**IS201, IS202, IS203, IS204,**
**ISD201, ISD202, ISD203, ISD204,**
**ISQ201, ISQ202, ISQ203, ISQ204**

# HIGH DENSITY PHOTOTRANSISTOR OPTICALLY COUPLED ISOLATORS

ROHS COMPLIANT

## APPROVALS

- UL recognised, File No. E91231
  Package Code " GG " or " FF "

## 'X' SPECIFICATION APPROVALS

- VDE 0884 in 3 available lead form : -
  - STD
  - G form
  - SMD approved to CECC 00802
- IS20* Certified to EN60950 by :-
  Nemko - Certificate No. P01102464

## DESCRIPTION

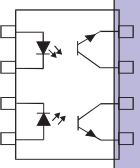
The IS20*, ISD20*, ISQ20* series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photo transistors in space efficient dual in line plastic packages.

## FEATURES

- Options :-
  10mm lead spread - add G after part no.
  Surface mount - add SM after part no.
  Tape&reel - add SMT&R after part no.
- High Isolation Voltage ($5.3kV_{RMS}$, $7.5kV_{PK}$)
- High $BV_{CEO}$ (70V min)
- All electrical parameter 100% tested
- Custom electrical selections available

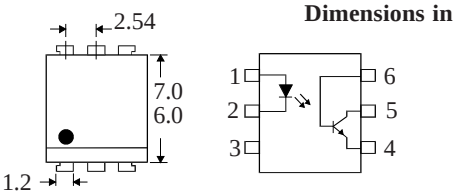
## APPLICATIONS

- Computer terminals
- Industrial systems controllers
- Signal transmission between systems of different potentials and impedances

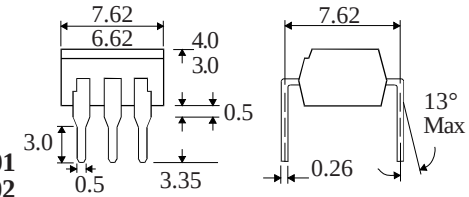


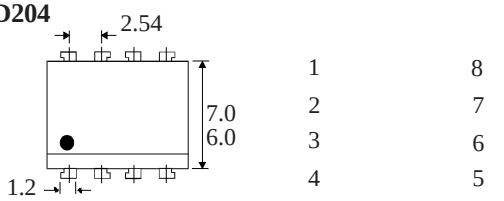
**IS201**
**IS202**
**IS203**
**IS204**

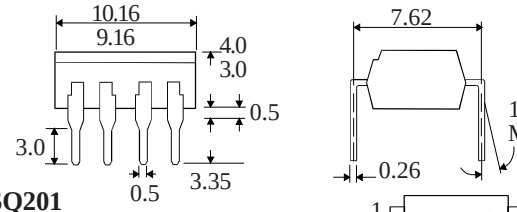
Dimensions in mm



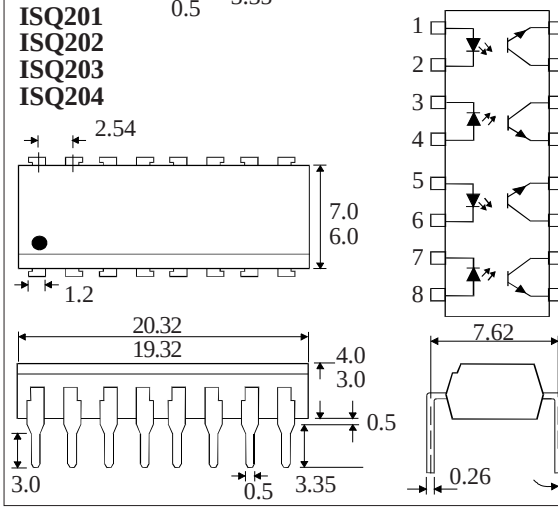

**ISD201**
**ISD202**
**ISD203**
**ISD204**



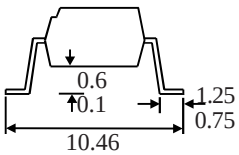



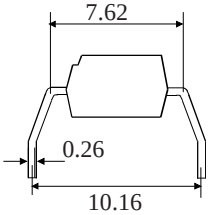

**ISQ201**
**ISQ202**
**ISQ203**
**ISQ204**




**OPTION SM**
**SURFACE MOUNT**




**OPTION G**





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## ABSOLUTE MAXIMUM RATINGS
**(25°C unless otherwise specified)**

| | |
|---|---|
| Storage Temperature | -40°C to +125°C |
| Operating Temperature | -25°C to +100°C |
| Lead Soldering Temperature (1/16 inch (1.6mm) from case for 10 secs) | 260°C |

### INPUT DIODE

| | |
|---|---|
| Forward Current | 50mA |
| Reverse Voltage | 6V |
| Power Dissipation | 70mW |

### OUTPUT TRANSISTOR

| | |
|---|---|
| Collector-emitter Voltage $BV_{CEO}$ | 70V |
| Emitter-collector Voltage $BV_{ECO}$ | 6V |
| Collector Current | 50mA |
| Power Dissipation | 150mW |

### POWER DISSIPATION

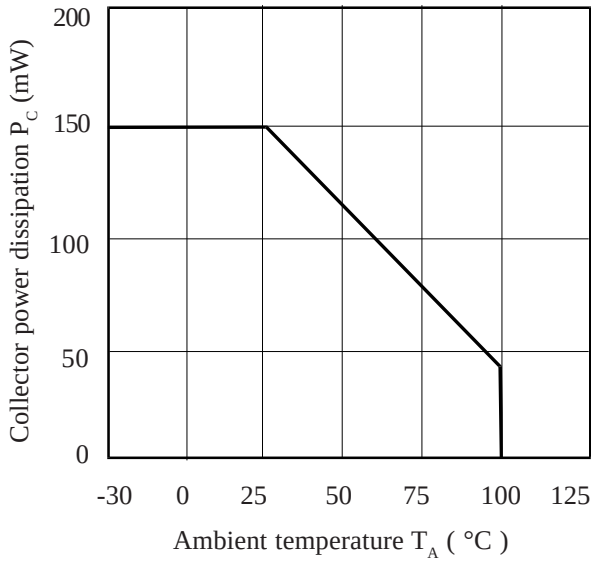
| | |
|---|---|
| Total Power Dissipation | 170mW |
| (derate linearly 2.67mW/°C above 25°C) | |

## ELECTRICAL CHARACTERISTICS ( $T_A$ = 25°C Unless otherwise noted )

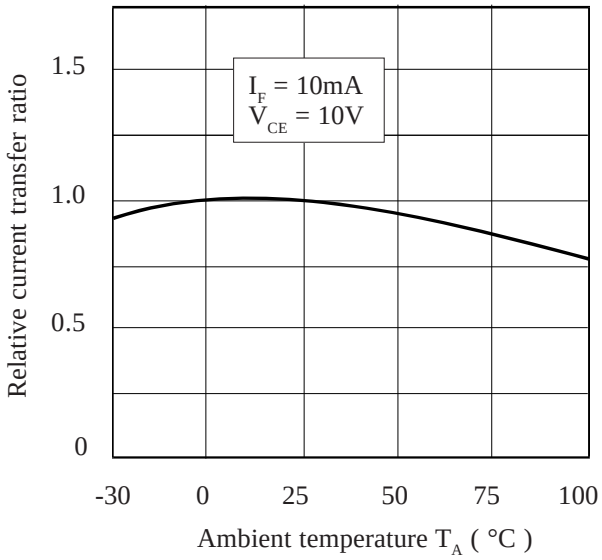
| PARAMETER | | MIN | TYP | MAX | UNITS | TEST CONDITION |
|---|---|---|---|---|---|---|
| Input | Forward Voltage ($V_F$) | | 1.2 | 1.65 | V | $I_F$ = 50mA |
| | Reverse Current ($I_R$) | | | 10 | µA | $V_R$ =4V |
| Output | Collector-emitter Breakdown ($BV_{CEO}$) ( Note 2 ) | 70 | | | V | $I_C$ = 1mA |
| | Emitter-collector Breakdown ($BV_{ECO}$) | 6 | | | V | $I_E$ = 100µA |
| | Collector-emitter Dark Current ($I_{CEO}$) | | | 50 | nA | $V_{CE}$ = 10V |
| Coupled | Current Transfer Ratio (CTR) (Note 2) | | | | | |
| | IS201, ISD201, ISQ201 | 75 | | | % | 10mA $I_F$, 10V $V_{CE}$ |
| | IS201, ISD201, ISQ201 | 10 | | | % | 1mA $I_F$, 10V $V_{CE}$ |
| | IS202, ISD202, ISQ202 | 125 | | 250 | % | 10mA $I_F$, 10V $V_{CE}$ |
| | IS202, ISD202, ISQ202 | 30 | | | % | 1mA $I_F$, 10V $V_{CE}$ |
| | IS203, ISD203, ISQ203 | 225 | | 450 | % | 10mA $I_F$, 10V $V_{CE}$ |
| | IS203, ISD203, ISQ203 | 50 | | | % | 1mA $I_F$, 10V $V_{CE}$ |
| | IS204, ISD204, ISQ204 | 200 | | 400 | % | 10mA $I_F$, 10V $V_{CE}$ |
| | IS204, ISD204, ISQ204 | 100 | | | % | 1mA $I_F$, 10V $V_{CE}$ |
| | Collector-emitter Saturation Voltage $V_{CE(SAT)}$ | | 0.2 | 0.4 | V | 10mA $I_F$ , 2mA $I_C$ |
| | Input to Output Isolation Voltage $V_{ISO}$ | 5300 | | | $V_{RMS}$ | See note 1 |
| | | 7500 | | | $V_{PK}$ | See note 1 |
| | Input-output Isolation Resistance $R_{ISO}$ | $5x10^{10}$ | | | Ω | $V_{IO}$ = 500V (note 1) |
| | Output Turn on Time $t_{ON}$ | | 3.0 | | µs | $I_F$ = 10mA |
| | Output Turn off Time $t_{OFF}$ | | 2.5 | | µs | $V_{CE}$ = 5V, $R_L$ = 75Ω |

Note 1 Measured with input leads shorted together and output leads shorted together.
Note 2 Special Selections are available on request. Please consult the factory.

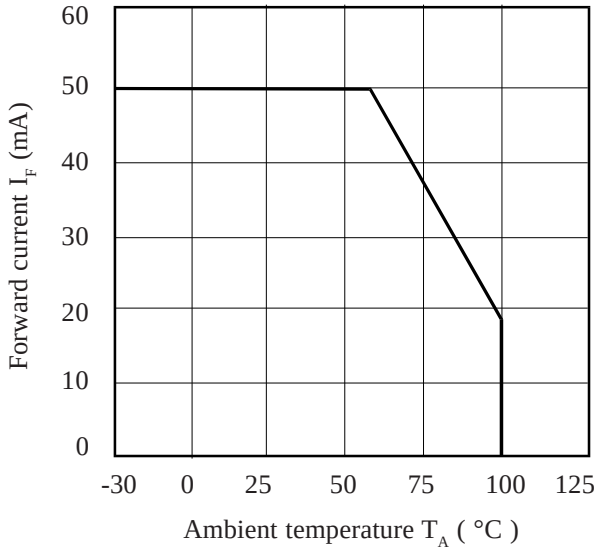
**Collector Power Dissipation vs. Ambient Temperature**



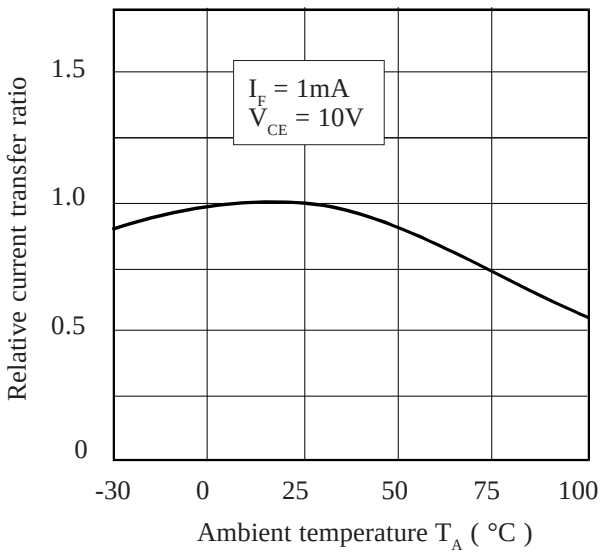

**Relative Current Transfer Ratio vs. Ambient Temperature**



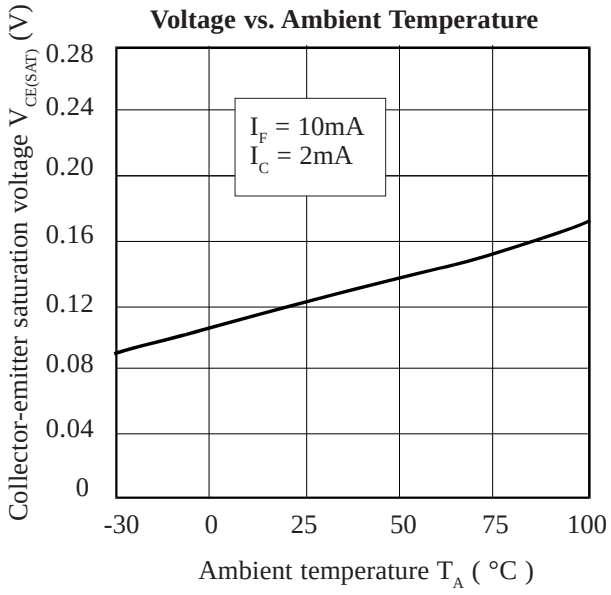

**Forward Current vs. Ambient Temperature**




**Relative Current Transfer Ratio vs. Ambient Temperature**




**Collector-emitter Saturation Voltage vs. Ambient Temperature**




**Relative Current Transfer Ratio vs. Forward Current**