High Speed Dual Low Side Driver

FEATURES

- **Two Independent Gate Drivers**
- **Outputs in Phase with Inputs**
- **Wide Operating Range: 6.5V to 20V**
- **Input Voltages up to VCC**
- **Compatible With 3.3V and 5V Logic Input**
- **Short Delay Time: 50ns at V_{CC} = 15V**
- **Output Rise and Fall Time of 25ns with 1000pF Load at V_{CC} = 15V**
- **Matched Propagation Delay for Both Channels**
- **Low Supply Current: 100μA at V_{CC} = 15V**
- **Leadfree, RoHS Compliant**

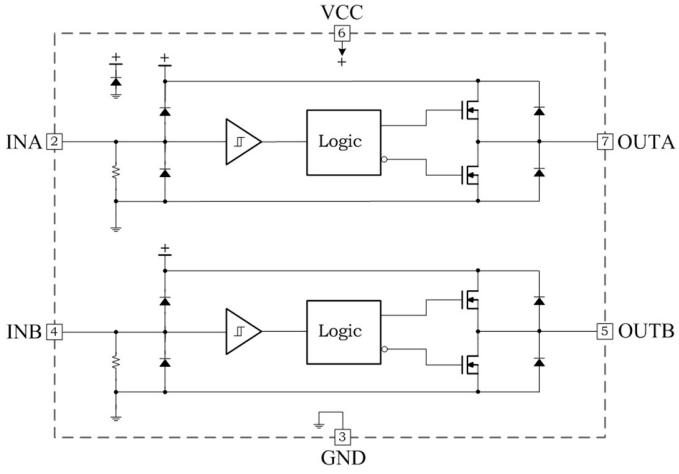
APPLICATIONS

- **Switching Mode Power Supplies**
- **Motor Drivers**
- **General Purpose Dual Low Side Drivers**

GENERAL DESCRIPTION

The TS6227 is a dual channel, high speed power MOSFET and IGBT driver, which is designed for applications that require low current signals to drive large capacitive loads with high speed. The input current is very low so that it is compatible with standard CMOS or LSTTL output. The output drivers feature a high pulse current buffer stage designed for minimum rise and fall time. Propagation delays between two channels are matched. Excellent latch immune performance is obtained.

BLOCK DIAGRAM



PIN Configuration

TS6227

NC	1	8	NC
INA	2	7	OUTA
GND	3	6	VCC
INB	4	5	OUTB

SOP8/DIP8

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ORDERING INFORMATION

Product	Part Number	Eco Plan	Package	Container, Pack Qty
TS6227	TS6227DIP8R	RoHS	DIP8	Rail, 50
TS6227	TS6227SOP8R	RoHS	SOP8	Reel, 2500

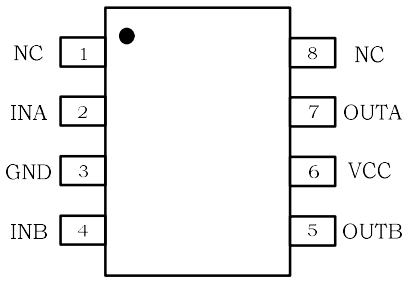
ABSOLUTE MAXIMUM RATINGS

Parameter	Min	Max	Unit
VCC to GND	-0.3	20	V
Input Voltage	- 0.3	VCC + 0.3	V
Output Voltage	- 0.3	VCC + 0.3	V
Logic Input Voltage	- 0.3	VCC + 0.3	V
Package power dissipation @ TA ≤ 50° C	--	800	mW
Thermal resistance, junction to ambient	--	125	°C/W
Junction temperature	--	150	°C
Storage Temperature	-55	150	°C
Lead Temperature (Soldering, 10s)	--	300	°C
Operating Temperature	-40	125	°C
ESD HBM	Class 3A (per EIA/JEDEC standard EIA/JESD22-A114)		
IC Latch-Up Test at room temperature	Class I, Level A (per JESD78)		

ESD CAUTION

ESD (Electrostatic Discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjects to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

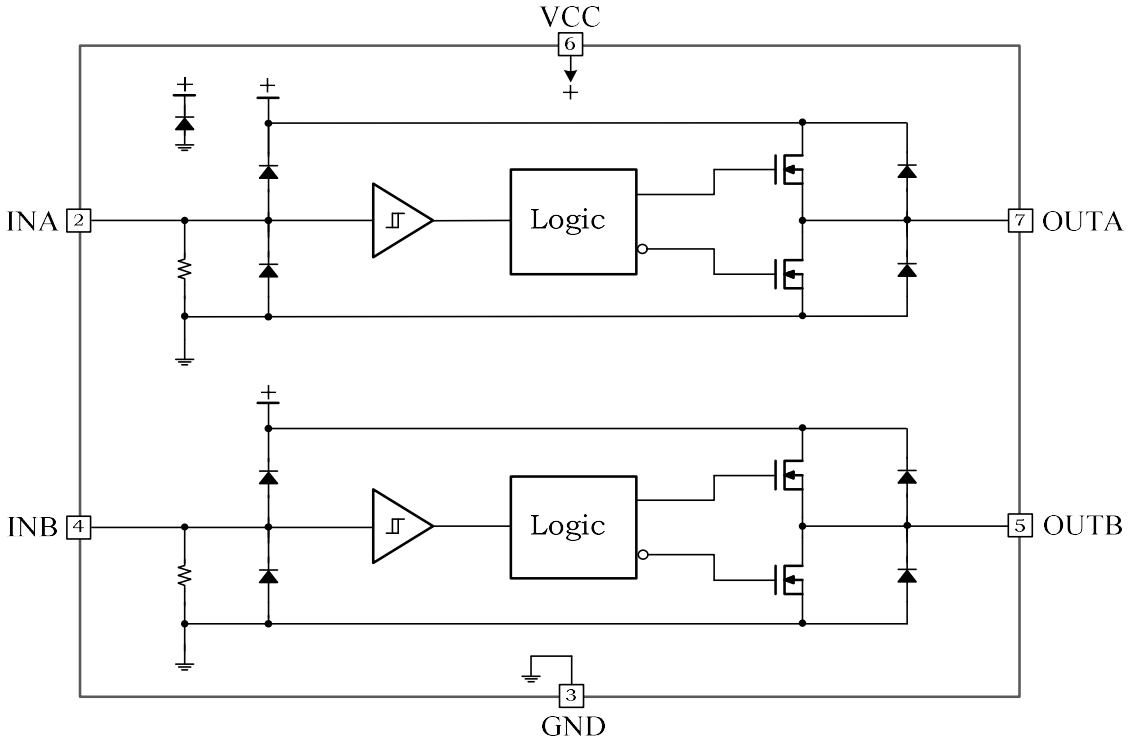
PIN Configuration



PIN DEFINITIONS

PIN No.	SYMBOL	FUNCTION
1	NC	No Connection
2	INA	Logic Input of Channel A
3	GND	Ground
4	INB	Logic Input of Channel B
5	OUTB	Output of Channel B, OUTB and INB are in the same phase
6	VCC	Power Supply
7	OUTA	Output of Channel A, OUTA and INA are in the same phase
8	NC	No Connection

BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS

Electrical characteristics listed here are measured at V_{CC} = 15V, T_A = 25℃ unless otherwise specified.

Symbol	Parameter	Testing Conditions	Min	Typ	Max	Unit
Input Characteristics						
V_{IH}	Logic 1 Input Voltage		2.5	--	--	V
V_{IL}	Logic 0 Input Voltage		--	--	0.8	
I_{IN+}	Logic 1 Input Current		--	5	15	μA
I_{IN-}	Logic 0 Input Current		--	0	--	
Output Characteristics						
V_{OH_0mA}	High Output Voltage	I_o = 0mA	13.2	--	--	V
V_{OH_20mA}		I_o = 20mA	--	13.0	--	
V_{OH_60mA}		I_o = 60mA	--	12.6	--	
V_{OH_200mA}		I_o = 200mA	--	11.7	--	
V_{OL_20mA}	Low Output Voltage	I_o = 20mA	--	--	0.15	
V_{OL_60mA}		I_o = 60mA	--	0.06	--	
V_{OL_200mA}		I_o = 200mA	--	0.22	--	
I_{O+}	Peak Output Current	INA (INB) = 5V, OUTA (OUTB) = 0	--	2.3	--	A
I_{O-}		INA (INB) = 0, OUTA (OUTB) = V_{CC}	--	3.3	--	
Power Supply						
I_{Q+}	Quiescent Supply Current	INA = INB = 5V	--	100	200	μA
I_{Q-}		INA = INB = 0V	--	80	180	
V_{CC_Clamp}		I_{Q+} = 5mA	--	22.0	--	V
Switching Time Characteristics						
t_{on}	Turn-on Propagation Delay	Refer to Figure 3	--	50	95	ns
t_{off}	Turn-off Propagation Delay		--	50	95	
t_r	Output Rise Time		--	25	55	
t_f	Output Fall Time		--	25	55	

APPLICATION NOTES & ADDITIONAL DETAILS

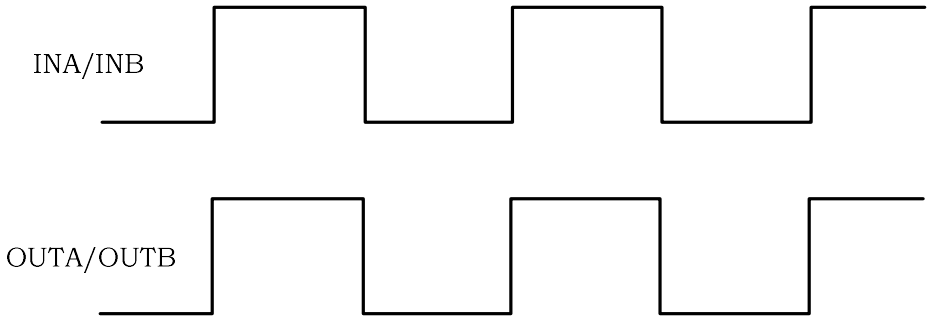


Figure 1. OUT and IN are in the same phase

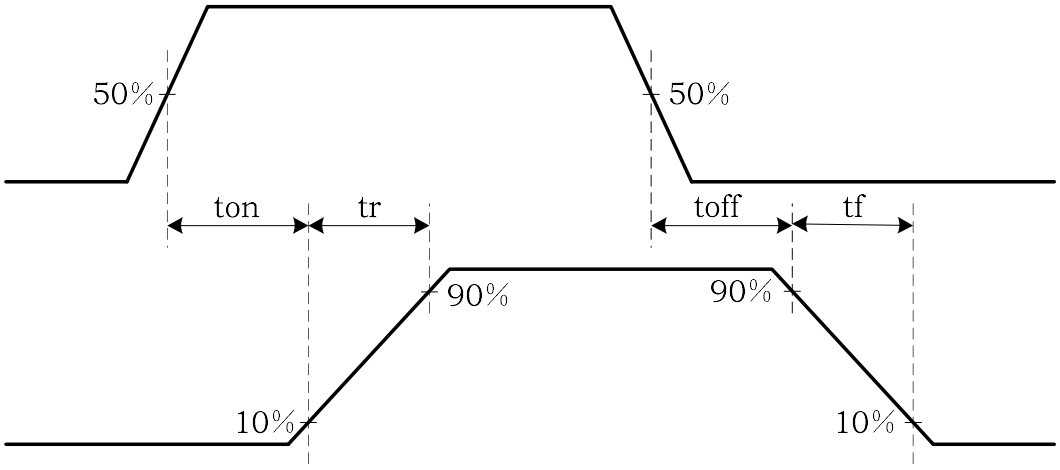


Figure 2. Switching Time Waveform Definitions

APPLICATION NOTES & ADDITIONAL DETAILS (CONTINUED)

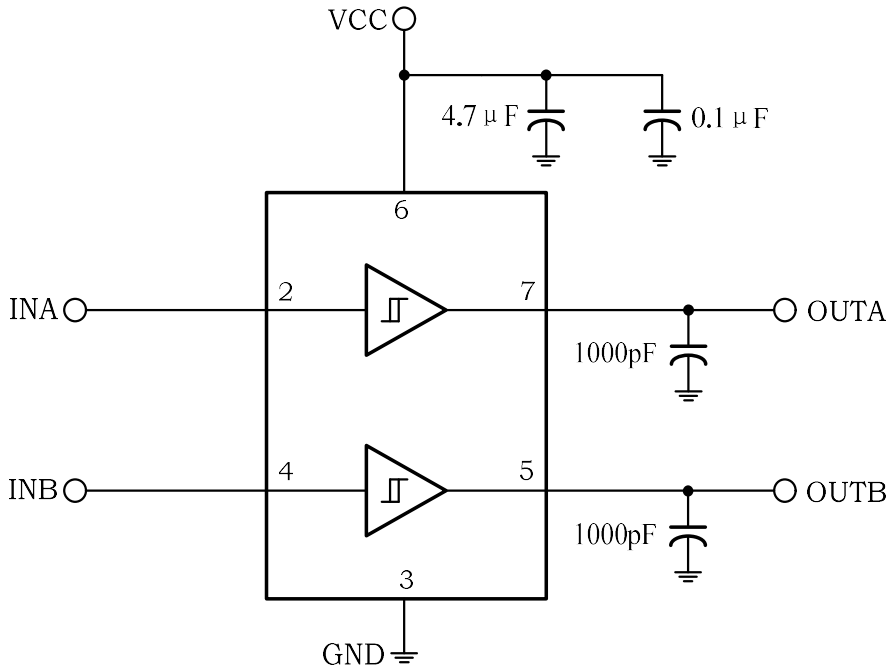
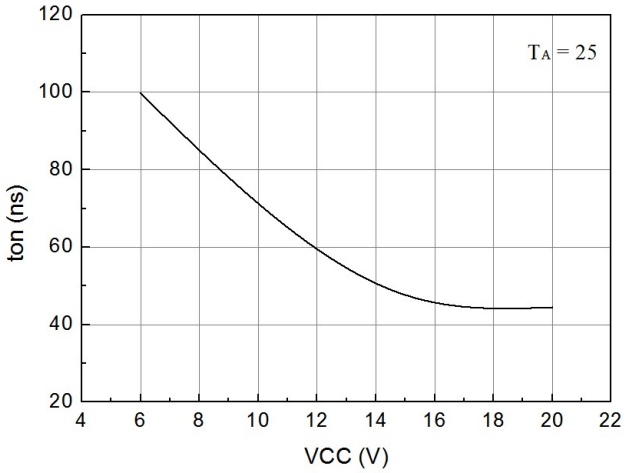


Figure 3. Test Circuit for Switching Time

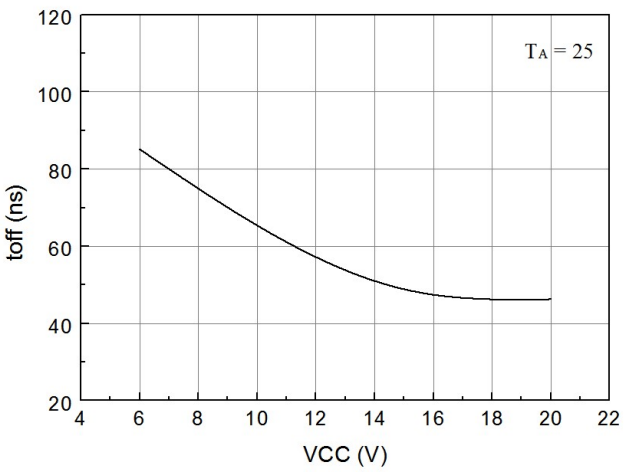
TYPICAL CHARACTERISTICS

Electrical characteristics listed are measured at V_{CC} = 15V,C_{LOAD} = 100pF, T_A = 25℃.

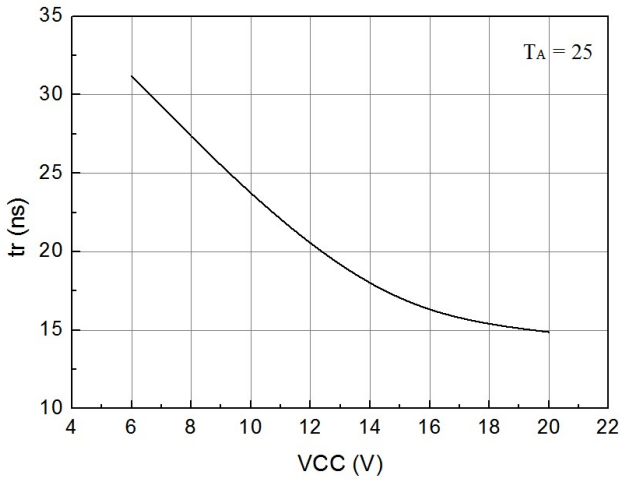
Turn-on Propagation Delay versus VCC



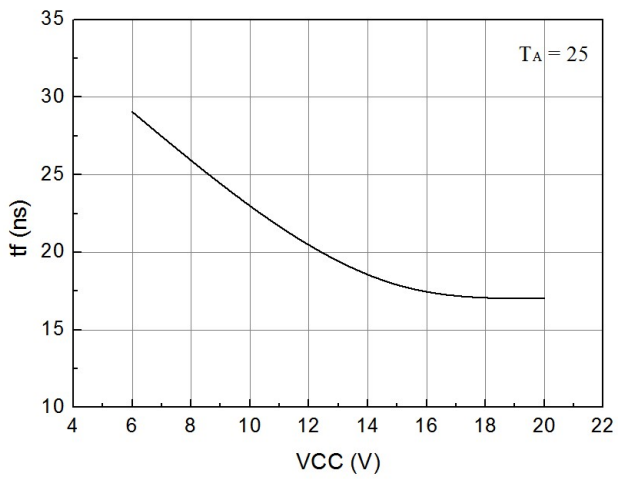
Turn-off Propagation Delay versus VCC



Output Rise Time versus VCC



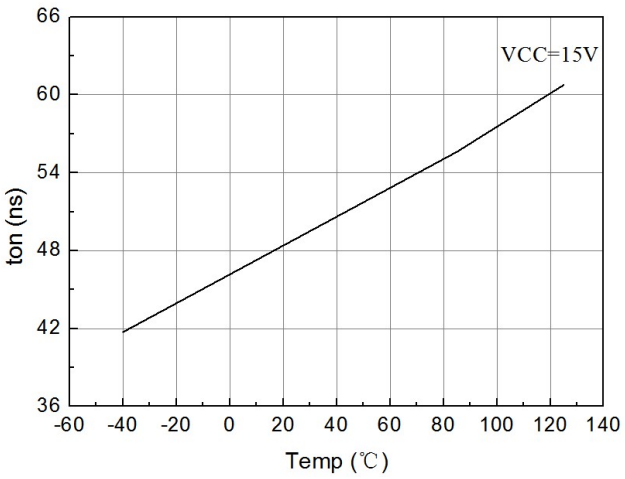
Output Fall Time versus VCC



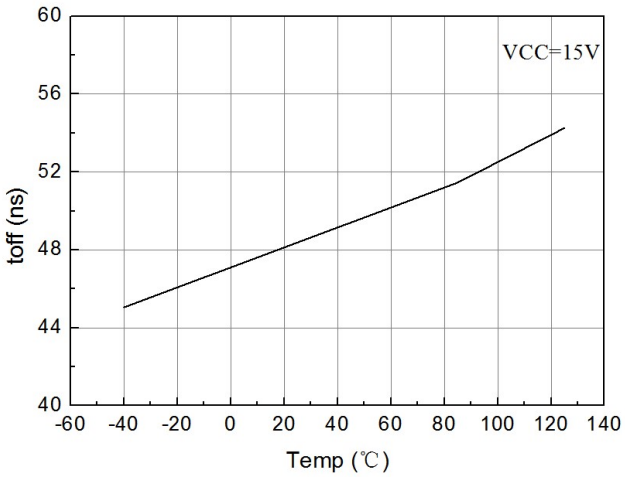
TYPICAL CHARACTERISTICS (CONTINUED)

Electrical characteristics listed are measured at V_{CC} = 15V,C_{LOAD} = 100pF, T_A = 25℃.

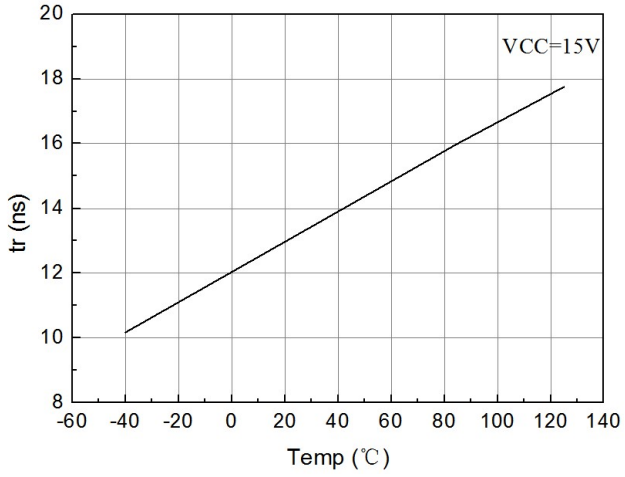
Turn-on Propagation Delay versus Temp



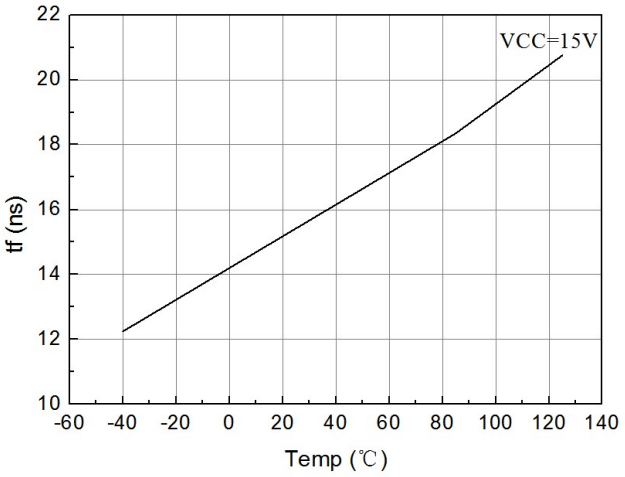
Turn-off Propagation Delay versus Temp



Output Rise Time versus Temp

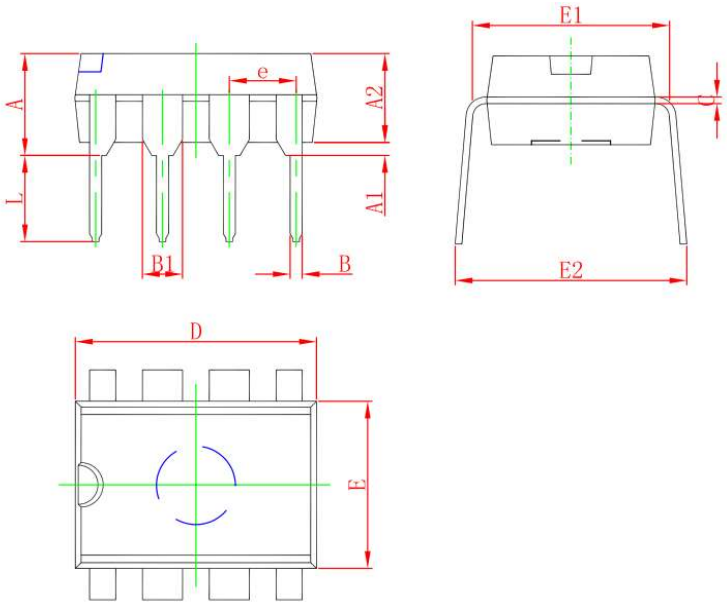


Output Fall Time versus Temp



MECHANICAL DIMENSIONS

DIP8 PACKAGE MECHANICAL DRAWING

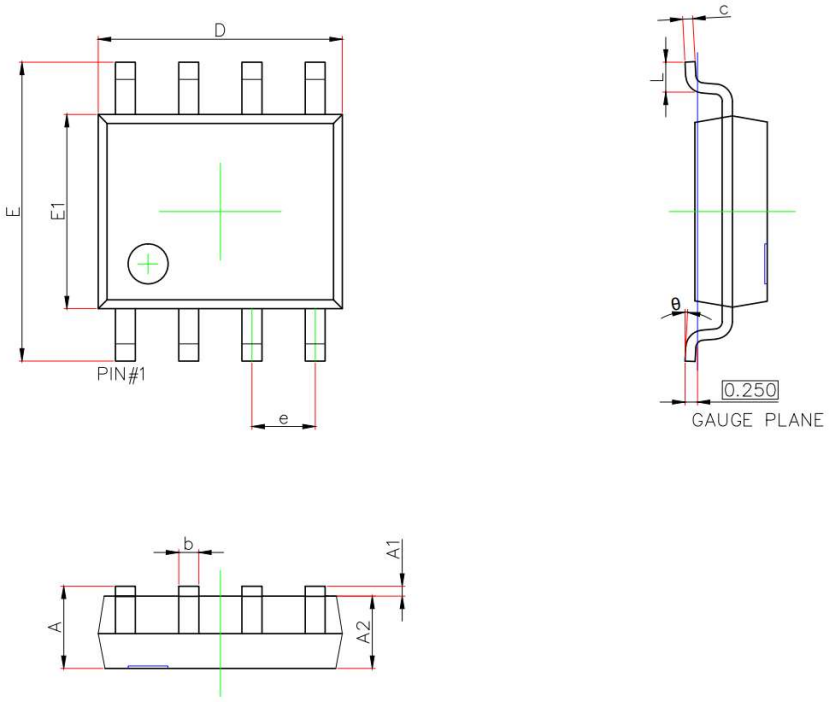


DIP8 PACKAGE MECHANICAL SPECIFICATIONS

Symbol	Dimensions			
	Millimeters		Inches	
	Min	Max	Min	Max
A	3.710	4.310	0.146	0.170
A1	0.510		0.020	
A2	3.200	3.600	0.126	0.142
B	0.380	0.570	0.015	0.022
B1	1.524（BSC）		0.060（BSC）	
C	0.204	0.360	0.008	0.014
D	9.000	9.400	0.354	0.370
E	6.200	6.600	0.244	0.260
E1	7.320	7.920	0.288	0.312
e	2.540（BSC）		0.100（BSC）	
L	3.000	3.600	0.118	0.142
E2	8.400	9.000	0.331	0.354

MECHANICAL DIMENSIONS（CONTINUED）

SOP8 PACKAGE MECHANICAL DRAWING



SOP8 PACKAGE MECHANICAL SPECIFICATIONS

Symbol	Dimensions			
	Millimeters		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	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270（BSC）		0.050（BSC）	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°