

IS357



# ISOCOM

COMPONENTS

## HIGH DENSITY MOUNTING PHOTOTRANSISTOR OPTICALLY COUPLED ISOLATORS



### DESCRIPTION

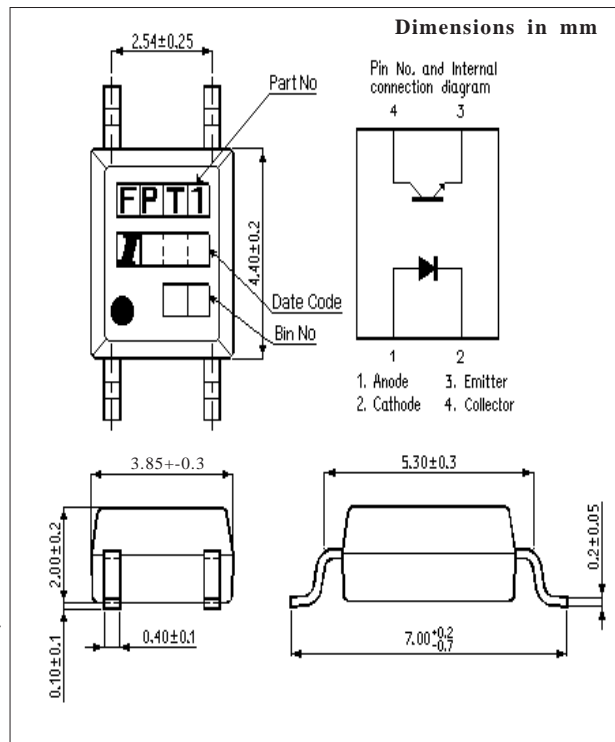
The IS357 is an optically coupled isolator consisting of an infrared light emitting diode and NPN silicon photo transistor in a space efficient dual in line plastic package.

### FEATURES

- Marked as FPT1.
- Current Transfer Ratio MIN. 50%
- Isolation Voltage ( $3.75kV_{RMS}$ ,  $5.3kV_{PK}$ )
- All electrical parameters 100% tested
- Drop in replacement for Sharp PC357

### APPLICATIONS

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



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**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 \_\_\_\_\_ 50mA  
 Reverse Voltage \_\_\_\_\_ 6V  
 Power Dissipation \_\_\_\_\_ 70mW

**OUTPUT TRANSISTOR**

Collector-emitter Voltage  $BV_{CEO}$  \_\_\_\_\_ 35V  
 Emitter-collector Voltage  $BV_{ECO}$  \_\_\_\_\_ 6V  
 Collector Current \_\_\_\_\_ 50mA  
 Power Dissipation \_\_\_\_\_ 150mW

**POWER DISSIPATION**

Total Power Dissipation \_\_\_\_\_ 170mW  
 (derate linearly 2.26mW/°C above 25°C)

**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 | 1.4           | V                                   | $I_F = 20\text{mA}$                 |                                    |
|   | Reverse Current ( $I_R$ )                          |              |     | 10            | $\mu\text{A}$                       | $V_R = 4\text{V}$                   |                                    |
| Output                                      | Collector-emitter Breakdown ( $BV_{CEO}$ )         | 35           |     |               | V                                   | $I_C = 0.5\text{mA}$                |                                    |
|   | Emitter-collector Breakdown ( $BV_{ECO}$ )         | 6            |     |               | V                                   | $I_E = 0.1\text{mA}$                |                                    |
|   | Collector-emitter Dark Current ( $I_{CEO}$ )       |              |     | 100           | nA                                  | $V_{CE} = 20\text{V}$               |                                    |
| Coupled                                     | Current Transfer Ratio (CTR)                       | 50           |     | 600           | %                                   | $5\text{mA} I_F, 5\text{V} V_{CE}$  |                                    |
|   | Optional CTR Grades:                               | IS357A       | 80  |               | 160                                 | %                                   | $5\text{mA} I_F, 5\text{V} V_{CE}$ |
|   |  | IS357B       | 130 |               | 260                                 | %                                   | $5\text{mA} I_F, 5\text{V} V_{CE}$ |
|   |  | IS357C       | 200 |               | 400                                 | %                                   | $5\text{mA} I_F, 5\text{V} V_{CE}$ |
|   |  | IS357D       | 300 |               | 600                                 | %                                   | $5\text{mA} I_F, 5\text{V} V_{CE}$ |
|   | Collector-emitter Saturation Voltage $V_{CE(SAT)}$ |              |     | 0.2           | V                                   | $20\text{mA} I_F, 1.0\text{mA} I_C$ |                                    |
|   | Input to Output Isolation Voltage $V_{ISO}$        | 3750<br>5300 |     |               | $V_{RMS}$<br>$V_{PK}$               | See note 1<br>See note 1            |                                    |
| Input-output Isolation Resistance $R_{ISO}$ | $5 \times 10^{10}$                                 |              |     | $\Omega$      | $V_{IO} = 500\text{V}$ (note 1)     |                                     |                                    |
| Output Rise Time $t_r$                      |  | 4            | 18  | $\mu\text{s}$ | $V_{CE} = 2\text{V}$ ,              |                                     |                                    |
| Output Fall Time $t_f$                      |  | 3            | 18  | $\mu\text{s}$ | $I_C = 2\text{mA}, R_L = 100\Omega$ |                                     |                                    |

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