

HIGH SIDE DRIVER

- OPERATING SUPPLY VOLTAGE UP TO 25V
- DC CURRENT 0.3A
- Ron < 800mΩ
- DIAGNOSTIC AND PROTECTION FUNC-TIONS
- µP COMPATIBLE
- ENABLE INPUT FOR STAND-BY MODE

DESCRIPTION

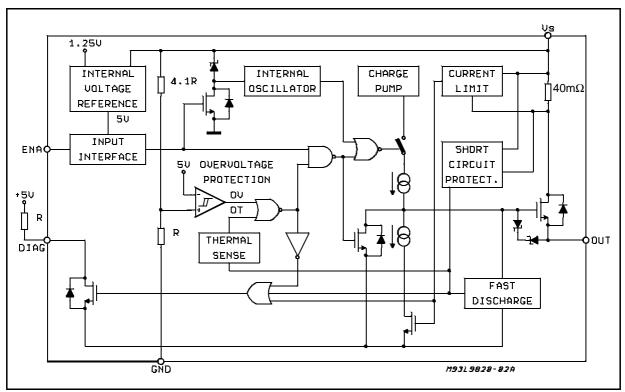
The L9820 High Side Driver realized with Multipower - BCD mixed technology, drives resistive or inductive loads with one side connected to ground.

The ENABLE input is TTL compatible and a diagnostic output provides an indication of short circuit and device status (thermal and overvoltage shutdown). Onchip thermal protection and short circuit protection are provided.

Minidip SO8 ORDERING NUMBERS: L9820 L9820D

MULTIPOWER BCD TECHNOLOGY

BLOCK DIAGRAM

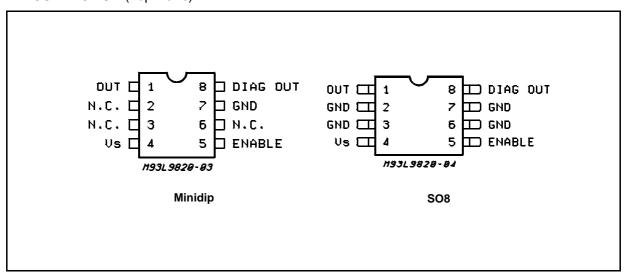


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ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
Vs	Max Forward Voltage	50	Vdc
I_R	Reverse Bias Current at -1.3V	-0.46	Α
V_5	Input Voltage (to GND)	-0.3 to 20	V
V ₈	Diag. Output Voltage (to GND)	-0.3 to 20	V
V ₁	Output Voltage (to GND)	-0.3 to 25	V
l ₄	Supply Current	Internally limited	
l ₅	Enable Input Current	0.5	mA
l ₈	Diag. Out Current (sink)	10	mA
I ₁	Output Current	Internally limited	
T _{op}	Operation Temperature	-40 to 85	°C
T _j , T _{stg}	Junction and Storage Temperature Range	-55 to 150	°C
T _{jp}	Detecting Temperature	150	°C

PIN CONNECTION (Top views)



THERMAL DATA

Ī	Symbol	Parameter	Minidip	SO8	Unit
	R _{th j-amb}	Thermal Resistance Junction-ambient Max.	100	200	°C/W

TRUTH TABLE

H: high level L: low level

ENABLE	FUNCTION	DIAG. STATUS	POWER STATUS
L	Operating OFF	Н	L
Н	Normal Operation	Н	Н
Н	Overvoltage Protection ON	L	L
Н	Overcurrent Protection ON	Ĺ	L
Н	Overtemperature Protection ON	L	L

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PIN FUNCTIONS

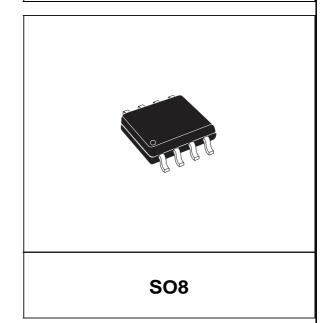
N.	Name	Description
1	POWER OUTPUT	The device is provided with short circuit protection.
4	POWER SUPPLY	Supply voltage input.
5	ENABLE INPUT	TTL compatible input. High level on this pin means output current ON. The low level voltage switches off the charge pump, the power stage and the diagnostic output reducing to the minimum value the quiescent current.
7	GROUND	This pin must be connected to ground.
8	DIAGNOSTIC FEEDBACK	The diagnostic circuit is active in input high level condition. This output detects with Tipically 50μs delay at T _{amb} = 25°C the following faults: - Overvoltage condition. - Thermal shutdown. - Short circuit. The power stage current is internally limited at 1.5A. The diagnostic output is active low. The diagnostic delay time allows to avoid spurious diagnosys(i.e.: turn ON overcurrent, overvoltage spikes etc.).

$\textbf{ELECTRICAL CHARACTERISTICS} \text{ (V}_S = 14.4 \text{V}, -40^{\circ}\text{C} \leq T_j \leq +85^{\circ}\text{C}, \text{ unless otherwise specified.)}$

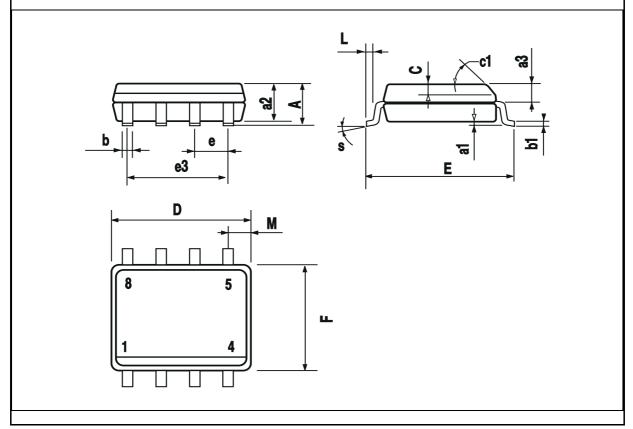
Symbol	Parameter	Test Condition	Min.	Тур.	Max.	Unit
Vs	Operating Supply Voltage		6		25	V
R _{on}	On Resistance	Input > 2V, $T_j = 25^{\circ}C$ Input > 2V, Full T range		0.6	0.8 1.2	Ω
l _{off}	Off State Supply Current	$T_j < 35^{\circ}C$ $T_j = 85^{\circ}C$			130 300	μΑ μΑ
I _{on}	On State Supply Current				4	mA
V _{EL}	Enable Low Level				0.8	V
V _{EH}	Enable High Level		2			V
Ι _Ε	Enable Current	0V < Vi <5V			10	μΑ
I _{leakd}	Diagnostic Output Leakage Current	V _{CC} = 5V Diagnostic Output High			10	μΑ
V _{satd}	Diagnostic Output Saturated Voltage	Isink < 3.5mA			0.4	V
t _{dd}	Diagnostic Delay Time	T _j = 25°C		30		μs
t _{don}	Output ON Delay Time	T _j = 25°C		30		μs
t _r	Output ON Rise Time	Tj = 25°C		100		μs
t_{doff}	Output OFF Delay Time	Tj = 25°C		80		μs
t _f	Output OFF Fall Time	Tj = 25°C		100		μs
V_{don}	Overvoltage Detection ON		25			V
V_{dh}	Overvoltage Hysteresis		2		5	V
I _{don}	Overcurrent Detection ON		0.5		1.5	Α
T _{don}	Overtemperature Detection ON		150			°C
T_{dh}	Overtemperature Hysteresis			25	50	°C

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DIM.	mm			inch			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Α			1.75			0.069	
a1	0.1		0.25	0.004		0.010	
a2			1.65			0.065	
аЗ	0.65		0.85	0.026		0.033	
b	0.35		0.48	0.014		0.019	
b1	0.19		0.25	0.007		0.010	
С	0.25		0.5	0.010		0.020	
c1			45° ((typ.)			
D (1)	4.8		5.0	0.189		0.197	
Е	5.8		6.2	0.228		0.244	
е		1.27			0.050		
еЗ		3.81			0.150		
F (1)	3.8		4.0	0.15		0.157	
L	0.4		1.27	0.016		0.050	
М			0.6			0.024	
S	8° (max.)						

OUTLINE AND MECHANICAL DATA



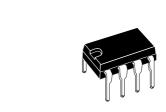
D and F do not include mold flash or protrusions. Mold flash or potrusions shall not exceed 0.15mm (.006inch).



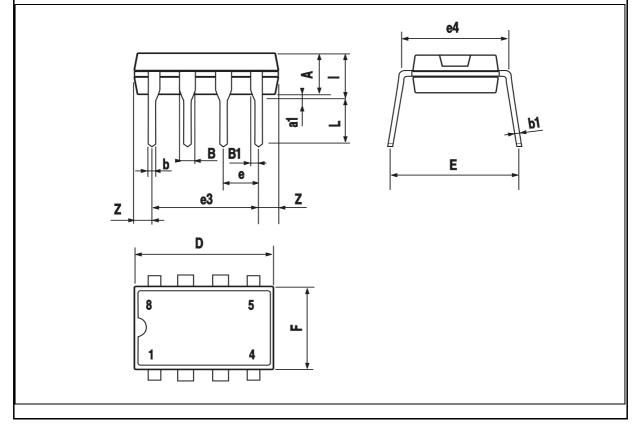
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DIM.	mm			inch			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Α		3.32			0.131		
a1	0.51			0.020			
В	1.15		1.65	0.045		0.065	
b	0.356		0.55	0.014		0.022	
b1	0.204		0.304	0.008		0.012	
D			10.92			0.430	
E	7.95		9.75	0.313		0.384	
е		2.54			0.100		
e3		7.62			0.300		
e4		7.62			0.300		
F			6.6			0.260	
I			5.08			0.200	
L	3.18		3.81	0.125		0.150	
Z			1.52			0.060	

OUTLINE AND MECHANICAL DATA



Minidip



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