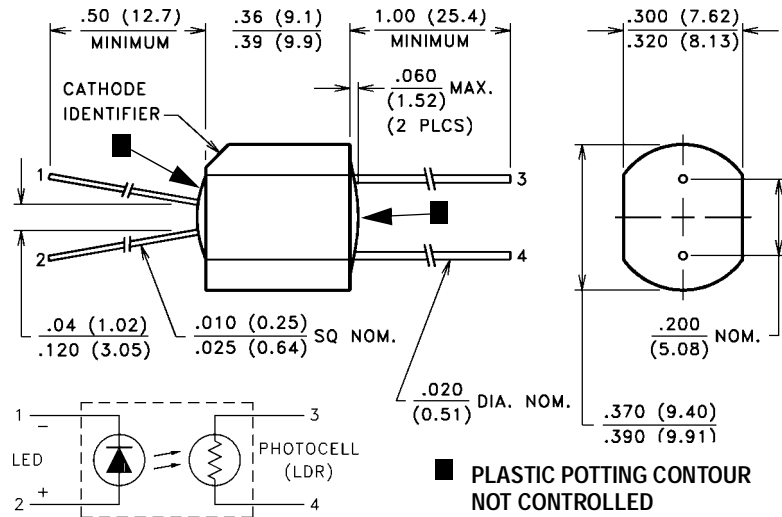


## PACKAGE DIMENSIONS INCH (MM)



## DESCRIPTION

VTL5C3 has a steep slope, good dynamic range, a very low temperature coefficient of resistance, and a small light history memory. VTL5C4 features a very low "on" resistance, fast response time, with a smaller temperature coefficient of resistance than VTL5C1.

## ABSOLUTE MAXIMUM RATINGS @ 25°C

|                                |                |   |                                |
|--------------------------------|----------------|---|--------------------------------|
| Maximum Temperatures           |                | LED Forward Voltage Drop @ 20 mA:           | 2.0V (1.65V Typ.)              |
| Storage and Operating:         | -40°C to 75°C  | Min. Isolation Voltage @ 70% Rel. Humidity: | 2500 VRMS                      |
| Cell Power:                    | 175 mW         | Output Cell Capacitance:                    | 5.0 pF                         |
| Derate above 30°C:             | 3.9 mW/°C      | Cell Voltage:                               | 250V (VTL5C3),<br>50V (VTL5C4) |
| LED Current:                   | 40 mA <b>1</b> | Input - Output Coupling Capacitance:        | 0.5 pF                         |
| Derate above 30°C:             | 0.9 mA/°C      |   |                                |
| LED Reverse Breakdown Voltage: | 3.0 V          |   |                                |

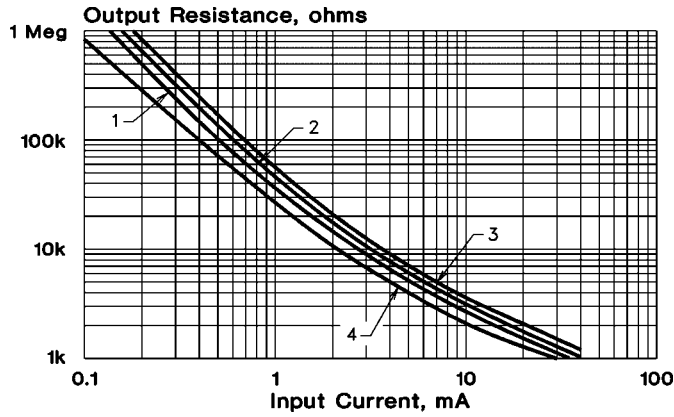
## ELECTRO-OPTICAL CHARACTERISTICS @ 25°C

| Part Number | Material Type | ON Resistance <b>2</b> |                         | OFF <b>3</b> Resistance @ 10 sec. (Min.) | Slope (Typ.)<br>R @ 0.5 mA<br>R @ 5 mA | Dynamic Range (Typ.)<br>R <sub>DARK</sub><br>R @ 20 mA | Response Time <b>4</b>                      |                                   |
|-------------|---------------|------------------------|-------------------------|--|--|--|---|-----------------------------------|
|             |               | Input current          | Dark Adapted (Typ.)     |  |  |  | Turn-on to 63% Final R <sub>ON</sub> (Typ.) | Turn-off (Decay) to 100 kΩ (Max.) |
| VTL5C3      | 3             | 1 mA<br>10 mA<br>40 mA | 30 kΩ<br>5 Ω<br>1.5 Ω   | 10 MΩ                                    | 20                                     | 75 db  | 2.5 ms                                      | 35 ms                             |
| VTL5C4      | 4             | 1 mA<br>10 mA<br>40 mA | 1.2 kΩ<br>125 Ω<br>75 Ω | 400 MΩ                                   | 18.7                                   | 72 db  | 6.0 ms                                      | 1.5 sec                           |

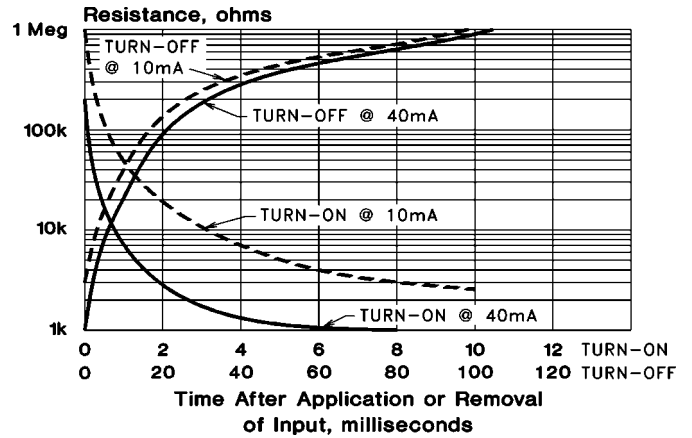
Refer to Specification Notes, page 41.

# Typical Performance Curves

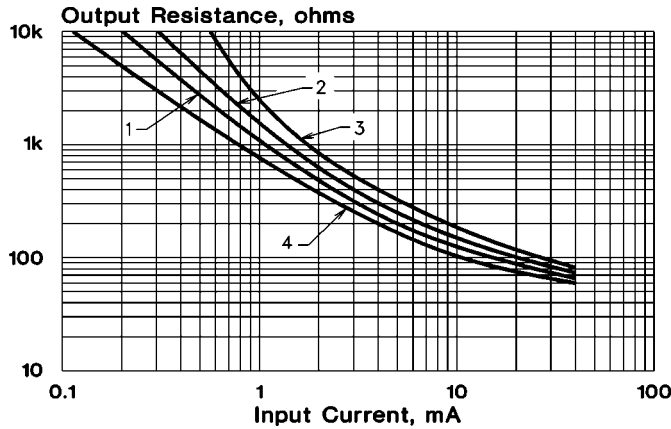
Output Resistance vs. Input Current  
VTL5C3



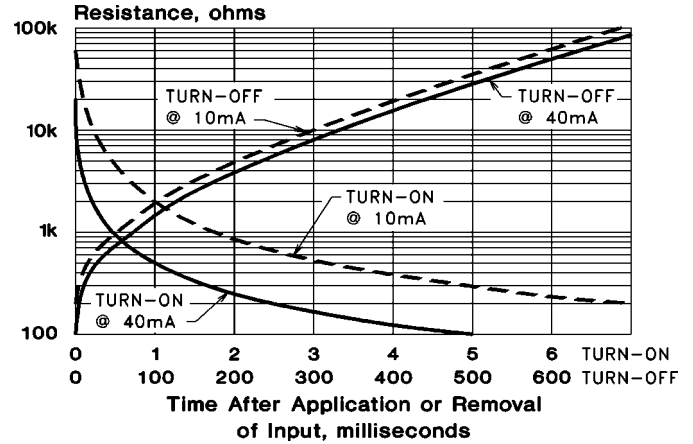
Response Time  
VTL5C3



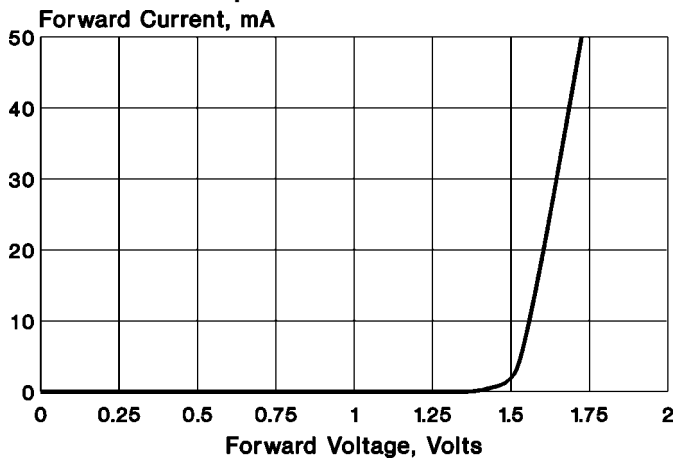
Output Resistance vs. Input Current  
VTL5C4



Response Time  
VTL5C4



Input Characteristics



## Notes:

- At 1.0 mA and below, units may have substantially higher resistance than shown in the typical curves. Consult factory if closely controlled characteristics are required at low input currents.
- Output resistance vs input current transfer curves are given for the following light adapt conditions:
  - 25°C — 24 hours @ no input
  - 25°C — 24 hours @ 40 mA input
  - +50°C — 24 hours @ 40 mA input
  - 20°C — 24 hours @ 40 mA input
- Response time characteristics are based upon test following adapt condition (2) above.

PerkinElmer (formerly EG&G Vactec) part VTL5C4 is the preferred unit for remote antenna termination.

As of 21 OCT 2004 it is supplied by Newark InOne Electronics as stock # 43F888 and by Allied Electronics as stock # 980-0716.

Silonex NSL-32SR2, Allied stock # 699-3010, may also be used.

### Features

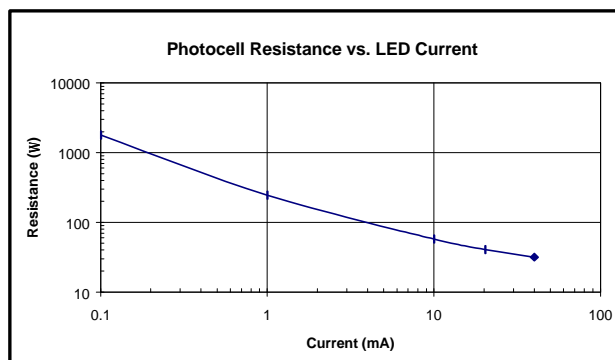
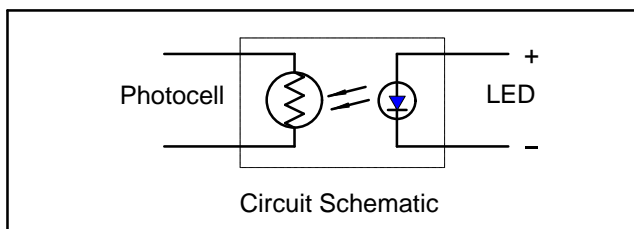
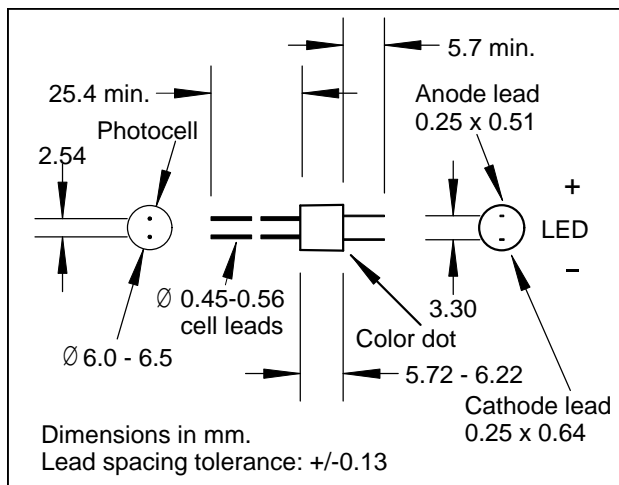
- Compact, moisture resistant package
- Lowest "on" resistance
- Very low LED current
- Passive resistance output
- Low distortion

### Description

This optocoupler consists of an LED input optically coupled to a photocell. The photocell resistance is high when the LED current is "off" and low resistance when the LED current is "on".

### Absolute Maximum Ratings

|                           |              |
|---------------------------|--------------|
| Storage Temperature       | -40 to +75°C |
| Operating Temperature     | -40 to +75°C |
| Soldering Temperature (1) | 260°C        |
| Isolation Voltage (peak)  | 2000V        |



### Electrical Characteristics (T<sub>A</sub>=25°C)

| Symbol           | Parameter             | Min. | Typ. | Max. | Units | Test Conditions  |
|------------------|-----------------------|------|------|------|-------|--|
| <b>LED</b>       |                       |      |      |      |       |  |
| I <sub>F</sub>   | Forward Current       |      |      | 25   | mA    |  |
| V <sub>F</sub>   | Forward Voltage       |      |      | 2.5  | V     | I <sub>F</sub> = 20 mA                                   |
| I <sub>R</sub>   | Reverse Current       |      |      | 10   | μA    | V <sub>R</sub> = 4V                                      |
| <b>Cell</b>      |                       |      |      |      |       |  |
| V <sub>C</sub>   | Maximum Cell Voltage  |      |      | 60   | V     | (Peak AC or DC)  |
| P <sub>D</sub>   | Power Dissipation     |      |      | 50   | mW    | (2)  |
| <b>Coupled</b>   |                       |      |      |      |       |  |
| R <sub>ON</sub>  | On Resistance         |      |      | 40   | Ω     | I <sub>F</sub> = 20 mA                                   |
|                  |                       |      | 140  |      | Ω     | I <sub>F</sub> = 1 mA                                    |
| R <sub>OFF</sub> | Off Resistance        | 1    | 5    |      | MΩ    | 10 sec after I <sub>F</sub> = 0, 5Vdc on cell.           |
| T <sub>R</sub>   | Rise Time             |      | 5    |      | msec  | Time to 63% of final conductance @ I <sub>F</sub> = 20mA |
| T <sub>F</sub>   | Decay Time            |      | 80   |      | msec  | Time to 100KΩ after removal of I <sub>F</sub> = 20mA     |
|                  | Cell Temp Coefficient |      | 0.7  |      | %/°C  | I <sub>F</sub> > 5 mA                                    |

Specifications subject to change without notice  
 Note: (1) >2 mm from case for <5 sec.  
 (2) Derate linearly to 0 at 75°C

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