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**Absolute Maximum Ratings** (No derating required up to 85°C)

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be



## Electrical Characteristics (T<sub>A</sub> = 0 to 70°C unless otherwise specified)

### Individual Component Characteristics

| Symbol           | Parameter                       | Test Conditions   | Min. | Typ.* | Max. | Unit |
|------------------|---------------------------------|---|------|-------|------|------|
| <b>EMITTER</b>   |                                 |   |      |       |      |      |
| V <sub>F</sub>   | Input Forward Voltage           | T <sub>A</sub> = 25°C<br>I <sub>F</sub> = 1.6mA (Each Channel)  |      | 1.35  | 1.7  | V    |
| BV <sub>R</sub>  | Input Reverse Breakdown Voltage | T <sub>A</sub> = 25°C, I <sub>R</sub> = 10μA (Each Channel)   | 5.0  |       | 1.75 | V    |
| <b>DETECTOR</b>  |                                 |   |      |       |      |      |
| I <sub>OH</sub>  | Logic High Output Current       | I <sub>F</sub> = 0 mA, V <sub>O</sub> = V <sub>CC</sub> = 3.3V (Each Channel)                               |      | 0.05  | 25   | μA   |
| I <sub>CCL</sub> | Logic Low Supply Current        | I <sub>F1</sub> = I <sub>F2</sub> = 1.6mA, V <sub>O1</sub> = V <sub>O2</sub> = Open, V <sub>CC</sub> = 3.3V |      | 0.8   | 3    | mA   |
| I <sub>CCH</sub> | Logic High Supply Current       | I <sub>F1</sub> = I <sub>F2</sub> = 0mA, V <sub>O1</sub> = V <sub>O2</sub> = Open, V <sub>CC</sub> = 3.3V   |      | 0.01  | 2    | μA   |

### Transfer Characteristics

| Symbol          | Parameter                               | Test Conditions   | Min. | Typ.* | Max. | Unit |
|-----------------|---|---|------|-------|------|------|
| CTR             | COUPLED Current Transfer Ratio (Note 1) | I <sub>F</sub> = 0.5mA, V <sub>O</sub> = 0.4V, V <sub>CC</sub> = 3.3V | 400  |       | 7000 | %    |
| V <sub>OL</sub> | Logic Low Output Voltage                | I <sub>F</sub> = 1.6mA, I <sub>O</sub> = 8mA, V <sub>CC</sub> = 3.3V  |      | 0.07  | 0.3  | V    |
|                 |   | I <sub>F</sub> = 5mA, I <sub>O</sub> = 15mA, V <sub>CC</sub> = 3.3V   |      | 0.07  | 0.4  |      |

### Switching Characteristics (V<sub>CC</sub> = 3.3 V)

| Symbol           | Parameter                                    | Test Conditions   | Min. | Typ.* | Max. | Unit |
|------------------|--|---|------|-------|------|------|
| T <sub>PHL</sub> | Propagation Delay Time to Logic LOW          | R <sub>L</sub> = 4.7kΩ, I <sub>F</sub> = 0.5mA (Fig. 9) |      | 5     | 30   | μs   |
| T <sub>PLH</sub> | Propagation Delay Time to Logic HIGH         | R <sub>L</sub> = 4.7kΩ, I <sub>F</sub> = 0.5mA (Fig. 9) |      | 25    | 90   | μs   |
| CM <sub>H</sub>  | Common Mode Transient Immunity at Logic HIGH | I <sub>F</sub> = 0 mA,  V <sub>CM</sub>                 |      |       |      |      |

\*All typicals at T<sub>A</sub> = 25°C

**Electrical Characteristics** (Continued) ( $T_A = 0$  to  $70^\circ\text{C}$  unless otherwise specified)**Isolation Characteristics**

| Symbol    | Characteristics                         | Test Conditions   | Min.  | Typ.*     | Max. | Unit          |
|-----------|---|---|-------|-----------|------|---------------|
| $I_{I-O}$ | Input-Output Insulation Leakage Current | Relative humidity = 45%, $T_A = 25^\circ\text{C}$ ,<br>$t = 5$ s, $V_{I-O} = 3000$ VDC (Note 3)     |       |           | 1.0  | $\mu\text{A}$ |
| $V_{ISO}$ | Withstand Insulation Test Voltage       | $R_H \leq 50\%$ , $T_A = 25^\circ\text{C}$ , $I_{I-O} \leq 2\mu\text{A}$ ,<br>$t = 1$ min. (Note 3) | 2500  |           |      | $V_{RMS}$     |
| $R_{I-O}$ | Resistance (Input to Output)            | $V_{I-O} = 500$ VDC (Note 3)  |       | $10^{12}$ |      | $\Omega$      |
| $C_{I-O}$ | Capacitance (Input to Output)           | $f = 1$ MHz (Notes 3, 4)  |       | 0.7       |      | pF            |
| $I_{I-I}$ | Input-Input Insulation Leakage Current  | $R_H \leq 45\%$ , $V_{I-I} = 500$ VDC (Note 5)  | 0.005 |           |      | $\mu\text{A}$ |
| $R_{I-I}$ | Input-Input Resistance                  | $V_{I-I} = 500$ VDC (Note 5)  |       | $10^{11}$ |      | $\Omega$      |
| $C_{I-I}$ | Input-Input Capacitance                 | $f = 1$ MHz (Note 5)  |       | 0.03      |      | pF            |

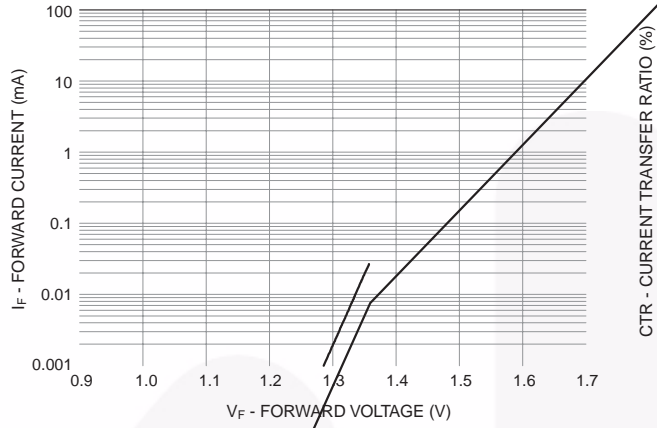
\*All typicals at  $T_A = 25^\circ\text{C}$

**Notes:**

1. Current Transfer Ratio is defined as a ratio of output collector current,  $I_O$ , to the forward LED input current,  $I_F$ , times 100%.
2. Common mode transient immunity in logic high level is the maximum tolerable (positive)  $dV_{CM}/dt$  on the leading edge of the common mode pulse signal,  $V_{CM}$ , to assure that the output will remain in a logic high state (i.e.,  $V_O > 2.0\text{V}$ ). Common mode transient immunity in logic low level is the maximum tolerable (negative)  $dV_{CM}/dt$  on the trailing edge of the common mode pulse signal,  $V_{CM}$ , to assure that the output will remain in a logic low state (i.e.,  $V_O < 0.8\text{V}$ ).
3. Device is considered a two terminal device: Pins 1, 2, 3 and 4 are shorted together and Pins 5, 6, 7 and 8 are shorted together.
4. CI-O is measured by shorting pins 1 and 2 or pins 3 and 4 together and pins 5 through 8 shorted together.
5. Measured between pins 1 and 2 shorted together, and pins 3 and 4 shorted together.

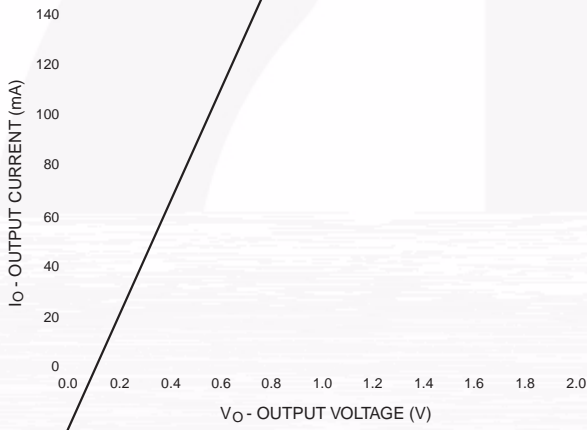
## Typical Performance Curves

Fig. 1 Input Forward Current vs Forward Voltage



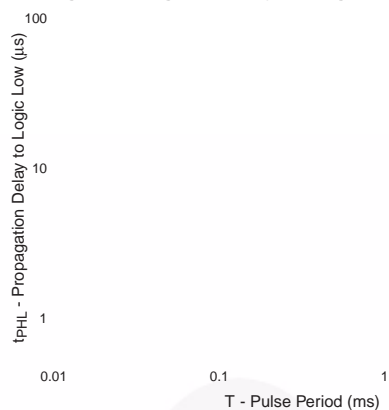
CTR - CURRENT TRANSFER RATIO (%)

Fig. 3 DC Transfer Characteristics



## Typical Performance Curves (Continued)

**Fig. 7 Propagation Delay To Logic Low vs Pulse Period**



**Fig. 8 Propagation Delay vs. Input Forward Current**

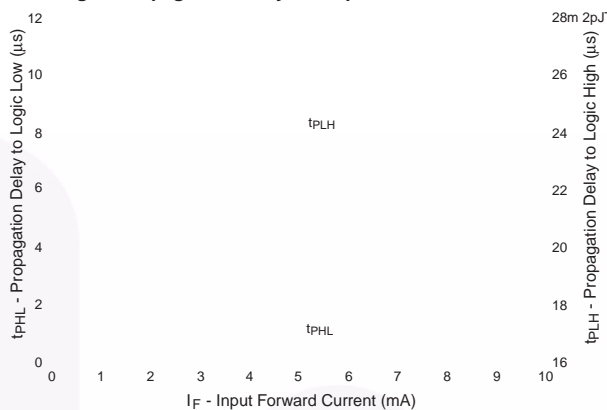


Fig. 9 Switching Time Test Circuit

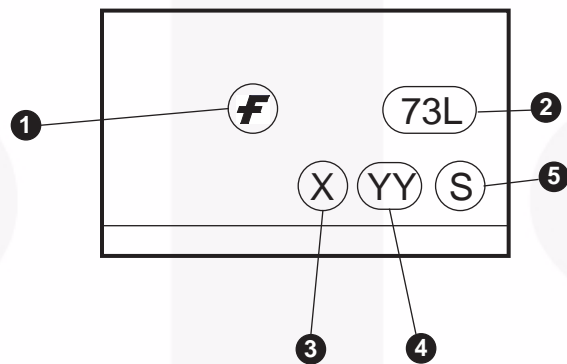
Fig. 10 Common Mode Immunity Test Circuit



### Ordering Information

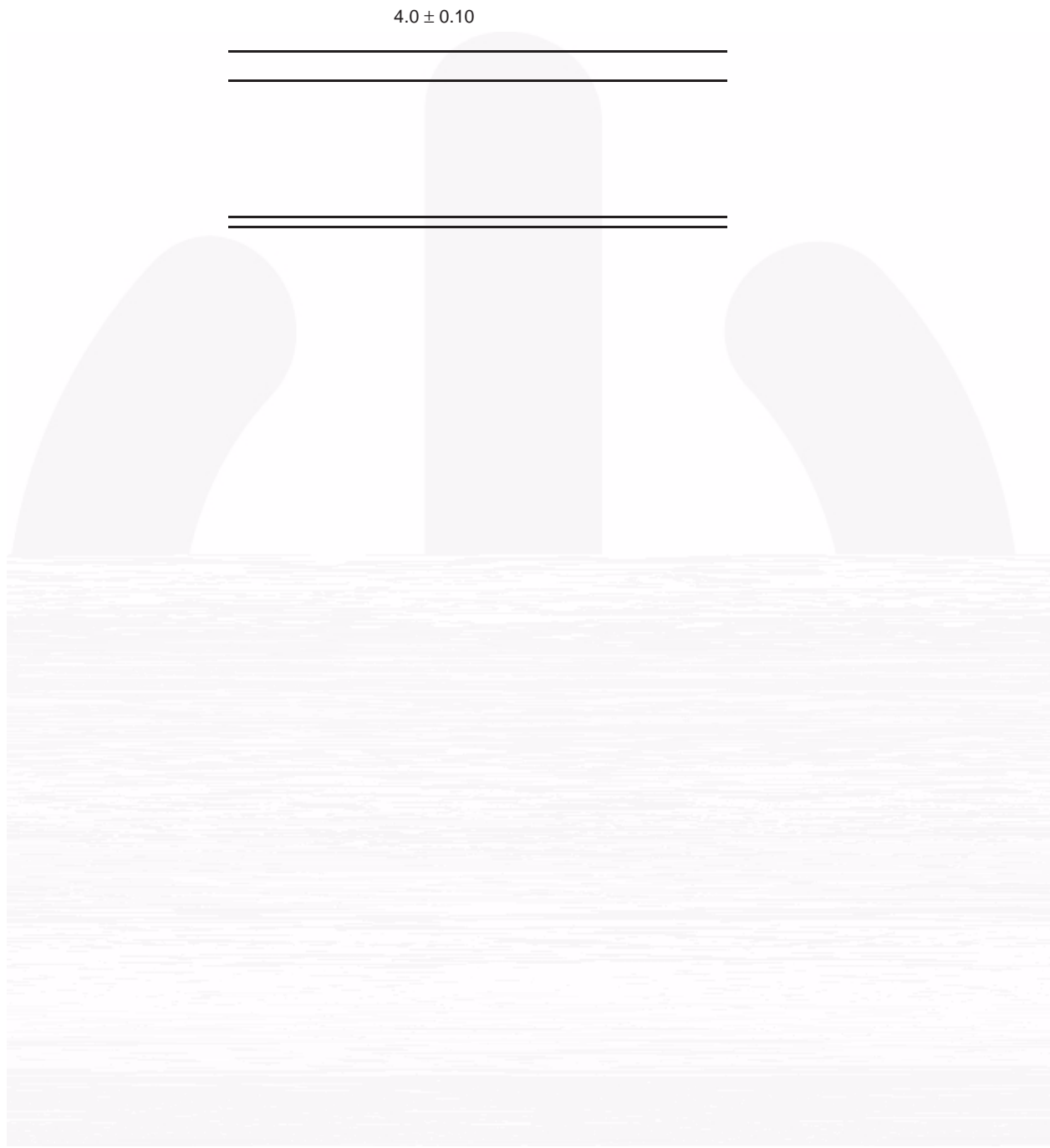
| Option    | Order Entry Identifier | Description                          |
|-----------|------------------------|--------------------------------------|
| No Suffix | FOD073L                | Shipped in tubes (50 units per tube) |
| R2        | FOD073LR2              | Tape and reel (2,500 units per reel) |

### Marking Information

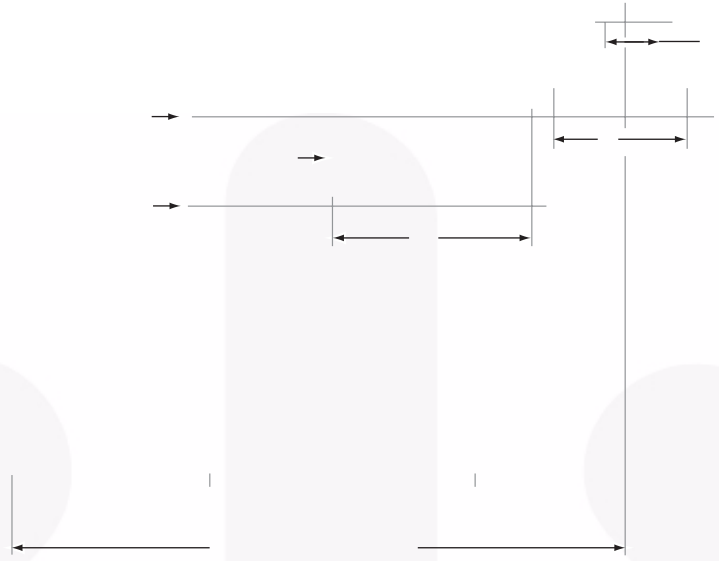


| Definitions |   |
|-------------|---|
| 1           | Fairchild logo                                |
| 2           | Device number                                 |
| 3           | One digit year code, e.g., '3'                |
| 4           | Two digit work week ranging from '01' to '53' |
| 5           | Assembly package code                         |

### Carrier Tape Specifications

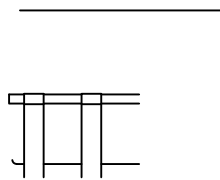


## Reflow Profile



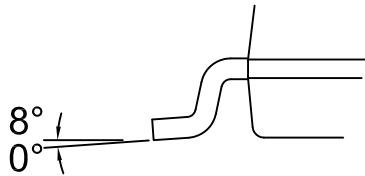
| Profile Feature   | Pb-Free Assembly Profile |
|---|--------------------------|
| Temperature Min. (Tsmín)                                  | 150°C                    |
| Temperature Max. (Tmax)                                   | 200°C                    |
| Time (t <sub>S</sub> ) from (Tsmín to Tmax)               | 60–120 seconds           |
| Ramp-up Rate (t <sub>L</sub> to t <sub>P</sub> )          | 3°C/second max.          |
| Liquidous Temperature (T <sub>L</sub> )                   | 217°C                    |
| Time (t <sub>L</sub> ) Maintained Above (T <sub>L</sub> ) | 60–150 seconds           |
| Peak Body Package Temperature                             | 260°C +0°C / -5°C        |
| Time (t <sub>P</sub> ) within 5°C of 260°C                | 30 seconds               |
| Ramp-down Rate (T <sub>P</sub> to T <sub>L</sub> )        | 6°C/second max.          |
| Time 25°C to Peak Temperature                             | 8 minutes max.           |


SEE DETAIL A



NOTES:

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- B) ALL DIMENSIONS ARE IN MILLIMETERS.
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