

## 53TP SERIES | IP20

PANEL MOUNT SOLID STATE RELAYS



### Features

- 3-phase solid state relay
- Ratings 25 A, 50 A per phase @ 48-530 VAC
- 2 package styles IP20 or IP00 (See IP00 datasheet for more information)
- SCR output for heavy industrial loads
- AC or DC control
- Zero voltage (resistive loads) or instantaneous (inductive loads) output
- LED input status indicator
- Transient protection built-in

### PRODUCT SELECTION

| Control Voltage | 25 A     | 50 A     |
|-----------------|----------|----------|
| 90-140 VAC      | B53TP25C | B53TP50C |
| 180-260 VAC     | C53TP25C | C53TP50C |
| 4-32 VDC        | D53TP25C | D53TP50C |
| 18-36 VAC       | E53TP25C | E53TP50C |

### SPECIFICATIONS

#### AC Output <sup>(1)</sup>

| Description                                                                   | 25 A      | 50 A      |
|-------------------------------------------------------------------------------|-----------|-----------|
| Operating Voltage (47-63 Hz) [Vrms]                                           | 48-530    | 48-530    |
| Transient Overvoltage [Vpk] <sup>(2)</sup>                                    | 1200      | 1200      |
| Maximum Off-State Leakage Current @ Rated Voltage [mA <sub>rs</sub> ]         | 3         | 3         |
| Minimum Off-State dv/dt @ Maximum Rated Voltage [V/sec] <sup>(2)</sup>        | 500       | 500       |
| Maximum Load Current [Arms] <sup>(3)</sup>                                    | 25        | 50        |
| Minimum Load Current [Arms]                                                   | 0.1       | 0.1       |
| Maximum 1 Cycle Surge Current (50/60 Hz) [A <sub>pk</sub> ]                   | 275/300   | 710/750   |
| Maximum 1 Second Surge Current (50/60 Hz) [A <sub>pk</sub> ]                  | 85        | 150       |
| Maximum On-State Voltage Drop @ Rated Current [Vpk]                           | 1.35      | 1.35      |
| Thermal Resistance Junction to Case (R <sub>jc</sub> ) [°C/W]                 | 0.24      | 0.12      |
| Maximum 1/2 Cycle I <sup>2</sup> t for Fusing (50/60 Hz) [A <sup>2</sup> sec] | 380/370   | 2520/2320 |
| Minimum Power Factor (with Maximum Load)                                      | 0.5       | 0.5       |
| UL/IEC 60947 Motor Control Ratings at 120V [HP/KW] <sup>(4)</sup>             | 0.75/0.56 | 1.5/1.11  |
| UL/IEC 60947 Motor Control Ratings at 240V [HP/KW] <sup>(4)</sup>             | 1/0.74    | 3/2.22    |
| UL/IEC 60947 Motor Control Ratings at 380V [HP/KW] <sup>(4)</sup>             | 2/1.48    | 5/3.7     |
| UL/IEC 60947 Motor Control Ratings at 480V [HP/KW] <sup>(4)</sup>             | 3/2.22    | 7.5/5.55  |

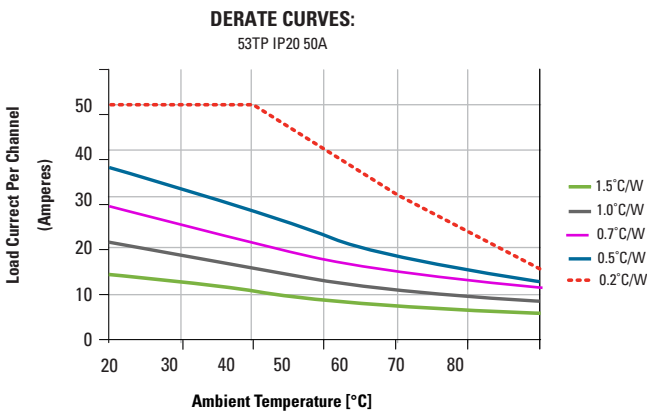
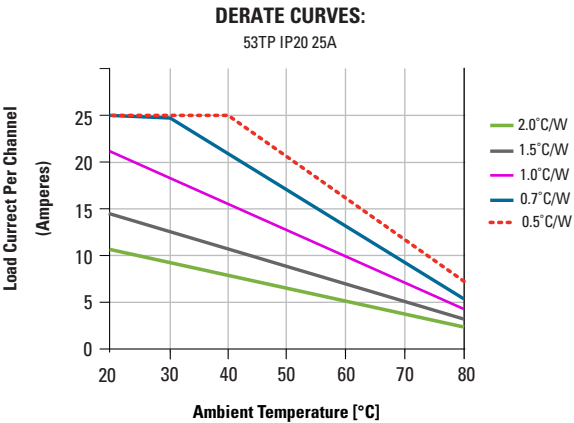
Input <sup>(1)</sup>

| Description                                | D53               | B53               | C53               | C53               |
|--------------------------------------------|-------------------|-------------------|-------------------|-------------------|
| Control Voltage Range                      | 4-32 VDC          | 90-140 VAC        | 180-260 VAC       | 18-36 VAC         |
| Minimum Turn-On Voltage                    | 4.0 VDC           | 90 VAC            | 180 VAC           | 18 VAC            |
| Minimum Turn-Off Voltage                   | 1.0 VDC           | 10 VAC            | 10 VAC            | 2 VAC             |
| Minimum Input Current (for on-state)       | 24 mA             | 7 mA              | 7 mA              | 15 mA             |
| Maximum Input Current                      | 35 mA             | 16 mA             | 20 mA             | 20 mA             |
| Nominal Input Impedance                    | Current Regulated | Current Regulated | Current Regulated | Current Regulated |
| Maximum Turn-On Time [msec] <sup>(5)</sup> | 8.33              | 20                | 20                | 20                |
| Maximum Turn-Off Time [msec]               | 8.33              | 30                | 30                | 30                |

General <sup>(1)</sup>

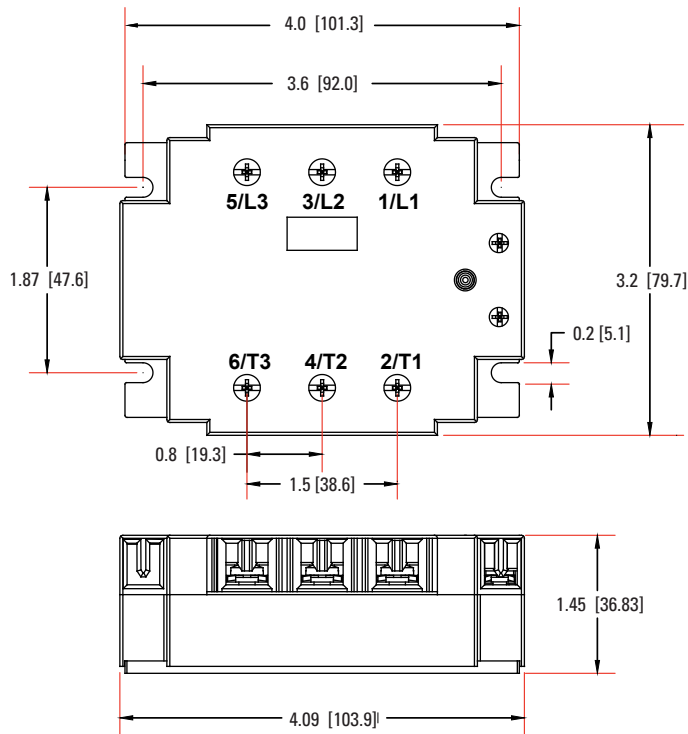
| Description                                       | Parameters                  |
|---------------------------------------------------|-----------------------------|
| Dielectric Strength, Input/Output/Base (50/60 Hz) | 4000 Vrms                   |
| Minimum Insulation Resistance (@ 500 VDC)         | 10 <sup>9</sup> Ohms        |
| Maximum Capacitance, Input/Output                 | 8 pF                        |
| Ambient Operating Temperature Range               | -40°C to 80°C               |
| Ambient Storage Temperature Range                 | -40°C to 125°C              |
| Weight (typical)                                  | 13.1 oz (370g)              |
| Encapsulation                                     | NA                          |
| Terminals                                         | Hardware Furnished, mounted |
| Screws and Saddle clamps                          | Zinc plated Steel           |
| Input Terminal Screw Torque Range: [lb-in/Nm]     | 8-10 / 0.9-1.1              |
| Output Terminal Screw Torque Range: [lb-in/Nm]    | 15-20 / 1.7-2.2             |

THERMAL DERATE INFORMATION



MECHANICAL SPECIFICATIONS

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



ORDERING OPTIONS

Example : D53TP25CH-10

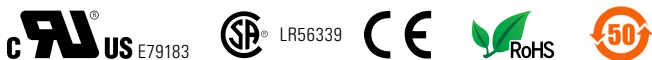
|                             |   |      |    |   |   |     |
|-----------------------------|---|------|----|---|---|-----|
|                             | D | 53TP | 25 | C | H | -10 |
| Control Voltage             |   |      |    |   |   |     |
| B: 90-140 VAC               |   |      |    |   |   |     |
| C: 180-260 VAC              |   |      |    |   |   |     |
| D: 4-32 VDC                 |   |      |    |   |   |     |
| E: 18-36 VAC                |   |      |    |   |   |     |
| Series                      |   |      |    |   |   |     |
| 53TP                        |   |      |    |   |   |     |
| Rated Load Current          |   |      |    |   |   |     |
| 25: 25 Amps                 |   |      |    |   |   |     |
| 50: 50 Amps                 |   |      |    |   |   |     |
| Cover                       |   |      |    |   |   |     |
| C: Included (IP20)          |   |      |    |   |   |     |
| Relay Options               |   |      |    |   |   |     |
| Blank: Not included         |   |      |    |   |   |     |
| H: Included                 |   |      |    |   |   |     |
| Relay Options               |   |      |    |   |   |     |
| Blank: Zero Voltage Turn-On |   |      |    |   |   |     |
| -10: Instantaneous Turn-On  |   |      |    |   |   |     |

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

## GENERAL NOTES

- <sup>1)</sup> All parameters at 25°C unless otherwise specified.
- <sup>2)</sup> Off-State dv/dt test method per EIA/NARM standard RS-443, paragraph 13.11.1
- <sup>3)</sup> Heat sinking required, see page 3 for derating curves.
- <sup>4)</sup> At 40°C Ambient temperature.
- <sup>5)</sup> Turn-on time for Instantaneous turn-on versions is 0.02 msec (DC Control Models)

## AGENCY APPROVALS & CERTIFICATIONS



Designed in accordance with the requirements of IEC 62314

EN60950 : Meets the requirements of sections 1.5: 1.7: 2.9: 2.10.5.3: 4.2: 4.5: 4.7:

IEC 62314

IEC 60068-2-6 35mm / 10-55Hz

IEC 60068-2-27 15G / 11ms

IEC 1000-4-2 : Electrostatic Discharge – Level 3

IEC 1000-4-3 : Radiated Electromagnetic Noise – Level 3

IEC 1000-4-4 : Electrically Fast Transients – Level 3

IEC 1000-4-5 : Electrical Surges – Level 3

IEC 1000-4-6 : Conducted Electromagnetic Noise – 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.**

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