Low Cost Axial Vactrols

VTL5C3, 5C4

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
- Storage and Operating: –40°C to 75°C
- Cell Power: 175 mW
  - Derate above 30°C: 3.9 mW/°C
- LED Current: 40 mA
  - Derate above 30°C: 0.9 mA/°C
- LED Reverse Breakdown Voltage: 3.0 V

LED Forward Voltage Drop @ 20 mA: 2.0V (1.65V Typ.)
Min. Isolation Voltage @ 70% Rel. Humidity: 2500 VRMS
Output Cell Capacitance: 5.0 pF
Cell Voltage: 250V (VTL5C3), 50V (VTL5C4)
Input - Output Coupling Capacitance: 0.5 pF

ELECTRO-OPTICAL CHARACTERISTICS @ 25°C

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Material Type</th>
<th>ON Resistance</th>
<th>OFF Resistance</th>
<th>Slope (Typ.)</th>
<th>Dynamic Range (Typ.)</th>
<th>Response Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>@ 0.5 mA R@ 5 mA</td>
<td>@ 0.5 mA R@ 20 mA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VTL5C3</td>
<td>3</td>
<td>1 mA 10 mA 40 mA</td>
<td>30 kΩ 5 kΩ 1.5 kΩ</td>
<td>10 MΩ</td>
<td>20</td>
<td>2.5 ms 35 ms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 mA 40 mA</td>
<td>30 kΩ 5 kΩ 1.5 kΩ</td>
<td>10 MΩ</td>
<td>20</td>
<td>2.5 ms 35 ms</td>
</tr>
<tr>
<td>VTL5C4</td>
<td>4</td>
<td>1 mA 10 mA 40 mA</td>
<td>1.2 kΩ 125 Ω 75 Ω</td>
<td>400 MΩ</td>
<td>18.7</td>
<td>6.0 ms 1.5 sec</td>
</tr>
</tbody>
</table>

Refer to Specification Notes, page 41.
PerkinElmer Optoelectronics, 10900 Page Ave., St. Louis, MO 63132 USA Phone: 314-423-4900 Fax: 314-423-3956 Web: www.perkinelmer.com/opto
Typical Performance Curves

Output Resistance vs. Input Current
VTL5C3

Output Resistance vs. Input Current
VTL5C4

Response Time
VTL5C3

Response Time
VTL5C4

Notes:
1. 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.

2. Output resistance vs input current transfer curves are given for the following light adapt conditions:
   (1) 25°C — 24 hours @ no input
   (2) 25°C — 24 hours @ 40 mA input
   (3) +50°C — 24 hours @ 40 mA input
   (4) −20°C — 24 hours @ 40 mA input

3. Response time characteristics are based upon test following adapt condition (2) above.

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Phone: 314-423-4900 Fax: 314-423-3956 Web: www.perkinelmer.com/opto
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: 260°C
Isolation Voltage (peak): 2000V

Electrical Characteristics \( (T_A=25°C) \)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
<th>Test Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>( I_F )</td>
<td>Forward Current</td>
<td>25</td>
<td></td>
<td></td>
<td>mA</td>
<td>( I_F = 20 ) mA</td>
</tr>
<tr>
<td>( V_F )</td>
<td>Forward Voltage</td>
<td>2.5</td>
<td></td>
<td></td>
<td>V</td>
<td>( I_F = 20 ) mA</td>
</tr>
<tr>
<td>( I_R )</td>
<td>Reverse Current</td>
<td>10</td>
<td></td>
<td></td>
<td>( \mu A )</td>
<td>( V_R = 4V )</td>
</tr>
<tr>
<td>( V_C )</td>
<td>Maximum Cell Voltage</td>
<td>60</td>
<td></td>
<td></td>
<td>V</td>
<td>(Peak AC or DC)</td>
</tr>
<tr>
<td>( P_D )</td>
<td>Power Dissipation</td>
<td>50</td>
<td></td>
<td></td>
<td>mW</td>
<td>(2)</td>
</tr>
</tbody>
</table>

Coupled

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
<th>Test Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>( R_{ON} )</td>
<td>On Resistance</td>
<td>40</td>
<td></td>
<td></td>
<td>( \Omega )</td>
<td>( I_F = 20 ) mA</td>
</tr>
<tr>
<td>( R_{OFF} )</td>
<td>Off Resistance</td>
<td>140</td>
<td></td>
<td></td>
<td>( \Omega )</td>
<td>( I_F = 1 ) mA</td>
</tr>
<tr>
<td>( T_R )</td>
<td>Rise Time</td>
<td>5</td>
<td></td>
<td></td>
<td>msec</td>
<td>Time to 63% of final conductance @ ( I_F = 20mA )</td>
</tr>
<tr>
<td>( T_F )</td>
<td>Decay Time</td>
<td>80</td>
<td></td>
<td></td>
<td>msec</td>
<td>Time to 100K( \Omega ) after removal of ( I_F = 20mA )</td>
</tr>
<tr>
<td></td>
<td>Cell Temp Coefficient</td>
<td>0.7</td>
<td></td>
<td></td>
<td>%/( ^\circ C )</td>
<td>( I_F &gt; 5 ) mA</td>
</tr>
</tbody>
</table>

Specifications subject to change without notice

Note:
(1) >2 mm from case for <5 sec.
(2) Derate linearly to 0 at 75°C