



钜地半导体  
Tudi Semiconductor

## Product Specification

TUDI-ICL7667

Dual Power MOSFET Driver

网址 [www.sztdbdt.com](http://www.sztdbdt.com) Q

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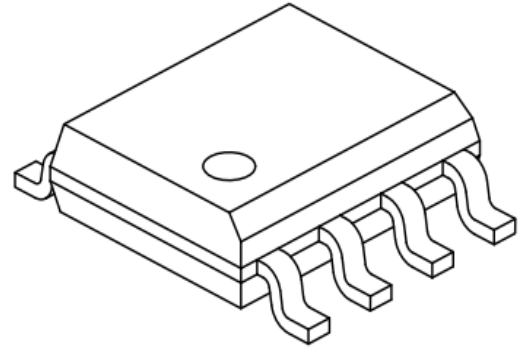
semiconductor device  
manufacturer

- Design
- research and development
- production
- and sales



## Features

- High Peak Output Current: 1.5A
- Wide Supply Voltage Operating Range: 4.5V to 25V
- High Capacitive Load Drive Capability 1000pF 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, DIP8 Packages



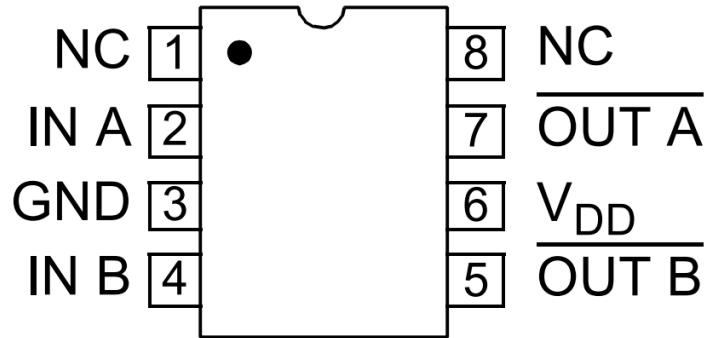
## Description

The ICL7667 is 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 clock skew 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.

## Applications

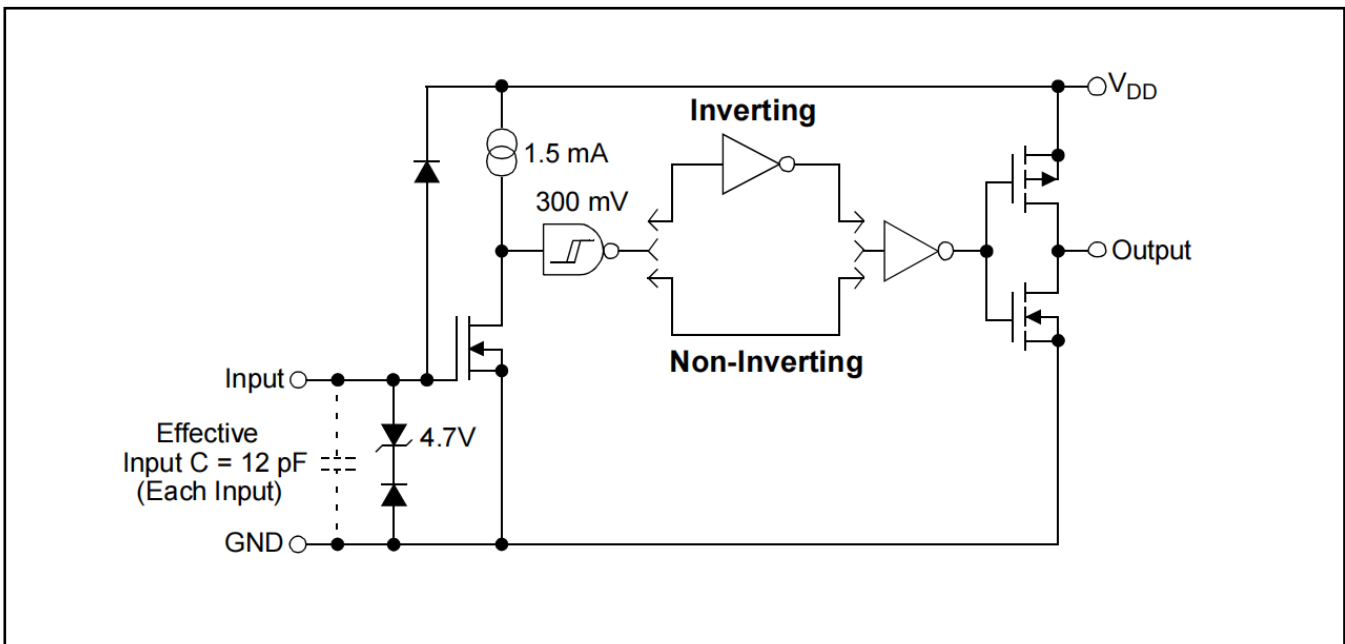
Wireless Power Transmitter  
Pulse Transformer Drivers  
CCD Driver  
Class D Switching Amplifiers

Switch Mode Power Supplies  
Line Drivers  
Power MOSFET Drivers



ICL7667:Outputs out of phase with in puts

## Functional Block Diagram





## Function Table

INA	INB	$\overline{\text{OUTA}}$	$\overline{\text{OUTB}}$
L	L	H	H
L	H	H	L
H	L	L	H
H	H	L	L

## Pin Descriptio

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	OUT A	Output of Channel A
8	NC	No connection
-	PAD	Exposed Metal Pad



### 1.1 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.

### 1.2 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.

### 1.3 Output A and B

MOSFET driver outputs A and B are low-impedance, CMOS push-pull style outputs. The pull-down and pullup devices are of equal strength, making the rise and fall times equivalent.

### 1.4 Supply Input (V<sub>DD</sub>)

The V<sub>DD</sub> input is the bias supply for the MOSFET driver and is rated for 4.5V to 25V with respect to the Ground pin. The V<sub>DD</sub> 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 1.0  $\mu$ F is suggested.

### 1.5 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.

## 2. Product Specification

### 2.1 Absolute Maximum Ratings <sup>(1)</sup>

Parameter	Min	Max	Unit
DC supply voltage V <sub>s</sub>		26	V
Operating junction temperature	-40	125	°C
Storage temperature	-55	150	°C
Maximum input voltage	GND-5	V <sub>DD</sub> +0.3	V
Combined peak output current		4	A



(1) 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.

## 2.2 Thermal Data

Parameter	Rating	Unit
Package Thermal Resistance	155 (SOP8) 90 (DIP8) 57 (FDN8,3x3)	°C/W

## 2.3 Recommended Operating Conditions

Parameter	Rating	Unit
DC Supply Voltage	4.5V ~ 25V	V
Operating ambient temperature	-40 to +85	°C

## 2.4 Electrical Characteristics

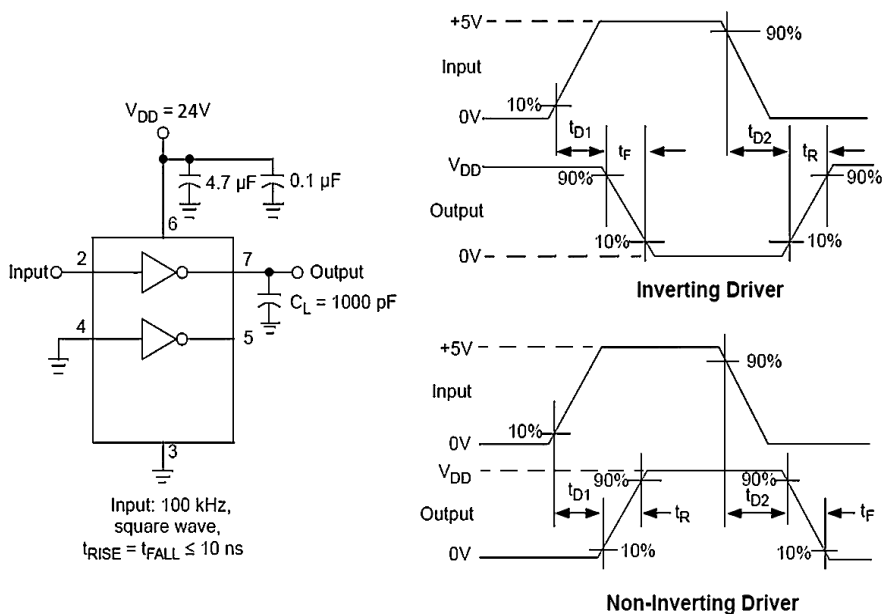
(Typical values are tested at  $T_A=25\text{ }^\circ\text{C}$ ,  $V_{DD}=18\text{V}$ )

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>INPUT</b>						
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	$I_{IN}$	$0V \leq V_{IN} \leq V_{DD}$			$\pm 1$	$\mu\text{A}$
<b>OUTPUT</b>						
Pull-Up Resistance	$R_{OH}$	Source Current = 10mA		2.0		$\Omega$
Pull-Down Resistance	$R_{OL}$	Sink Current = -10mA		2.0		$\Omega$
Peak Output Current	$I_{PK}$	Source Current, $f=1\text{kHz}$ , $C_L=1000\text{pF}$		1.5		A
		Sink Current, $f=1\text{kHz}$ , $C_L=1000\text{pF}$		-1.5		
Continuous Output Current	$I_{DC}$	Source / Sink Current		$\pm 200$		mA
<b>POWER SUPPLY</b>						



Power Supply Current	$I_{CC}$	$V_{INA}=V_{INB}=3V$	0.9	mA
		$V_{INA}=V_{INB}=0V$	0.5	
Operating Voltage Range	$V_{DD}$	4.5	25	V
Under-Voltage Lockout ON Threshold		3.6	4	V
Under-Voltage Lockout Hysteresis		0.5		V
<b>SWITCHING CHARACTERISTICS</b>				
Rise Time	$t_R$	$C_L = 1000pF$ , See Figure 3.1	11	ns
Fall Time	$t_F$	$C_L = 1000pF$ , See Figure 3.1	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
<b>OVER-TEMPERATURE PROTECTION</b>				
Thermal Shutdown Threshold			150	$^{\circ}C$
Thermal Shutdown Threshold Hysteresis			25	$^{\circ}C$

### 3.0 Application Information

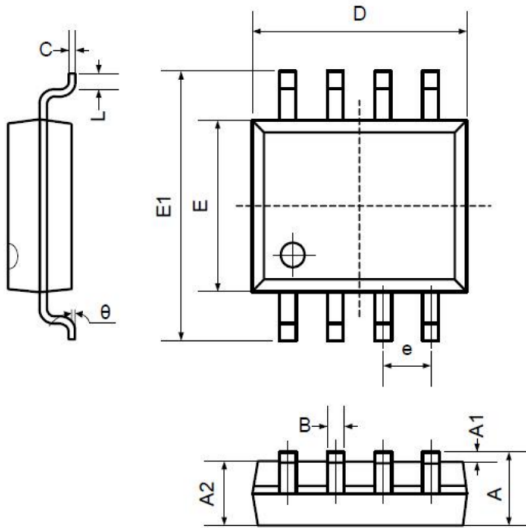


Switching Time Test Circuit



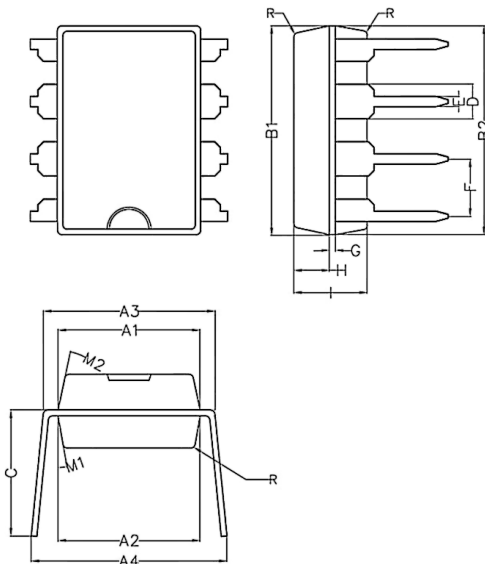
## 4.0 Package Information

### 4.1 SOP8 (Package Outline Dimensions)



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°

### 4.2 DIP8 (Package Outline Dimensions)



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°



## 5.Ordering Informatio

Order Number	Package	Package Quantity	Marking On The park	Temperature
ICL7667CBAZA-T-TUDI	SOP8	Tape,Reel,2500	7667CBAZ	0°C to 70°C
ICL7667CPA-TUDI	DIP8	Tube,50,A box of 2000	7667CPA	
ICL7667EBAZA-T-TUDI	SOP8	Tape,Reel,2500	7667EBAZ	-40°C to 85°C
ICL7667EPA-TUDI	DIP8	Tube,50,A box of 2000	7667EPA	



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