



## DC60 SERIES

PANEL MOUNT



### Features

- Ratings from 3A to 7A @ 60 VDC
- Bi-Polar Transistor Output
- UL Approved, CE Compliant to EN60950-1
- Improved SEMS Screw and Washer
- Redesigned Housing with Anti-Rotation Barriers
- AC and DC Control
- Epoxy Free Design



### PRODUCT SELECTION

Control Voltage	3A	5A	7A
3.5-32 VDC	DC60S3	DC60S5	DC60S7
90-280 VAC/VDC	DC60SA3	DC60SA5	DC60SA7



### SPECIFICATIONS

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

Description	3A	5A	7A
Recommended Operating Voltage [Vdc]	3-48	3-48	3-48
Absolute Maximum Rating [Vdc]	60	60	60
Maximum Off-State Leakage Current @ Rated Voltage [mA]	0.1	0.1	0.1
Maximum Load Current [Adc] <sup>(3)</sup>	3	5	7
Minimum Load Current [mA]	20	20	20
Maximum Surge Current (10 msec) [Adc]	6	10	14
Maximum On-State Voltage Drop @ Rated Current [Vdc]	1	1.2	1.3
Thermal Resistance Junction to Case (Rjc) [°C/W]	2	2	2
Minimum Heat Sink @ Ambient (for max current = °C/W & Ta)	5 @ 60°C	5 @ 60°C	5 @ 40°C

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

Description	DC Control	AC Control
<b>Control Voltage Range</b>	3.5-32 VDC	90-280 VAC/VDC
<b>Maximum Reverse Voltage</b>	-32 VDC	—
<b>Minimum Turn-On Voltage <sup>(4)</sup></b>	3.5 VDC	90 VAC/VDC
<b>Must Turn-Off Voltage <sup>(5)</sup></b>	1 VDC	10 VAC/VDC
<b>Minimum Input Current (For On-State)</b>	2.2 mA	2 mA
<b>Maximum Input Current</b>	25 mA	5.5 mA
<b>Nominal Input Impedance [Ohms]</b>	1500 Ohm	60K
<b>Maximum Turn-On Time [msec] <sup>(6)</sup></b>	0.1	10
<b>Maximum Turn-Off Time [msec] <sup>(7)</sup></b>	0.3	40

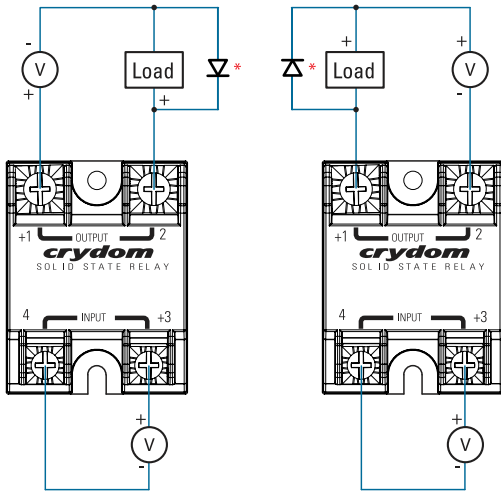
## General <sup>(2)</sup>

Description	Parameters
<b>Dielectric Strength, Input/Output/Base (50/60Hz) <sup>(2)</sup></b>	4000 Vrms
<b>Minimum Insulation Resistance (@500 VDC) <sup>(2)</sup></b>	10 <sup>9</sup> Ohm
<b>Maximum Capacitance, Input/Output</b>	8 pF
<b>Ambient Operating Temperature Range</b>	-30 to 80°C
<b>Ambient Storage Temperature Range</b>	-40 to 125°C
<b>Weight (typical)</b>	2.46 oz. (17g)
<b>Housing Material</b>	UL94 V-0
<b>Baseplate Material</b>	Aluminum
<b>Input Terminal Screw Torque Range (in/lb/NM)</b>	13-15 / 1.5-1.7
<b>Load Terminal Screw Torque Range (in/lb/NM)</b>	18-20 / 2-2.2
<b>SSR Mounting Screw Torque Range (in-lb/Nm)</b>	18-20 / 2-2.2
<b>Input/Load Terminal Screw Torque Range (in/lb/NM) <sup>(1)</sup></b>	13-15 / 1.5-1.7
<b>Humidity</b>	85% non-condensing
<b>MTBF (Mean Time Between Failures) at 40°C Ambient Temperature <sup>(8)</sup></b>	21,395,130 hours (2,441 years)
<b>MTBF (Mean Time Between Failures) at 60°C Ambient Temperature <sup>(8)</sup></b>	11,545,504 hours (1,317 years)



## WIRING DIAGRAM

\* Inductive loads must be diode suppressed.



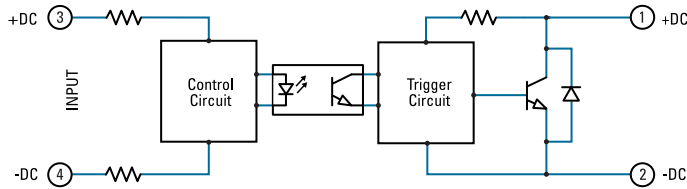
### Recommended Wire Sizes

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>

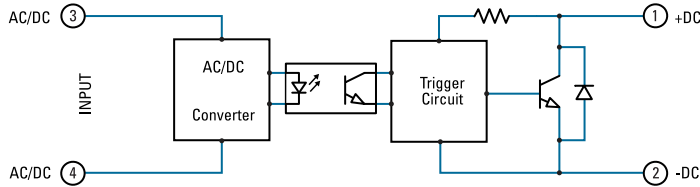


## EQUIVALENT CIRCUIT BLOCK DIAGRAMS

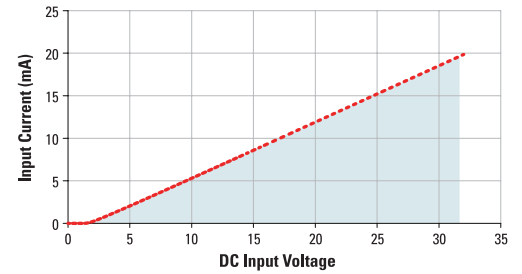
### DC60 Series DC Control



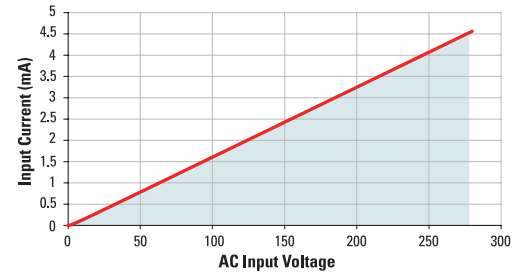
### DC60 Series AC Control



Input Current vs Input Voltage  
Standard Regulated DC Input



Input Current vs Input Voltage  
Standard Regulated AC Input

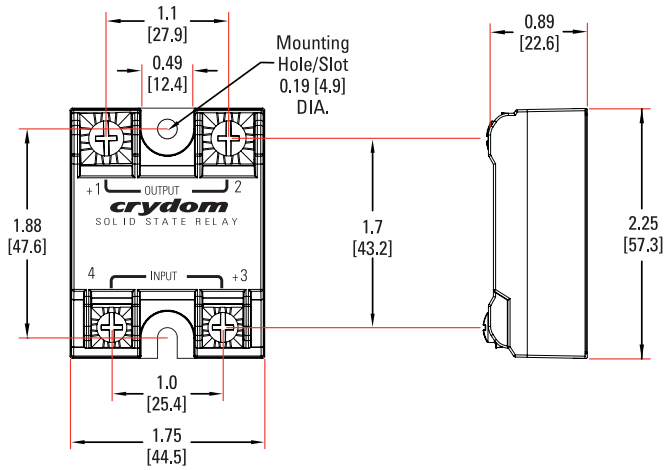




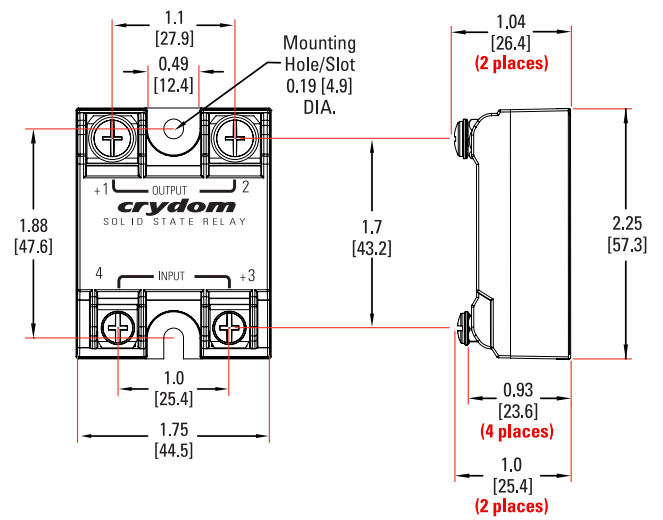
## MECHANICAL SPECIFICATIONS (1)

Tolerances:  $\pm 0.02$  in /  $\pm 0.5$  mm  
All dimensions are in inches [millimeters]

### Screw Termination

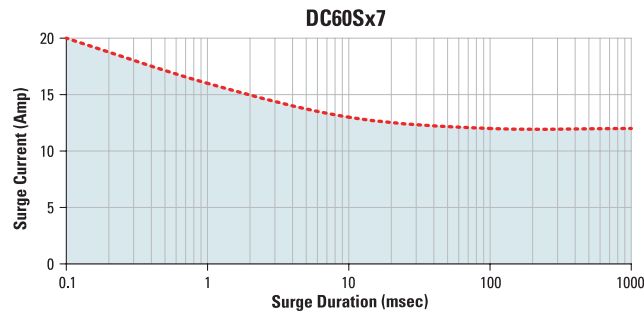
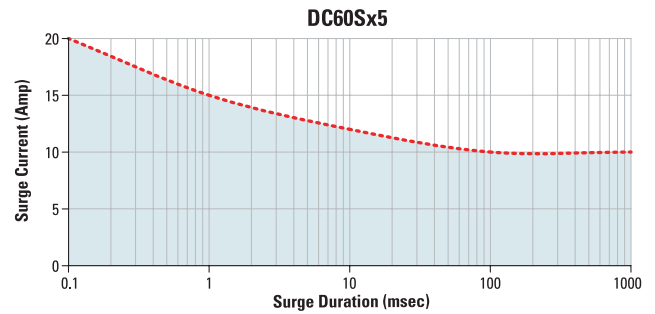
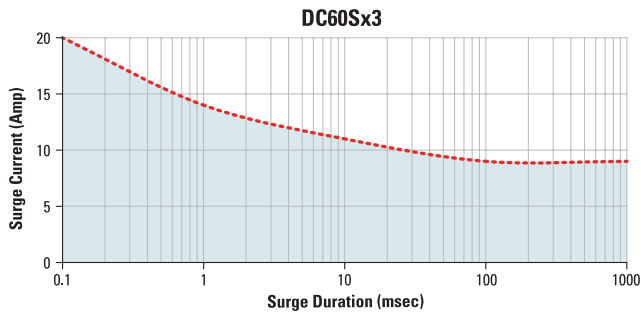


### Hex Standoff Termination ("K" Option)(1)



## SURGE CURRENT INFORMATION

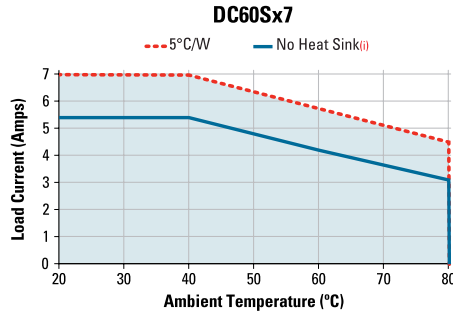
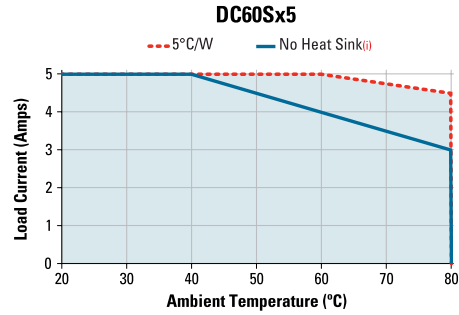
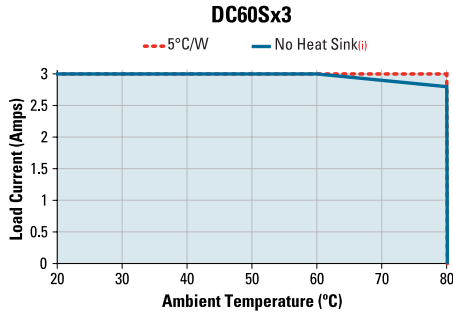
--- Single Pulse (9)





# THERMAL DERATE INFORMATION

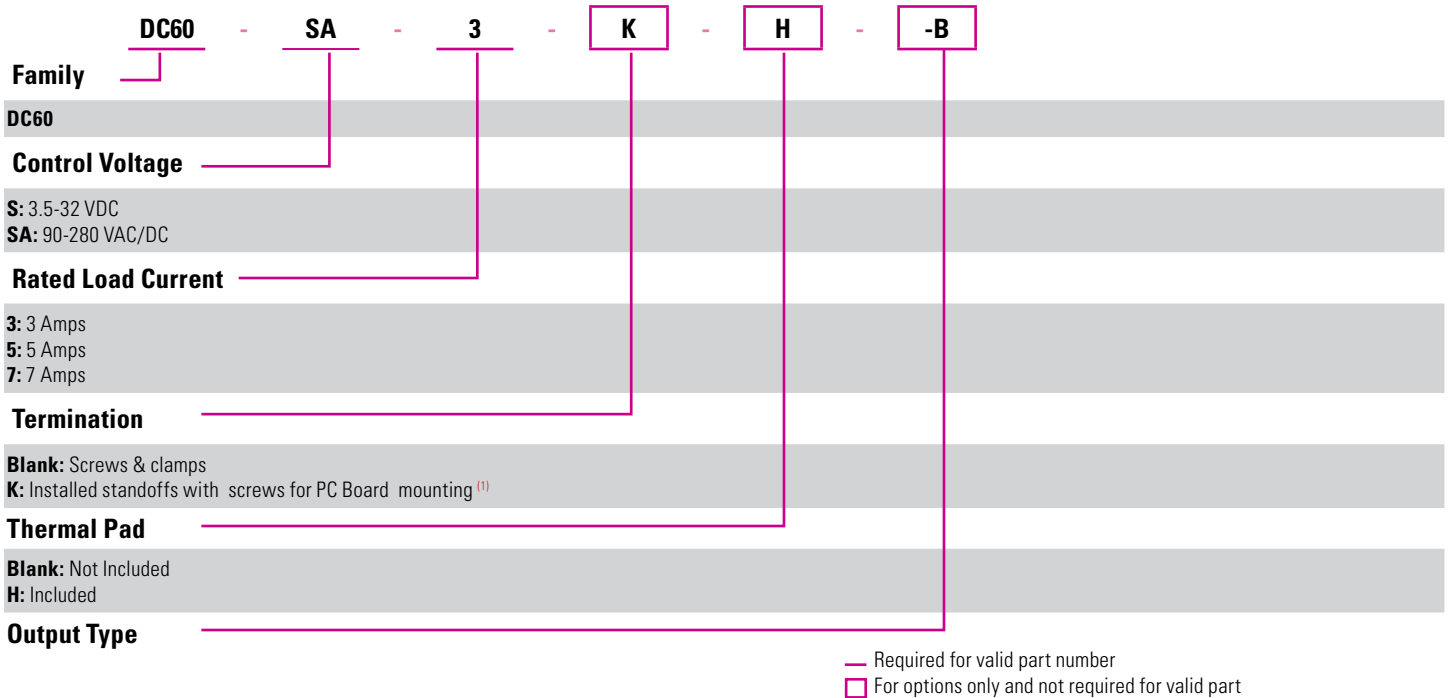
(i) SSR metal base plate acting as heat sink, it must be exposed to free ambient air.



# ORDERING OPTIONS

Example : DC60SA3KH-B

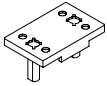


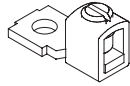
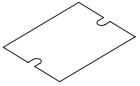
Not all part number combinations are available.  
Contact Sensata Technical Support for information on the availability of a specific part number.





## ACCESSORIES

<b>New Accessories!</b> Protective Cover and Hardware Kits			
<b>Protective Cover</b> Part Number KS101		<b>Hardware Kit</b> Part Number HK4	
	Clear plastic cover compatible with all new S1 designs. Safety covers provide added protection from electric shock when installing or checking equipment.		Bag with 2 square brass accessories and 2 screw 8-32 x 5/8 for output. Used to mount TMR1 lug terminals.

<b>Recommended Accessories</b>					
					
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).
- (2) All parameters at 25°C unless otherwise specified.
- (3) Heat sinking required, see derating curves.
- (4) Maximum turn-on voltage for -B, DC control is 1 VDC.
- (5) Must turn-off voltage for -B, DC control is 3.5 VDC.
- (6) Turn-on time for -B version is 300µsec.
- (7) Turn-off time for -B version is 100µsec.
- (8) All parameters at 50% power rating and 100% duty cycle (contact Sensata tech support for detailed report).
- (9) For single surge pulse Tc=25°C; Tj=150°C.

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
- 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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