torque Range (in-lb/NM)	13-15 / 1.5-1.7
Load Terminal Screw Torque Range (in-lb/NM)	18-20 / 2-2.2
SSR Mounting Screw Torque Range (in-lb/Nm)	18-20 / 2-2.2
Input/Load Terminal Screw Torque Range (in-lb/NM) <sup>(1)</sup>	w/"K" Option 8-10 / 0.9-1.13
Input/Load Terminal Screw Thread Size	#6-32 UNC / #8-32 UNC
Humidity per IEC60068-2-78	93% non-condensing
MTBF (Mean Time Between Failures) at 40°C Ambient Temperature <sup>(8)</sup>	21,395,130 hours (2,441 years)
MTBF (Mean Time Between Failures) at 60°C Ambient Temperature <sup>(8)</sup>	11,545,504 hours (1,317 years)

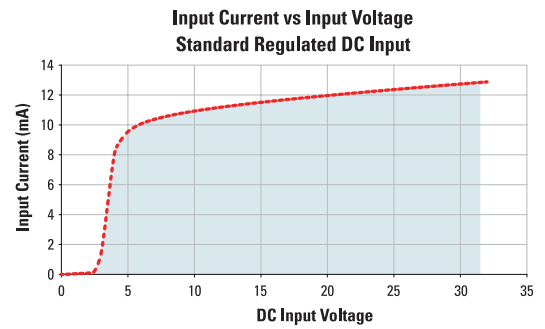
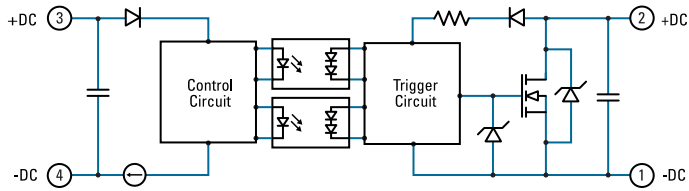
## WIRING DIAGRAM

\* 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 <sup>2</sup> ) / 0.2 [minimum]	<b>10 [44.5]</b>
	2 x 12 AWG (3.3 mm <sup>2</sup> ) / 3.3 [maximum]	<b>90 [400]</b>
Output	20 AWG (0.5 mm <sup>2</sup> ) / 0.518 [minimum]	<b>30 [133]</b>
	2 x 10 AWG (5.3 mm <sup>2</sup> ) / 5.3	<b>110 [490]</b>
	2 x 8 AWG (8.4 mm <sup>2</sup> ) / 8.4 [maximum]	<b>90 [400]</b>

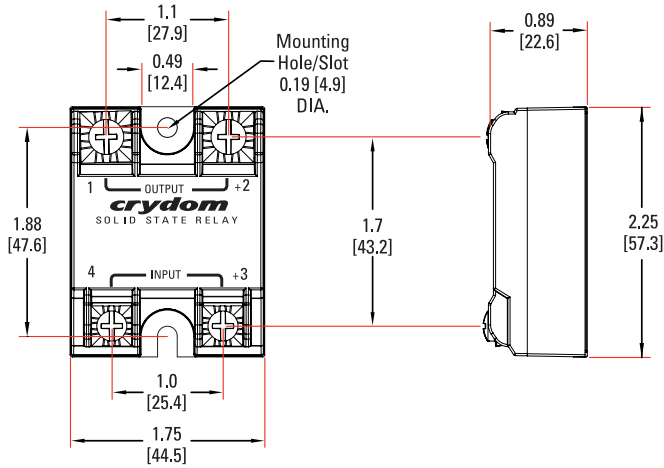
## EQUIVALENT CIRCUIT BLOCK DIAGRAMS



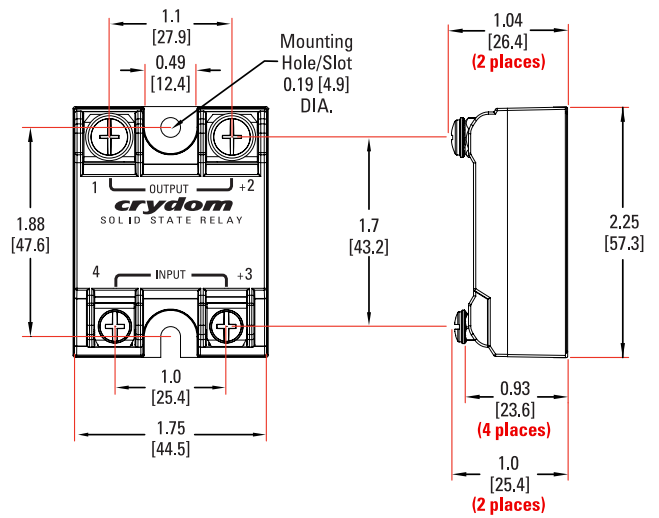
# MECHANICAL SPECIFICATIONS (2)

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

## Screw Termination

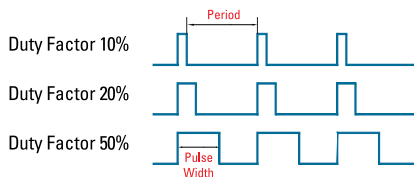
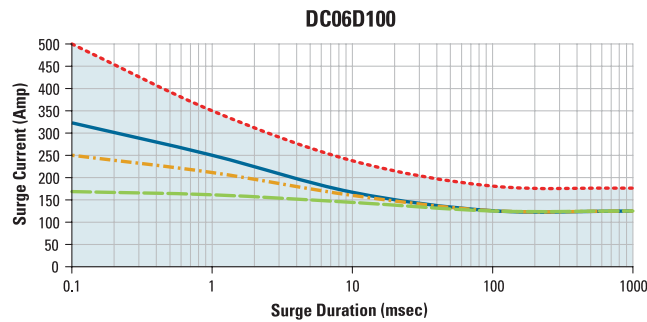
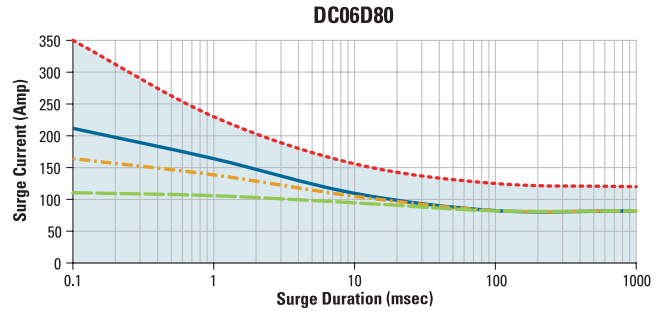
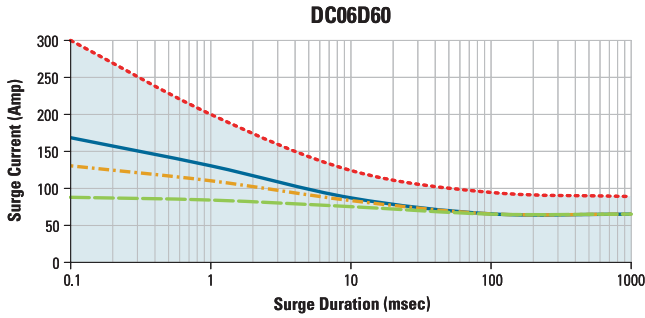


## Hex Standoff Termination ("K" Option) (1)



# SURGE CURRENT INFORMATION

--- Single Pulse (i) — Duty Factor (10%) (ii) - - - Duty Factor (20%) (ii) — Duty Factor (50%) (ii)

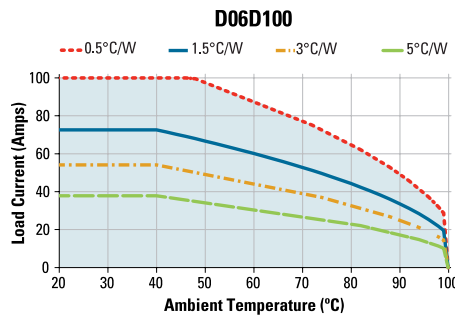
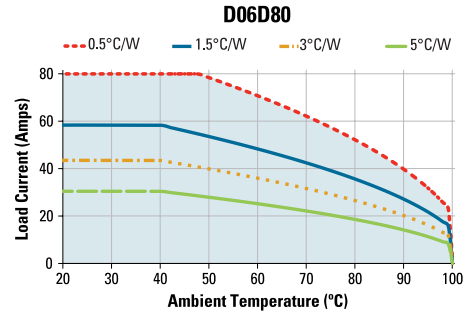
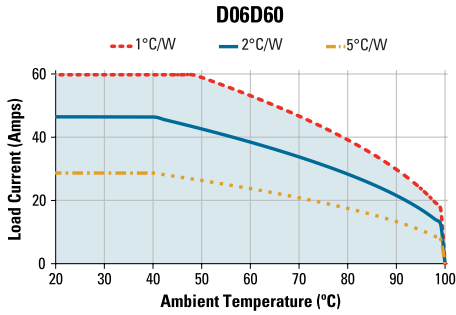


For Pulse Width Modulation applications select the curve according to duty factor and pulse duration as following.

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

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

# THERMAL DERATE INFORMATION



# ORDERING OPTIONS

Example : D06D60KH

1-60VDC, 60 Amps, Installed Standoffs, Thermal Pad Included

<b>Series</b>	D	06D	60	K	H
<b>Required for Valid Part Number</b>	Required	Required	Required	Required	Required
<b>Operating Voltage</b>	Required	Required	Required	Required	Required
<b>06D: 1-60 VDC</b>	Required	Required	Required	Required	Required
<b>Required for Valid Part Number</b>	Required	Required	Required	Required	Required
<b>Rated Load Current</b>	Required	Required	Required	Required	Required
<b>60: 60 Amps 80: 80 Amps 100: 100 Amps</b>	Required	Required	Required	Required	Required
<b>Required for Valid Part Number</b>	Required	Required	Required	Required	Required
<b>Termination</b>	Required	Required	Required	Required	Required
<b>Blank: Screws &amp; clamps K: Installed standoffs with screws for PC Board mounting *</b>	Required	Required	Required	Required	Required
<b>Thermal Pad</b>	Required	Required	Required	Required	Required
<b>Blank: Not Included H: Included</b>	Required	Required	Required	Required	Required

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

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

## ACCESSORIES

### New Accessories!

Protective Cover and Hardware Kits

#### Protective Cover

Part Number KS101



Clear plastic cover compatible with all new S1 designs. Safety covers provide added protection from electric shock when installing or checking equipment.

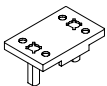


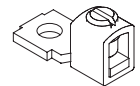
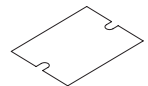
#### Hardware Kit

Part Number HK4



Bag with 2 square brass accessories and 2 screw 8-32 x 5/8 for output. Used to mount TMR1 lug terminals.

### 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

## GENERAL NOTES

- (1) 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 Sensata Technical Support.
- (2) All parameters at Tc=25°C unless otherwise specified.
- (3) Heat sinking required, see derating curves.
- (4) Low current loads and high ambient temperature can affect turn-on time.
- (5) 8VDC 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°C 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 (contact Sensata tech support for detailed report).

For additional information or specific questions, contact Sensata Technical Support.

## AGENCY APPROVALS & CERTIFICATIONS



- EN60950-1: Meets the requirements of sections 1.5: 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 3-1: Meets the requirements of sections 1.5: 1,7: 2.9: 2.10.5.3: 4.2: 4.5: 4.7:
- E116950
- Vibration Resistance: IEC 60068-2-6 : Amplitude Range 10-55 Hz, Displacement 0.75mm
- Shock Resistance: IEC 60068-2-27 : Peak Acceleration 15g, Duration 11msec

## 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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