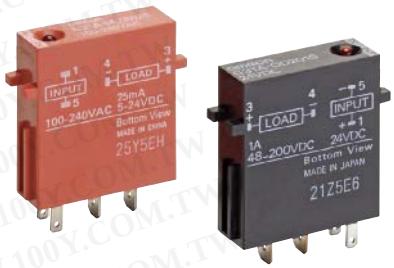
# Solid State Relays
# G3TA

Refer to *Safety Precautions for All Solid State Relays*.

## I/O SSRs That Mount to OMRON's G7TC I/O Block

- Input and output modules are available in wide variety.
- Snaps easily into P7TF I/O Terminals and can be used together with G7T I/O relays.
- Operation of each SSR can be monitored easily through an LED indicator.
- Certified by UL and CSA.






# Model Number Structure

## ■ Model Number Legend

**G3TA□□□□□□□-□**
**1 2 3 4 5 6 7 8 9 10**

1. **Basic Model Name**
   G3T: I/O Solid State Relay
2. **Structure**
   A: Socket type for PCB
3. **I/O**
   I: Input models
   O: Output models
4. **Type**
   A: Input models: AC input
   Output models: AC output
   D: Input models: DC input
   Output models: DC output
5. **Rated Load Power Supply Voltage**
   2: 200 VAC/200 VDC
   X: 50 to 100 V
   Z: 26 V max.
6. **Rated Load Current**
   01: 1 A
   02: 2 A
   R02: 25 mA
7. **Terminal Type**
   S: Plug-in terminals
8. **Zero Cross Function**
   Blank: DC output models
   Z: Equipped with zero cross function
   L: Not equipped with zero cross function
9. **Operation Indicator**
   Blank: Equipped with operation indicator
   M: Not equipped with operation indicator
10. **Certification**
    US: Certified by UL and CSA

# Ordering Information

## ■ List of Models

### Input Modules

| Isolation | Indicator | Logic level | | Rated input voltage | Model |
|---|---|---|---|---|---|
| | | Supply voltage | Supply current | | |
| Photocoupler | Yes | 4 to 32 VDC | 25 mA | 100 to 240 VAC | G3TA-IAZR02S-US |
| | | | | 5 to 24 VDC | G3TA-IDZR02S-US |
| | No | | | 4 to 24 VDC | G3TA-IDZR02SM-US |

**Note:** When ordering, specify the rated input voltage.

## Output Modules

| Isolation | Zero cross function | Indicator | Rated output load | Rated input voltage | Model |
|---|---|---|---|---|---|
| Phototriac | Yes | Yes | 2 A at 100 to 240 VAC at 60°C | 12 VDC | G3TA-OA202SZ-US |
| | | | | 24 VDC | |
| | No | | | 12 VDC | G3TA-OA202SL-US |
| | | | | 24 VDC | |
| Photocoupler | --- | | 2 A at 5 to 48 VDC at 60°C | 12 VDC | G3TA-ODX02S-US |
| | | | | 24 VDC | |
| | | | 1 A at 48 to 200 VDC at 40°C | 12 VDC | G3TA-OD201S-US |
| | | | | 24 VDC | |

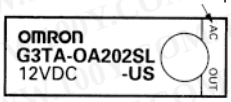
**Note:** When ordering, specify the rated input voltage.

## I/O Indication

I/O module classification and AC/DC use are indicated on the mark affixed to the top of the product.

| Mark indication | Specification |
|---|---|
| AC IN | Input module, AC input |
| DC IN | Input module, DC input |
| AC OUT | Output module, AC output |
| DC OUT | Output module, DC output |

Mark attached to the top of product




# ■ Accessories (Order Separately)

## Connecting Socket

| I/O classification | Rated voltage | Model |
|---|---|---|
| Input (NPN, – common) | 12 VDC | P7TF-IS16 |
| | 24 VDC | |
| | 100/110 VDC | |
| | 100/110 VAC | |
| | 200/220 VAC | |
| Output (NPN, + common) | 12 VDC | P7TF-OS16 |
| | 24 VDC | |
| Output (PNP, – common) | 12 VDC | P7TF-OS16-1 |
| | 24 VDC | |
| Output (NPN, + common) | 12 VDC | P7TF-OS08 |
| | 24 VDC | |
| --- | --- | P7TF-05 |

# Specifications

## ■ Ratings (at an Ambient Temperature of 25°C)

### Input Module

#### Input

| Model | Rated voltage | Operating voltage | Input current | Voltage level | |
|---|---|---|---|---|---|
| | | | | Must operate voltage | Must release voltage |
| G3TA-IAZR02S-US | 100 to 240 VAC | 80 to 264 VAC | 5 mA max. | 80 VAC max. | 10 VAC min. |
| G3TA-IDZR02S-US | 5 to 24 VDC | 4 to 32 VDC | | 4 VDC max. | 1 VDC min. |
| G3TA-IDZR02SM-US | 4 to 24 VDC | 3 to 32 VDC | | 3 VDC max. | |

#### Output

| Model | Logic level supply voltage | Output breakdown voltage | Output current | Output current (load current) |
|---|---|---|---|---|
| G3TA-IAZR02S-US | 4 to 32 VDC | 32 VDC max. | 25 mA max. | 0.1 to 25 mA |
| G3TA-IDZR02S-US | | | | |
| G3TA-IDZR02SM-US | | | | |

### Output Module

#### Input

| Model | Rated voltage | Operating voltage | Input impedance | Voltage level | |
|---|---|---|---|---|---|
| | | | | Must operate voltage | Must release voltage |
| G3TA-OA202SZ-US | 12 VDC | 9.6 to 13.2 VDC | 0.9 kΩ±20% | 9.6 VDC max. | 2 VDC min. |
| | 24 VDC | 19.2 to 26.4 VDC | 1.7 kΩ±20% | 19.2 VDC max. | |
| G3TA-OA202SL-US | 12 VDC | 9.6 to 13.2 VDC | 0.9 kΩ±20% | 9.6 VDC max. | |
| | 24 VDC | 19.2 to 26.4 VDC | 1.7 kΩ±20% | 19.2 VDC max. | |
| G3TA-ODX02S-US | 12 VDC | 9.6 to 13.2 VDC | 3.5 kΩ±20% | 9.6 VDC max. | |
| | 24 VDC | 19.2 to 26.4 VDC | 6.5 kΩ±20% | 19.2 VDC max. | |
| G3TA-OD201S-US | 12 VDC | 9.6 to 13.2 VDC | 3.6 kΩ±20% | 9.6 VDC max. | |
| | 24 VDC | 19.2 to 26.4 VDC | 6.4 kΩ±20% | 19.2 VDC max. | |

#### Output

| Model | Applicable load | | | |
|---|---|---|---|---|
| | Rated load voltage | Load voltage range | Load current (See note.) | Inrush current |
| G3TA-OA202SZ-US | 100 to 240 VAC | 75 to 264 VAC | 0.05 to 2 A | 30 A (60 Hz, 1 cycle) |
| G3TA-OA202SL-US | 100 to 240 VAC | 75 to 264 VAC | | |
| G3TA-ODX02S-US | 5 to 48 VDC | 4 to 60 VDC | 0.01 to 2 A | 12 A (10 ms) |
| G3TA-OD201S-US | 48 to 200 VDC | 40 to 200 VDC | 0.01 to 1 A | 6 A (10 ms) |

**Note:** The minimum current value is measured at 10°C min.

# ■ Characteristics

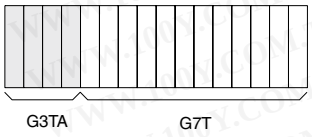
## Input Module

| Item | G3TA-IAZR02S-US | G3TA-IDZR02S-US | G3TA-IDZR02SM-US |
|---|---|---|---|
| **Operate time** | 20 ms max. | 0.5 ms max. | |
| **Release time** | 20 ms max. | 0.5 ms max. | |
| **Output ON voltage drop** | 1.6 V rms max. | 1.6 V max. | |
| **Leakage current** | 5 μA max. | | |
| **Insulation resistance** | 100 MΩ min. (at 500 VDC) | | |
| **Dielectric strength** | 4,000 VAC, 50/60 Hz for 1 min between input and output | | |
| **Vibration resistance** | Malfunction: 10 to 55 to 10 Hz, 0.75-mm single amplitude | | |
| **Shock resistance** | Malfunction: 1,000 $m/s^2$ | | |
| **Ambient temperature** | Operating: –30°C to 80°C (with no icing or condensation)<br>Storage: –30°C to 100°C (with no icing or condensation) | | |
| **Ambient humidity** | Operating: 45% to 85% | | |
| **Certified standards** | UL508 file No. E64562/CSA C22.2 (No. 0, No. 14) file No. LR35535 | | |
| **Weight** | Approx. 16 g | | |

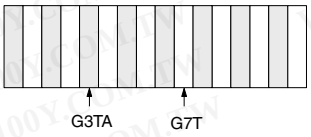
## Output Module

| Item | G3TA-OA202SZ-US | G3TA-OA202SL-US | G3TA-ODX02S-US | G3TA-OD201S-US |
|---|---|---|---|---|
| **Operate time** | 1/2 of load power source cycle + 1 ms max. | 1 ms max. | 0.5 ms max. | 2 ms max. |
| **Release time** | 1/2 of load power source cycle + 1 ms max. | | 2 ms max. | 2 ms max. |
| **Output ON voltage drop** | 1.6 V rms max. | | 1.6 V max. | 2.5 V max. |
| **Leakage current** | 5 mA max. (at 200 VAC) | | 1 mA max. | |
| **Insulation resistance** | 100 MΩ min. (at 500 VDC) | | | |
| **Dielectric strength** | 4,000 VAC, 50/60 Hz for 1 min between input and output | | | |
| **Vibration resistance** | Malfunction: 10 to 55 to 10 Hz, 0.75-mm single amplitude | | | |
| **Shock resistance** | Malfunction: 1,000 $m/s^2$ | | | |
| **Ambient temperature** | Operating: –30°C to 80°C (with no icing or condensation)<br>Storage: –30°C to 100°C (with no icing or condensation) | | | |
| **Ambient humidity** | Operating: 45% to 85% | | | |
| **Certified standards** | UL508 file No. E64562, CSA C22.2 (No. 14) file No. LR3553 | | | |
| **Weight** | Approx. 23 g | | | |

With up to four G3TA SSRs mounted before G7T Relays, switching is possible at the rated load current for each Relay.



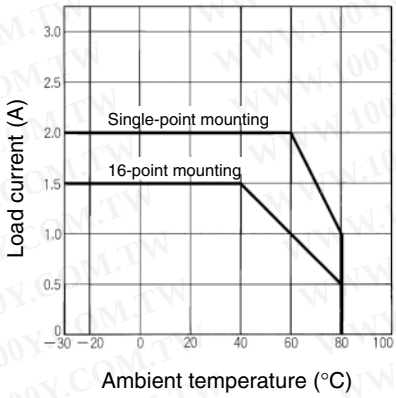

With G3TA SSRs mounted before every other G7T Relays, switching is possible at the rated load current for each Relay.



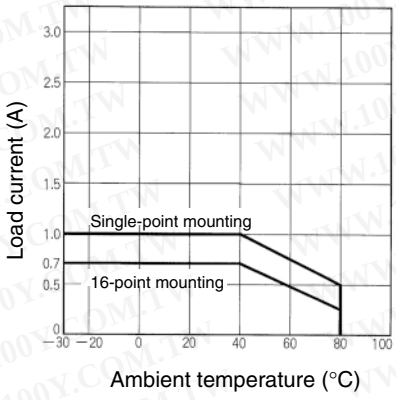
# Engineering Data

## Load Current vs. Ambient Temperature Characteristics

**G3TA-OA202SZ/OA202SL/ODX02S-US**




**G3TA-OD201S-US**

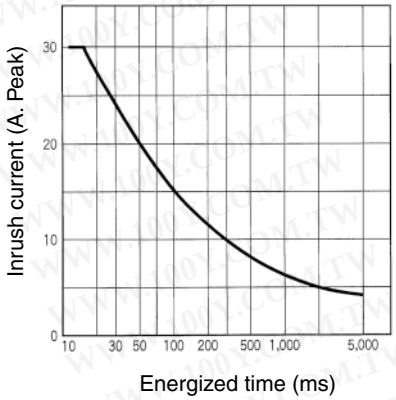




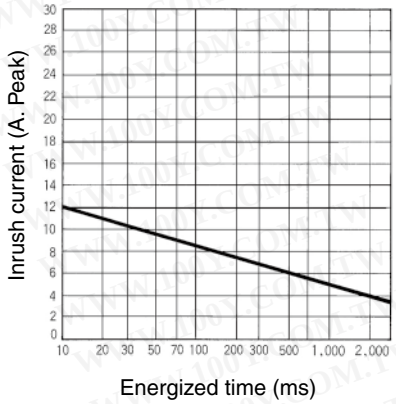

## One Cycle Surge Current: Non-repetitive

Non-repetitive (Keep the inrush current to half the rated value if it occurs repetitively.)

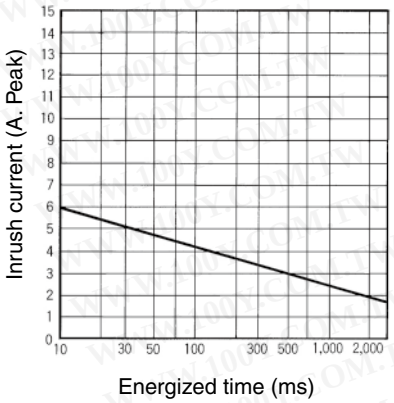
**G3TA-OA202SZ/OA202SL-US**




**G3TA-ODX02S-US**



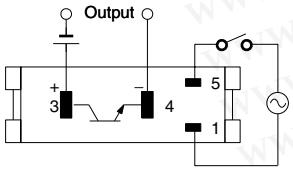

**G3TA-OD201S-US**



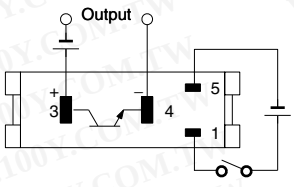

# Connections

## ■ External Connections (Bottom View)

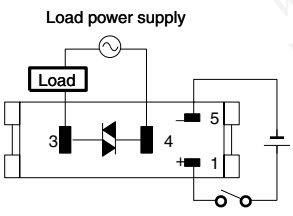
**G3TA-IAZR02S**



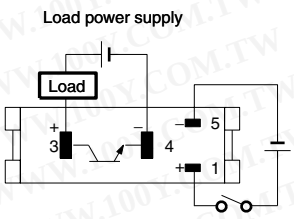

**G3TA-IDZR02S/IDZR02SM**



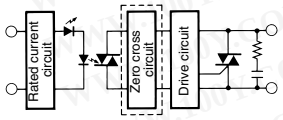
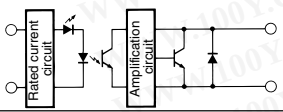
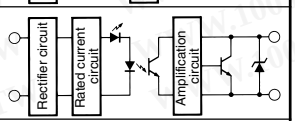
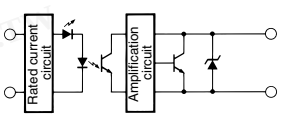

**G3TA-OA**




**G3TA-OD**

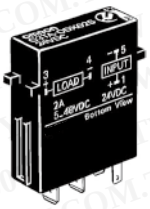


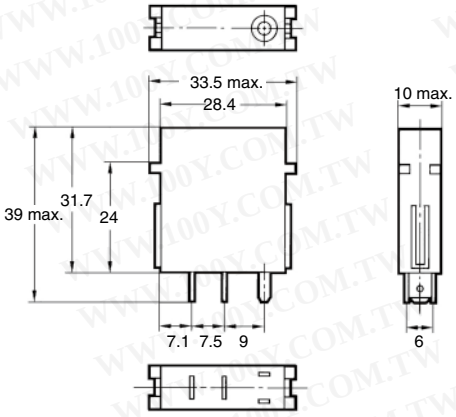

## ■ Circuit Configurations

| | Model | Case color | Operation indicator | Circuit |
|---|---|---|---|---|
| AC output | G3TA-OA202SZ (with zero cross)<br>G3TA-OA202SL (without zero cross) | Black | yes |  |
| DC output | G3TA-ODX02S<br>G3TA-OD201S | Black | yes |  |
| AC input | G3TA-IAZR02S | Red | yes |  |
| DC input | G3TA-IDZR02S | Green | yes |  |
| | G3TA-IDZR02SM | | No | |

# Dimensions

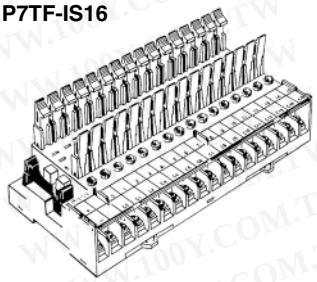
**Note:** All units are in millimeters unless otherwise indicated.

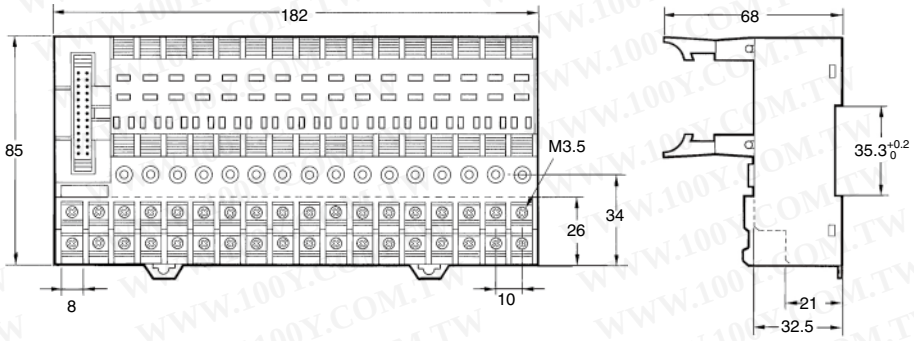


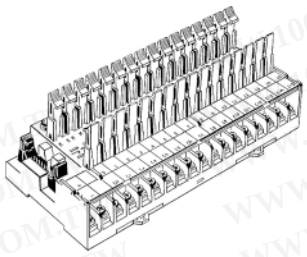

**Connecting Sockets**

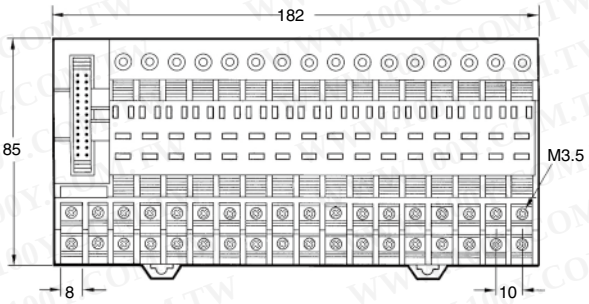
**For Input (NPN, - Common)**
**P7TF-IS16**

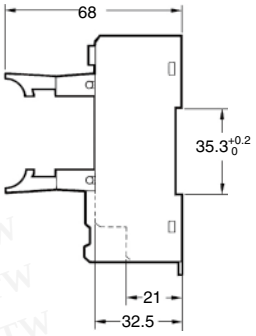




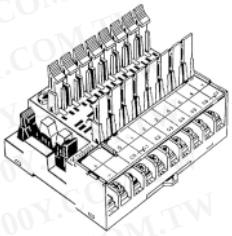
**For Output (NPN, + Common)**
**P7TF-OS16**

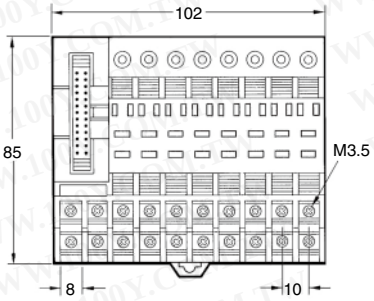


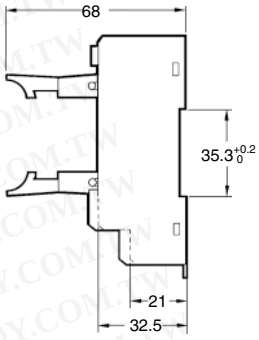


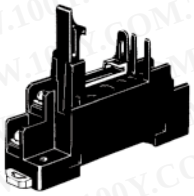

**For Output (PNP, + Common)**
**P7TF-OS08**

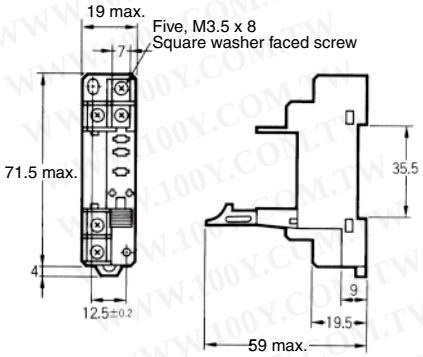





**P7TF-O5**






# Safety Precautions

## ■ Precautions for Correct Use

Please observe the following precautions to prevent failure to operate, malfunction, or undesirable effect on product performance.

### Connection

With the SSR for DC switching, the load can be connected to either positive or negative output terminal of the SSR.

### Protective Component

Since the SSR does not incorporate an overvoltage absorption component, be sure to connect an overvoltage absorption component when using the SSR under an inductive load.



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

# Safety Precautions for All Solid State Relays

Refer to the *Safety Precautions* section for each SSR for specific precautions applicable to that SSR.

**⚠ CAUTION**

| | |
|---|---|
| Do not touch the SSR or the heat sink while the power is being supplied or immediately after the power supply has been turned OFF.<br>Touching the SSR or heat sink while it is hot may result in burns. |  |
| Do not touch the LOAD terminals on the SSR immediately after the power supply has been turned OFF.<br>Shock may result due to the electrical charge stored in the built-in snubber circuit. |  |
| Always attach the cover terminal if the SSR has one.<br>Contact with current-carrying parts may result in shock. |  |
| Always turn OFF the power supply before performing wiring.<br>Not doing so may result in shock. |  |
| Do not allow short-circuit current to flow to the load side of the SSR.<br>The SSR may explode if short-circuit current flows. |  |

## ■ Precautions for Safe Use

OMRON constantly strives to improve quality and reliability. SSRs, however, use semiconductors, and semiconductors may commonly malfunction or fail. In particular, it may not be possible to ensure safety if the SSRs are used outside the rated ranges. Therefore, always use the SSRs within the ratings. When using an SSR, always design the system to ensure safety and prevent human accidents, fires, and social harm in the event of SSR failure. System design must include measures such as system redundancy, measures to prevent fires from spreading, and designs to prevent malfunction.

1. Do not apply voltage or current in excess of the ratings to the terminals of the SSR.
   Doing so may result in failure or burn damage.
2. Do not use the SSR with loose terminal screws.
   Doing so may result in burn damage due to abnormal heat produced by the terminals.
3. Do not block the movement of the air surrounding the SSR or heat sink.
   Abnormal heating of the SSR may result in shorting failures of the elements or burn damage.
4. Follow the *Precautions for Correct Use* when performing wiring or tightening the screws.
   If the SSR is used with the wiring or screw tightening performed improperly, burn damage may occur due to abnormal heat generated when the power is being applied.

## ■ Precautions for Correct Use

For details, refer to *Technical Guide for Solid State Relays*.



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## Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

## Warranty and Limitations of Liability

### WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

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