

## GN SERIES | DC OUTPUT

PANEL MOUNT SOLID STATE RELAYS



### Features

- Current ratings of 10, 15 and 30 Amps
- Output voltage of 3-60, 1-50, 1-100 and 1-200 VDC
- Transistor and MOSFET output options available
- Available with or without IP20 touch-safe cover
- LED Input Status Indicator
- UL Approved, CE Compliant to EN60950-1
- Improved SEMS screw and washer
- Redesigned housing with anti-rotation barriers

### PRODUCT SELECTION

Control Voltage	10 A	15 A	30 A
3-32 VDC	84134750		
3.5-32 VDC	84134850	84134860	84134870

### SPECIFICATIONS

Output <sup>(1)</sup>

Description	8413x750	8413x850	8413x860	8413x870
Recommended Operating Voltage [Vdc]	3-48	1-150	1-72	1-36
Absolute Maximum Rating [Vdc]	60	200	100	50
Maximum Off-State Leakage Current @ Rated Voltage [mA]	1	0.1	0.1	0.1
Maximum Load Current [Adc] <sup>(2)</sup>	10	10	15	30
Minimum Load Current [mA]	100	0.1	0.1	0.1
Maximum On-State Voltage Drop @ Rated Current [Vdc]	1.4	2.1	0.8	0.8

<b>Maximum On-State Resistance [RDS-ON] [Ohm]</b>	N/A	0.21	0.05	0.03
<b>Maximum Surge Current [Adc] (10 msec)</b>	15	50	50	72
<b>Thermal Resistance Junction to Case (Rjc) [°C/W]</b>	2	1.25	2.1	1.5
<b>Minimum Heat Sink for Rated Current @ 40°C [°C/W]</b>	5	1.5	2	2
<b>Maximum Pulse Width Modulation Frequency [Hz] <sup>(3)</sup></b>	1500	2000	2500	1200

## Input <sup>(1)</sup>

Description	8413x750	8413x8xx
<b>Control Voltage Range</b>	3-32 VDC	3.5-32 VDC
<b>Maximum Reverse Voltage</b>	-32 VDC	-32 VDC
<b>Minimum Turn-On Voltage</b>	3 VDC	3.5 VDC <sup>(4)</sup>
<b>Must Turn-Off Voltage]</b>	1 VDC	1 VDC
<b>Minimum Input Current (for on-state)</b>	9 mA	11 mA
<b>Maximum Input Current [mA]</b>	14.5 mA	15 mA
<b>Nominal Input Impedance [Ohm]</b>	Current Regulated	
<b>Maximum Turn-On Time [µsec]</b>	100	75
<b>Maximum Turn-Off Time [µsec]</b>	200	50

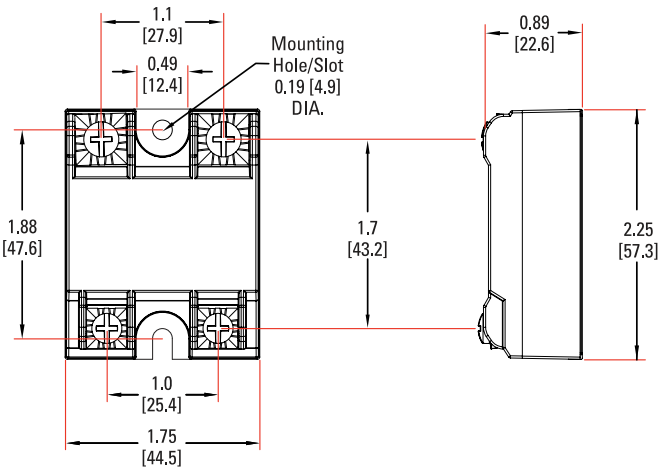
## General <sup>(1)</sup>

Description	Parameters
<b>Dielectric Strength, Input to Output (50/60 Hz)</b>	3700 Vrms
<b>Dielectric Strength, Input/Output to Ground (50/60 Hz)</b>	2500 Vrms
<b>Minimum Insulation Resistance (@ 500 VDC)</b>	10 <sup>9</sup> Ohms
<b>Maximum Capacitance, Input/Output</b>	8 pF
<b>Ambient Operating Temperature Range <sup>(5)</sup></b>	-40 to 100 °C
<b>Ambient Storage Temperature Range</b>	-40 to 100 °C
<b>Weight (typical)</b>	2.46 oz (70 g)
<b>Housing Material</b>	UL94 V-0
<b>Baseplate Material</b>	Aluminum
<b>Input Terminal Screw Torque Range (lb-in/Nm)</b>	13-15 / 1.5-1.7
<b>Load Terminal Screw Torque Range (lb-in/Nm)</b>	18-20 / 2-2.2
<b>SSR Mounting Screw Torque Range (lb-in/Nm)</b>	18-20 / 2-2.2
<b>Humidity per IEC60068-2-78</b>	93% non-condensing
<b>LED Input Status Indicator</b>	Green
<b>MTBF (Mean Time Between Failures) at 40°C ambient temperature <sup>(6)</sup></b>	11,641,553 hours (1,328 years)
<b>MTBF (Mean Time Between Failures) at 60°C ambient temperature <sup>(6)</sup></b>	7,210,376 hours (823 years)

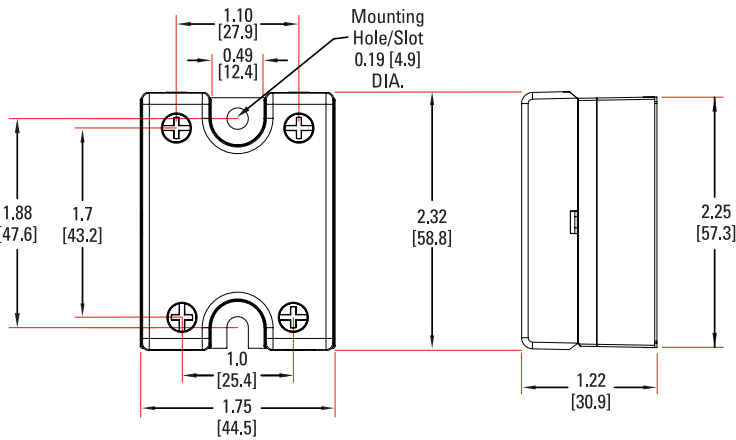
MECHANICAL SPECIFICATIONS (1)

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

Screw Termination, IP00

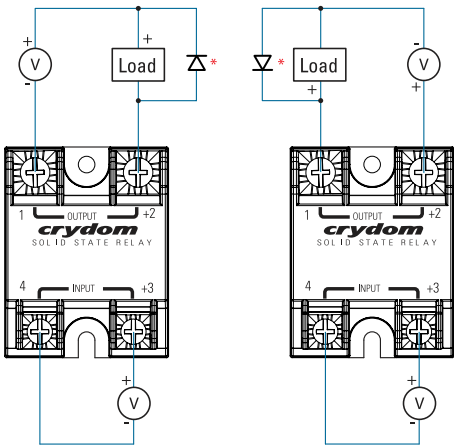


Screw Termination, IP20



WIRING DIAGRAM

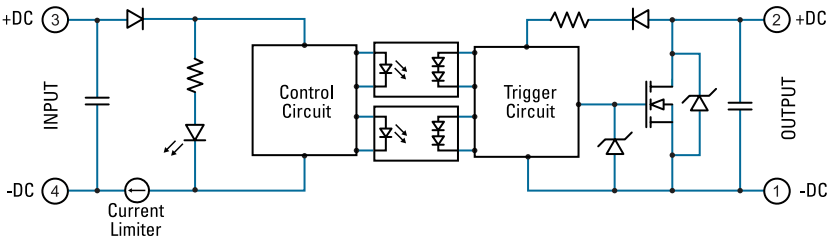
\* Inductive loads must be diode suppressed.



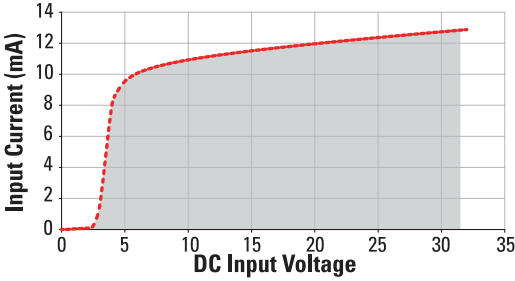
Recommended Wire Sizes

Terminals	Wire Size (Solid / Stranded)	Wire Pull-Out Strength (lb)[N]
Input	24 AWG (0.2 mm²) / 0.2 [minimum]	10 [44.5]
	2 x 12 AWG (3.3 mm²) / 3.3 [maximum]	90 [400]
Output	20 AWG (0.5 mm²) / 0.518 [minimum]	30 [133]
	2 x 10 AWG (5.3 mm²) / 5.3	110 [490]
	2 x 8 AWG (8.4 mm²) / 8.4 [maximum]	90 [400]

EQUIVALENT CIRCUIT BLOCK DIAGRAMS

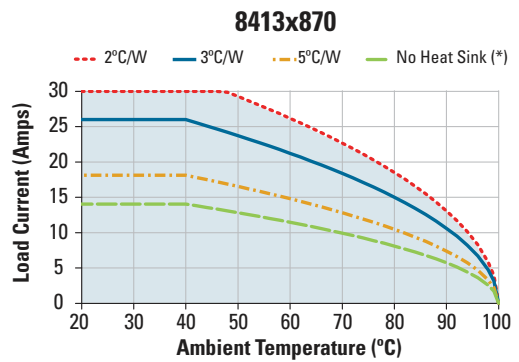
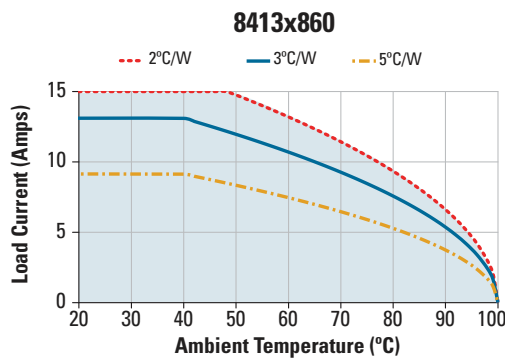
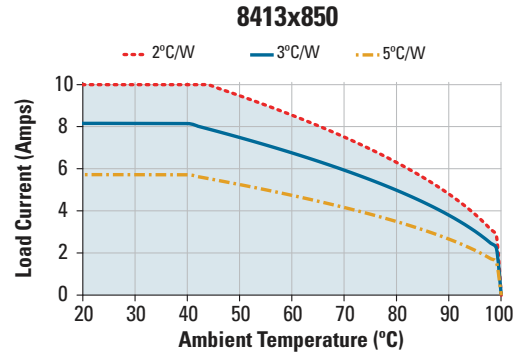
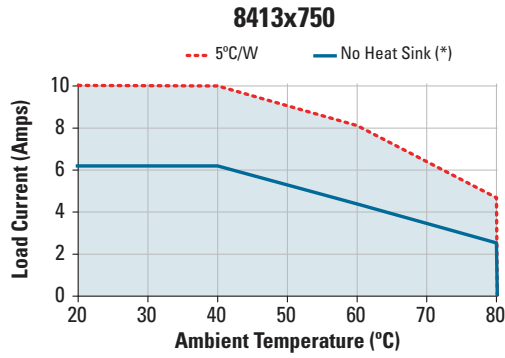


Input Current vs Input Voltage  
Standard Regulated DC Input

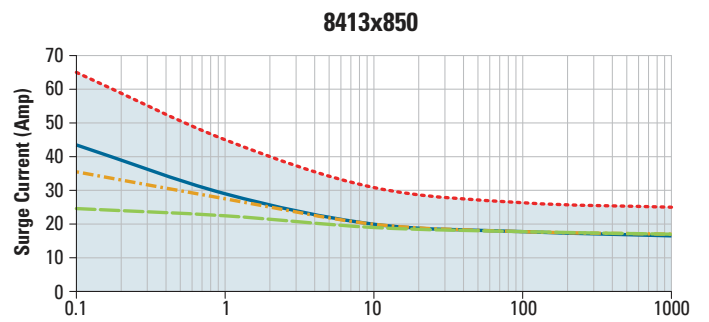
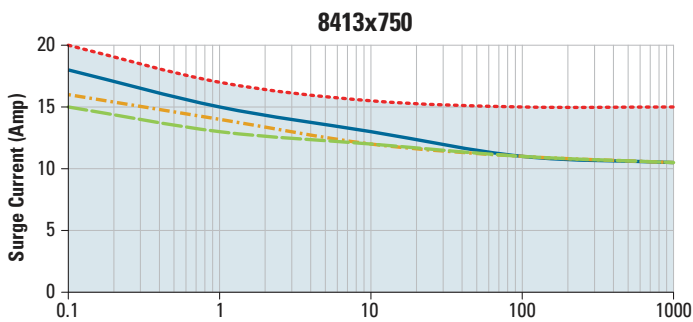


## THERMAL DERATE INFORMATION

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



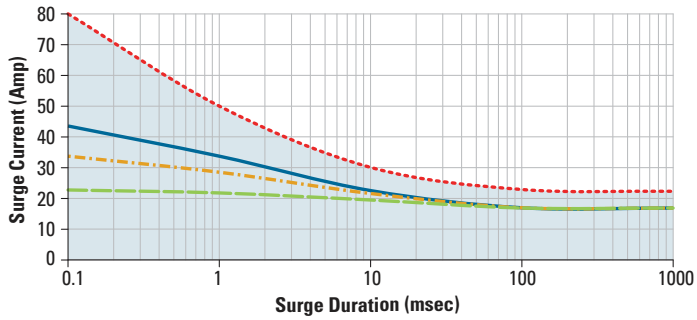
## SURGE CURRENT INFORMATION



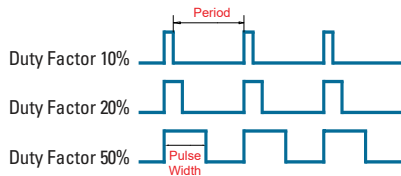
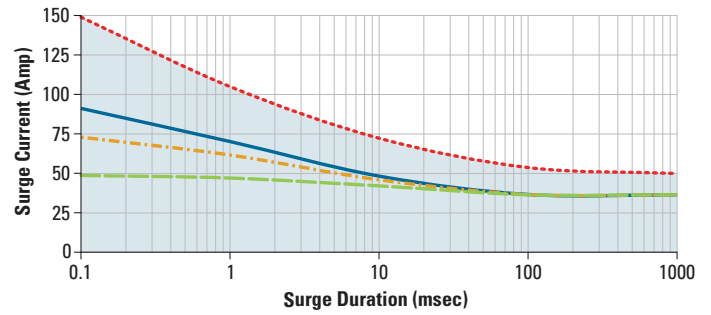
Surge Duration (msec)

Surge Duration (msec)

8413x860



8413x870



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  $T_c=40^\circ\text{C}$ ;  $T_j 175^\circ\text{C}$   
(ii) for Repetitive Surge Pulse  $T_c=40^\circ\text{C}$ ;  $T_j 130^\circ\text{C}$

## ACCESSORIES

### Recommended Accessories

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

## ORDERING OPTIONS

Example : 84134750H

	8413	4	7	5	0	H
Series						
8413						
Touch Safe Cover						
4 : Not included (IP00) 7 : Included (IP20)						
Output Type						
7 : Transistor 8 : MOSFET						
Rated Voltage & Load Current						
5 : 3-60 VDC, 10 Amps (with output type 7 only) 1-200 VDC, 10 Amps (with output type 8 only) 6 : 1-100 VDC, 15 Amps (with output type 8 only) 7 : 1-50 VDC, 30 Amps (with output type 8 only)						
Control Voltage						
0 : 3.5-32 VDC						
Thermal Pad						
Blank : Not Included H : Included						

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

NOTE: Not all combinations are available.  
Consult factory for information on the availability of a specific part number.

## GENERAL NOTES

- (1) All parameters at 25°C unless otherwise specified.
- (2) Heat sinking required, see derating curves.
- (3) 8 VDC Minimum control voltage. Resistive loads only. Consider switching losses; at maximum frequency reduce to 75% output current.
- (4) Increase minimum voltage by 1V for operations from -20 to -40°C.
- (5) Maximum ambient temperature for 8413x750 is 80°C, decrease maximum control voltage 1.35V/°C above 80°C ambient temperature.
- (6) 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 sections 1.5: 1.7: 2.9: 2.10.5.3: 4.2: 4.5: 4.7:

## 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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Mailing Address: Sensata Technologies, Inc., 529 Pleasant Street, Attleboro, MA 02703, USA

## CONTACT US

### Americas

+1(800) 350 2727  
[sales.crydom@sensata.com](mailto:sales.crydom@sensata.com)

### Europe, Middle East & Africa

+44 (1202) 416170  
[ssr-info.eu@sensata.com](mailto:ssr-info.eu@sensata.com)

### Asia Pacific

[sales.isasia@list.sensata.com](mailto:sales.isasia@list.sensata.com)  
China +86 (21) 2306 1500  
Japan +81 (45) 277 7117  
Korea +82 (31) 601 2004  
India +91 (80) 67920890  
Rest of Asia +886 (2) 27602006  
ext 2808