



# SERIES 1T | 240 VAC PANEL MOUNT



## Features

- Ratings from 10A to 125A @ 24-280 VAC
- SCR output for heavy industrial loads
- Zero voltage or instantaneous turn-on outputs
- UL/CSA/TUV Approved, CE Compliant to EN60950-1
- Improved SEMS screw and washer
- Redesigned housing with anti-rotation barriers
- AC or DC control
- Direct bond copper substrate
- Direct power lead frame
- Epoxy free design

## PRODUCT SELECTION

Control Voltage	10A	25A	50A	75A	90A	110A	125A
3-32 VDC	D2410T	D2425T	D2450T	D2475T	D2490T	D24110T	D24125T
90-280 VAC	A2410T	A2425T	A2450T	A2475T	A2490T	A24110T	A24125T
18-36 VAC	A2410ET	A2425ET	A2450ET	A2475ET	A2490ET	A24110ET	A24125ET

## ORDERING OPTIONS

**A** - **24** - **10** - **E** - **K** - **P** - **G** - **H** - **T** - **-10** - **-B**

**Control Voltage**

**A:** 90-280 VAC  
**D:** 3-32 VDC  
**AxxxxE:** 18-36 VAC

**Operating Voltage**

**24:** 24-280 VAC

**Rated Load Current**

**10:** 10 Amps      **75:** 75 Amps  
**25:** 25 Amps      **90:** 90 Amps  
**50:** 50 Amps      **110:** 110 Amps      **125:** 125 Amps

**Termination**

**Blank:** Screw  
**F:** Quick Connect (Up to 50 Amps only) (1)  
**K:** Hex standoffs (2)

**Overvoltage Protection**

**Blank:** Not Included  
**P:** Included (3)

**Input Status LED**

**Blank:** Not Included  
**G:** Included

**Thermal Pad**

**Blank:** Not Included  
**H:** Included

**Trigger Circuit**

**T:** Phototransistor (Not needed with -B suffix, included as standard)

**Switching Type**

**Blank:** Zero Voltage Turn-On  
**-10:** Instantaneous Turn-On (4)

**Output Type**

**-B:** Normally Closed (Not available with -10 option)

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

**Note:** Not all part number combinations are available. Contact Crydom Technical support for information on the availability of a specific part number.

## OUTPUT SPECIFICATIONS <sup>(5)</sup>

Description	10A	25A	50A	75A	90A	110A	125A
Operating Voltage (47-440Hz) [Vrms]	24-280	24-280	24-280	24-280	24-280	24-280	24-280
Transient Overvoltage [Vpk]	600	600	600	600	600	600	600
Maximum Off-State Leakage Current @ Rated Voltage [mArms]	10	10	10	10	10	10	10
Minimum Off-State dv/dt @ Maximum Rated Voltage [V/μsec]	500	500	500	500	500	500	500
Maximum Load Current [Arms] <sup>(2)(6)</sup>	10	25	50	75	90	110	125
Minimum Load Current [mArms]	40	40	40	40	40	150	150
Maximum 1 Cycle Surge Current (50/60Hz) [Apk]	115/120	239/250	597/625	954/1000	1145/1200	1432/1500	1670/1750
Maximum On-State Voltage Drop @ Rated Current [Vrms] <sup>(7)</sup>	1.15	1.15	1.15	1.15	1.15	1.15	1.15
Thermal Resistance Junction to Case (Rjc) [°C/W]	1.03	0.8	0.45	0.3	0.27	0.25	0.22
Maximum 1/2 Cycle I <sup>2</sup> t for Fusing (50/60Hz) [A <sup>2</sup> sec]	66/60	285/259	1779/1621	4555/4150	6560/5976	10249/9338	13950/12709
Minimum Power Factor (at Maximum Load)	0.5	0.5	0.5	0.5	0.5	0.5	0.5

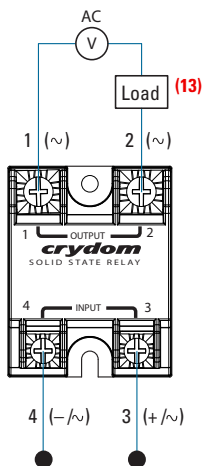
## INPUT SPECIFICATIONS <sup>(5)</sup>

Description	D12xxT	A12xxT	A12xxET
Control Voltage Range	3-32 VDC	90-280 Vrms	18-36 Vrms
Minimum Turn-On Voltage <sup>(8)</sup>	3.0 VDC <sup>(9)</sup>	90 Vrms	18 Vrms
Must Turn-Off Voltage <sup>(10)</sup>	1.0 VDC	10 Vrms	4 Vrms
Minimum Input Current [mA]	3.4	2	2
Maximum Input Current [mA]	30	4.9	4
Nominal Input Impedance [Ohms]	1.5K	60K	9K
Maximum Turn-On Time [msec]	1/2 Cycle <sup>(11)</sup>	10	10
Maximum Turn-Off Time [msec]	1/2 Cycle	40	40

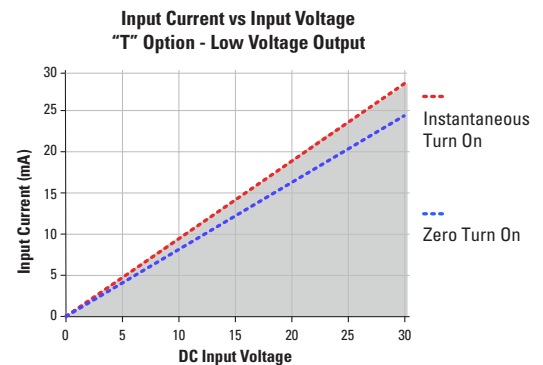
## GENERAL SPECIFICATIONS <sup>(5)</sup>

Description	Parameters
Dielectric Strength, Input/Output/Base (50/60Hz)	4000 Vrms
Minimum Insulation Resistance (@ 500 VDC)	10 <sup>9</sup> Ohm
Maximum Capacitance, Input/Output	8 pF
Ambient Operating Temperature Range	-40 to 80 °C
Ambient Storage Temperature Range	-40 to 125 °C
Weight (typical)	2.6 oz (74.9g)
Housing Material	UL 94 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 / 2.0-2.2
SSR Mounting Screw Torque Range (in-lb/Nm)	18-20 / 2.0-2.2
Input/Load Terminal Screw Torque Range (in-lb/Nm) <sup>(2)</sup>	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	93% non-condensing
LED Input Status Indicator	w/"G" option (green)
MTBF (Mean Time Between Failures) at 40°C ambient temperature <sup>(9)</sup>	11,641,553 hours (1,328 years)
MTBF (Mean Time Between Failures) at 60°C ambient temperature <sup>(9)</sup>	7,210,376 hours (823 years)

## WIRING DIAGRAM



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 [maximum]	110 [490]
	2 x 8 AWG (8.4 mm <sup>2</sup> ) / 8.4 [maximum]	90 [400]



# EQUIVALENT CIRCUIT BLOCK DIAGRAMS

Diagram: D24xxT

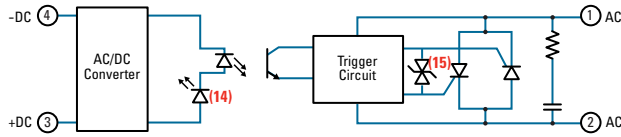
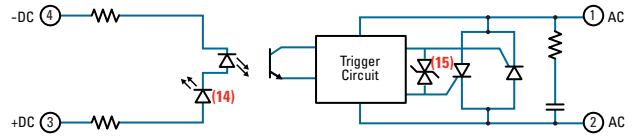


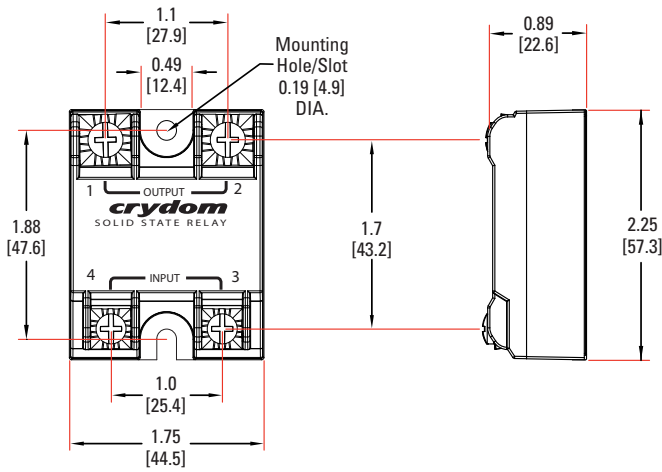
Diagram: A24xxT, A24xxET



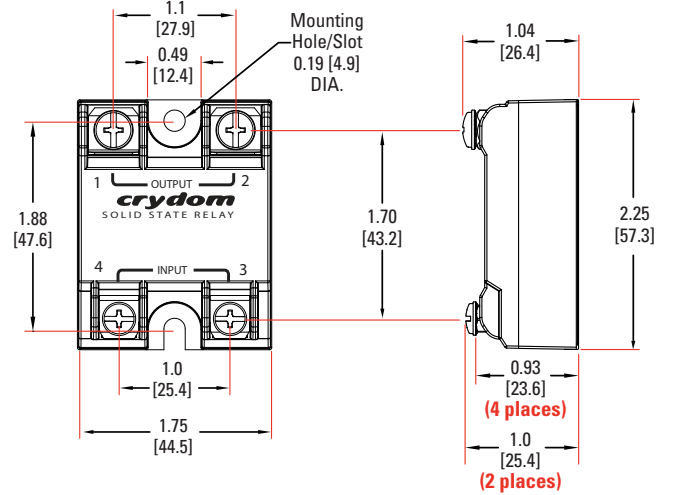
# MECHANICAL SPECIFICATIONS (5)

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

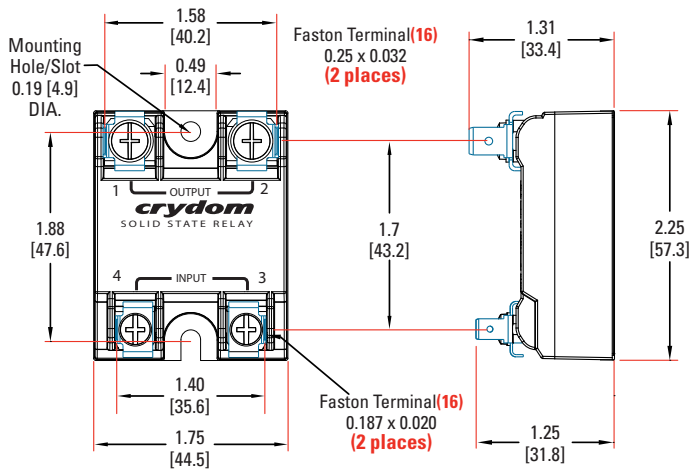
Screw Termination



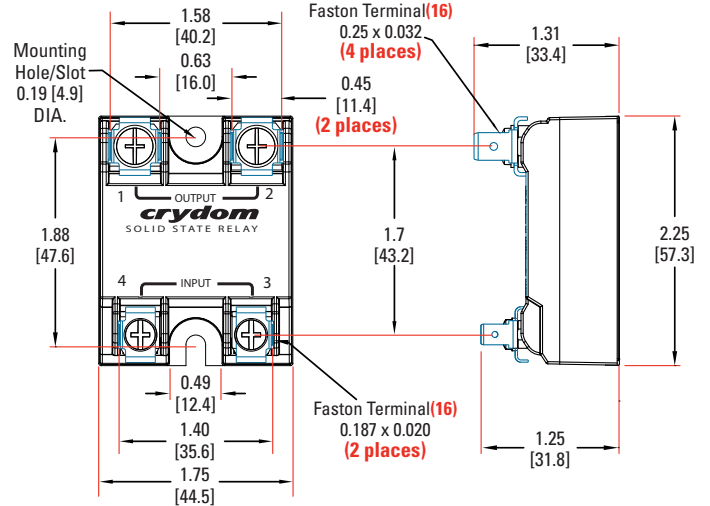
Hex Standoff Termination ("K" Option) (2)



Quick Connect Termination ("F" Option) - Up to 25 Amp (1)

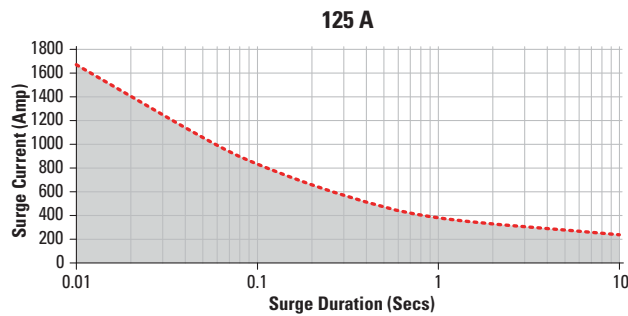
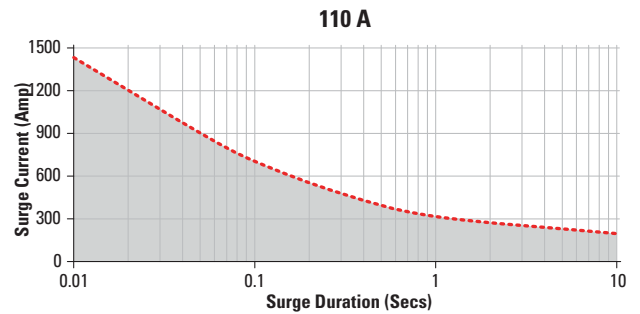
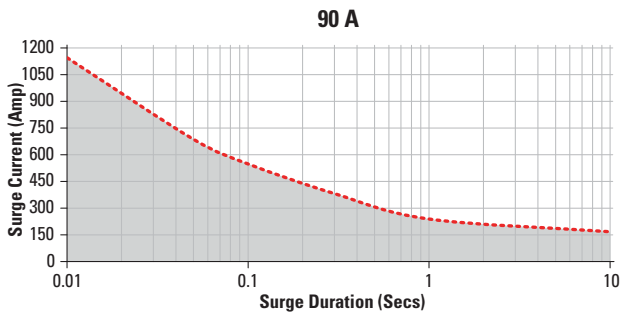
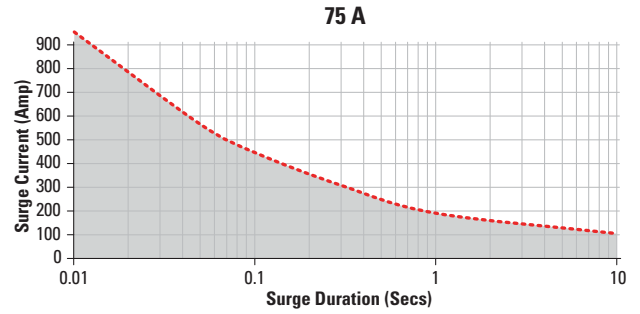
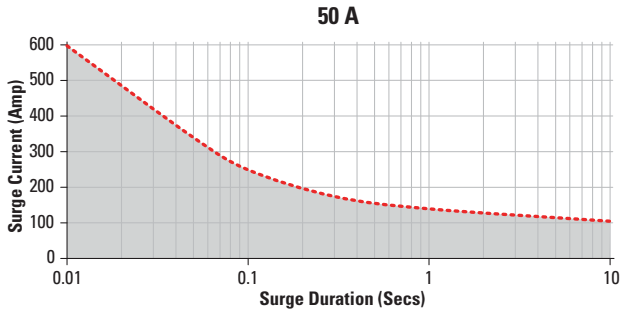
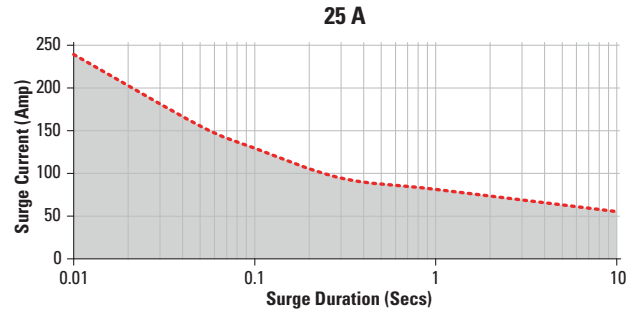
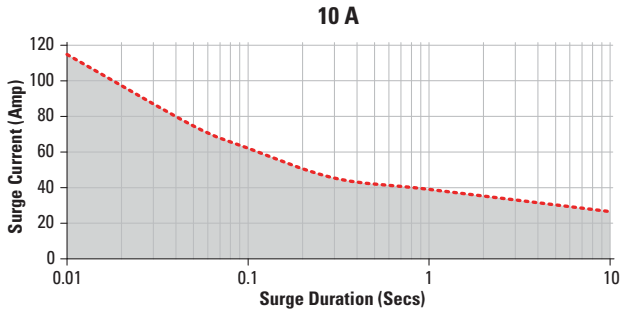


Quick Connect Termination ("F" Option) - Up to 50 Amp (1)





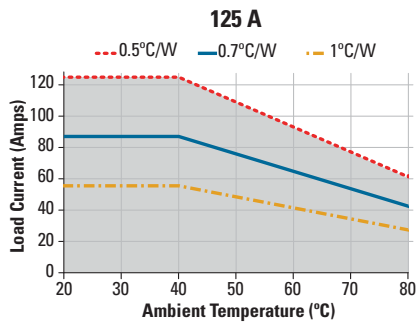
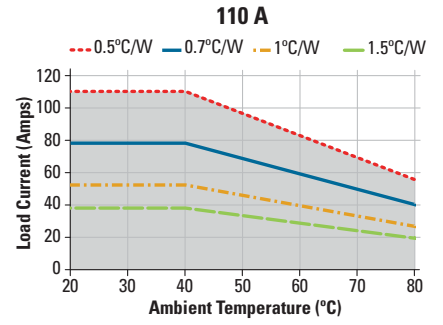
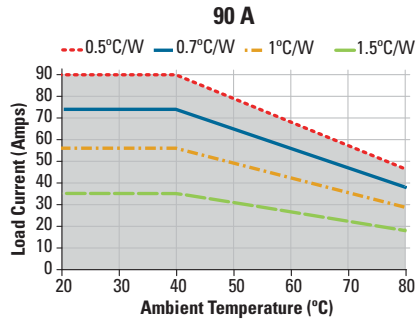
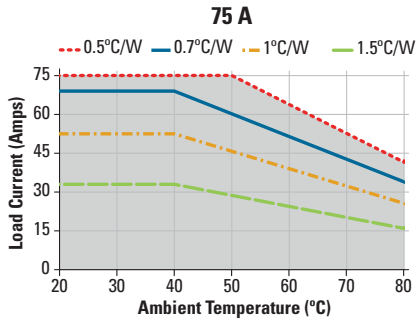
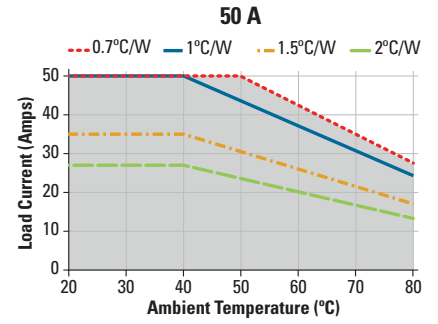
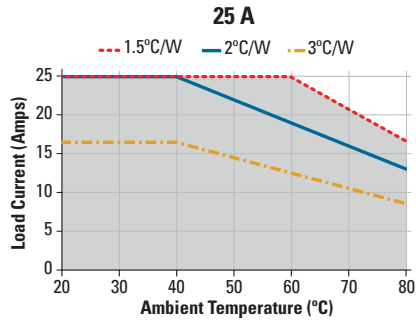
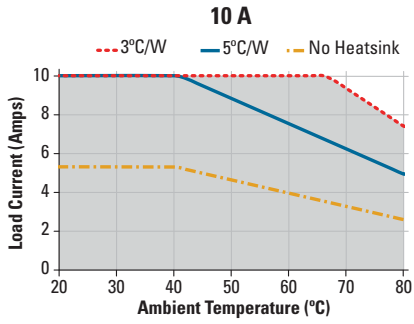
# SURGE CURRENT INFORMATION



Non repetitive peak surge current at Tj initial 40°C.



# THERMAL DERATE INFORMATION



## AGENCY APPROVALS AND CERTIFICATIONS

EN60950 : Meets the requirements of sections 1.5: 1.7: 2.9: 2.10.5.3: 4.2: 4.5: 4.7:  
 Designed in accordance with the requirements of IEC 62314  
 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  
 IEC 60068-2-6 : Vibration 0.33mm and 0.75 mm Amplitude over 10-55 Hz  
 IEC 60068-2-27 : Shock Resistance 15g/11ms



(except 110A & 125A models)

## ACCESSORIES

### New Accessories! Protective Cover & 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
	HK4	HS301 / HS301DR	3.0	TRM6	HSP-2
		HS251	2.5		
		HS202 / HS202DR	2.0		
		HS201 / HS201DR	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		

## GENERAL NOTES

- (1) Single pair (up to 25A) Double pair\* (up to 50A). **\*Caution:** User must connect both pairs.
- (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 Crydom Technical Support.
- (3) Output will self trigger between 450-600Vpk, Min., not suitable for capacitive loads.
- (4) Instantaneous turn-on version is not recommended for capacitive loads. Use zero turn-on only.
- (5) All parameters at 25°C unless otherwise specified.
- (6) Heat sinking required, see derating curves.
- (7) For 40mA minimum current, the voltage drop increases over maximum rated.
- (8) Maximum turn-on voltage for -B option is: 1VDC for DC control, 10Vrms for AC control, and 4Vrms for E control range.
- (9) For relays with option "G" minimum control voltage is 4.5VDC.
- (10) Must turn-off voltage for -B option is: 3VDC for DC control, 90Vrms for AC control, and 18Vrms for E control range.
- (11) Turn-on time for Instantaneous turn-on versions is 0.02 msec (DC Control Models).
- (12) All parameters at 50% power rating and 100% duty cycle (contact Crydom tech support for detailed report).
- (13) Load can be wired to either SSR output terminal 1 or 2.
- (14) Elective Input Status LED, "G" option.
- (15) Elective Overvoltage Protection, "P" option.
- (16) Mechanical dimensions vary from G3 models.

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



## 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 – Option 2  
[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