



钲地半导体
Tudi Semiconductor

Product Specification

TUDI-TC4426/4427/4428

1.5A Dual High-Speed Power MOSFET Drivers

网址 www.sztdbdt.com Q

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semiconductor device
manufacturer

- Design
- research and development
- production
- and sales



Features

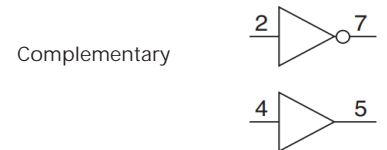
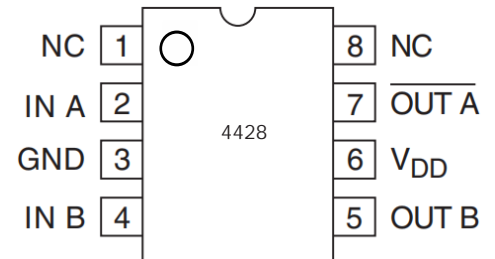
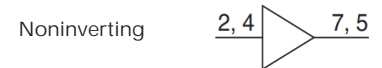
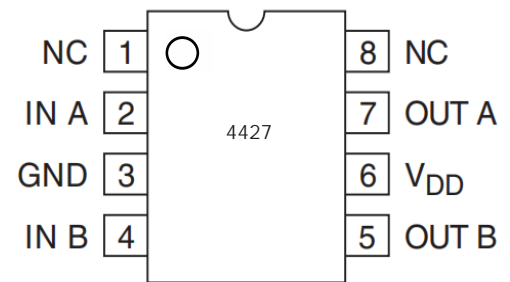
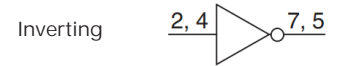
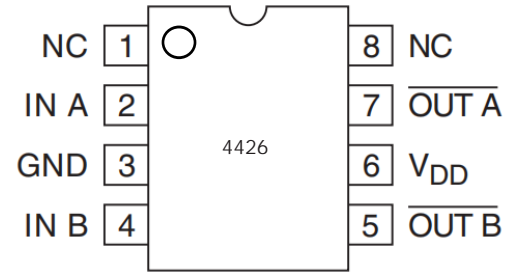
- High Peak Output Current:1.5A
- Wide Supply Voltage Operating Range:4.5V to 18V
- High Capacitive Load Drive Capability1000pF in 11ns(typical)
- Short Delay Times:35ns (typical)
- Matched Rise/Fall Times
- Low Output Impedance
- Low Supply Current
- Over-temperature Protection
- Under-voltage Lockout
- Non-overlapped Drive Tech
- ESD Protected:2.0kV
- Input withstands negative inputs up to 5V
- Available in Green SOP8 and DIP8

Applications

- Wireless Power Transmitter
- Switch Mode Power Supplies
- Power MOSFET Drivers
- Pulse Transformer Drivers
- Line Drivers
- CCD Driver
- Class D Switching Amplifiers

Description

The TC4426/4427/4428 are matched dual power MOSFET drivers. Unique circuit design enables high speed operation capable of delivering peak currents of 1.5A into 1000pF capacitive loads. Improved speed and drive capability are enhanced by matched rise and fall delay times. These matched delays maintain the integrity of input-to-output pulse-widths to reduce timing errors and clockskew problems. Dynamic switching losses are minimized with non-overlapped drive techniques. These devices are highly latch-up resistant within their power and voltage ratings. They are not subject to damage when up to 5V of noise spiking (of either polarity) occurs on the ground pin. All terminals are fully protected against Electrostatic Discharge (ESD) up to 2.0 kV.





Pin Description

| Pin | Name | Description |
|-----|-------|---------------------|
| 1 | NC | No connection |
| 2 | IN A | Input A |
| 3 | GND | Ground |
| 4 | In B | Input B |
| 5 | OUT B | Output of Channel B |
| 6 | VDD | Power Supply |
| 7 | OUTA | Output of Channel A |
| 8 | NC | No connection |
| - | PAD | Exposed Metal Pad |

Function Table

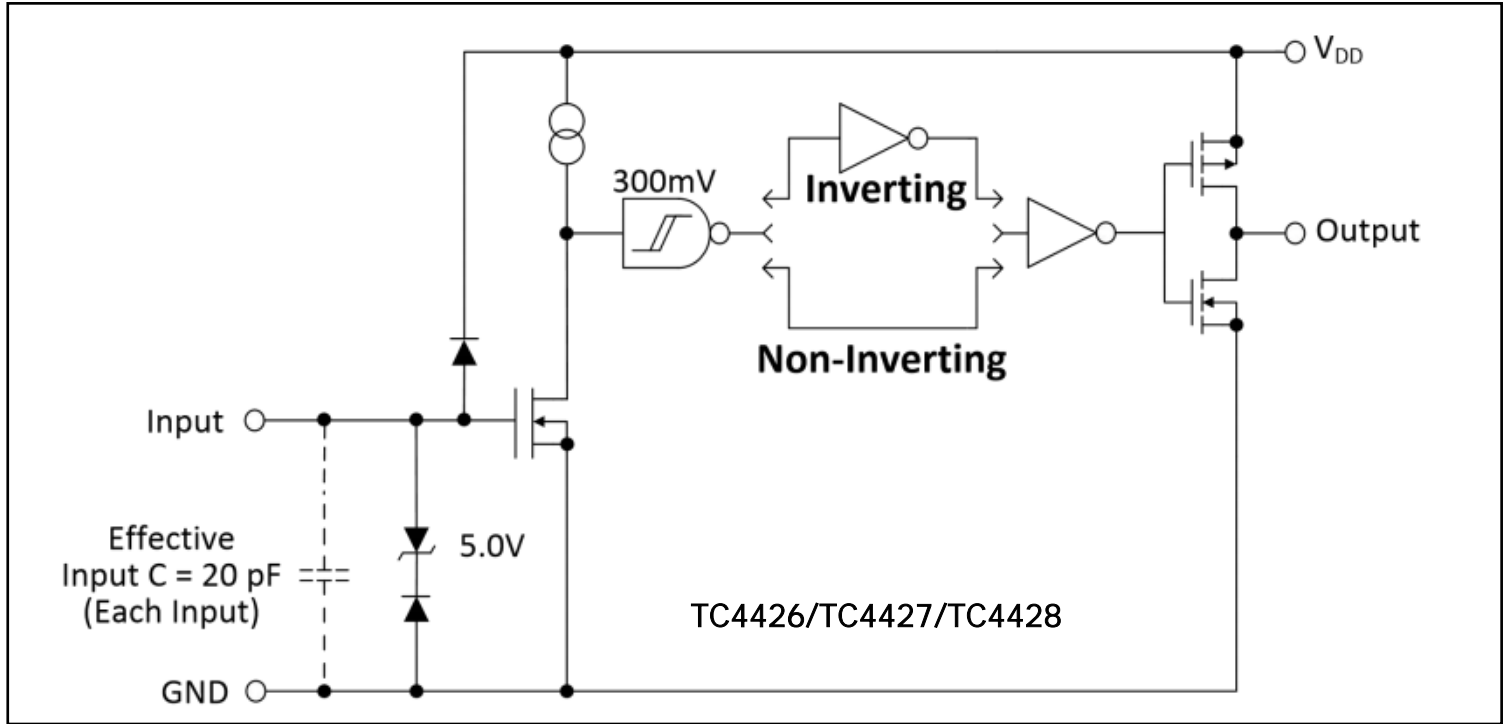
| | | TC4426 | | TC4427 | | TC4428 | |
|-----|-----|--------|-------|--------|------|--------|------|
| INA | INB | OUTA | OUT B | OUTA | OUTB | OUTA | OUTB |
| L | L | H | H | L | L | H | L |
| L | H | H | L | L | H | H | H |
| H | L | L | H | H | L | L | L |
| H | H | L | L | H | H | L | H |

Thermal Data

| Parameter | Rating | Unit |
|----------------------------|-----------------------|------|
| Package Thermal Resistance | 155(SOP8) 90(DIP8) | °CW |



Functional Block Diagram



Note

1: TC4426 has two inverting drivers, while the TC4427 has two non-inverting drivers. The TC4428 has one inverting and one non-inverting driver.

2: Ground any unused driver input.

Absolute Maximum Ratings

| Parameter | Min | Max | Unit |
|--------------------------------|-------|---------|------|
| DC supply voltage V_s | | 26 | V |
| Operating junction temperature | -40 | 85 | |
| Storage temperature | -55 | 150 | |
| Maximum input voltage | GND-5 | VDD+0.3 | V |
| Combined peak output current | | 4 | A |

Note: Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.



Recommended Operating Conditions

| Parameter | Rating | Unit |
|-------------------------------|----------|------|
| DC Supply Voltage | 4.5 ~ 18 | V |
| Operating ambient temperature | -40 ~ 85 | °C |

Additional description

| |
|--|
| Output A and B |
| MOSFET driver outputs A and B are low-impedance, CMOS push-pull style outputs. The pull-down and pull-up devices are of equal strength, making the rise and fall times equivalent. |
| Inputs A and B |
| MOSFET driver inputs A and B are high-impedance, TTL/CMOS compatible inputs. These inputs also have 300 mV of hysteresis between the high and low thresholds that prevents output glitching even when the rise and fall time of the input signal is very slow. |
| Supply Input (VDD) |
| The VDD input is the bias supply for the MOSFET driver and is rated for 4.5V to 18V with respect to the Ground pin. The VDD input should be bypassed with local ceramic capacitors. The value of these capacitors should be chosen based on the capacitive load that is being driven. A value of 1.0µF is suggested. |
| Ground(GND) |
| Ground is the device return pin. The Ground pin(s) should have a low-impedance connection to the bias supply source return. High peak current flows out the Ground pin(s) when the capacitive load is being discharged. |
| Exposed Metal Pad |
| The exposed metal pad of the DFN-8 package is not internally connected to any potential. Therefore, this pad can be connected to a ground plane or other copper plane on a Printed Circuit Board (PCB), to aid in heat removal from the package. |



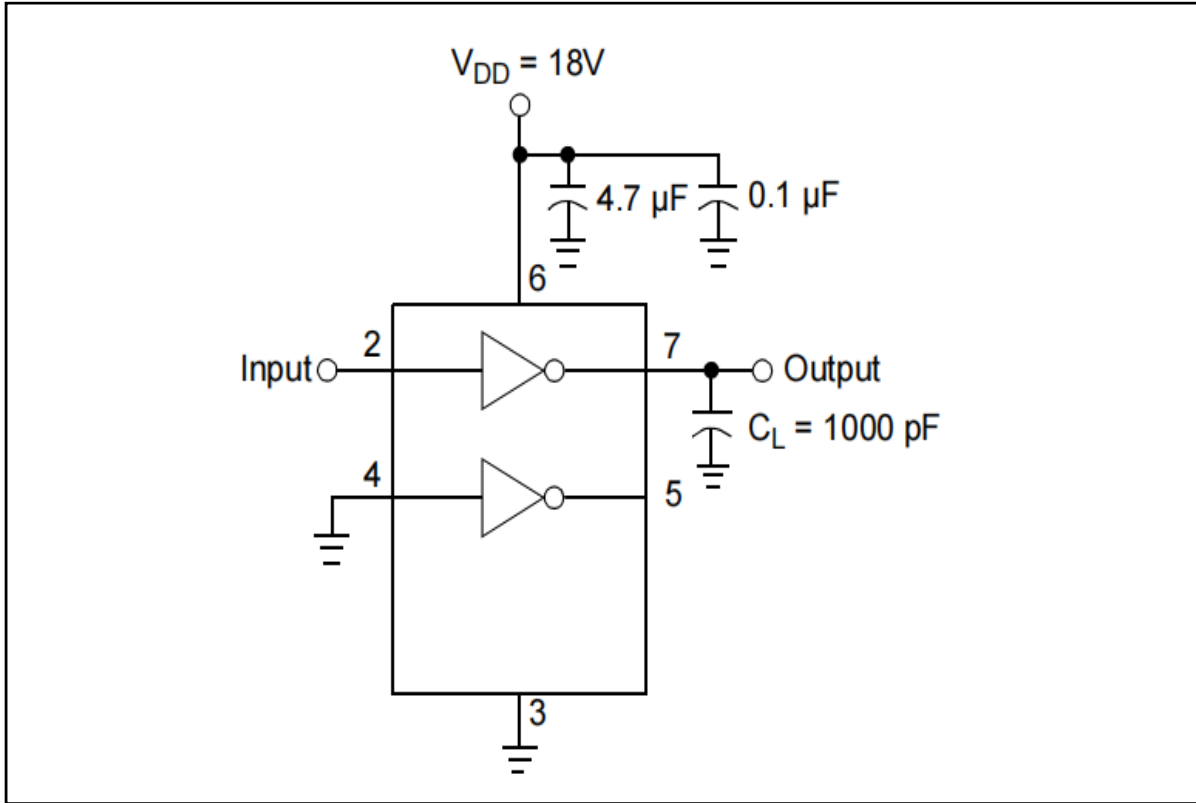
Electrical Characteristics

(Typical values are tested at $T_a=25^\circ\text{C}$, $V_{DD}=18\text{V}$)

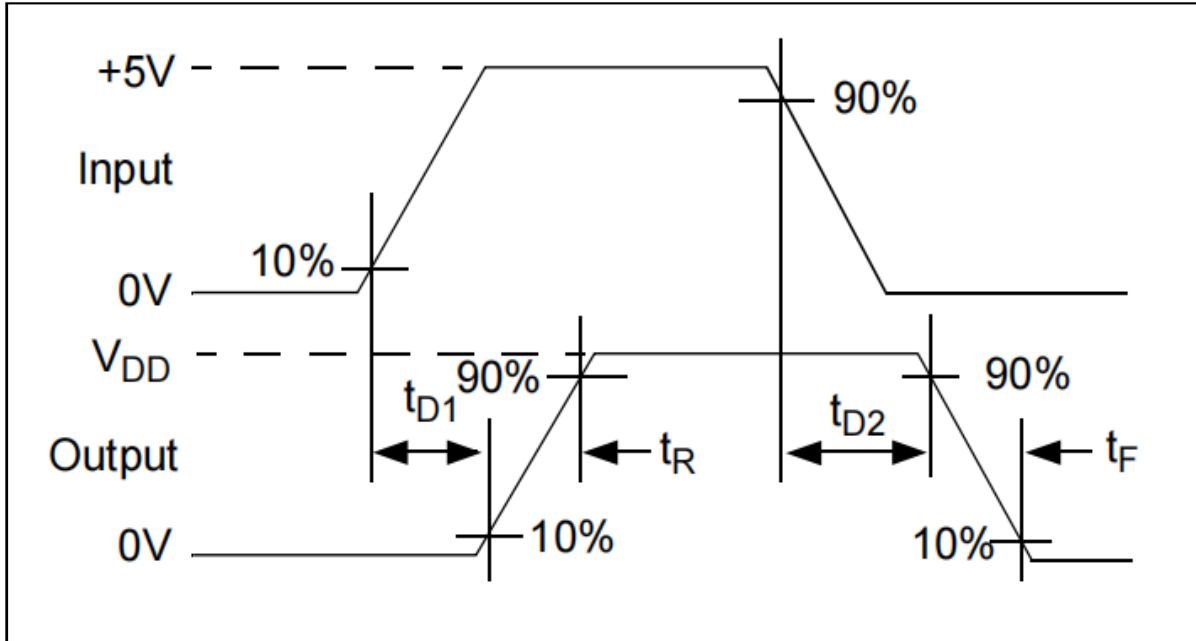
| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|-----------|---|------|-----------|---------|---------------|
| Input | | | | | | |
| Input Signal High Threshold | V_{IH} | | 1.8 | | | V |
| Input Signal Low Threshold | V_{IL} | | | | 0.7 | V |
| Input Signal Hysteresis | V_{HYS} | | | 0.3 | | V |
| Input Current | I_{in} | OV V_{In} V_{DD} | | | ± 1 | μA |
| Output | | | | | | |
| Pull-Up Resistance | R_{oH} | Source Current = 10mA | | 2.0 | | |
| Pull-Down Resistance | R_{oL} | Sink Current = -10mA | | 2.0 | | |
| Peak Output Current | I_{pk} | Source Current, $f=1\text{kHz}$, $CL=1000\text{pF}$ | | 1.5 | | A |
| | | Sink Current, $f=1\text{kHz}$, $CL=1000\text{pF}$ | | -1.5 | | |
| Continuous Output Current | I_{oc} | Source /Sink Current | | ± 200 | | mA |
| Power supply Current | | | | | | |
| Power Supply Current | I_{cc} | $V_{INA}=V_{INB}=3\text{V}$ | | 0.9 | | mA |
| | | $V_{INA}=V_{INB}=0\text{V}$ | | 0.5 | | |
| Operating Voltage Range | V_{DD} | | 4.5 | | 18 | V |
| Under-Voltage Lockout ONThreshold | | | | 3.6 | 4 | V |
| Under-Voltage LockoutHysteresis | | | | 0.5 | | V |
| Switching characteristics | | | | | | |
| Rise Time | t_R | $CL=1000\text{pF}$ | | 11 | | ns |
| Fall Time | t_F | $CL=1000\text{pF}$ | | 11 | | ns |
| Turn-On Delay Time | t_{D1} | Non-inverting Input | | 34 | | ns |
| | | Inverting Input | | 44 | | ns |
| Turn-Off Delay Time | t_{D2} | Non-inverting Input | | 34 | | ns |
| | | Inverting Input | | 44 | | ns |
| Over-temperature protection | | | | | | |
| Thermal Shutdown Threshold | | | | 150 | | |
| Thermal Shutdown ThresholdHysteresis | | | | 25 | | |



Switching Time Test Circuit



Inverting Driver



Non-Inverting Driver

Order information

| Order Number | Package | Package Quantity | Marking On The park | Temperature |
|-------------------|---------|-----------------------|---------------------|---------------|
| TC4426EOA713-TUDI | SOP8 | Tape,Reel,2500 | TC4426EOA | -40°C to 85°C |
| TC4426EPA-TUDI | DIP8 | Tube,50,A box of 2000 | TC4426EPA | |
| TC4427EOA713-TUDI | SOP8 | Tape,Reel,2500 | TC4427EOA | |
| TC4427EPA-TUDI | DIP8 | Tube,50,A box of 2000 | TC4427EPA | |
| TC4428EOA713-TUDI | SOP8 | Tape,Reel,2500 | TC4428EOA | |
| TC4428EPA-TUDI | DIP8 | Tube,50,A box of 2000 | TC4428EPA | |



Package SOP8

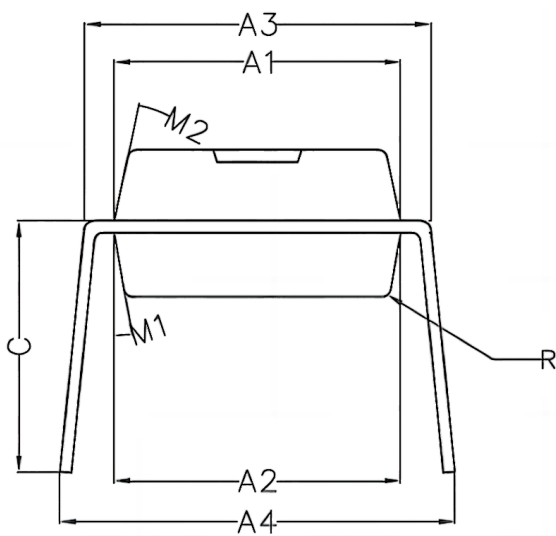
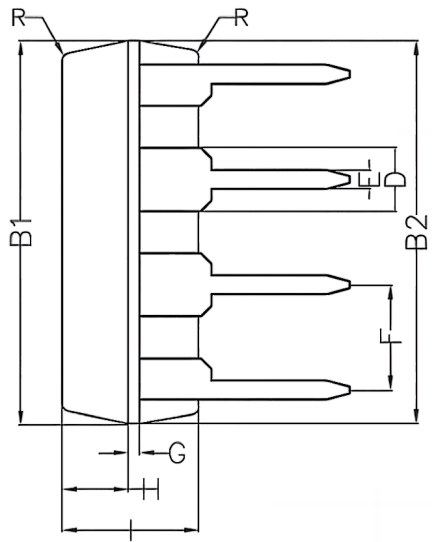
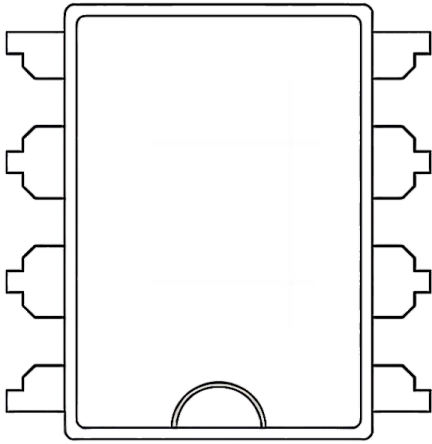


| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|------------------------------|-------|-------------------------|-------|
| | Min | Max | Min | Max |
| A | 1.350 | 1.750 | 0.053 | 0.069 |
| A1 | 0.100 | 0.250 | 0.004 | 0.010 |
| A2 | 1.350 | 1.550 | 0.053 | 0.061 |
| B | 0.330 | 0.510 | 0.013 | 0.020 |
| C | 0.190 | 0.250 | 0.007 | 0.010 |
| D | 4.780 | 5.000 | 0.188 | 0.197 |
| E | 3.800 | 4.000 | 0.150 | 0.157 |
| E1 | 5.800 | 6.300 | 0.228 | 0.248 |
| e | 1.270TYP | | 0.050TYP | |
| L | 0.400 | 1.270 | 0.016 | 0.050 |
| theta | 0° | 8° | 0° | 8° |





Package DIP8



| Symbol | Min | Non | Max |
|--------|------|------|------|
| A1 | 6.28 | 6.33 | 6.38 |
| A2 | 6.33 | 6.38 | 6.43 |
| A3 | 7.52 | 7.62 | 7.72 |
| A4 | 7.80 | 8.40 | 9.00 |
| B1 | 9.15 | 9.20 | 9.25 |
| B2 | 9.20 | 9.25 | 9.30 |
| C | | 5.57 | |
| D | | 1.52 | |
| E | 0.43 | 0.45 | 0.47 |
| F | | 2.54 | |
| G | | 0.25 | |
| H | 1.54 | 1.59 | 1.64 |
| I | 3.22 | 3.27 | 3.32 |
| R | | 0.20 | |
| M1 | 9° | 10° | 11° |
| M2 | 11° | 12° | 13° |



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