The actual value of the reset current is not given in the datasheet and so when calculating the value of the bleeder resistance, use the following formula.

$$\text{Reset current for SSR} = \frac{\text{Minimum value of reset voltage}}{\text{Input impedance}}$$

For SSRs with constant-current input circuits (e.g., G3NA, G3PA, G3PB), calculation is performed at 0.1 mA.

The calculation for the G3M-202P DC24 is shown below as an example.

$$\text{Reset current I} = \frac{1\text{ V}}{1.6\text{ k}\Omega} = 0.625\text{ mA}$$

$$\text{Bleeder resistance R} = \frac{1\text{ V} \times 1/2}{I_L - 0.625\text{ mA}}$$

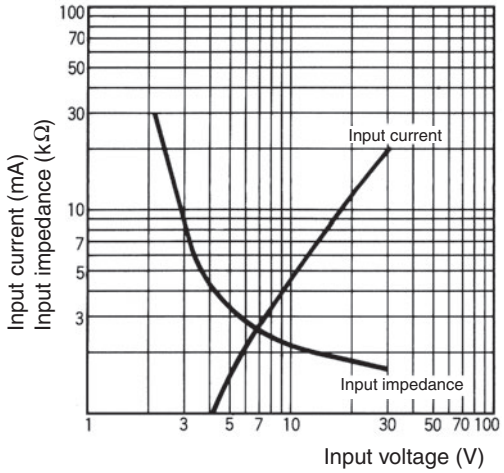
3. ON/OFF Frequency

An SSR has delay times called the operating time and reset time. Loads, such as inductive loads, also have delay times called the operating time and reset time. These delays must all be considered when determining the switching frequency.

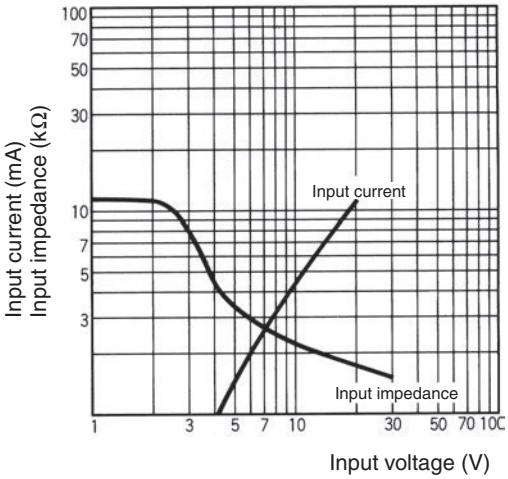
4. Input Impedance

In SSRs which have wide input voltages (such as G3F and G3H), the input impedance varies according to the input voltage and changes in the input current. For semiconductor-driven SSRs, changes in voltage can cause malfunction of the semiconductor, so be sure to check the actual device before usage. See the following examples.

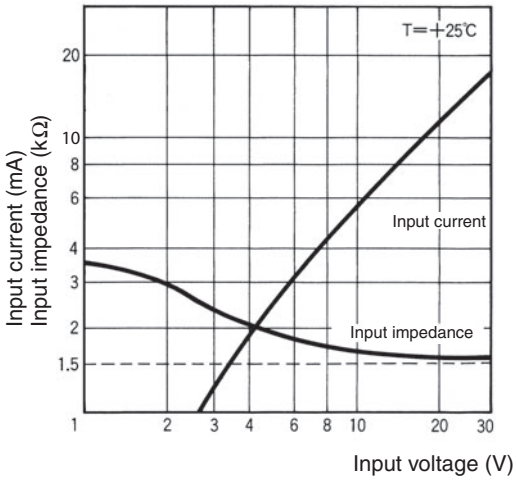
Applicable Input Impedance for a Photocoupler-type SSR without Indicators (Example)
G3F, G3H (Without Indicators)



Applicable Input Impedance for a Photocoupler-type SSR with Indicators (Example)
G3B, G3F, G3H (With Indicators)



Applicable Input Impedance (Example)
G3CN

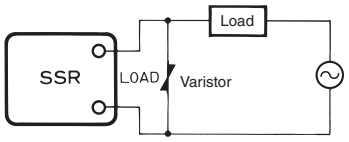


■ Output Circuit

AC ON/OFF SSR Output Noise Surges

- If there is a large voltage surge in the AC power supply where SSRs are used, the CR snubber circuit built into the SSR between the SSR load terminals will not be sufficient to suppress the surge, and the SSR transient peak element voltage will be exceeded, causing overvoltage damage to the SSR.
  Varistors should generally be added because measuring surges is often difficult (except when it has been confirmed that there is no surge immediately before use).
- Built-in surge absorption elements are included only with the G3NA, G3S, G3PA, G3PE, G3PC, G3NE, G3J, G3NH, G9H, G3DZ, G3RZ, and G3FM. When switching an inductive load ON and OFF, be sure to take countermeasures against surge, such as adding a surge absorbing element.
- The following is an example of measures in which a surge voltage absorption element has been added.
  OMRON confirmed the amount of resistance for the SSR output at the following impulse withstand voltage test conditions.

  Conditions: Between all I/O terminals and heat sink: 6 kV
  Between input terminals and output terminals: 4.5 kV
  Between output terminals: 4.5 kV



Select an element which meets the conditions in the table below as the surge absorbing element.

Voltage	Varistor voltage	Surge resistance
100 to 120 VAC	240 to 270 V	1,000 A min.
200 to 240 VAC	440 to 470 V	
380 to 480 VAC	820 to 1,000 V	

Output Connections

Do not connect SSR outputs in parallel. With SSRs, both sides of the output will not turn ON at the same time, so the load current cannot be increased by using parallel connections.