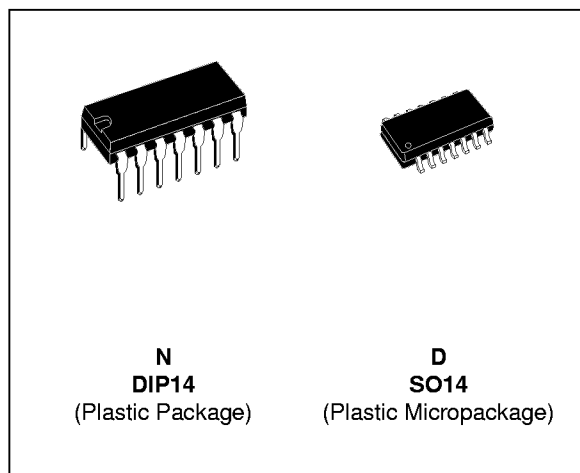


15V TRIPLE IGBT/MOS DRIVER

- 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 : 7Ω 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.

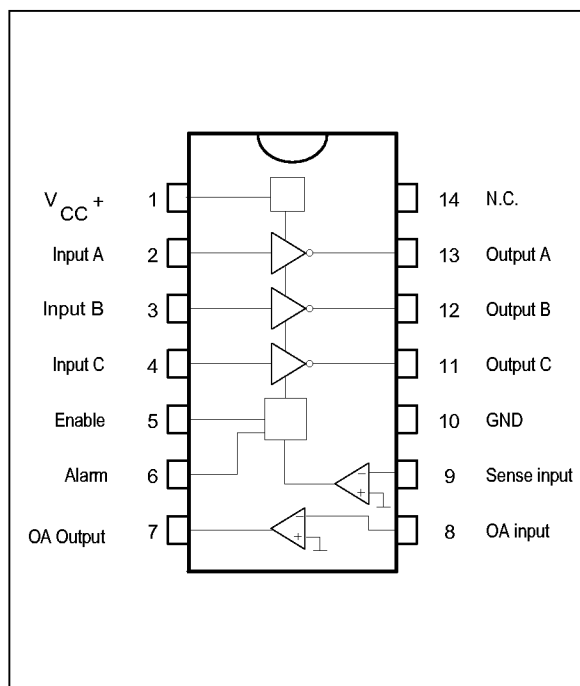
The typical application shown figure 1 implements the TD300 in a pulse controlled half-bridge drive. Positive and negative pulses are applied to the pulse transformer to charge and discharge the IGBT/MOS gate capacitance. More sophisticated secondary circuits provide low impedance gate drive and short-circuit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

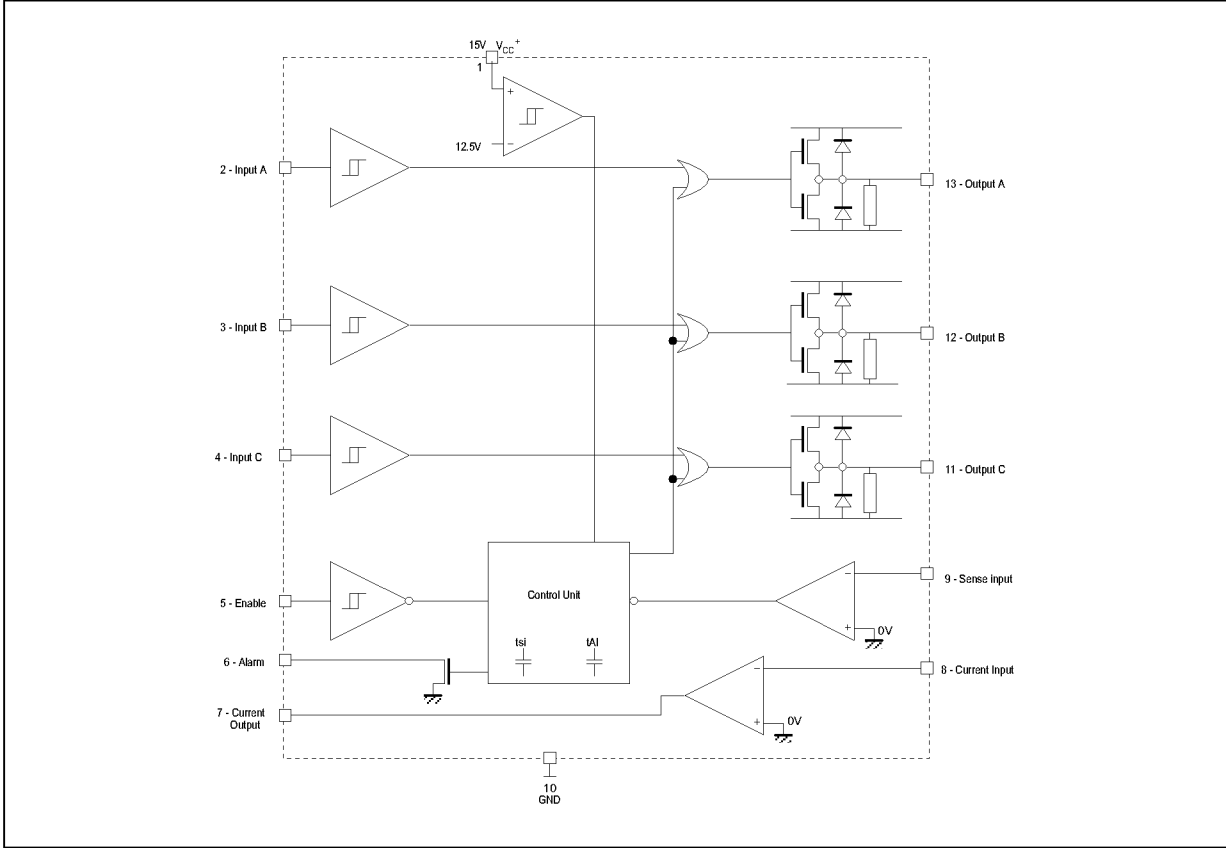
Figure 3 presents a general purpose low side gate drive.

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_{CC}	Supply Voltage	18	V
V_i	Input Voltage	0 to V_{CC}	V
V_{is}	Sense Input Voltage	-0.3 to V_{CC}	V
T_j	Operating Junction Temperature	-40 to 150	°C
T_{amb}	Operating Ambient Temperature	-40 to 105	°C
T_{stg}	Storage Temperature Range	-65 to 150	°C

OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	13 to 16	V

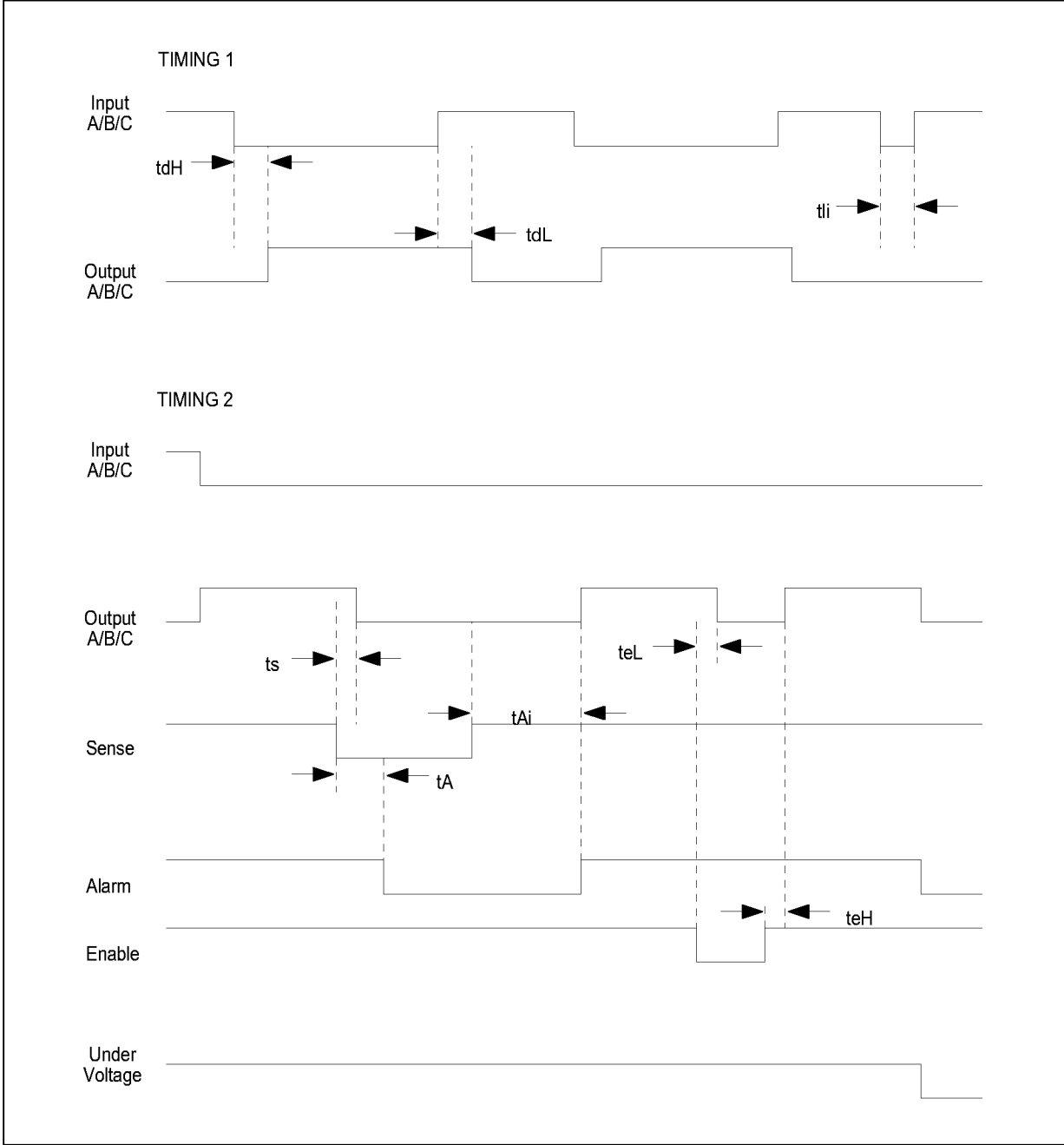
INSTRUCTIONS FOR USE

- 1 - The TD300 supply voltage must be decoupled with a 1 μ F min. capacitor.
- 2 - If the application involving TD300 requires maximum output current capability, this current must be pulsed : pulse width 1 μ sec, duty cycle 1% at T_{amb} .

ELECTRICAL CHARACTERISTICSV_{CC} = 15V, T_{amb} = 25°C (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit
I _{CC}	Supply Current with Inputs in High State		1.5	2	mA
LOGIC INPUT (all inputs)					
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.} ≤ T _{amb} ≤ T _{max.}		200 60	400 400	ns
t _{ij}	Input Inhibiting Time		100		ns
t _{dd}	Differential Delay Time Between Channels		20		ns
OUTPUT DRIVERS					
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		kΩ
UNDERVOLTAGE LOCKOUT					
V _{hys}	Threshold Hysteresis		0.8		V
V _{st}	Internal Start Threshold	11.7		13.3	V
ALARM OUTPUT					
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
SENSE INPUT					
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
OPERATIONAL AMPLIFIER					
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 = 100kΩ)		8.9		V
GBP	Gain Bandwidth Product		1		MHz
A _{vd}	Open Loop Gain	60			dB
SR	Slew Rate at Unity Gain (R _L = 100kΩ, C _L = 100pF, V _i = 3 to 7V)		0.6		V/μs

TIMING DIAGRAM



TYPICAL APPLICATIONS

Figure 1 : THREE PHASE MOTOR HIGH AND LOW SIDE DRIVE

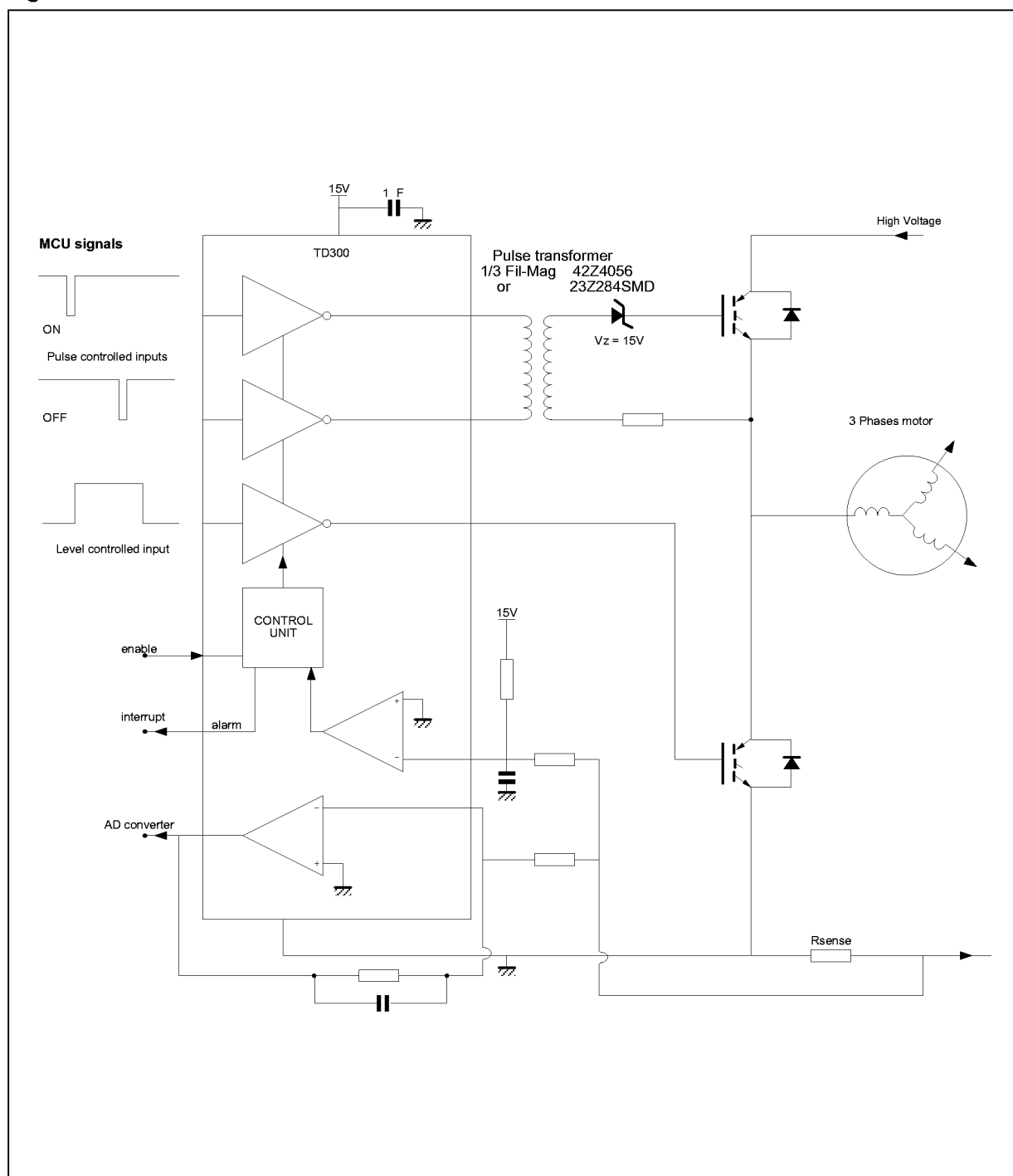


Figure 2 : THREE PHASE MOTOR LOW SIDE DRIVE

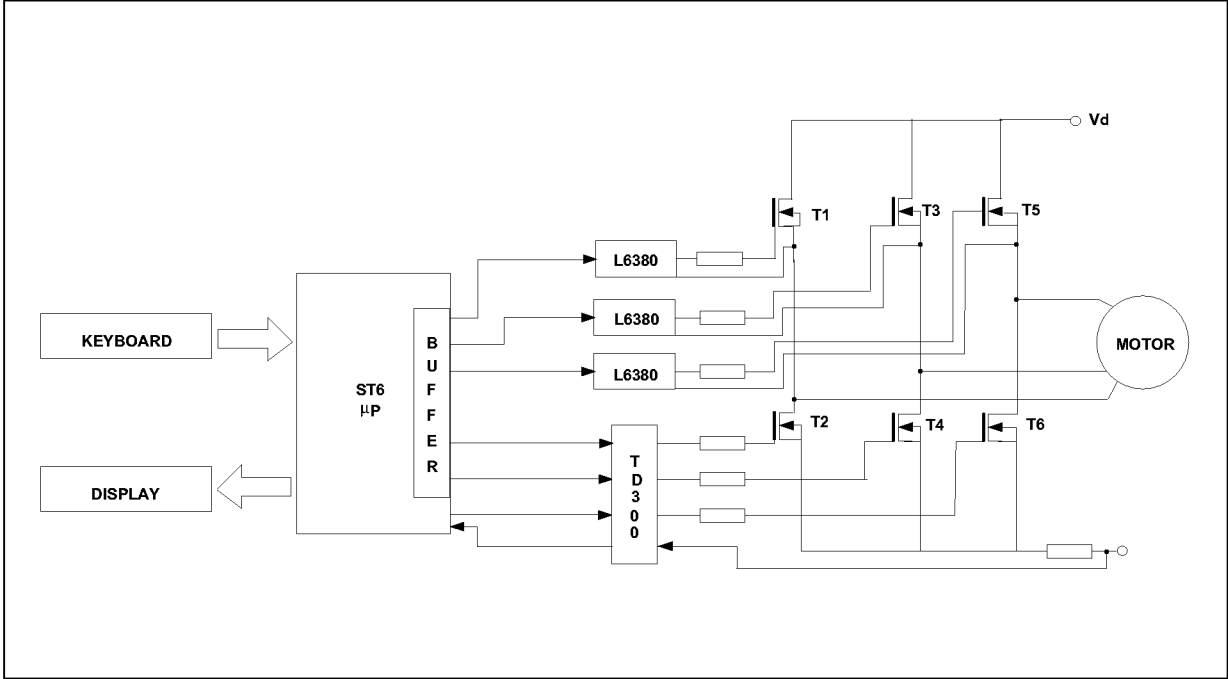
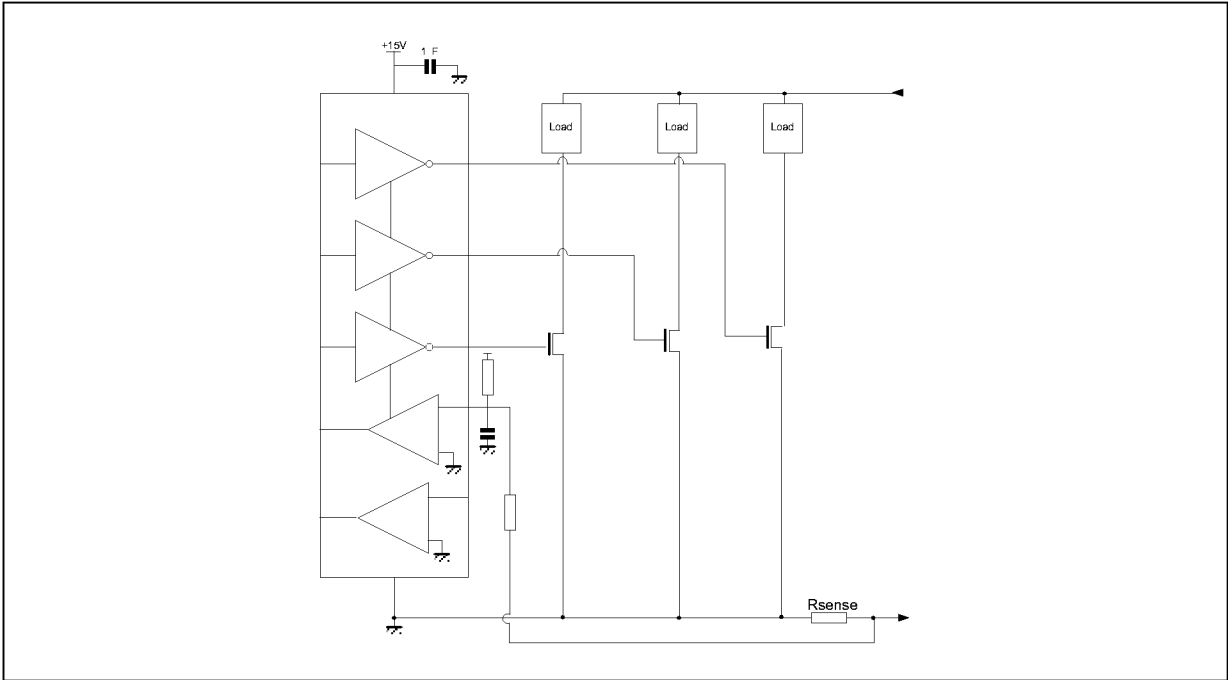
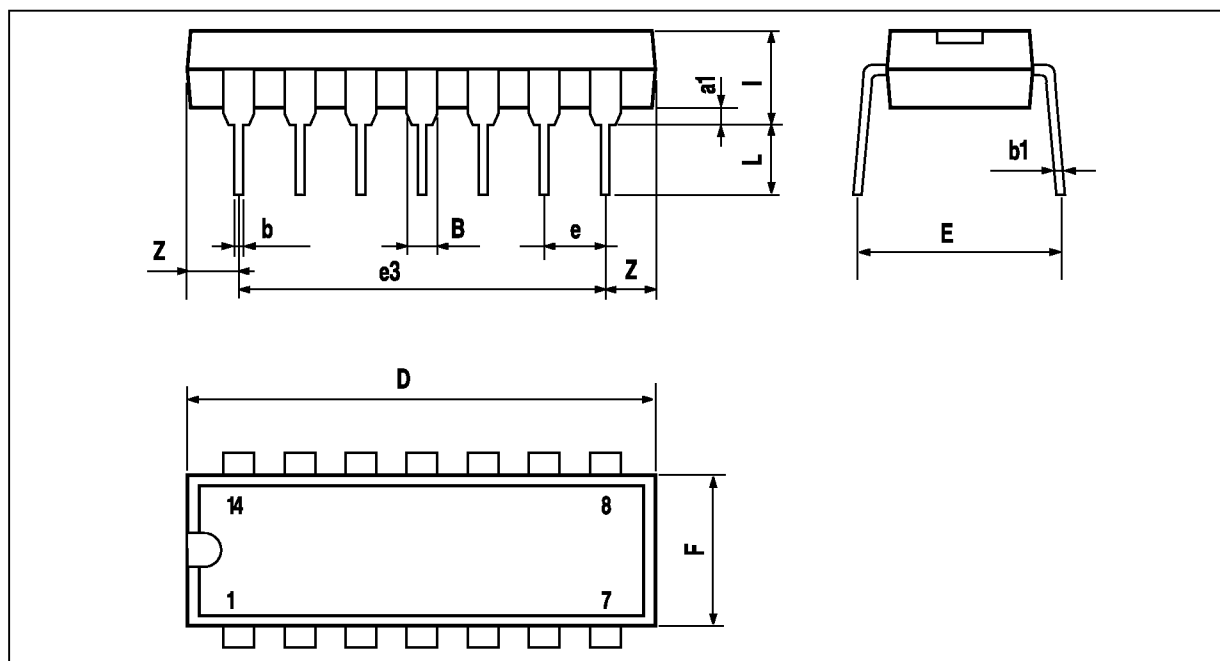


Figure 3 : LOW SIDE DRIVE



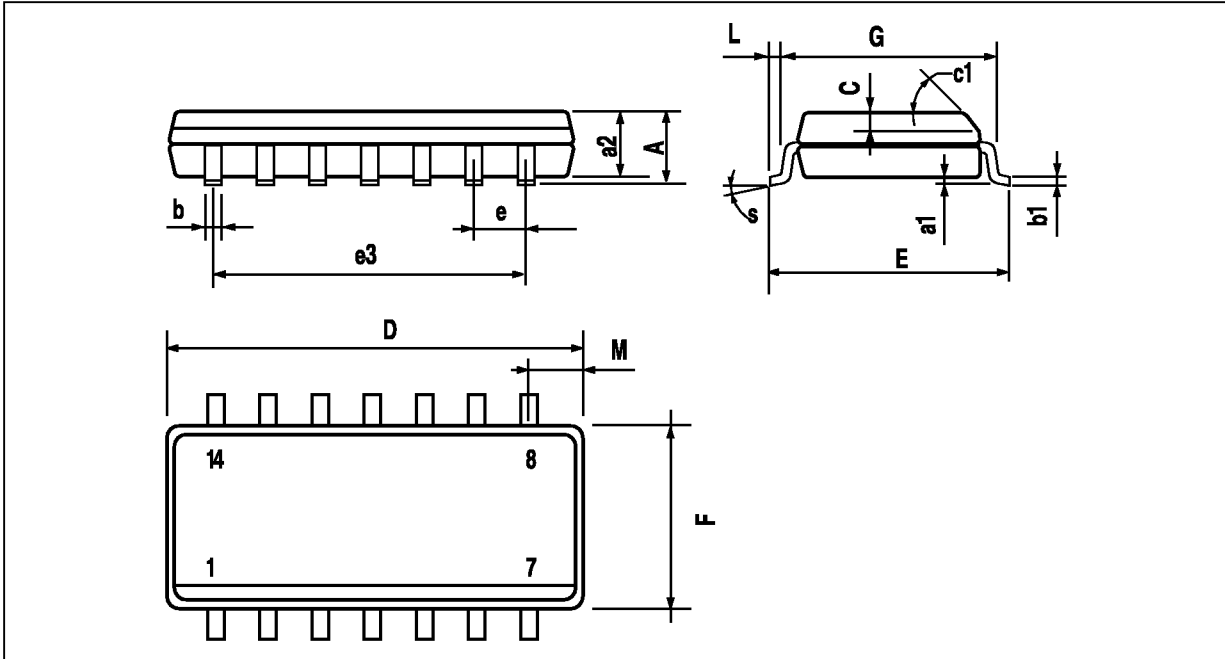
PACKAGE MECHANICAL DATA

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.)					

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

© The ST logo is a trademark of STMicroelectronics

© 1998 STMicroelectronics – Printed in Italy – All Rights Reserved
STMicroelectronics GROUP OF COMPANIES
 Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Mexico - Morocco
 The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.