

**SERIES:** CSXX12U | **DESCRIPTION:** CURRENT SENSOR

**FEATURES**

- open loop
- unipolar
- detects current direction
- single channel


**MODEL**

| MODEL   | rated current (If)  | linearity range <sup>1</sup> (Im) |
|---------|---------------------|-----------------------------------|
|         | [A <sub>RMS</sub> ] | [A <sub>PEAK</sub> ]              |
| CS0312U | +3                  | +6                                |
| CS0512U | +5                  | +10                               |
| CS1012U | +10                 | +20                               |
| CS1512U | +15                 | +30                               |
| CS2012U | +20                 | +40                               |

Notes: 1. Im is the maximum peak current for which the output voltage specifications are guaranteed, however the If RMS rating must not be exceeded.  
 2. All specifications measured at 25°C, RI=10 kΩ, unless otherwise noted.  
 3. It is recommended to add a 1 μF capacitor connected between the common terminal 4 and the +12 V terminal 1 to avoid noise problems.

**SPECIFICATIONS**

| parameter                                   | conditions/description                      | min  | typ   | max   | units |
|---|---|------|-------|-------|-------|
| supply voltage (Vcc)                        |   | 11.4 | 12.0  | 12.6  | V     |
| max current consumption (Ic)                |   |      |       | 25    | mA    |
| output voltage (Vo)                         | at +If                                      | 4.96 | 5.00  | 5.04  | V     |
| zero current offset voltage (Vr)            | after demagnetization                       | 0.97 | 1.0   | 1.03  | V     |
| output voltage linearity <sup>4</sup> (ΔKo) |   |      |       | ±0.5  | %     |
| response (tr)                               | at di/dt = If/μs                            |      | 3     |       | μs    |
| output voltage temperature characteristics  |   |      |       | ±0.1  | %/°C  |
| zero current offset voltage characteristics |   |      |       | ±1.5  | mV/°C |
| hysteresis (Vh)                             | at +If to zero current                      |      |       | 15    | mV    |
| primary over current                        | for maximum 50 ms, no damage                |      |       | 10*If | A     |
| withstand voltage                           | between coil and each terminal for 1 minute |      | 2,000 |       | Vac   |
| insulation resistance                       | between coil and each terminal at 500 Vdc   |      | 500   |       | MΩ    |
| operating temperature                       |   | -10  |       | 75    | °C    |
| storage temperature                         |   | -30  |       | 90    | °C    |
| safety approvals                            | UL 508                                      |      |       |       |       |
| flammability rating                         | UL94V-0                                     |      |       |       |       |
| RoHS  | yes   |      |       |       |       |

Notes: 4. Deducting the value of hysteresis and offset voltage, calculated by (V/Vo)/(IfxI-1)x100%.

## SOLDERABILITY

| parameter      | conditions/description | min | typ | max | units |
|----------------|------------------------|-----|-----|-----|-------|
| hand soldering | for maximum 3 seconds  |     | 280 |     | °C    |

## MECHANICAL

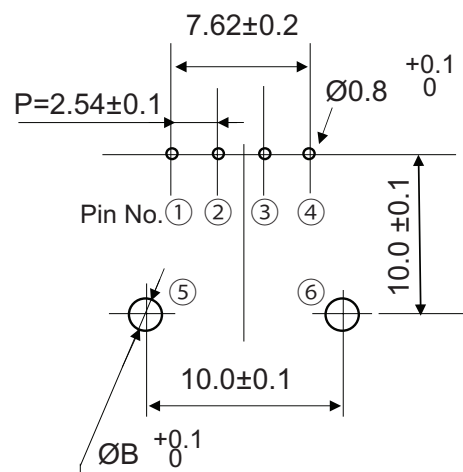
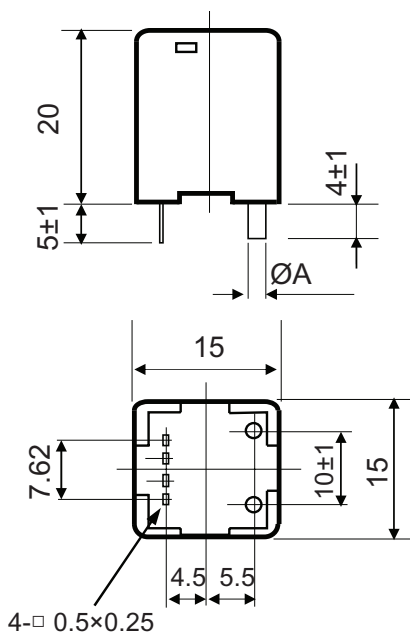
| parameter     | conditions/description           | min | typ | max | units |
|---------------|----------------------------------|-----|-----|-----|-------|
| dimensions    | 15 x 15 x 20                     |     |     |     | mm    |
| case material | PBT                              |     |     |     |       |
| terminals     | phosphor bronze with tin plating |     |     |     |       |
| weight        |                                  |     | 8   |     | g     |

## MECHANICAL DRAWING

units: mm  
tolerance: ±0.5 mm

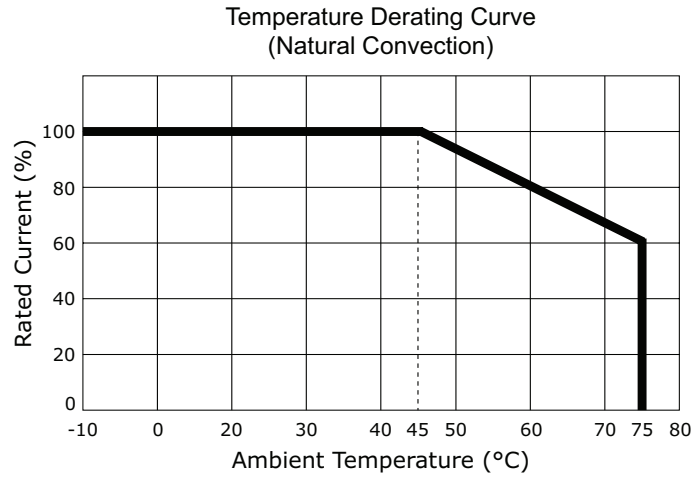
| PIN CONNECTIONS |            |
|-----------------|------------|
| PIN             | FUNCTION   |
| 1               | +12 V      |
| 2               | NC         |
| 3               | Output [V] |
| 4               | 0 V        |
| 5               | +Input [A] |
| 6               | -Input [A] |

| MODEL NO. | ØA [mm] | ØB [mm] |
|-----------|---------|---------|
| CS0312U   | 0.6     | 1.2     |
| CS0512U   | 0.9     | 1.5     |
| CS1012U   | 1.1     | 1.7     |
| CS1512U   | 1.4     | 2.0     |
| CS2012U   | 1.7     | 2.3     |



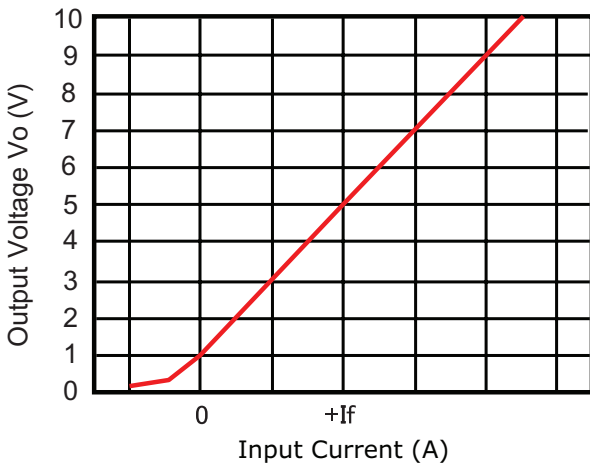
Recommended PCB Layout  
Top View

## DERATING CURVE

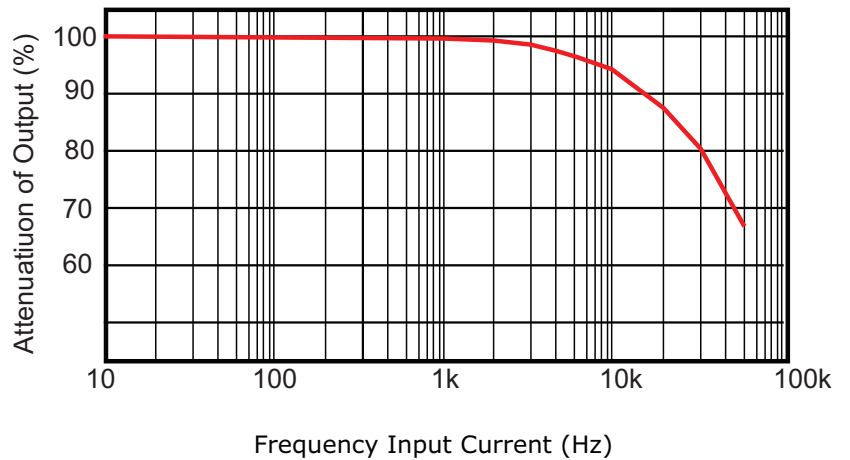


## PERFORMANCE CURVES

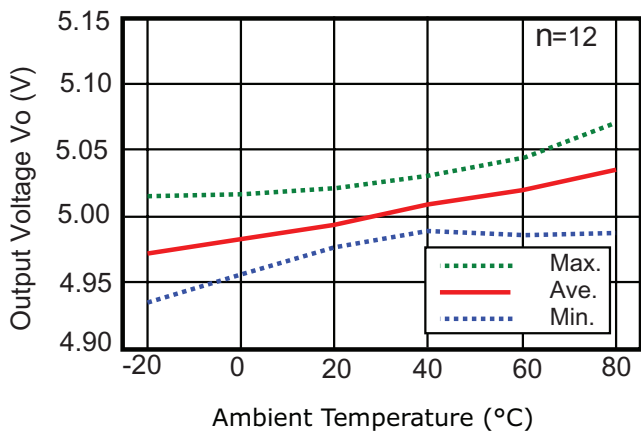
Output Voltage vs. Input Current



Input Current Frequency vs. Output Attenuation



Output Voltage vs. Ambient Temperature  
[at +If]



Offset Voltage vs. Ambient Temperature  
[at Zero Current]

