

1.4A HIGH-SPEED OPTO-ISOLATED POWER MOSFET DRIVER

FEATURES

- Input to Output Isolation of 2.5kV RMS
- Operating Range 10V to 18V
- High Peak Output Current 1.4A Typ
- Short Delay Time <200 ns Typ
- Fast Switching on Outputs $T_R, T_F < 60\text{ns Typ}$
..... with $C_L = 1000\text{pF}$
- Low Power BiCMOS Design
- Undervoltage Lock-out with Hysteresis

APPLICATIONS

- Isolated Digital Line Driver
- Isolated Line Receiver
- "High-Side" Driver
- SMPS Control
- Motor Control
- Solid State Relays
- Off-Line Regulation/Control

UL File No: E151672

GENERAL DESCRIPTION

The TC4803/4 are BiCMOS optocoupled driver ICs for switching loads when electrical isolation is desired. Input drive current is converted to low impedance voltage drive with the ability to drive 1.4A peak current into a capacitive load of 1,000 pF with fast output rise and fall times. UV lockout circuitry forces the output to a "off" state when the input voltage drops below 7.8V. 0.4V of hysteresis prevents output toggling around the drop-out voltage. The output "off" state is high on TC4803 and low on TC4804.

For switching many loads in low-power regimes, these drivers, because they reduce shoot-through currents in the output stage, require significantly less power at higher frequencies, and can be helpful in meeting low-power budgets.

These devices are built using Teledyne Components' new Tough CMOS process and are capable of giving reliable service in the most demanding electrical environments.

They will not latch under normal conditions within their power and voltage ratings. All terminals are fully protected against up to 4 kV of electrostatic discharge.

ORDERING INFORMATION

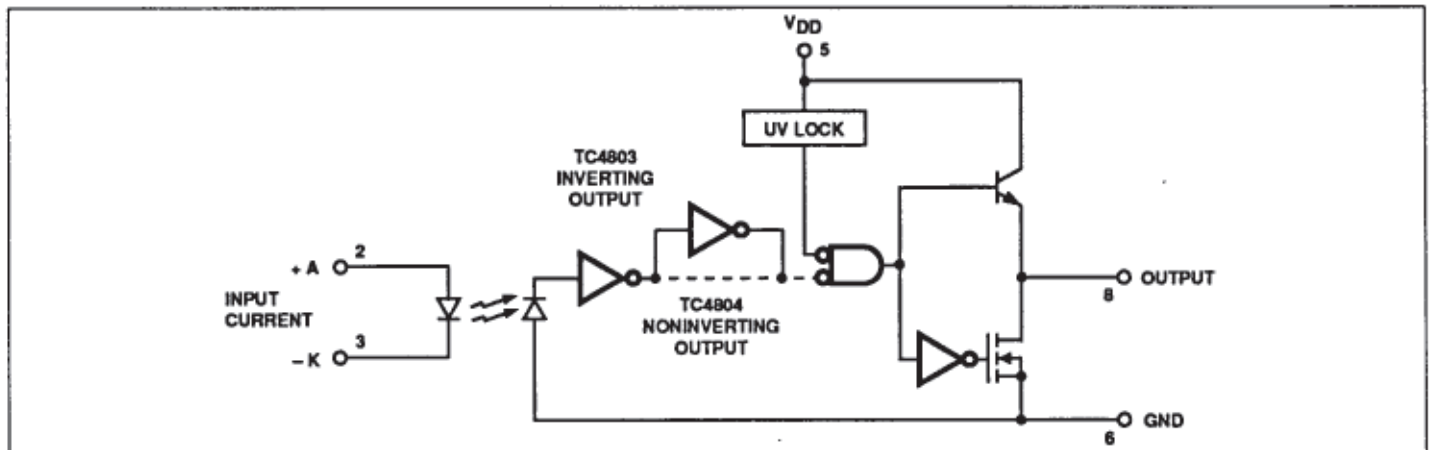
| Part No. | Package | Temperature Range |
|-----------|------------|-------------------|
| TC4803EPA | 8-Pin PDIP | -40°C to +85°C |
| TC4804EPA | 8-Pin PDIP | -40°C to +85°C |

ABSOLUTE MAXIMUM RATINGS

| | |
|--|-------------------|
| Supply Voltage | +20V |
| Diode Signal Current Input | 20mA |
| Maximum Chip Temperature | 85°C |
| Storage Temperature Range | -55°C to +125°C |
| Lead Temperature (Soldering, 10 sec) | +300°C |
| Package Thermal Resistance | |
| PDIP $R_{\theta J-A}$ | 200°C/W |
| Operating Temperature Range | |
| Thermal Derating | 5mW/°C above 25°C |
| Power Dissipation | 300mW |

Static-sensitive device. Unused devices must be stored in conductive material. Protect devices from static discharge and static fields. Stresses above those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to Absolute Maximum Rating Conditions for extended periods may affect device reliability.

FUNCTIONAL DIAGRAM



TC4803/04

ELECTRICAL CHARACTERISTICS:

Typical specifications measured at $T_A = +25^\circ\text{C}$ with $V_{DD} = 18\text{V}$, unless otherwise specified. Minimum and maximum specifications guaranteed over full temperature and power supply range.

| Symbol | Parameter | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------|--|-----------------|------|------|------|-------|
| Input LED | | | | | | |
| I_{FTH} | LED Forward Threshold Current (DC) | | — | 3.0 | 10 | mA |
| I_{FMAX} | LED Forward Maximum Current (Continuous) | | — | — | 20 | mA |
| V_F | LED Forward Voltage @ 10 mA Current | | 1.3 | 1.5 | 1.7 | V |
| V_R | LED Reverse Voltage @ 50nA | | 6.0 | — | — | V |
| | Isolation Voltage | | 2.5 | — | — | kVRms |
| Output | | | | | | |
| V_{OH} | High Output Voltage, $V_{DD} = 18\text{V}$, $I_{OUT} = 50\text{mA}$ | | 16.3 | 16.9 | — | V |
| V_{OL} | Low Output Voltage, $V_{DD} = 18\text{V}$, $I_{OUT} = 50\text{mA}$ | | — | .70 | 1.0 | V |
| I_{PK} | Peak Output Current (Note 2) Source | | — | 1.4 | — | A |
| | Sink | | | .5 | | A |
| I_{DC} | Continuous Output Current $V_{DD} = 18\text{V}$ (Source, sink) | | 100 | — | — | mA |
| | DV/DT Input to Output Common Mode Transient Immunity | | 5 | 6 | — | V/nS |
| Switching Time (Note 1) | | | | | | |
| t_R | Rise Time | Figure 1 | — | 37 | 60 | ns |
| t_F | Fall Time | Figure 1 | — | 40 | 80 | ns |
| t_{D1} | Delay Time | Figure 1 (4803) | — | 133 | 190 | ns |
| t_{D2} | Delay Time | Figure 1 (4803) | — | 200 | 260 | ns |
| t_{D1} | Delay Time | Figure 1 (4804) | — | 105 | 165 | ns |
| t_{D2} | Delay Time | Figure 1 (4804) | — | 143 | 225 | ns |
| F_{MAX} | Maximum Operating Frequency | | 1 | 1.2 | — | MHz |
| Power Supply | | | | | | |
| I_{DD} | Power Supply Current | Output HIGH | — | 4.0 | 8.0 | mA |
| I_{DD} | Power Supply Current | Output LOW | — | 3.0 | 5.0 | mA |
| V_S | Start up threshold | | — | 8.7 | 10.0 | V |
| V_{UV} | Drop-out threshold | | 7.5 | 8.4 | — | V |

NOTE: 1. Switching times guaranteed by design.
2. 1 μs , 1% duty cycle pulse input, output shorted to V_{DD} or GND.

PIN CONFIGURATION

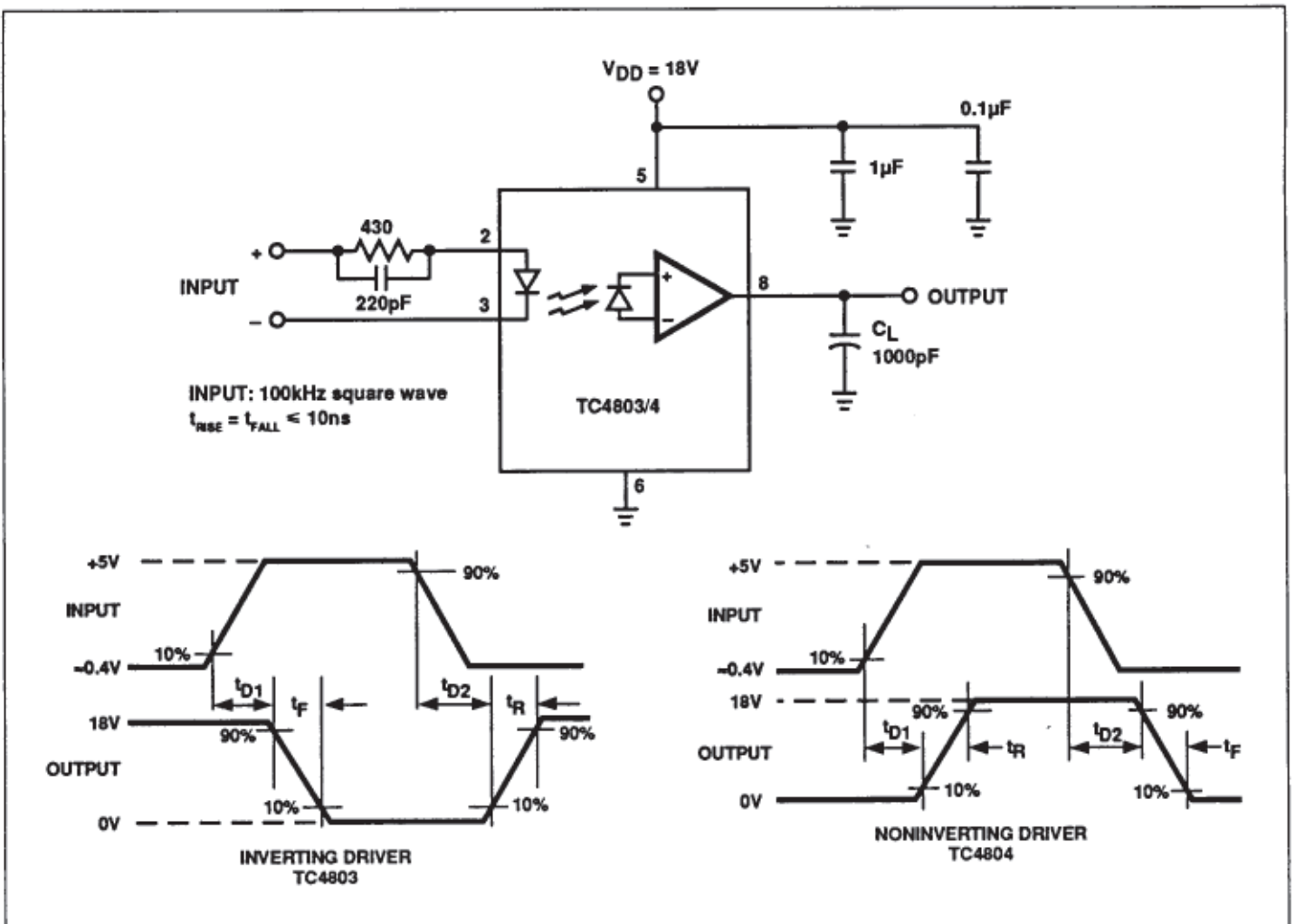
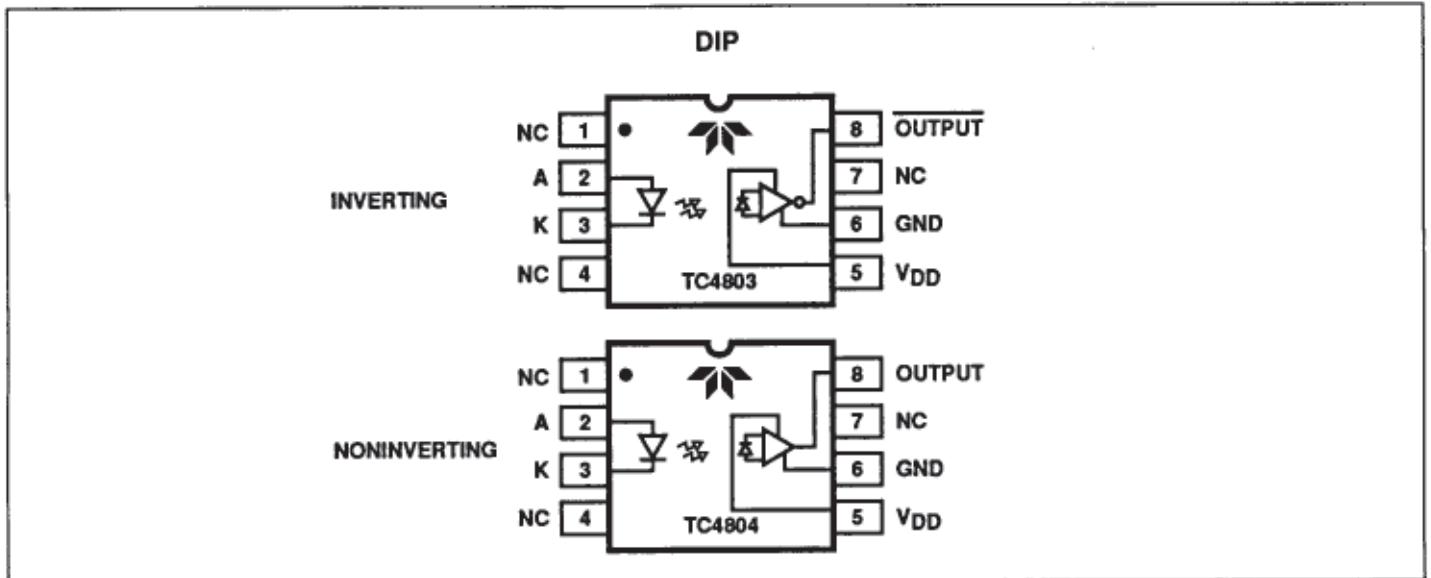
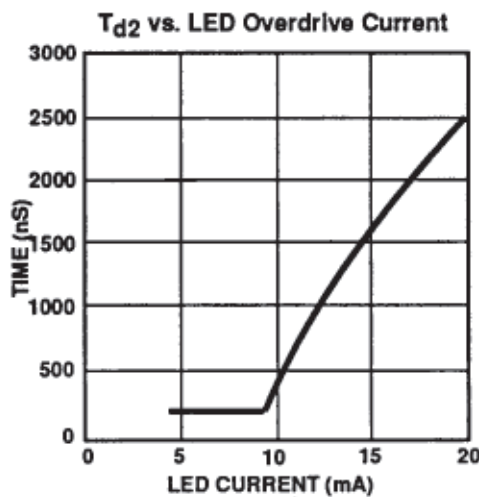
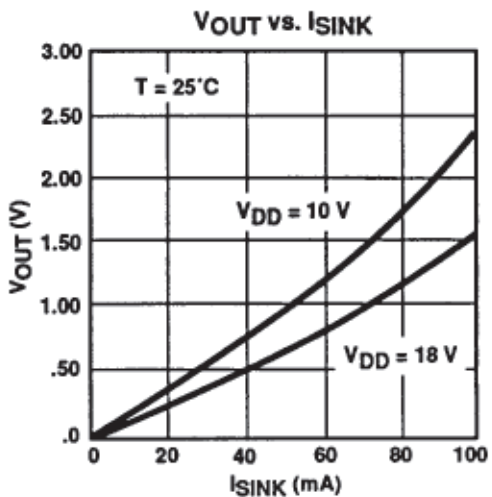
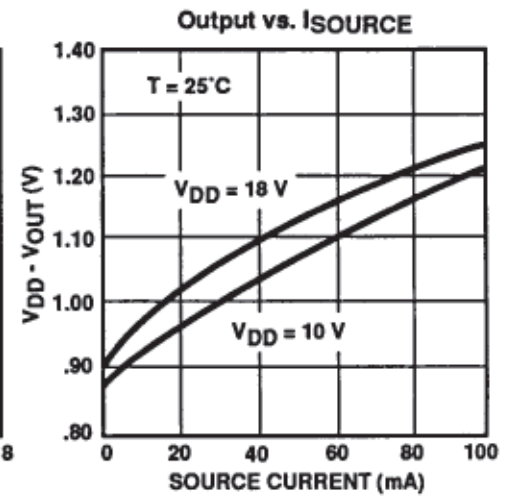
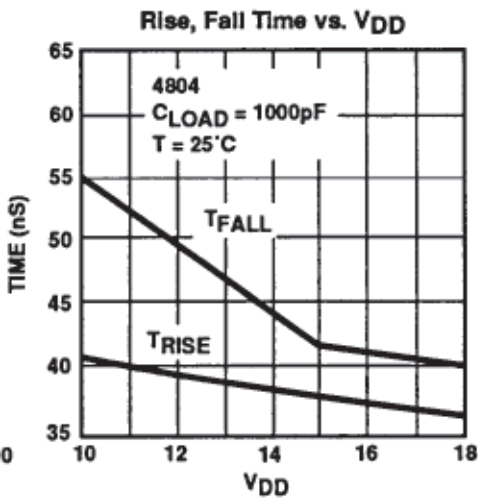
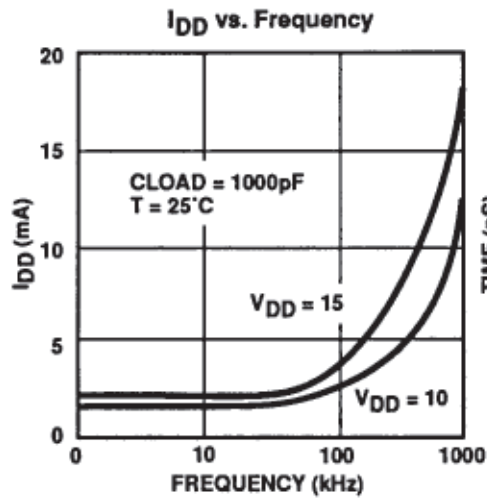
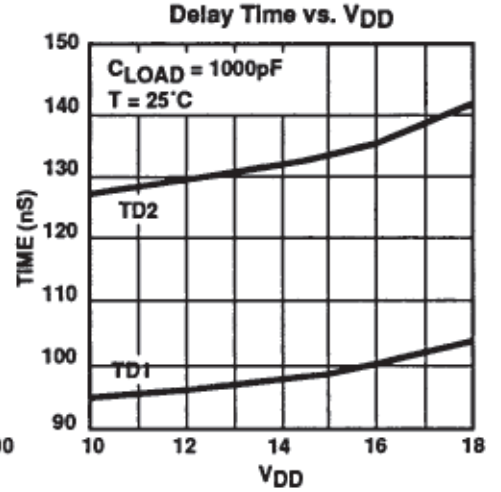
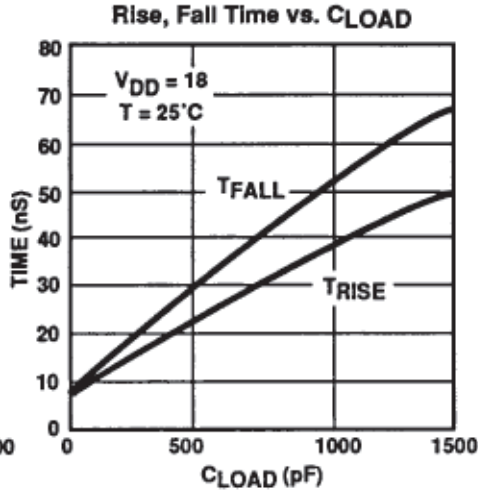
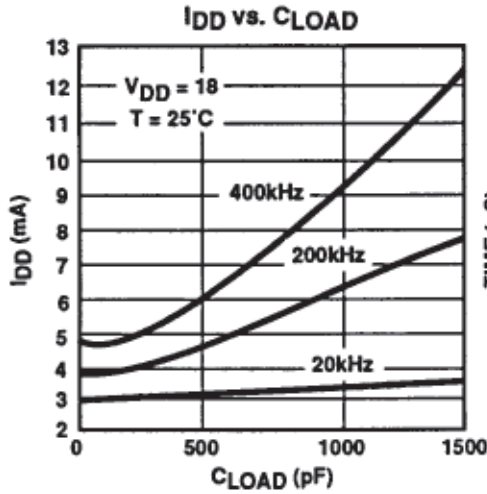


Figure 1 Switching Time Test Circuit

TC4803/04

TYPICAL CHARACTERISTICS CURVES

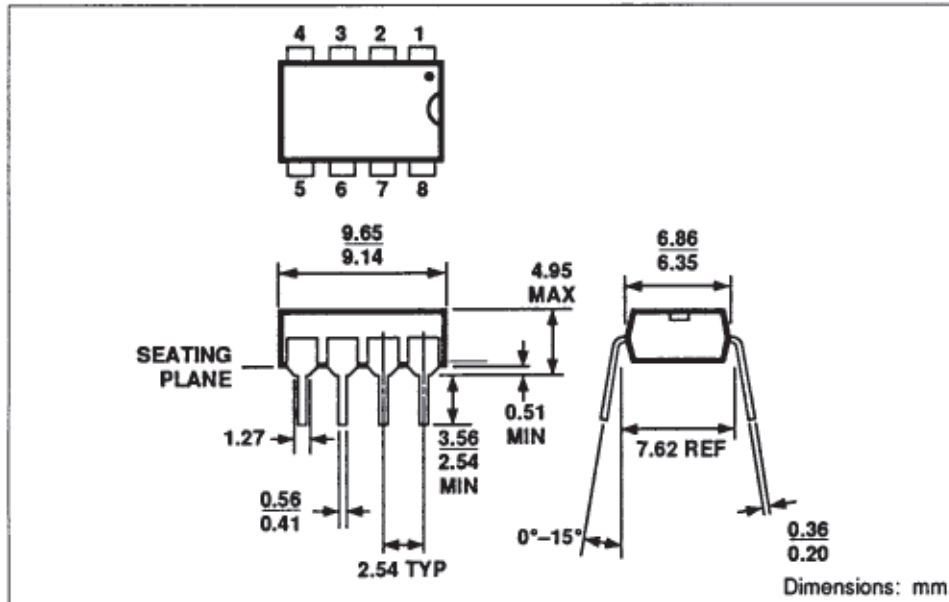


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POWER MOSFET DRIVER**

PRELIMINARY INFORMATION

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PACKAGE DIMENSIONS



Domestic Sales Offices

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