

4N35X, 4N36X, 4N37X,  
4N35, 4N36, 4N37,



## OPTICALLY COUPLED ISOLATOR PHOTOTRANSISTOR OUTPUT

### APPROVALS

- UL recognised, File No. E91231

### 'X' SPECIFICATION APPROVALS

- VDE 0884 in 3 available lead forms :-
  - STD
  - G form
  - SMD approved to CECC 00802
- BSI approved - Certificate No. 8001

### DESCRIPTION

The 4N35, 4N36, 4N37 series of optically coupled isolators consist of infrared light emitting diode and NPN silicon photo transistor in a standard 6 pin dual in line plastic package.

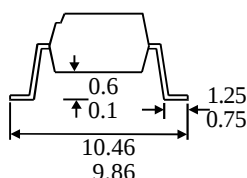
### FEATURES

- 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 Current Transfer Ratio (100% min.)
- High Isolation Voltage (5.3kV<sub>RMS</sub>, 7.5kV<sub>PK</sub>)
- All electrical parameters 100% tested
- Custom electrical selections available

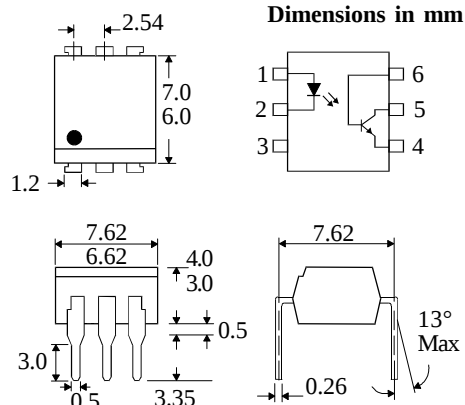
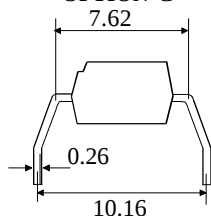
### APPLICATIONS

- DC motor controllers
- Industrial systems controllers
- Measuring instruments
- Signal transmission between systems of different potentials and impedances

#### OPTION SM SURFACE MOUNT



#### OPTION G



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

Storage Temperature \_\_\_\_\_ -55°C to + 150°C  
Operating Temperature \_\_\_\_\_ -55°C to + 100°C  
Lead Soldering Temperature  
(1/16 inch (1.6mm) from case for 10 secs) 260°C

### INPUT DIODE

Forward Current \_\_\_\_\_ 60mA  
Reverse Voltage \_\_\_\_\_ 6V  
Power Dissipation \_\_\_\_\_ 105mW

### OUTPUT TRANSISTOR

Collector-emitter Voltage  $BV_{CEO}$  \_\_\_\_\_ 30V  
Collector-base Voltage  $BV_{CBO}$  \_\_\_\_\_ 70V  
Emitter-collector Voltage  $BV_{ECO}$  \_\_\_\_\_ 6V  
Power Dissipation \_\_\_\_\_ 160mW

### POWER DISSIPATION

Total Power Dissipation \_\_\_\_\_ 200mW  
(derate linearly 2.67mW/°C above 25°C)

### ISOCOM COMPONENTS LTD

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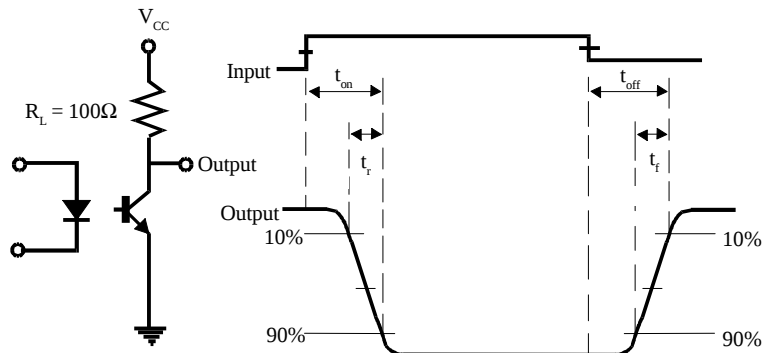
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**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

| PARAMETER |                                                          | MIN                | TYP | MAX | UNITS         | TEST CONDITION                                                             |
|-----------|----------------------------------------------------------|--------------------|-----|-----|---------------|----------------------------------------------------------------------------|
| Input     | Forward Voltage ( $V_F$ )                                |                    | 1.2 | 1.5 | V             | $I_F = 10\text{mA}$                                                        |
|           | Reverse Current ( $I_R$ )                                |                    |     | 10  | $\mu\text{A}$ | $V_R = 6\text{V}$                                                          |
| Output    | Collector-emitter Breakdown ( $BV_{CEO}$ )<br>( Note 2 ) | 30                 |     |     | V             | $I_C = 1\text{mA}$                                                         |
|           | Collector-base Breakdown ( $BV_{CBO}$ )                  | 70                 |     |     | V             | $I_C = 100\mu\text{A}$                                                     |
|           | Emitter-collector Breakdown ( $BV_{ECO}$ )               | 6                  |     |     | V             | $I_E = 100\mu\text{A}$                                                     |
|           | Collector-emitter Dark Current ( $I_{CEO}$ )             |                    |     | 50  | nA            | $V_{CE} = 10\text{V}$                                                      |
|           | Collector-base Dark Current ( $I_{CBO}$ )                |                    |     | 20  | nA            | $V_{CE} = 10\text{V}$                                                      |
| Coupled   | Current Transfer Ratio (CTR)                             | 100                |     |     | %             | $10\text{mA } I_F, 10\text{V } V_{CE}$                                     |
|           | Collector-emitter Saturation Voltage $V_{CE(SAT)}$       |                    |     | 0.3 | V             | $10\text{mA } I_F, 0.5\text{mA } I_C$                                      |
|           | Input to Output Isolation Voltage $V_{ISO}$              | 5300               |     |     | $V_{RMS}$     | See note 1                                                                 |
|           |                                                          | 7500               |     |     | $V_{PK}$      | See note 1                                                                 |
|           | Input-output Isolation Resistance $R_{ISO}$              | $5 \times 10^{10}$ |     |     | $\Omega$      | $V_{IO} = 500\text{V}$ (note 1)                                            |
|           | Turn-on Time $t_{on}$                                    |                    | 5   | 10  | $\mu\text{s}$ | $V_{CC} = 10\text{V},$<br>$I_C = 2\text{mA}, R_L = 100\Omega$<br>( FIG 1 ) |
|           | Turn-off Time $t_{off}$                                  |                    | 5   | 10  | $\mu\text{s}$ |                                                                            |
|           | Output Rise Time $t_r$                                   |                    | 3.5 |     | $\mu\text{s}$ |                                                                            |
|           | Output Fall Time $t_f$                                   |                    | 4.9 |     | $\mu\text{s}$ |                                                                            |

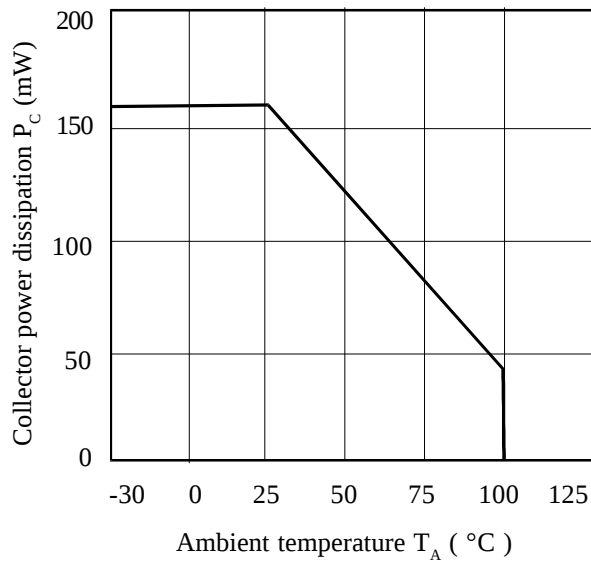
Note 1 Measured with input leads shorted together and output leads shorted together.

Note 2 Special Selections are available on request. Please consult the factory.

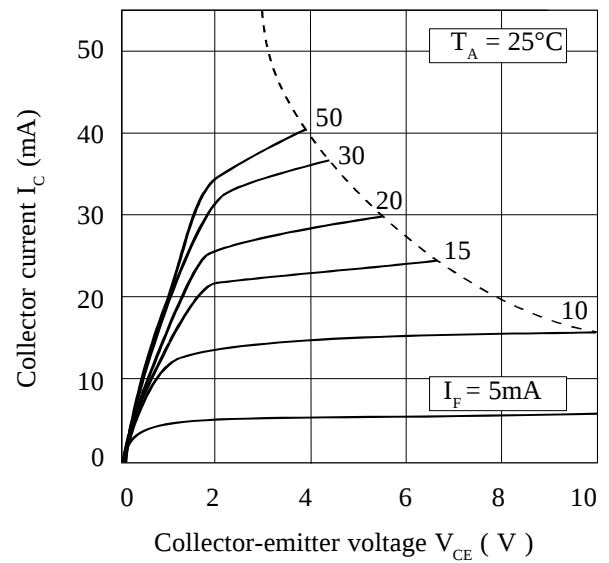


**FIG 1**

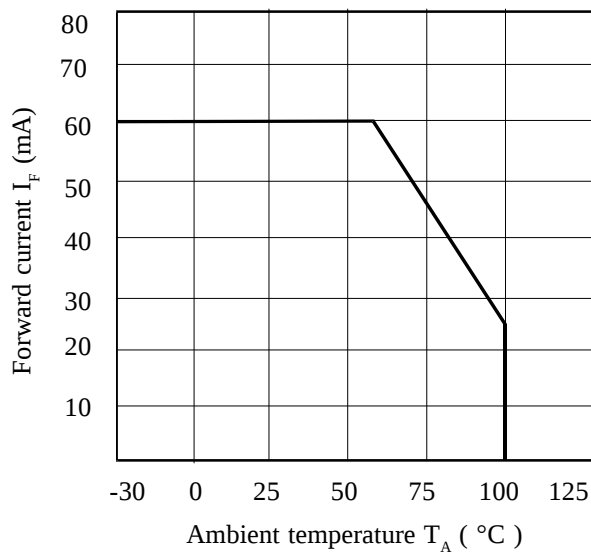
**Collector Power Dissipation vs. Ambient Temperature**



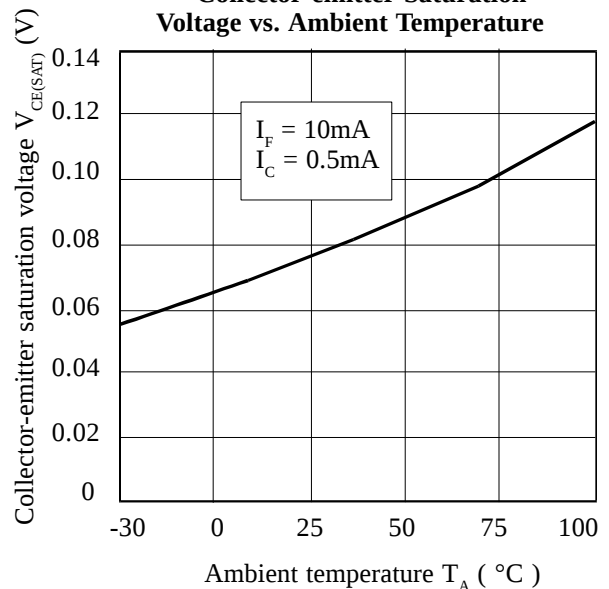
**Collector Current vs. Collector-emitter Voltage**



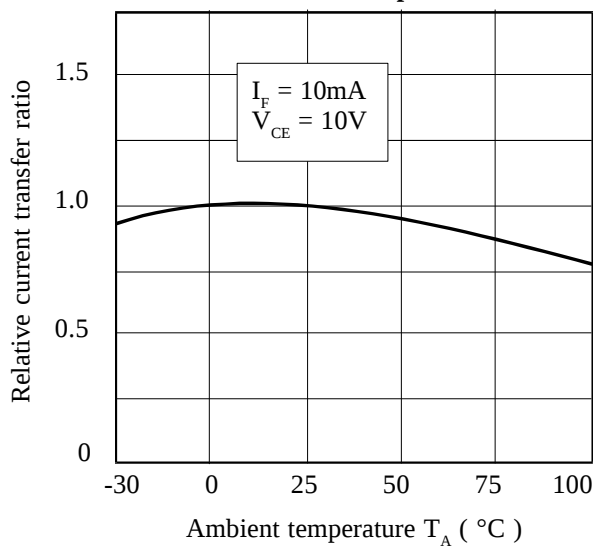
**Forward Current vs. Ambient Temperature**



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



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



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

