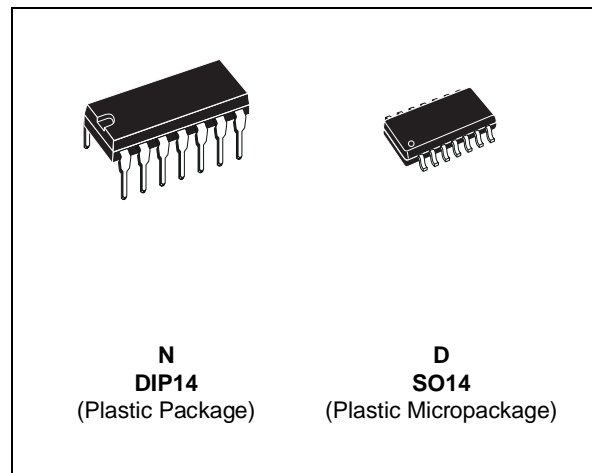




## 15V TRIPLE IGBT/MOS DRIVER

- 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.

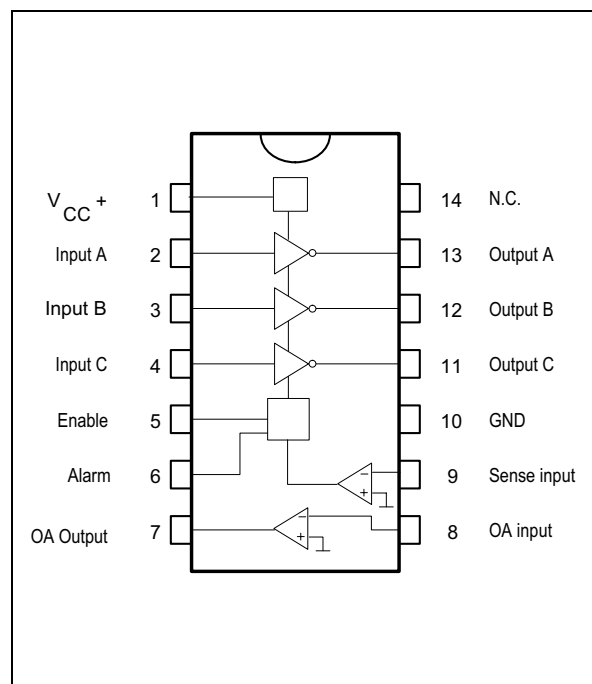
The typical application shown figure 1 implements the TD300 in a pulse controlled half-bridge drive. Positive and negative pulses are applied to the pulse transformer to charge and discharge the IGBT/MOS gate capacitance. More sophisticated secondary circuits provide low impedance gate drive and short-circuit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

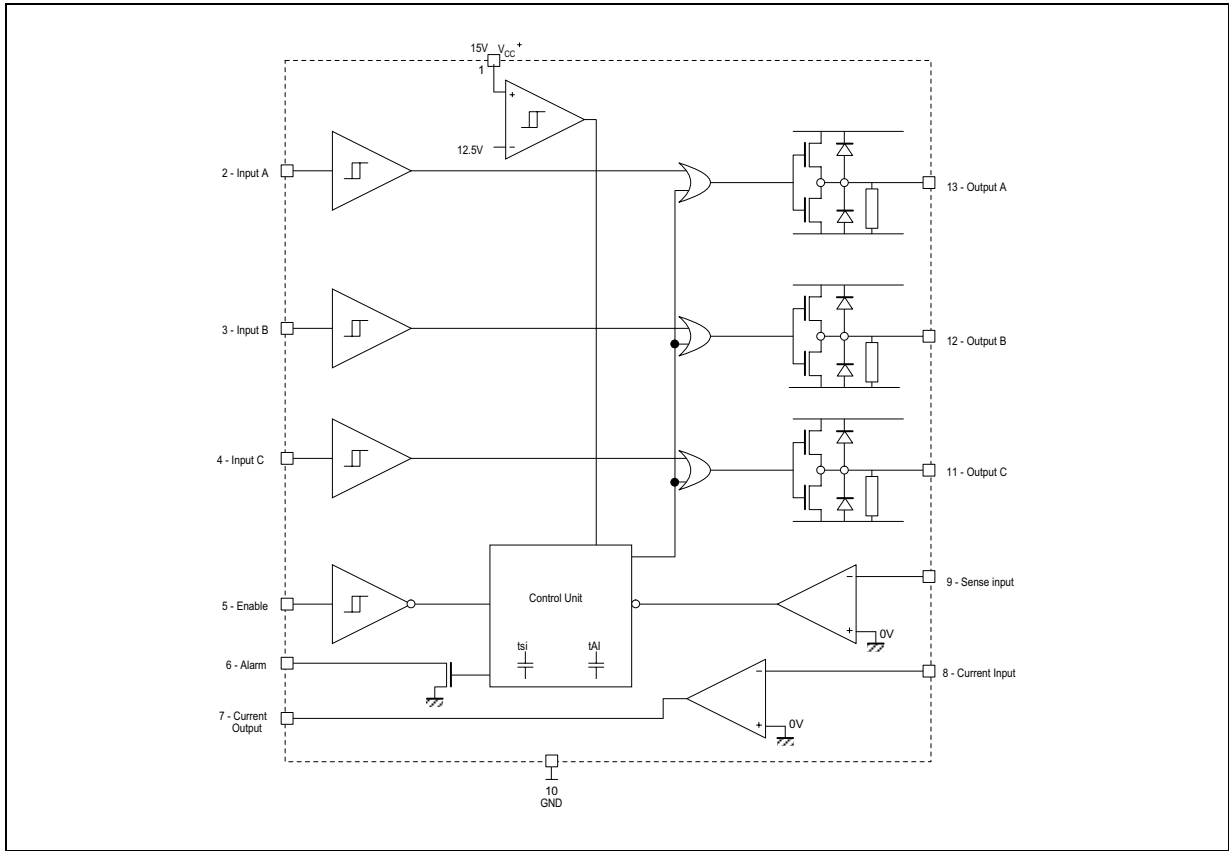
Figure 3 presents a general purpose low side gate drive.

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**

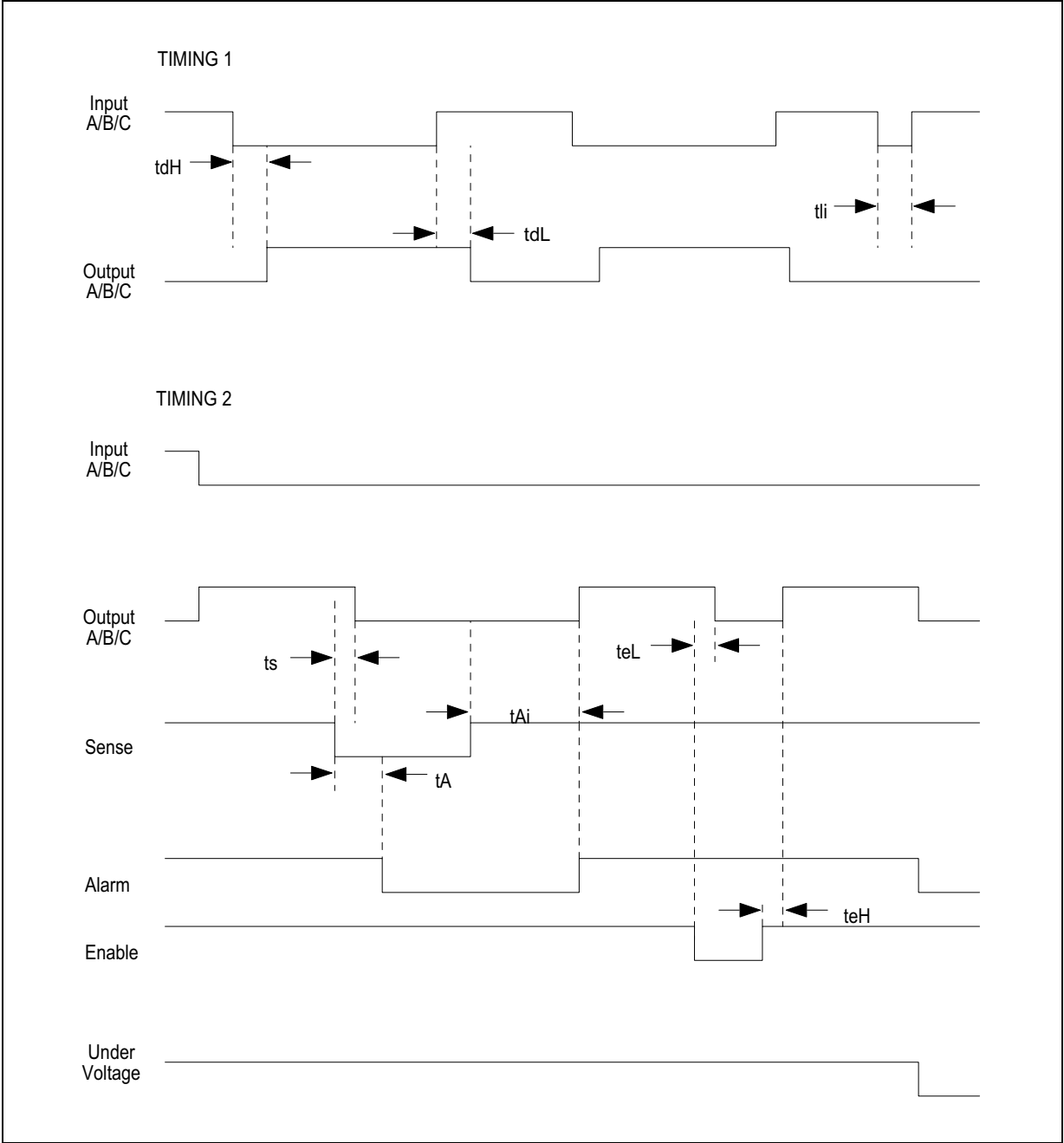
- 1 - The TD300 supply voltage must be decoupled with a 1µF min. capacitor.
- 2 - If the application involving TD300 requires maximum output current capability, this current must be pulsed : pulse width 1µsec, duty cycle 1% at T<sub>amb</sub>.

**ELECTRICAL CHARACTERISTICS**

$V_{CC} = 15V$ ,  $T_{amb} = 25^{\circ}C$  (unless otherwise specified)

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

TIMING DIAGRAM



TYPICAL APPLICATIONS

Figure 1 : THREE PHASE MOTOR HIGH AND LOW SIDE DRIVE

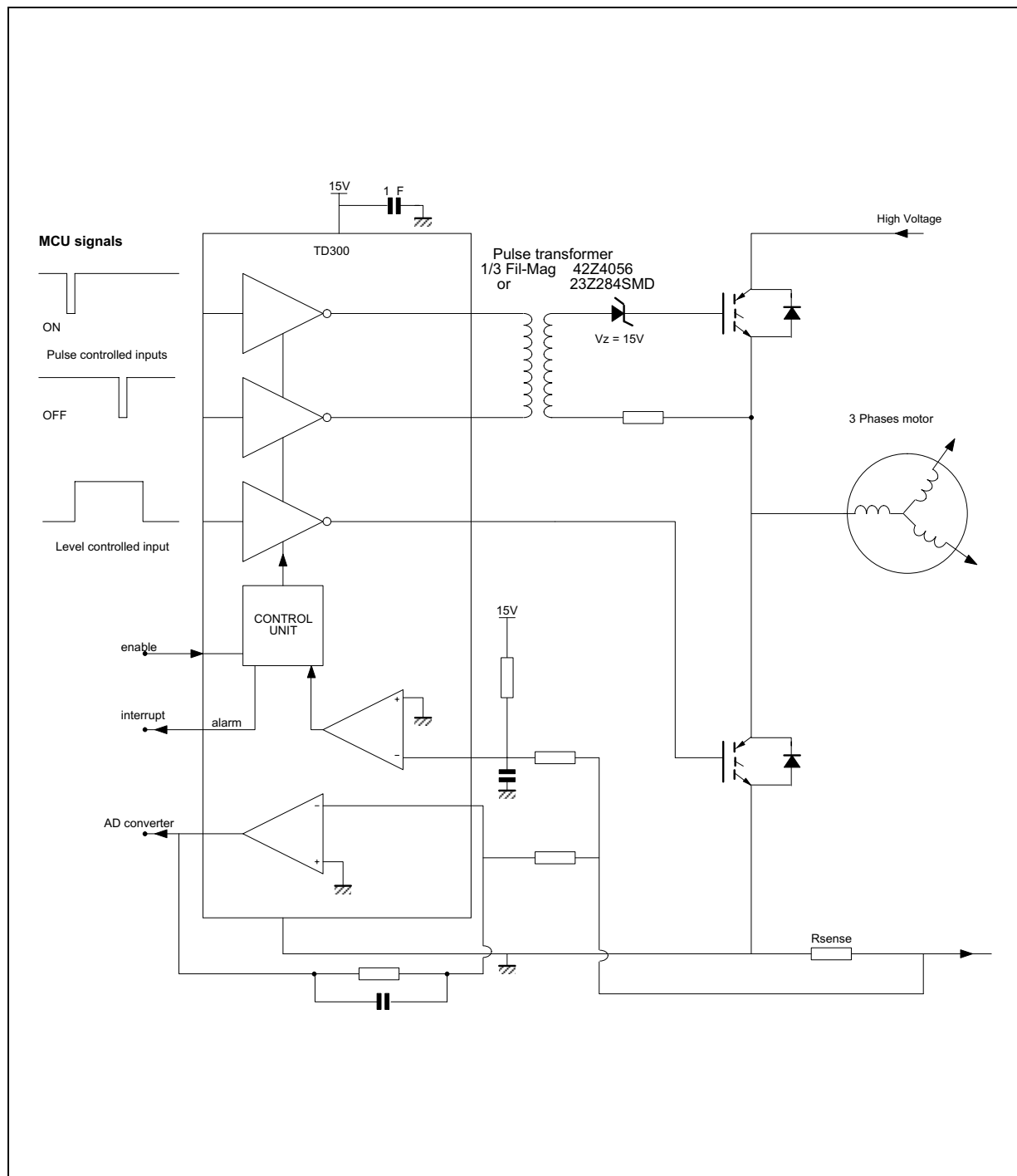


Figure 2 : THREE PHASE MOTOR LOW SIDE DRIVE

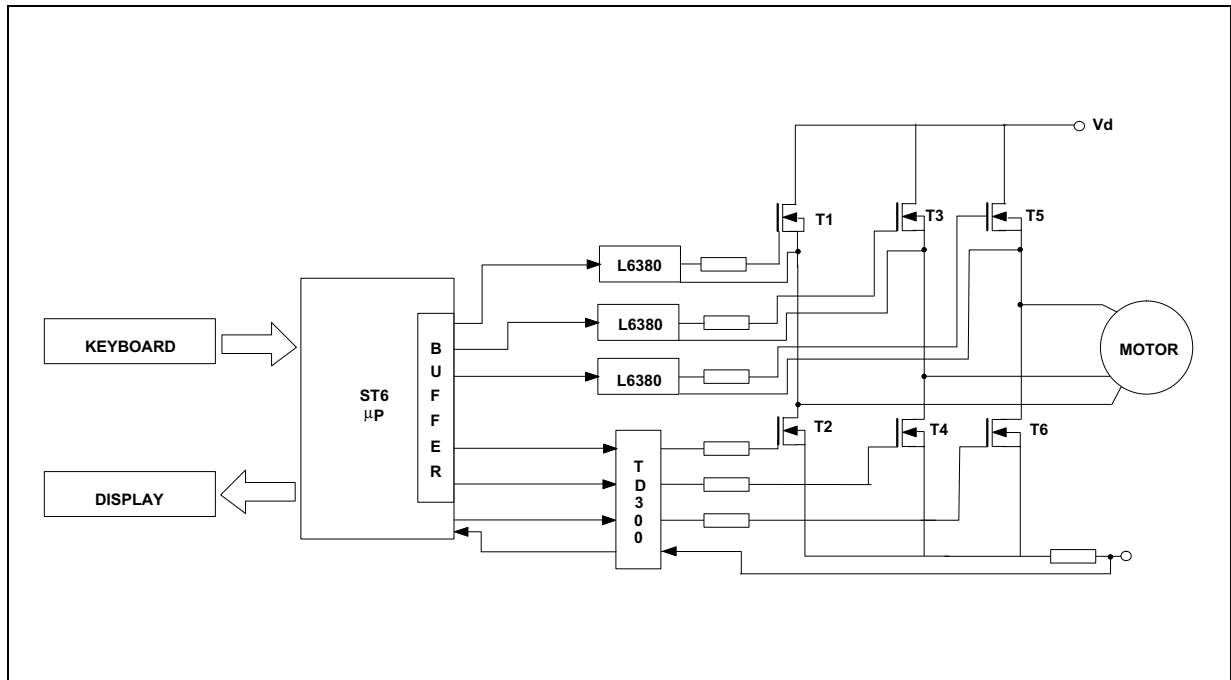
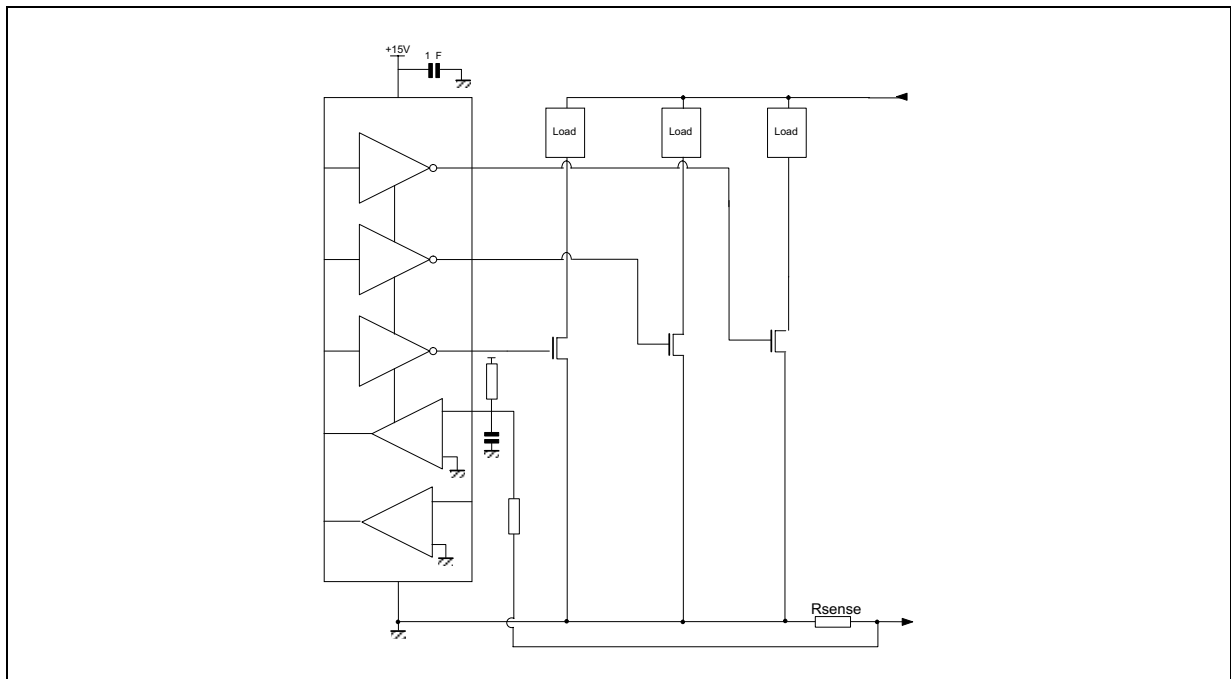
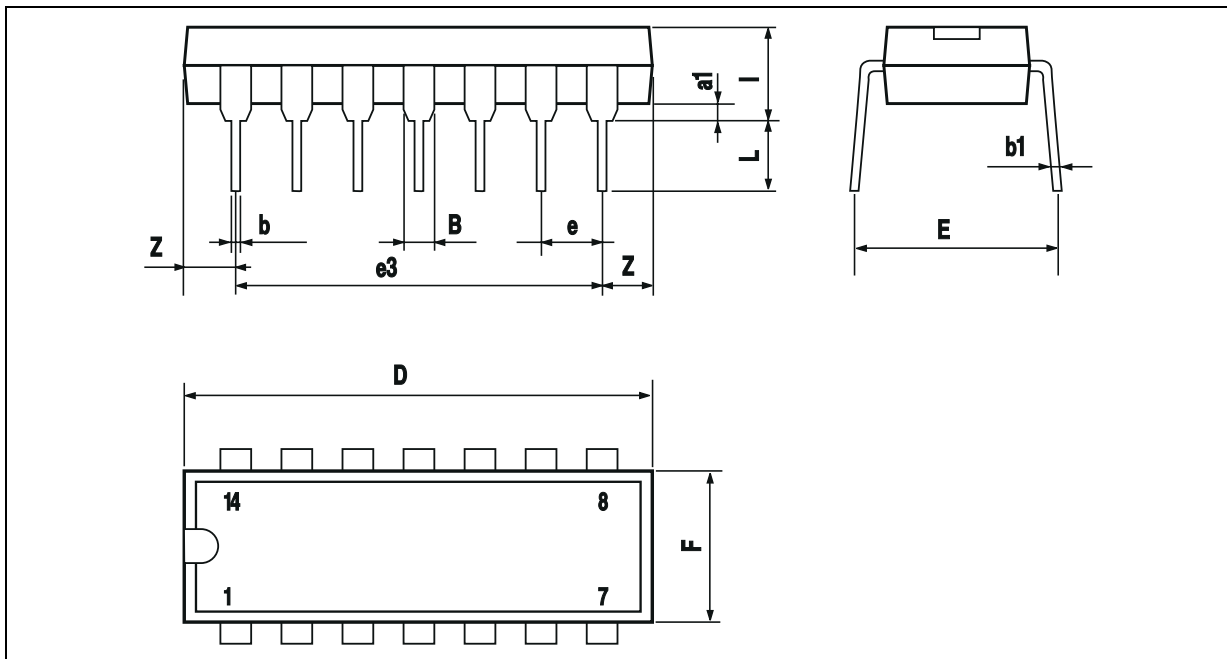


Figure 3 : LOW SIDE DRIVE

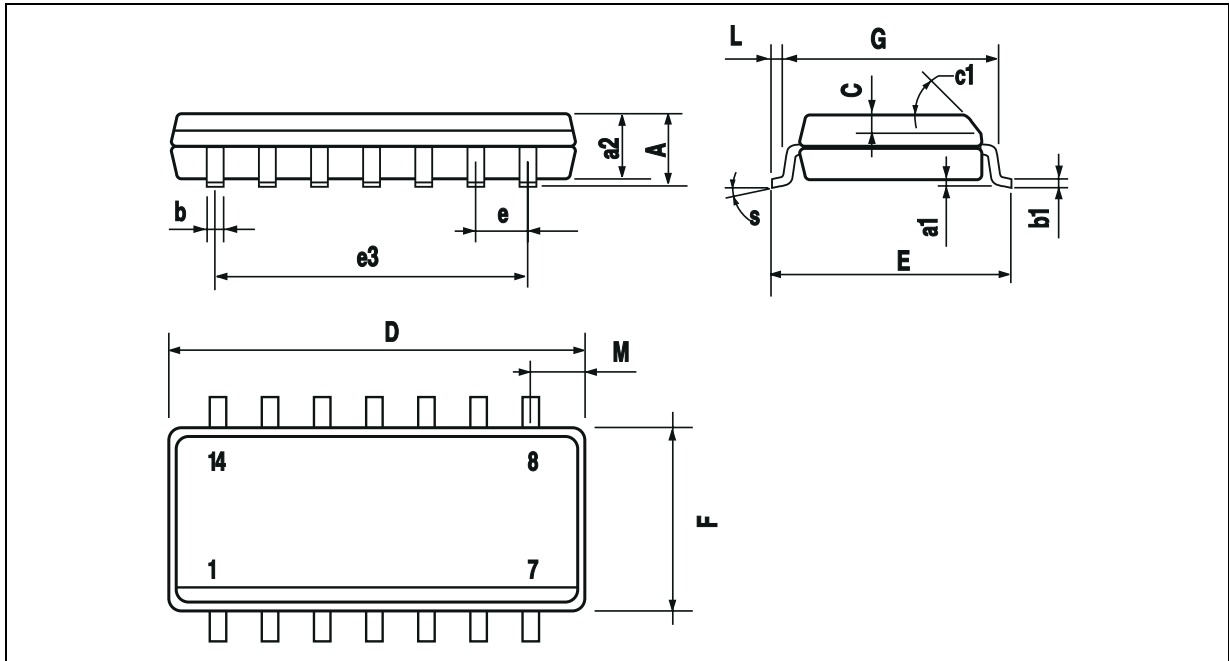


**PACKAGE MECHANICAL DATA**  
14 PINS - PLASTIC DIP



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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