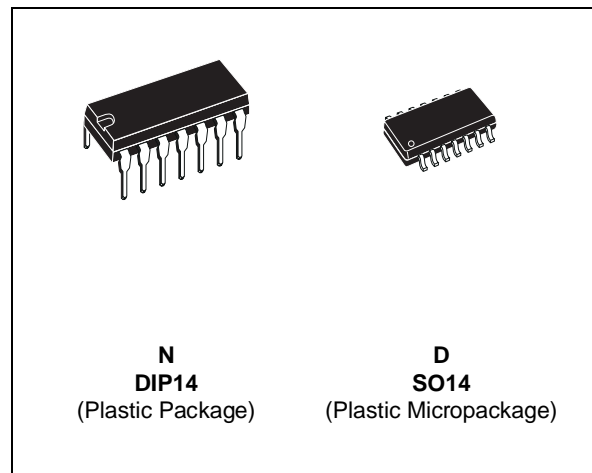




## 15V TRIPLE IGBT/MOS DRIVER

- THREE POWER IGBT/MOS OR PULSE TRANSFORMER DRIVERS
- CURRENT SENSE COMPARATOR WITH 1ms INHIBITION TIME FUNCTION
- INSTANTANEOUS SIGNAL TRANSMISSION
- 0.6 Amp PER CHANNEL PEAK OUTPUT CURRENT CAPABILITY
- LOW OUTPUT IMPEDANCE TYP :  $7\Omega$  at 200mA
- CMOS/LSTTL COMPATIBLE INVERTING INPUT WITH HYSTERESIS
- 13V TO 16V SINGLE SUPPLY OPERATION
- UNDER VOLTAGE LOCKOUT (12.5V)
- CURRENT AMPLIFIER
- LOW BIAS CURRENT TYP : 1.5mA
- DURING POWER UP NO RANDOM OUTPUT STATE
- ENHANCED LATCH-UP IMMUNITY
- CHANNEL PARALLELING CAPABILITY



### ORDER CODES

Part Number	Temperature Range	Package	
		N	D
TD300I	-40°C, +105°C	•	•

### DESCRIPTION

The TD300 is designed to drive one, two or three Power IGBT/MOS and has driving capability for pulse transformer. So it is perfectly suited to interface control IC with Power Switches in low side or half-bridge configuration.

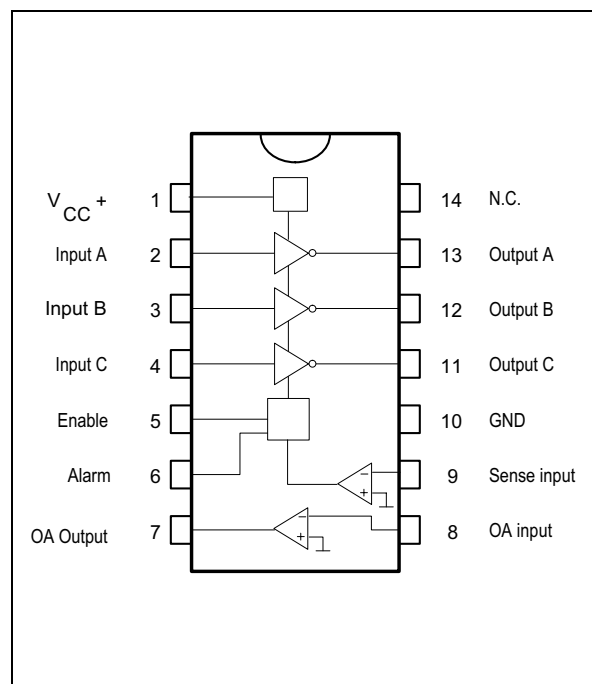
The typical application shown figure 1 implements the TD300 in a pulse controlled half-bridge drive. Positive and negative pulses are applied to the pulse transformer to charge and discharge the IGBT/MOS gate capacitance. More sophisticated secondary circuits provide low impedance gate drive and short-circuit protection as shown in application note AN461.

On Figure 2, TD300 is implemented as a low side driver in a typical 3 phase motor drive.

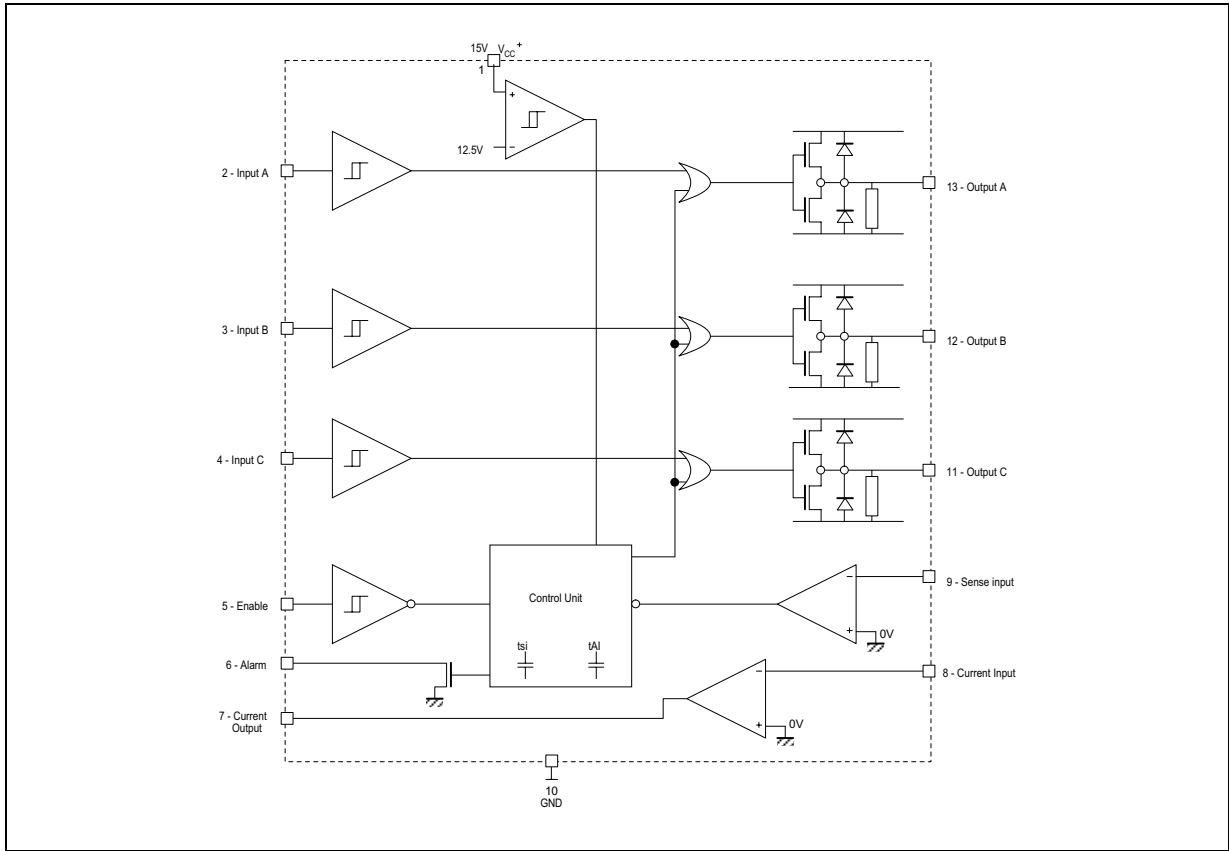
Figure 3 presents a general purpose low side gate drive.

In both case, the current amplifier provides interfacing between a sense resistor and an A/D converter.

### PIN CONNECTIONS



**BLOCK DIAGRAM**



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	Supply Voltage	18	V
V <sub>i</sub>	Input Voltage	0 to V <sub>CC</sub>	V
V <sub>is</sub>	Sense Input Voltage	-0.3 to V <sub>CC</sub>	V
T <sub>j</sub>	Operating Junction Temperature	-40 to 150	°C
T <sub>amb</sub>	Operating Ambient Temperature	-40 to 105	°C
T <sub>stg</sub>	Storage Temperature Range	-65 to 150	°C

**OPERATING CONDITIONS**

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	Supply Voltage	13 to 16	V

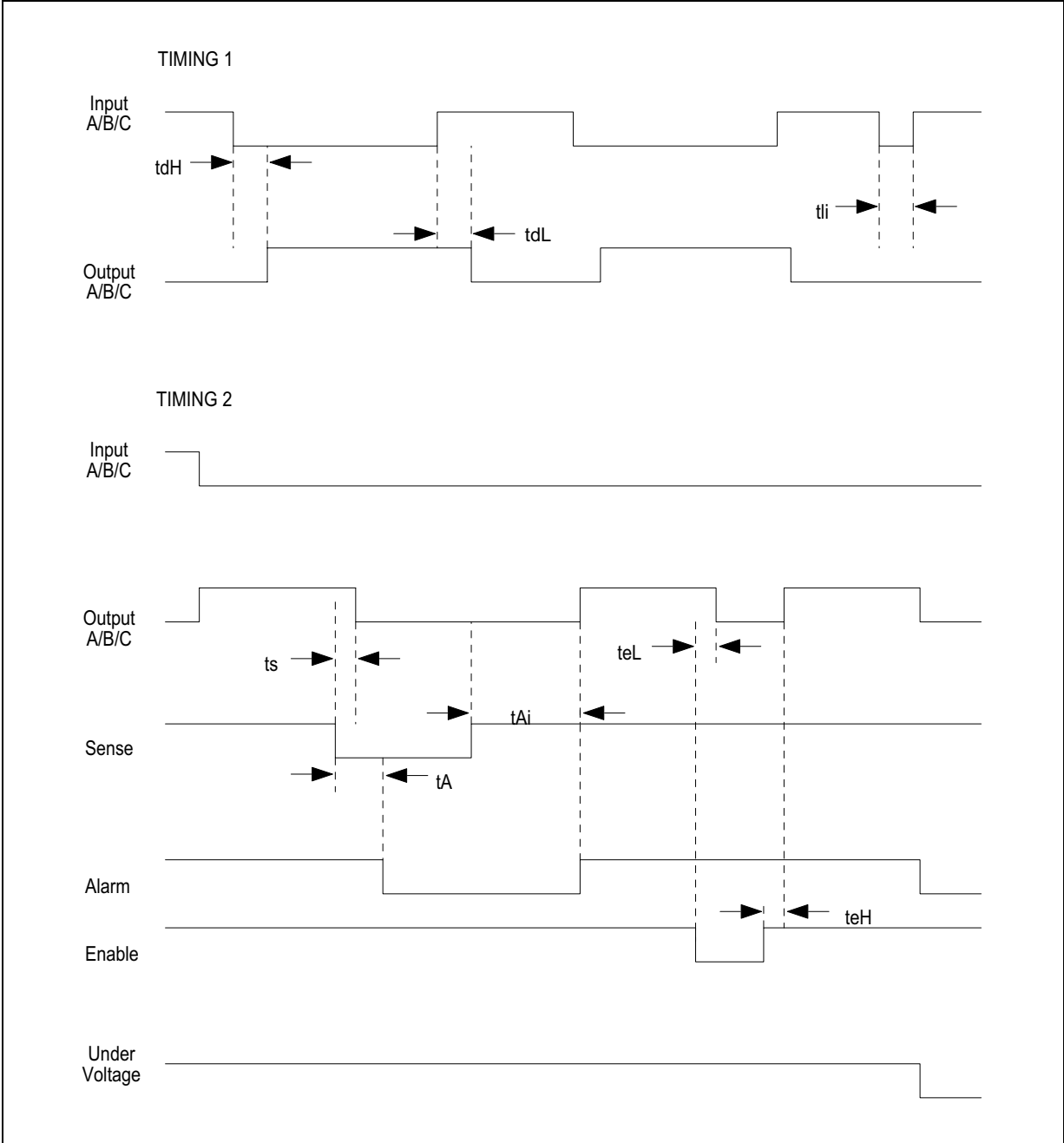
**INSTRUCTIONS FOR USE**

- 1 - The TD300 supply voltage must be decoupled with a 1µF min. capacitor.
- 2 - If the application involving TD300 requires maximum output current capability, this current must be pulsed : pulse width 1µsec, duty cycle 1% at T<sub>amb</sub>.

**ELECTRICAL CHARACTERISTICS**V<sub>CC</sub> = 15V, T<sub>amb</sub> = 25°C (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit
I <sub>CC</sub>	Supply Current with Inputs in High State		1.5	2	mA
<b>LOGIC INPUT (all inputs)</b>					
V <sub>IH</sub>	High Input Voltage	2			V
V <sub>IL</sub>	Low Input Voltage			0.8	V
I <sub>IH</sub>	High Input Current		10		pA
I <sub>IL</sub>	Low Input Current		10		pA
t <sub>dH,t<sub>eL</sub></sub> t <sub>dL,t<sub>eH</sub></sub>	Propagation Delay (10% input to 10% output) Output Delay Output Delay T <sub>min.</sub> ≤ T <sub>amb</sub> ≤ T <sub>max.</sub>		200 60	400 400	ns
t <sub>ij</sub>	Input Inhibiting Time		100		ns
t <sub>dd</sub>	Differential Delay Time Between Channels		20		ns
<b>OUTPUT DRIVERS</b>					
V <sub>sod</sub>	Sourcing Drop Voltage (A/B/C outputs) I <sub>source</sub> = 200mA			3	V
V <sub>sid</sub>	Sinking Drop Voltage (A/B/C outputs) I <sub>sink</sub> = 200mA			5	V
V <sub>dem</sub>	Demagnetising Drop Voltage (A/B/C outputs) I <sub>demag.</sub> = 100mA			2	V
R <sub>opd</sub>	Output Pull Down Resistor		47		kΩ
<b>UNDERVOLTAGE LOCKOUT</b>					
V <sub>hys</sub>	Threshold Hysteresis		0.8		V
V <sub>st</sub>	Internal Start Threshold	11.7		13.3	V
<b>ALARM OUTPUT</b>					
I <sub>s</sub>	Low Level Sinking Current V <sub>O</sub> = 0.8V	5	35		mA
I <sub>sh</sub>	High Level Sinking Current			500	nA
t <sub>A</sub>	Alarm Output : Delay Time to Alarm Fall if Sense Input Triggered			500	ns
<b>SENSE INPUT</b>					
V <sub>ios</sub>	Input Offset Voltage			20	mV
t <sub>Ai</sub>	Inhibition Time if Sense Input Triggered		1		ms
t <sub>s</sub>	Delay Time to Output Fall if Sense Input Triggered All outputs inhibited			600	ns
t <sub>si</sub>	Inhibition Time of Sense Input		300		ns
V <sub>shys</sub>	Sense Hysteresis		40		mV
<b>OPERATIONAL AMPLIFIER</b>					
V <sub>icm</sub>	Common Mode Input Voltage Range	0 to V <sub>CC</sub> <sup>+</sup> - 1.5			V
V <sub>io</sub>	Input Offset Voltage			10	mV
I <sub>io</sub>	Input Offset Current		1		pA
I <sub>o</sub>	Output Short Circuit Current (V <sub>id</sub> = 100mV, V <sub>o</sub> = 0V)		60		mA
V <sub>OL</sub>	Low Level Output Voltage (V <sub>id</sub> = -100mV)		20		mV
V <sub>OH</sub>	High Level Output Voltage (V <sub>id</sub> = 100mV, R <sub>L</sub> = 100kΩ)		8.9		V
GBP	Gain Bandwidth Product		1		MHz
A <sub>vd</sub>	Open Loop Gain	60			dB
SR	Slew Rate at Unity Gain (R <sub>L</sub> = 100kΩ, C <sub>L</sub> = 100pF, V <sub>i</sub> = 3 to 7V)		0.6		V/μs

TIMING DIAGRAM



TYPICAL APPLICATIONS

Figure 1 : THREE PHASE MOTOR HIGH AND LOW SIDE DRIVE

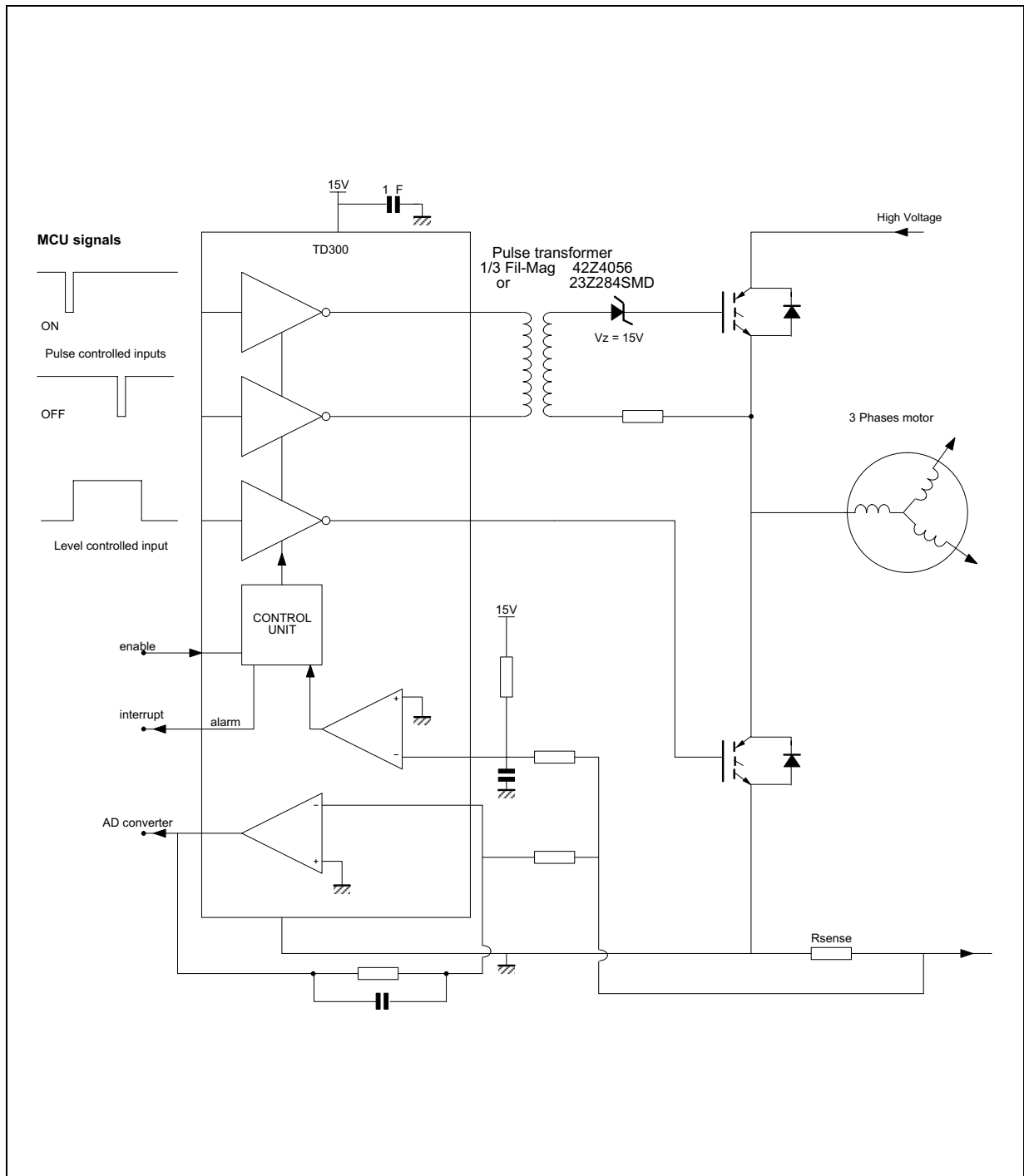


Figure 2 : THREE PHASE MOTOR LOW SIDE DRIVE

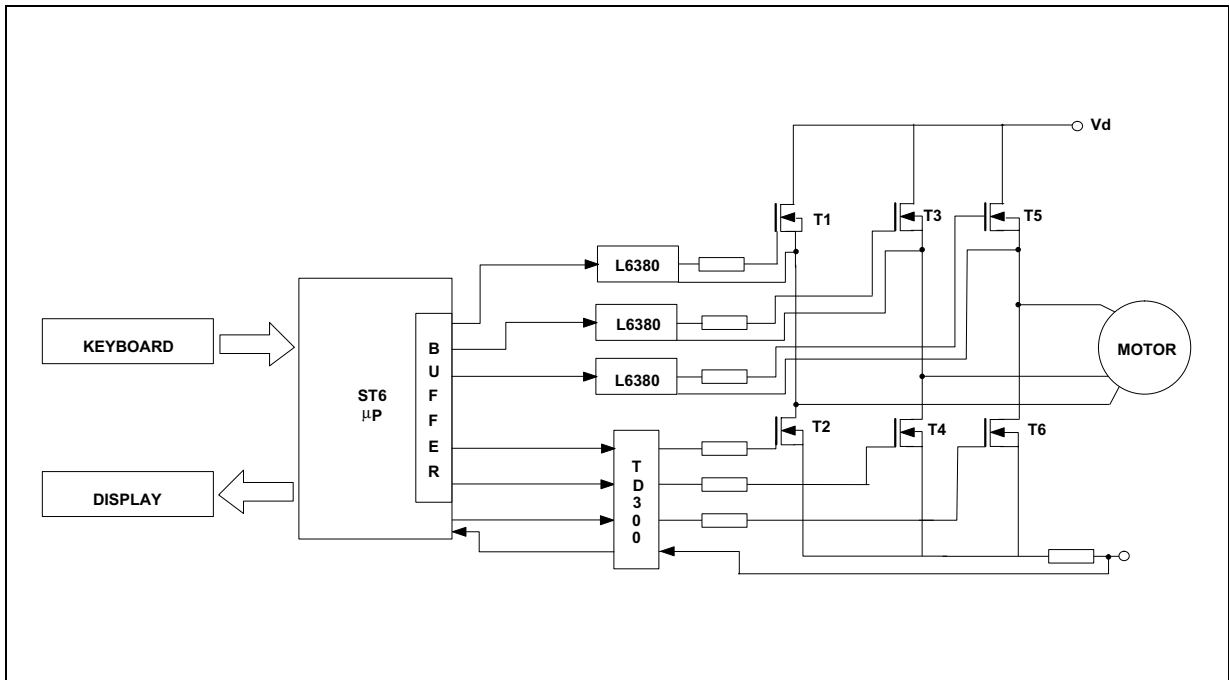
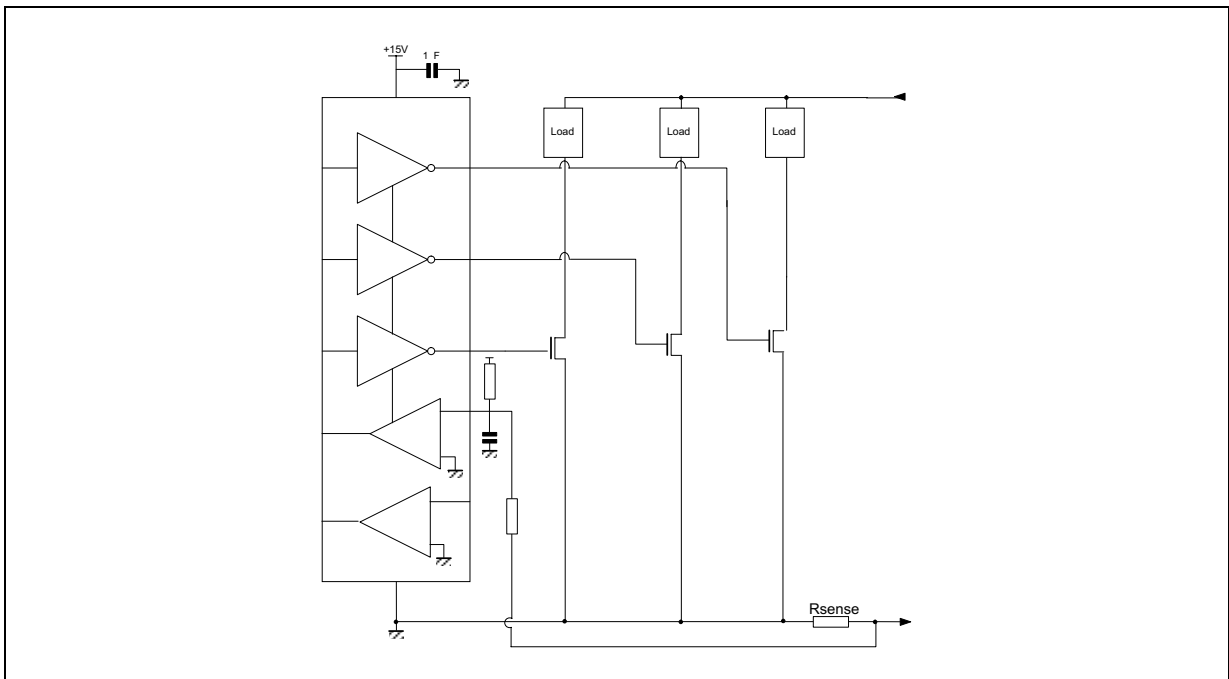
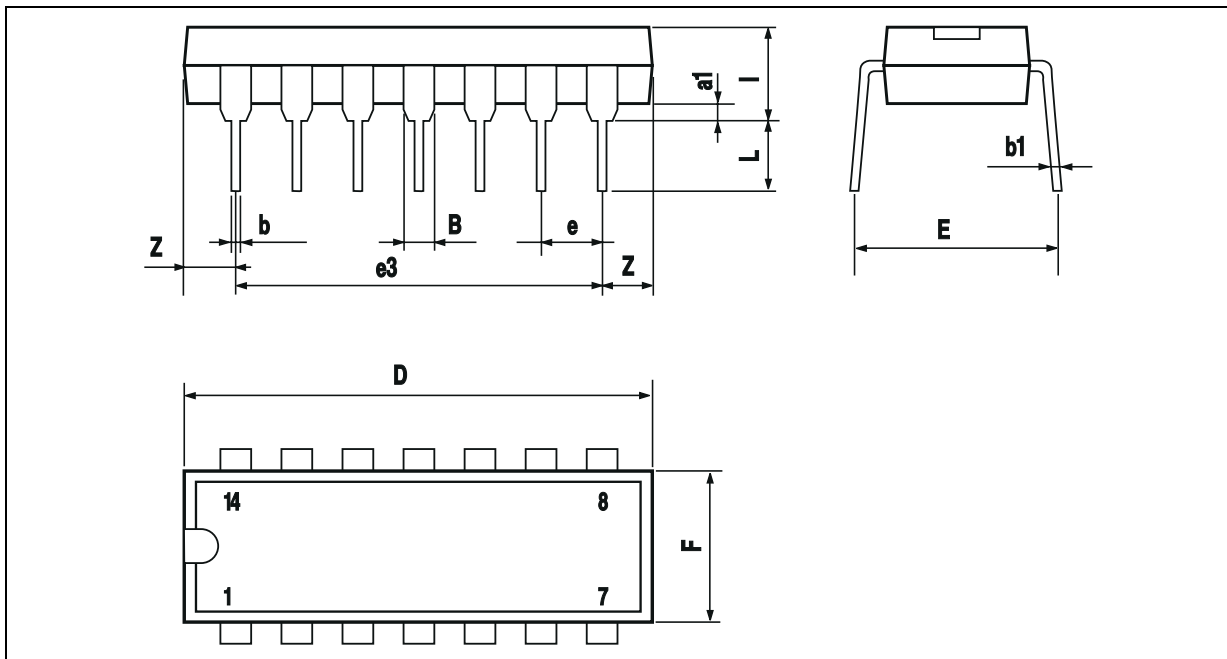


Figure 3 : LOW SIDE DRIVE

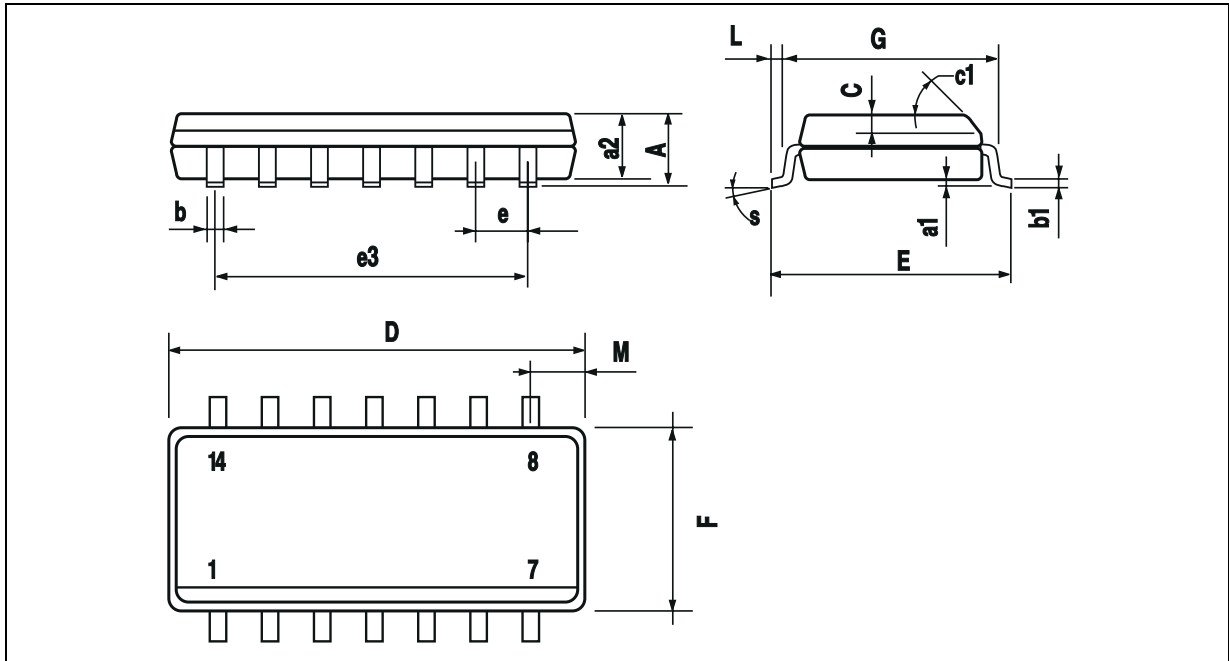


**PACKAGE MECHANICAL DATA**  
14 PINS - PLASTIC DIP



Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
a1	0.51			0.020		
B	1.39		1.65	0.055		0.065
b		0.5			0.020	
b1		0.25			0.010	
D			20			0.787
E		8.5			0.335	
e		2.54			0.100	
e3		15.24			0.600	
F			7.1			0.280
i			5.1			0.201
L		3.3			0.130	
Z	1.27		2.54	0.050		0.100

**PACKAGE MECHANICAL DATA**  
**14 PINS - PLASTIC MICROPACKAGE (SO)**



Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
a1	0.1		0.2	0.004		0.008
a2			1.6			0.063
b	0.35		0.46	0.014		0.018
b1	0.19		0.25	0.007		0.010
C		0.5			0.020	
c1	45° (typ.)					
D	8.55		8.75	0.336		0.334
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		7.62			0.300	
F	3.8		4.0	0.150		0.157
G	4.6		5.3	0.181		0.208
L	0.5		1.27	0.020		0.050
M			0.68			0.027
S	8° (max.)					

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