



## 6A HIGH-SPEED MOSFET DRIVERS

### TC4420 TC4429

#### ABSOLUTE MAXIMUM RATINGS\*

Supply Voltage .....	+20V
Input Voltage .....	- 5V to > V <sub>DD</sub>
Input Current (V <sub>IN</sub> > V <sub>DD</sub> ) .....	50mA
Power Dissipation, T <sub>A</sub> ≤ 70°C	
PDIP .....	730mW
SOIC .....	470mW
CerDIP .....	800mW
5-Pin TO-220 .....	1.6W
Package Power Dissipation (T <sub>A</sub> ≤ 70°C)	
5-Pin TO-220 (With Heat Sink) .....	1.60W
Derating Factors (To Ambient)	
PDIP .....	8mW/°C
SOIC .....	4mW/°C
CerDIP .....	6.4mW/°C
5-Pin TO-220 .....	12mW/°C
Thermal Impedances (To Case)	
5-Pin TO-220 R <sub>θJ-C</sub> .....	10°C/W

Storage Temperature Range .....	- 65°C to +150°C
Operating Temperature (Chip) .....	+150°C
Operating Temperature Range (Ambient)	
C Version .....	0°C to +70°C
I Version .....	- 25°C to +85°C
E Version .....	- 40°C to +85°C
M Version .....	- 55°C to +125°C
Lead Temperature (Soldering, 10 sec) .....	+300°C

\*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 operation sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

#### ELECTRICAL CHARACTERISTICS: T<sub>A</sub> = +25°C with 4.5V ≤ V<sub>DD</sub> ≤ 18V, unless otherwise specified.

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>Input</b>						
V <sub>IH</sub>	Logic 1 High Input Voltage		2.4	1.8	—	V
V <sub>IL</sub>	Logic 0 Low Input Voltage		—	1.3	0.8	V
V <sub>IN</sub> (Max)	Input Voltage Range		-5	—	V <sub>DD</sub> +0.3	V
I <sub>IN</sub>	Input Current	0V ≤ V <sub>IN</sub> ≤ V <sub>DD</sub>	- 10	—	10	μA
<b>Output</b>						
V <sub>OH</sub>	High Output Voltage	See Figure 1	V <sub>DD</sub> - 0.025	—	—	V
V <sub>OL</sub>	Low Output Voltage	See Figure 1	—	—	0.025	V
R <sub>O</sub>	Output Resistance, High	I <sub>OUT</sub> = 10 mA, V <sub>DD</sub> = 18V	—	2.1	2.8	Ω
R <sub>O</sub>	Output Resistance, Low	I <sub>OUT</sub> = 10 mA, V <sub>DD</sub> = 18V	—	1.5	2.5	Ω
I <sub>PK</sub>	Peak Output Current	V <sub>DD</sub> = 18V (See Figure 5)	—	6	—	A
I <sub>REV</sub>	Latch-Up Protection Withstand Reverse Current	Duty Cycle ≤ 2% t ≤ 300 μs	1.5	—	—	A
<b>Switching Time (Note 1)</b>						
t <sub>R</sub>	Rise Time	Figure 1, C <sub>L</sub> = 2500 pF	—	25	35	nsec
t <sub>F</sub>	Fall Time	Figure 1, C <sub>L</sub> = 2500 pF	—	25	35	nsec
t <sub>D1</sub>	Delay Time	Figure 1	—	55	75	nsec
t <sub>D2</sub>	Delay Time	Figure 1	—	55	75	nsec
<b>Power Supply</b>						
I <sub>S</sub>	Power Supply Current	V <sub>IN</sub> = 3V V <sub>IN</sub> = 0V	—	0.45 55	1.5 150	mA μA
V <sub>DD</sub>	Operating Input Voltage		4.5	—	18	V

# 6A HIGH-SPEED MOSFET DRIVERS

**TC4420**  
**TC4429**

**ELECTRICAL CHARACTERISTICS:** Measured over operating temperature range with  $4.5V \leq V_{DD} \leq 18V$ , unless otherwise specified.

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>Input</b>						
$V_{IH}$	Logic 1 High Input Voltage		2.4	—	—	V
$V_{IL}$	Logic 0 Low Input Voltage		—	—	0.8	V
$V_{IN} (Max)$	Input Voltage Range		-5	—	$V_{DD} + 0.3$	V
$I_{IN}$	Input Current	$0V \leq V_{IN} \leq V_{DD}$	-10	—	10	$\mu A$
<b>Output</b>						
$V_{OH}$	High Output Voltage	See Figure 1	$V_{DD} - 0.025$	—	—	V
$V_{OL}$	Low Output Voltage	See Figure 1	—	—	0.025	V
$R_{OH}$	Output Resistance, High	$I_{OUT} = 10 \text{ mA}, V_{DD} = 18V$	—	3	5	$\Omega$
$R_{OL}$	Output Resistance, Low	$I_{OUT} = 10 \text{ mA}, V_{DD} = 18V$	—	2.3	5	$\Omega$
<b>Switching Time (Note 1)</b>						
$t_R$	Rise Time	Figure 1, $C_L = 2500 \text{ pF}$	—	32	60	nsec
$t_F$	Fall Time	Figure 1, $C_L = 2500 \text{ pF}$	—	34	60	nsec
$t_{D1}$	Delay Time	Figure 1	—	50	100	nsec
$t_{D2}$	Delay Time	Figure 1	—	65	100	nsec
<b>Power Supply</b>						
$I_S$	Power Supply Current	$V_{IN} = 3V$ $V_{IN} = 0V$	—	0.45 60	3 400	$\text{mA}$ $\mu A$
$V_{DD}$	Operating Input Voltage		4.5	—	18	V

**NOTE:** 1. Switching times guaranteed by design.

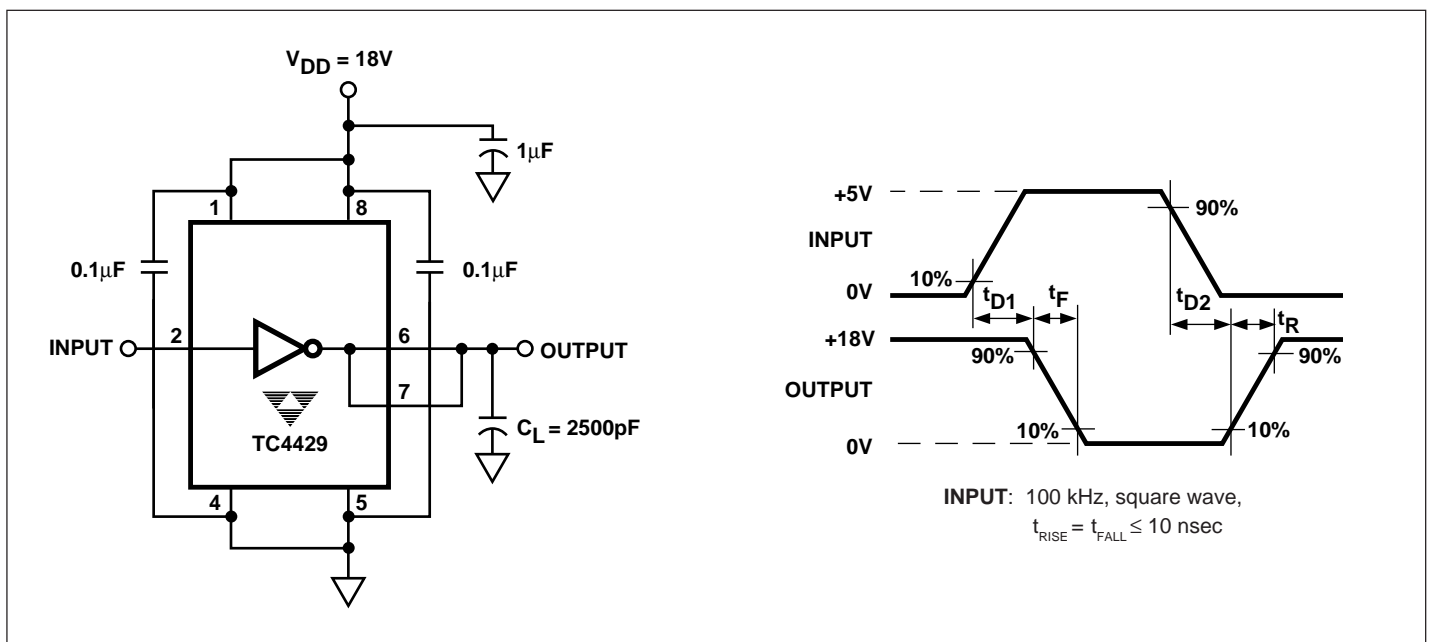
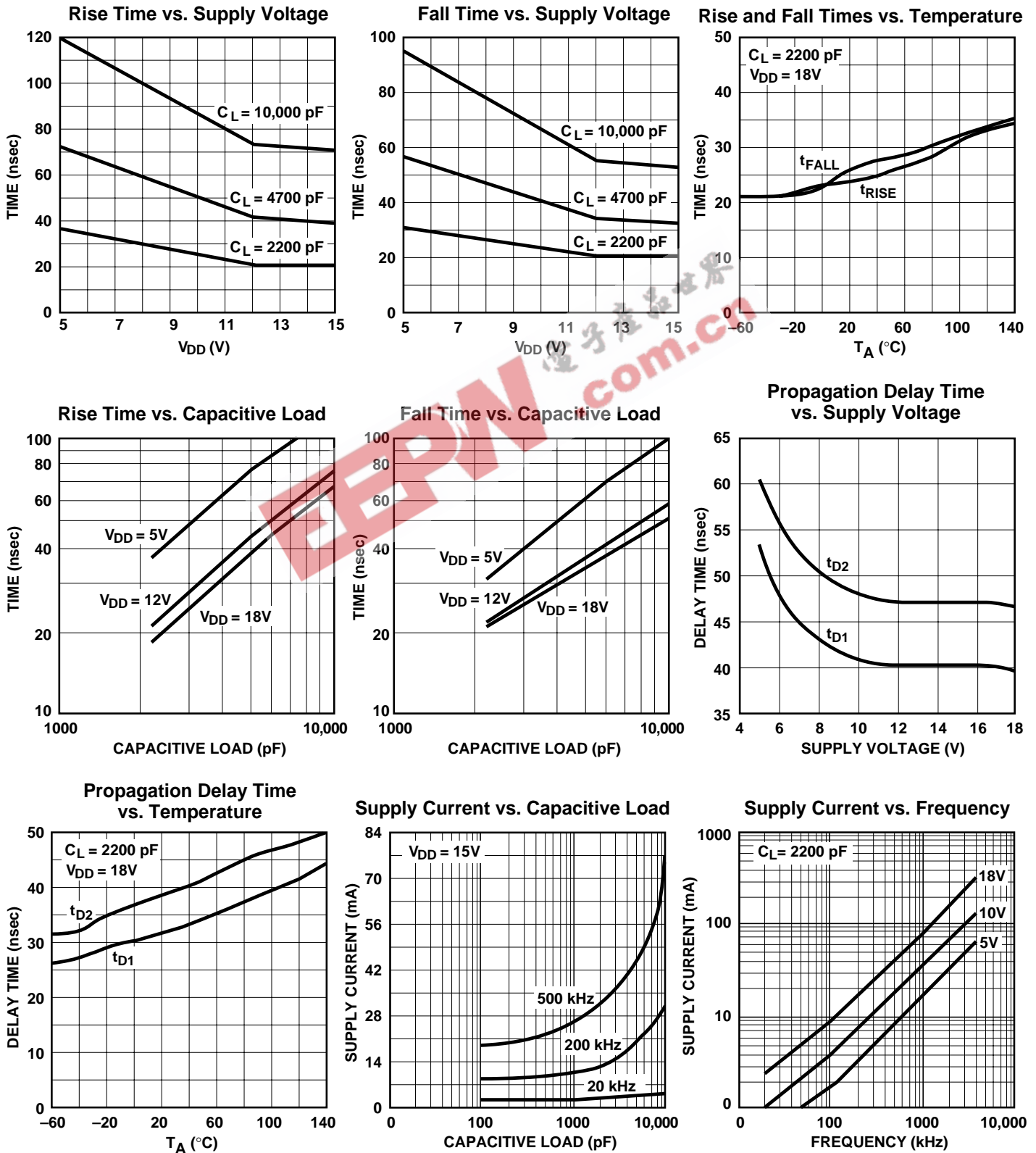


Figure 1. Switching Time Test Circuit

# 1.5A DUAL OPEN-DRAIN MOSFET DRIVERS

TC4420  
TC4429

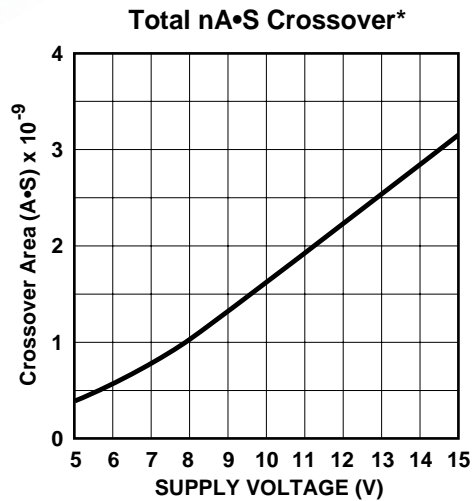
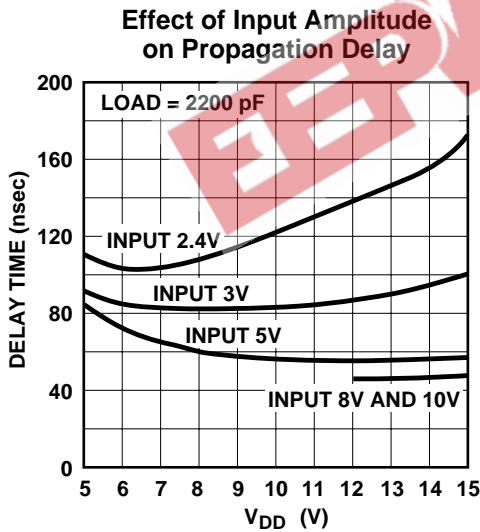
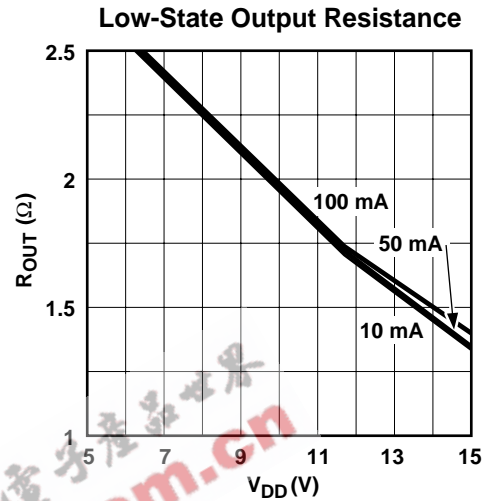
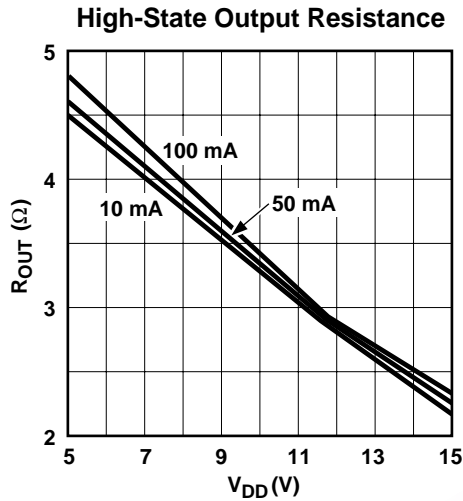
## TYPICAL CHARACTERISTICS



# 1.5A DUAL OPEN-DRAIN MOSFET DRIVERS

TC4420  
TC4429

## TYPICAL CHARACTERISTICS (Cont.)



\* The values on this graph represent the loss seen by the driver during one complete cycle. For a single transition, divide the value by 2.