



## POWER PLUS 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 <sup>(1)</sup>

| 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] <sup>(2)(3)</sup>               | 10   | 20   | 40   | 60   | 80   | 100   |
| Minimum Load Current [mA] <sup>(4)</sup>                   | 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] <sup>5</sup> | 1000 | 1000 | 900  | 900  | 700  | 700   |

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

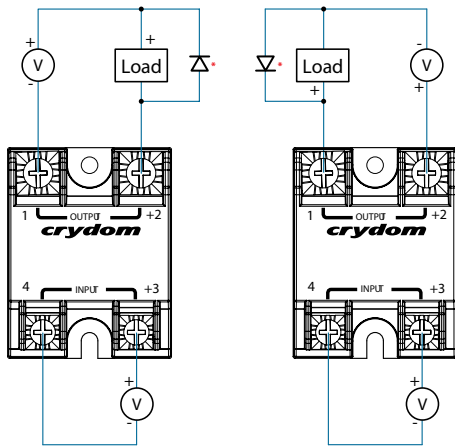
| Description                                   | DC Control        |
|---|-------------------|
| <b>Control Voltage Range</b>                  | 4-32 VDC          |
| <b>Maximum Reverse Voltage</b>                | -32 VDC           |
| <b>Minimum Turn-On Voltage <sup>(6)</sup></b> | 4 VDC         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

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

| Description   | Parameters                     |
|---|--------------------------------|
| <b>Dielectric Strength, Input/Output/Base (50/60Hz)</b>                             | 3750 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>(7)</sup></b>                           | -40 to 100 °C                  |
| <b>Ambient Storage Temperature Range</b>  | -40 to 125 °C                  |
| <b>Weight (typical)</b>   | 2.53 oz (72 g)                 |
| <b>Housing Material</b>   | UL94 V-0                       |
| <b>Hardware Finish</b>  | Nickel Plating                 |
| <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>Input/Load Terminal Screw Torque Range (lb-in/Nm) <sup>(2)</sup></b>             | w/"K" option 8-10 / 0.9-1.13   |
| <b>Input/Output Terminal Screw Thread Size</b>                                      | #6-32 UNC / #8-32 UNC          |
| <b>Humidity per IEC60068-2-78</b>   | 85% non-condensing             |
| <b>LED Input Status Indicator</b>   | Green                          |
| <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) |

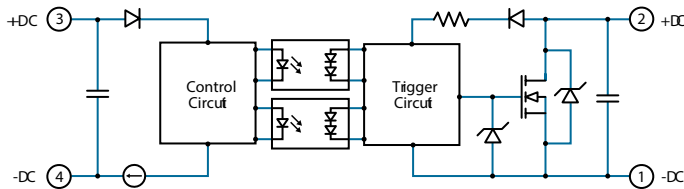
# WIRING DIAGRAM

\* Inductive loads must be diode suppressed.

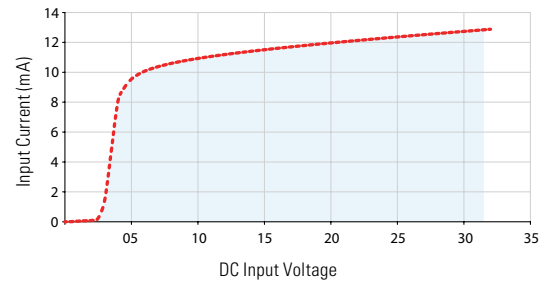


| Recommended Wire Sizes |   |                                |
|------------------------|---|--------------------------------|
| Terminals              | Wire Size (Solid / Stranded)                      | Wire Pull-Out Strength (lb)[N] |
| Input                  | 24 AWG (0.2 mm <sup>2</sup> ) / 0.2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

# EQUIVALENT CIRCUIT BLOCK DIAGRAMS



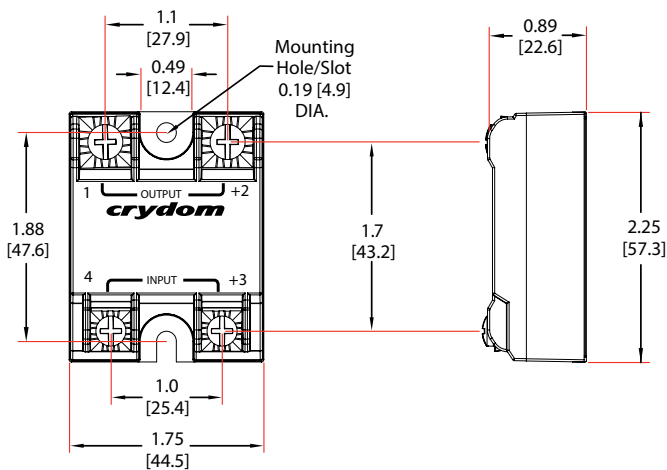
Input Current vs Input Voltage  
Standard Regulated "DC" Inputs



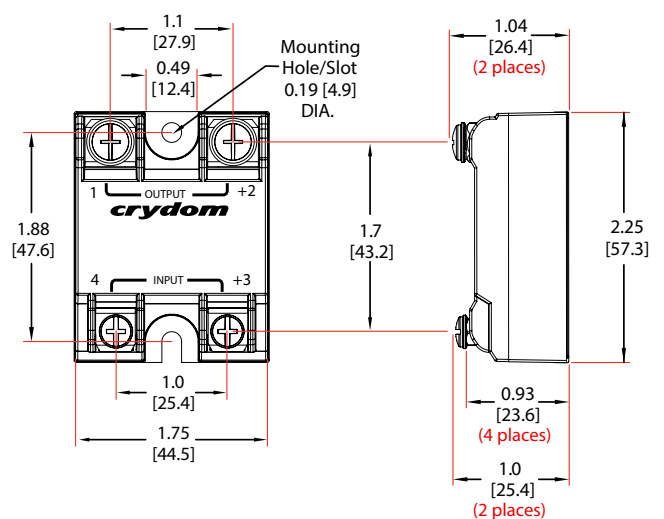
# MECHANICAL SPECIFICATIONS (1)

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

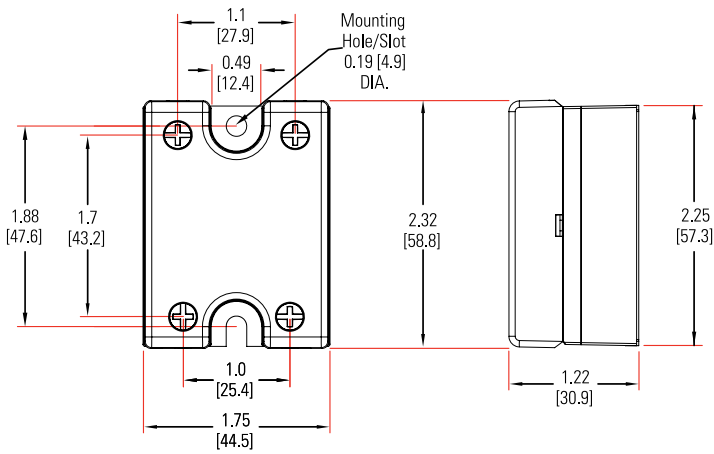
## Screw Termination



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

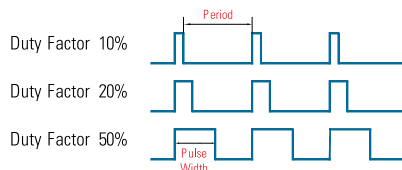
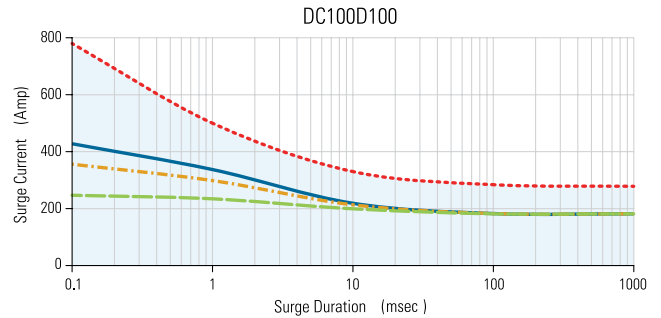
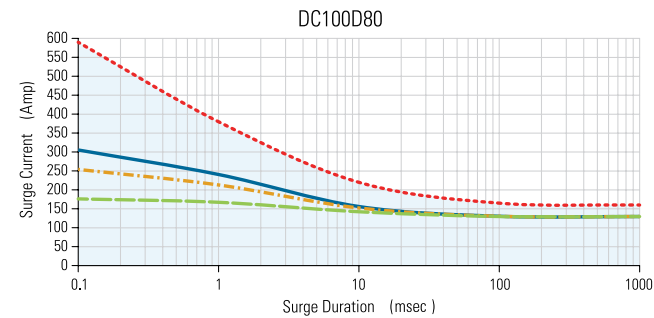
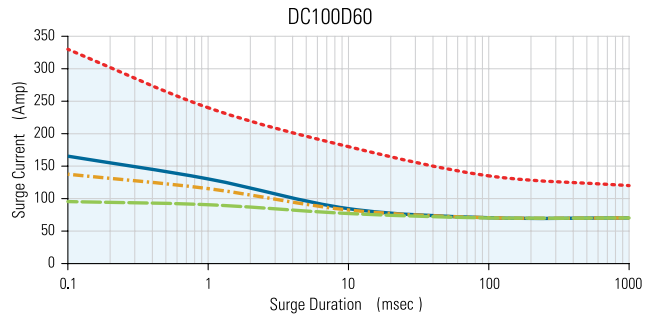
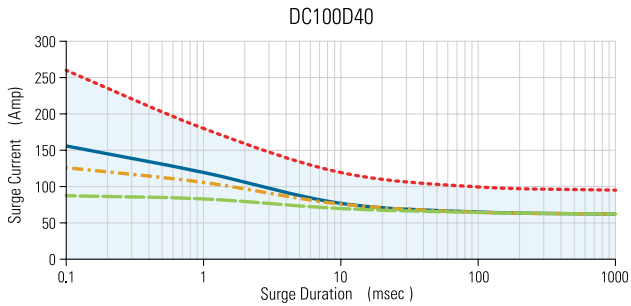
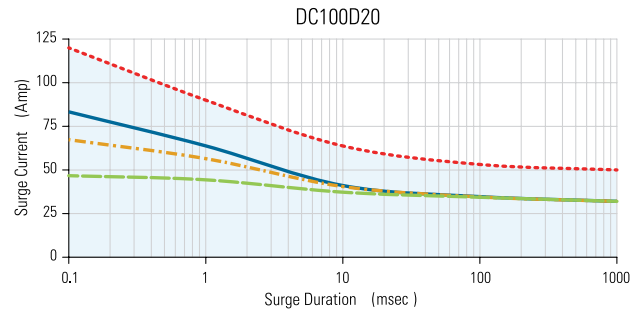
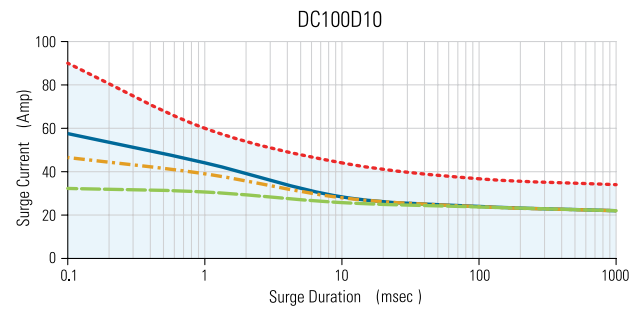


# Screw Termination, IP20



## 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 duty factor and pulse duration as following.

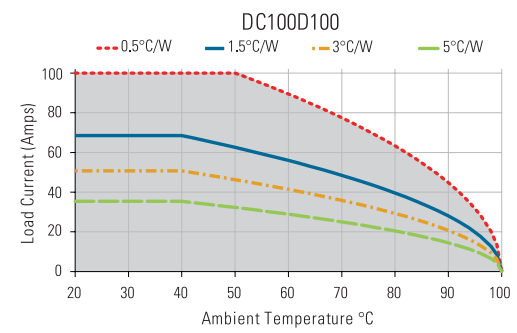
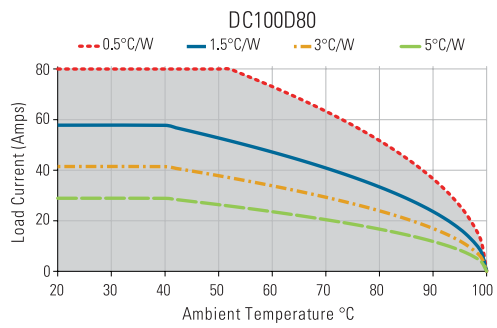
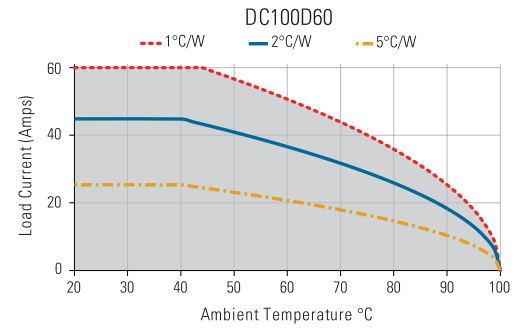
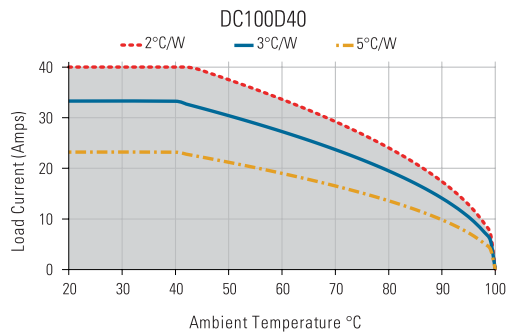
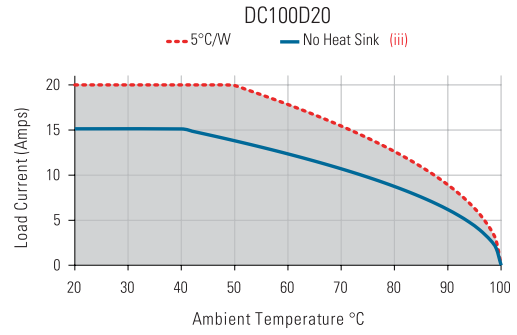
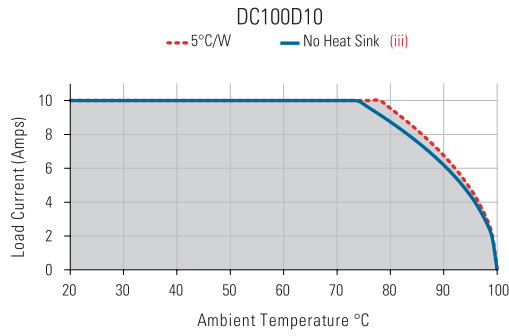
$$\text{Duty Factor} = \frac{\text{Pulse Width}}{\text{Period}} \times 100 (\%)$$

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

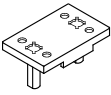

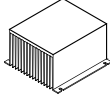
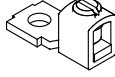
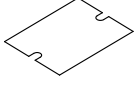


# THERMAL DERATE INFORMATION

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

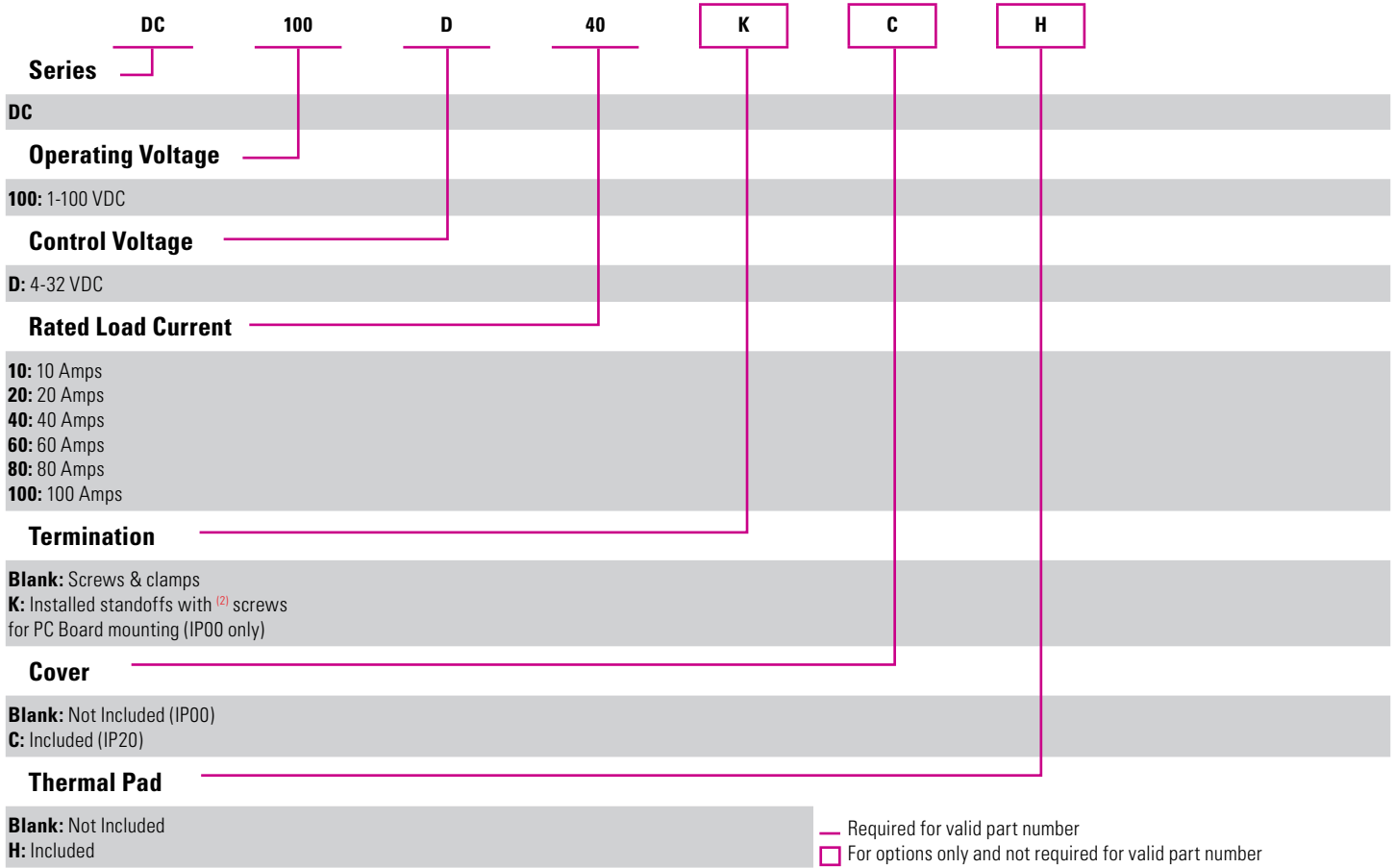




| Recommended Accessories   |   |   |   |   |   |
|---|---|---|---|---|---|
|  |  |    |   |  |  |
| Cover   | Hardware Kit  | Heat Sink Part No.  | Thermal Resistance [°C/W]   | Lug Terminal  | Thermal Pad   |
| KS101   | HK1<br>HK4  | HS501DR<br>HS301 / HS301DR<br>HS251<br>HS201 / HS201DR<br>HS202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



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



## 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 (contact Crydom tech support for detailed report).

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:  
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



## 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.**

Sensata Technologies, Inc. ("Sensata") data sheets are solely intended to assist designers ("Buyers") who are developing systems that incorporate Sensata products (also referred to herein as "components"). Buyer understands and agrees that Buyer remains responsible for using its independent analysis, evaluation and judgment in designing Buyer's systems and products. Sensata data sheets have been created using standard laboratory conditions and engineering practices. Sensata has not conducted any testing other than that specifically described in the published documentation for a particular data sheet. Sensata may make corrections, enhancements, improvements and other changes to its data sheets or components without notice.

Buyers are authorized to use Sensata data sheets with the Sensata component(s) identified in each particular data sheet. HOWEVER, NO OTHER LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE TO ANY OTHER SENSATA INTELLECTUAL PROPERTY RIGHT, AND NO LICENSE TO ANY THIRD PARTY TECHNOLOGY OR INTELLECTUAL PROPERTY RIGHT, IS GRANTED HEREIN. SENSATA DATA SHEETS ARE PROVIDED "AS IS". SENSATA MAKES NO WARRANTIES OR REPRESENTATIONS WITH REGARD TO THE DATA SHEETS OR USE OF THE DATA SHEETS, EXPRESS, IMPLIED OR STATUTORY, INCLUDING ACCURACY OR COMPLETENESS. SENSATA DISCLAIMS ANY WARRANTY OF TITLE AND ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, QUIET ENJOYMENT, QUIET POSSESSION, AND NON-INFRINGEMENT OF ANY THIRD PARTY INTELLECTUAL PROPERTY RIGHTS WITH REGARD TO SENSATA DATA SHEETS OR USE THEREOF.

All products are sold subject to Sensata's terms and conditions of sale supplied at [www.sensata.com](http://www.sensata.com) SENSATA ASSUMES NO LIABILITY FOR APPLICATIONS ASSISTANCE OR THE DESIGN OF BUYERS' PRODUCTS. BUYER ACKNOWLEDGES AND AGREES THAT IT IS SOLELY RESPONSIBLE FOR COMPLIANCE WITH ALL LEGAL, REGULATORY AND SAFETY-RELATED REQUIREMENTS CONCERNING ITS PRODUCTS, AND ANY USE OF SENSATA COMPONENTS IN ITS APPLICATIONS, NOTWITHSTANDING ANY APPLICATIONS-RELATED INFORMATION OR SUPPORT THAT MAY BE PROVIDED BY SENSATA.

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

## CONTACT US

### Americas

+1 (877) 502 5500  
sales.crydom@sensata.com  
**Europe, Middle East & Africa**  
+44 (1202) 416170  
ssr-info.eu@sensata.com

### Asia Pacific

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