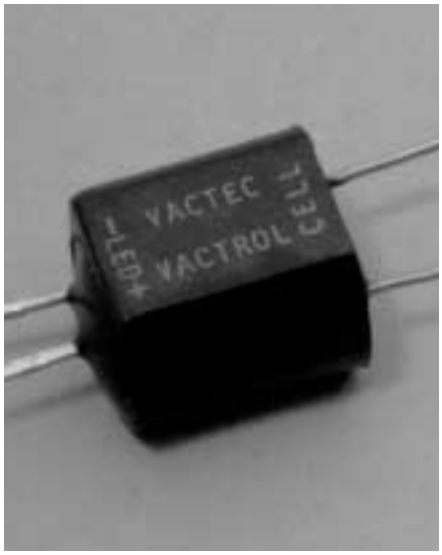
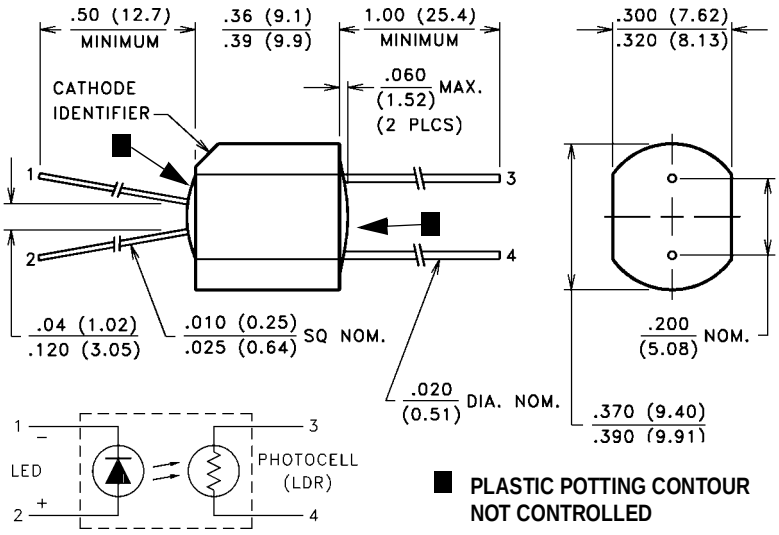
Low Cost Axial Vactrols

VTL5C1, 5C2



PACKAGE DIMENSIONS inch (mm)



DESCRIPTION

VTL5C1 offers 100db dynamic range, fast response time, and very high dark resistance.
VTL5C2 features a very steep slope, low temperature coefficient of resistance, and a small light history memory.

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 [1]
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: 100V (VTL5C1), 200V (VTL5C2)

Input - Output Coupling Capacitance: 0.5 pF

ELECTRO-OPTICAL CHARCTERISTICS @ 25°C

Part Number	Material Type	ON Resistance [2]		OFF [3] Resistance @ 10 sec. (Min.)	Slope (Typ.) $\frac{\text{@ 0.5 mA}}{\text{R@ 5 mA}}$	Dynamic Range (Typ.) $\frac{R_{DARK}}{\text{R@ 20 mA}}$	Response Time [4]	
		Input current	Dark Adapted (Typ.)				Turn-on to 63% Final R_{ON} (Typ.)	Turn-off (Decay) to 100 kΩ (Max.)
VTL5C1	1	1 mA 10 mA 40 mA	20 kΩ 600 Ω 200 Ω	50 MΩ	15	100 db	2.5 ms	35 ms
VTL5C2	0	1 mA 10 mA 40 mA	5.5 kΩ 800 Ω 200 Ω	1 MΩ	24	69 db	3.5 ms	500 ms

Refer to Specification Notes, page 41.

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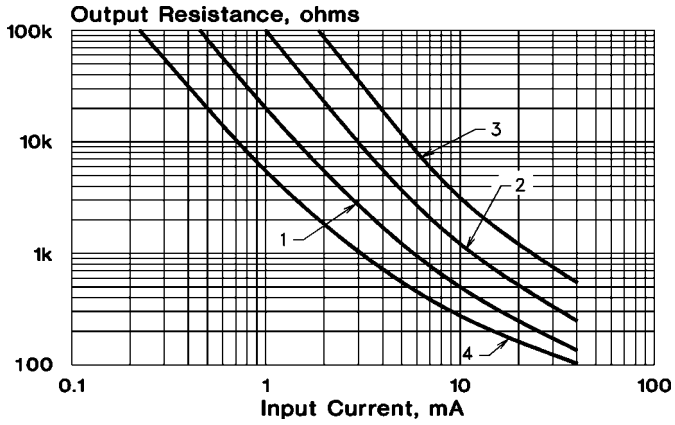
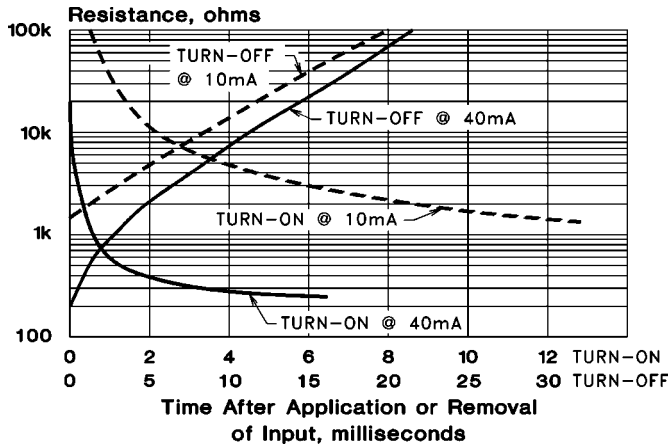
Typical Performance Curves

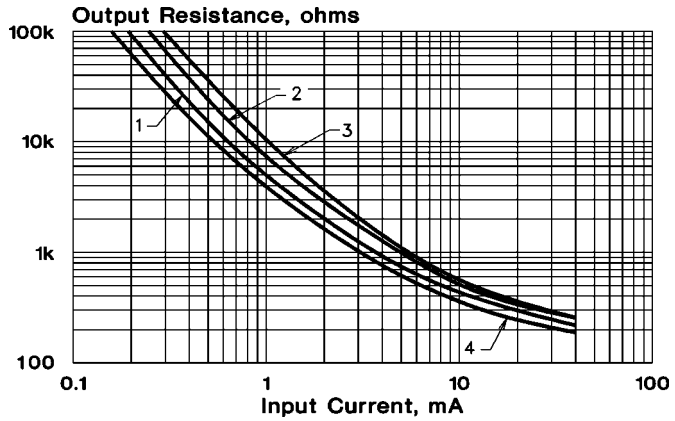
Output Resistance vs. Input Current
VTL5C1



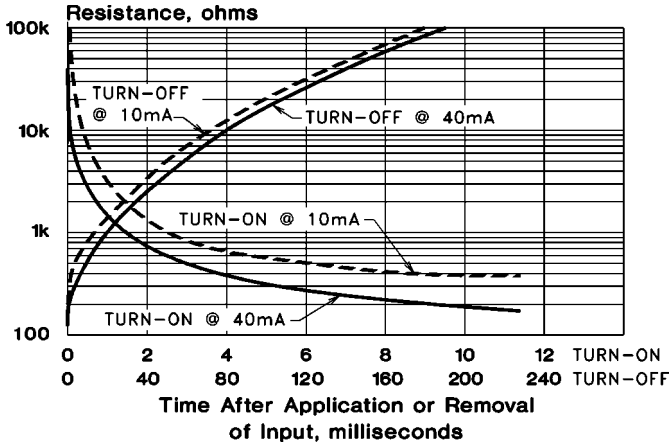
Response Time
VTL5C1



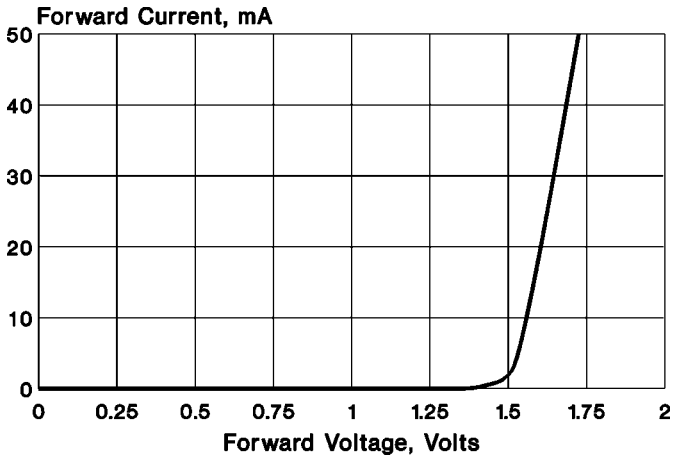
Output Resistance vs. Input Current
VTL5C2



Response Time
VTL5C2



Input Characteristics



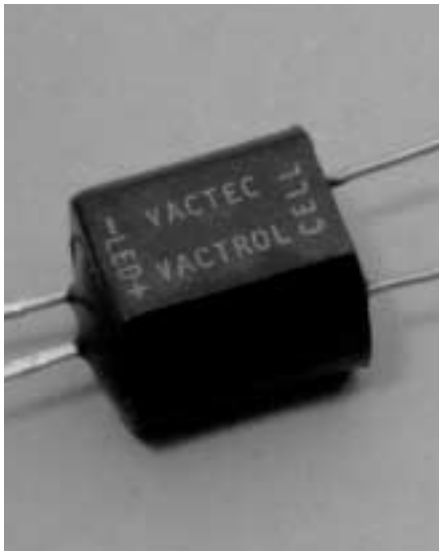
Notes:

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:

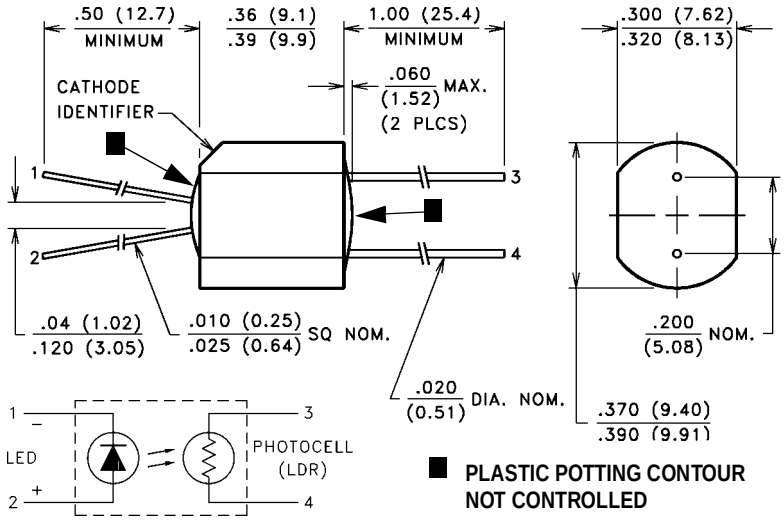
   (1) 25°C — 24 hours @ no input
   (2) 25°C — 24 hours @ 40 mA input
   (3) +50°C — 24 hours @ 40 mA input
   (4) –20°C — 24 hours @ 40 mA input
3. Response time characteristics are based upon test following adapt condition (2) above.

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 [1]
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 CHARCTERISTICS @ 25°C

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

Refer to Specification Notes, page 41.

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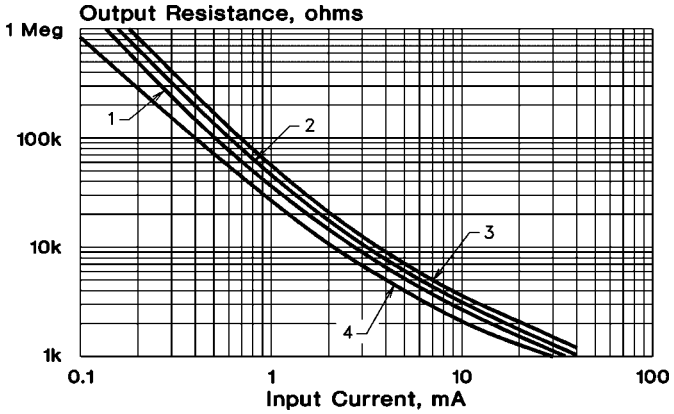
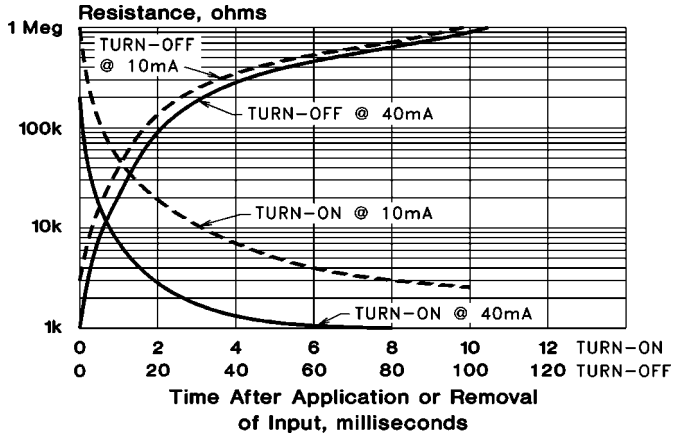
Typical Performance Curves

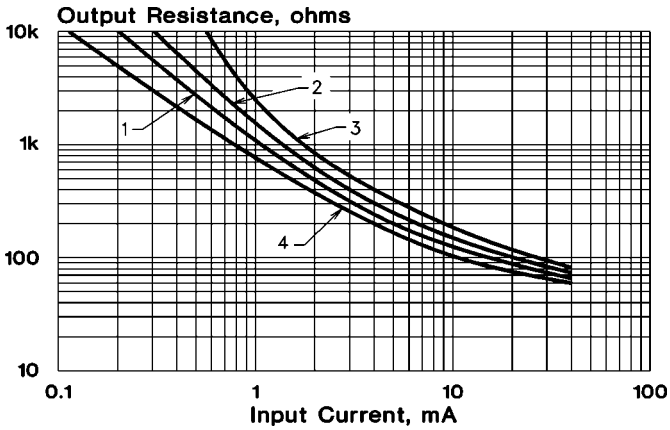
Output Resistance vs. Input Current
VTL5C3



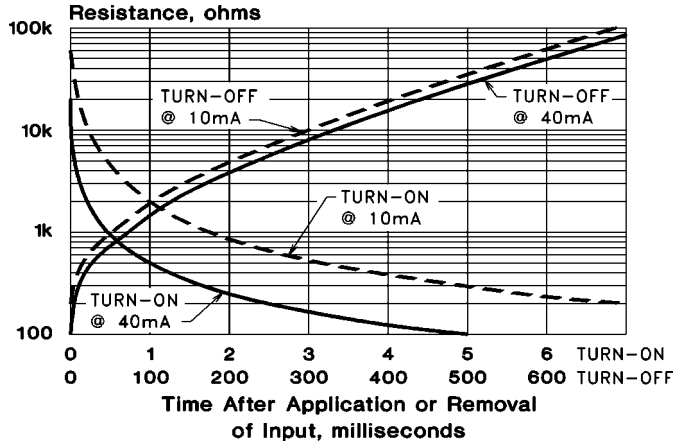
Response Time
VTL5C3



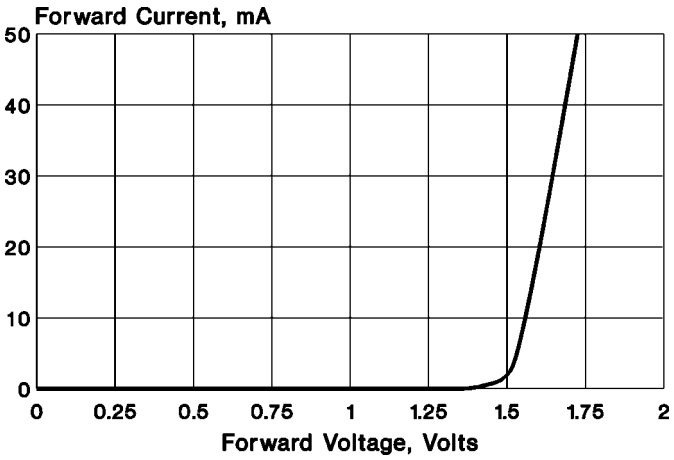
Output Resistance vs. Input Current
VTL5C4



Response Time
VTL5C4



Input Characteristics



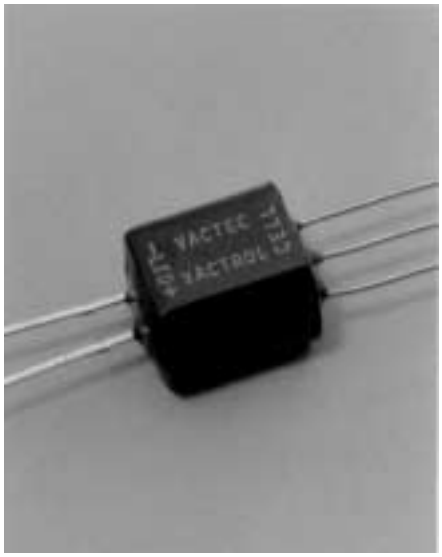
Notes:

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:

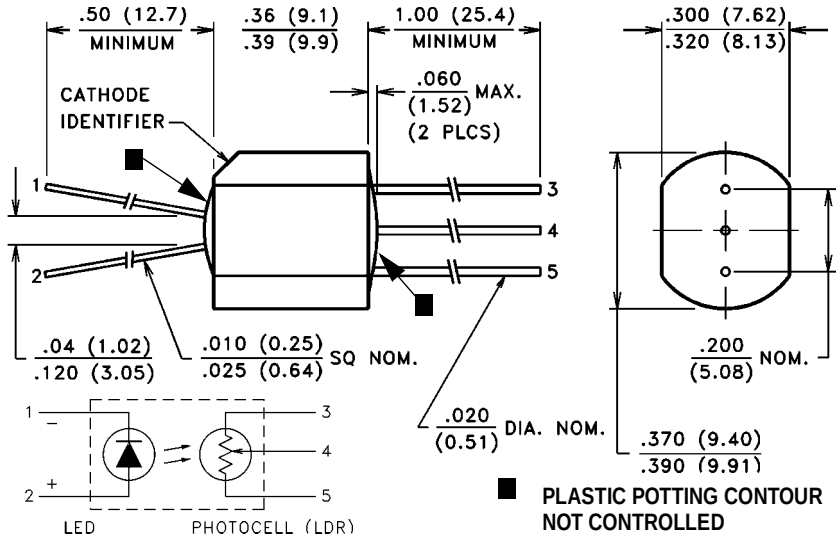
   (1) 25°C — 24 hours @ no input
   (2) 25°C — 24 hours @ 40 mA input
   (3) +50°C — 24 hours @ 40 mA input
   (4) –20°C — 24 hours @ 40 mA input
3. Response time characteristics are based upon test following adapt condition (2) above.

Dual Element Axial Vactrols

VTL5C2/2, 5C3/2



PACKAGE DIMENSIONS INCH (MM)



DESCRIPTION

VTL5C2/2 features a very steep slope, low temperature coefficient of resistance, and a small light history memory.
VTL5C3/2 has a steep slope, good dynamic range, a very low temperature coefficient of resistance, and a small light history memory.

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 **1**
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: 50V (VTL5C2/2), 100V (VTL5C2/3)

Input - Output Coupling Capacitance: 0.5 pF

ELECTRO-OPTICAL CHARCTERISTICS @ 25°C

Part Number	Material Type	ON Resistance **2**		OFF **3** Resistance @ 10 sec. (Min.)	Slope (Typ.) $\frac{\text{@ 0.5 mA}}{\text{R@ 5 mA}}$	Dynamic Range (Typ.) $\frac{R_{DARK}}{\text{R@ 20 mA}}$	Response Time **4**	
		Input current	Dark Adapted (Typ.)				Turn-on to 63% Final R_{ON} (Typ.)	Turn-off (Decay) to 100 kΩ (Max.)
VTL5C2/2	Ø	5 mA 40 mA	2.5 kΩ 700 Ω	1.0 MΩ	20	65 db	7.0 ms	150 ms
VTL5C3/2	3	1 mA 40 mA	55 kΩ 2 Ω	10 MΩ	19	71 db	3.0 ms	50 ms

Refer to Specification Notes, page 41.

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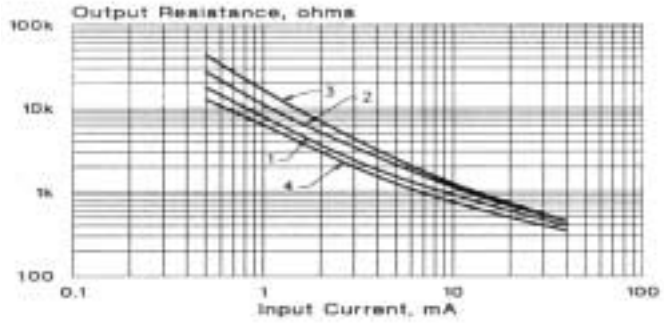
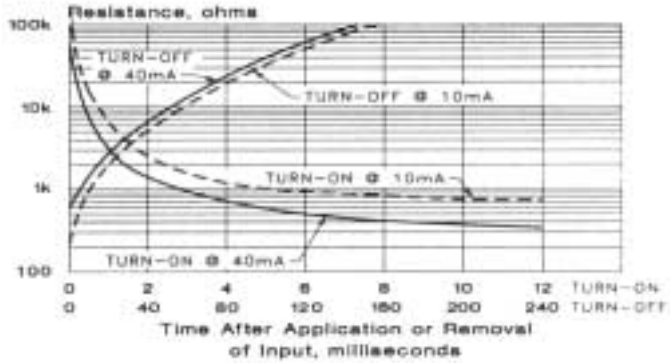
Typical Performance Curves

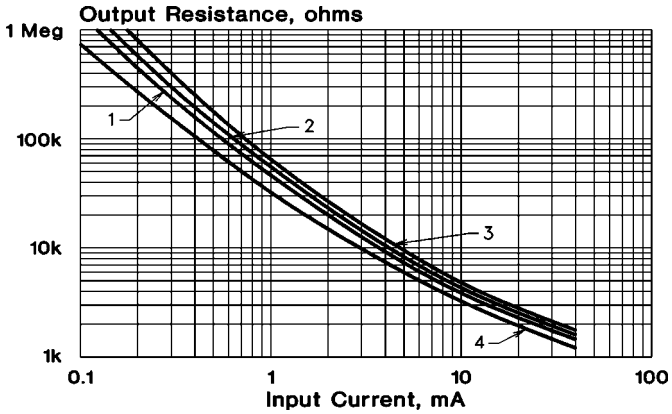
Output Resistance vs. Input Current
VTL5C2/2



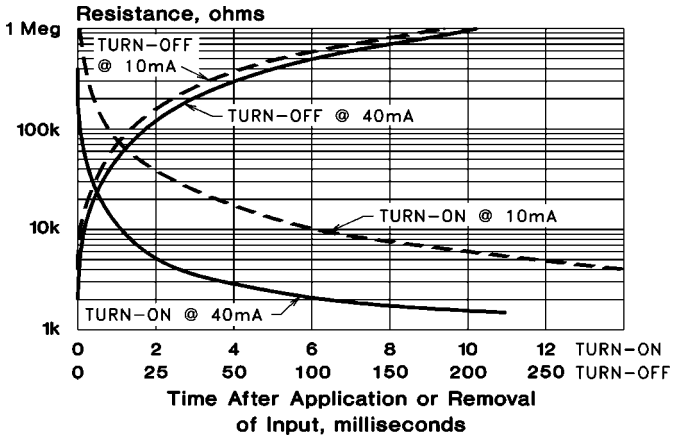
Response Time
VTL5C2/2



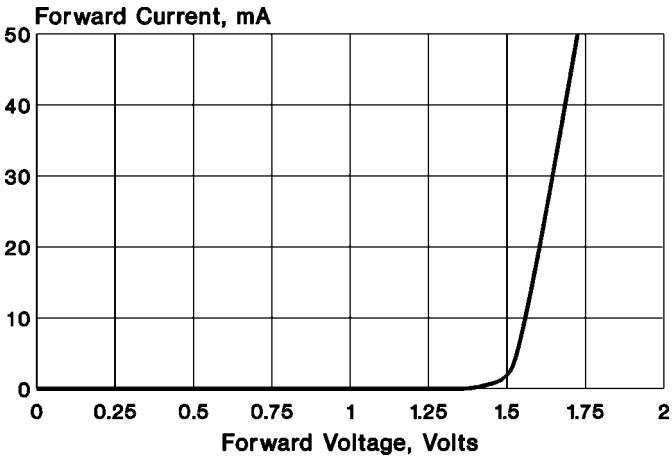
Output Resistance vs. Input Current
VTL5C3/2



Response Time
VTL5C3/2



Input Characteristics



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.