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XINBOLE

Product Specification

XBLW L298

Dual Channel Full Bridge Driver

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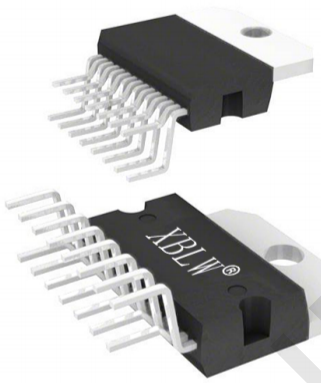
Descriptions

The L298 is an integrated monolithic circuit in a 15-lead ZIP (Multiwatt) packages. It is a high voltage, high current dual full-bridge driver designed to accept standard TTL logic levels and drive inductive loads such as relays, solenoids, DC and stepping motors. Two enable inputs are provided to enable or disable the device independently of the input signals. The emitters of the lower transistors of each bridge are connected together and the corresponding external terminal can be used for the con-lower voltage.



ZIP-15

Feature

- Low saturation voltage
- Operating supply voltage up to 46V
- Total DC current up to 4A
- Logical "0" input voltage up to 1.5V (high noise immunity)
- Logic power supply and drive power supply are independent of each other

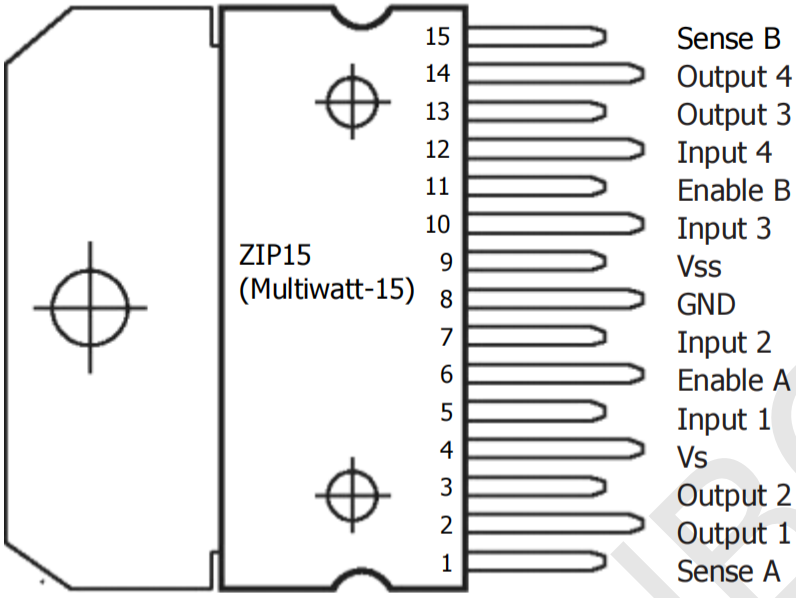
Applications

- Vending machine
- Claw machine
- Coin counter
- Mechanical arm
- Dehydration motor, air conditioning drive

Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
XBLW L298N	ZIP-15（Multiwatt-15）	L298N	Tube	250Pcs/Box

Pin Configurations



(TOP VIEW)

Figure1.PIN CONFIGURATIONS

Pin Functions

Pin No.	Name	Function
1;15	Sense A; Sense B	Between this pin and ground is connected the sense resistor to control the current of the load.
2;3	Out 1; Out 2	Outputs of the Bridge A; the current that flows through the load connected between these two pins is monitored at pin 1.
4	V_S	Supply Voltage for the Power Output Stages. A non-inductive 100nF capacitor must be connected between this pin and ground.
5;7	Input 1;Input 2	TTL Compatible Inputs of the Bridge A.
6;11	Enable A;Enable B	TTL Compatible Enable Input: the L state disables the bridge A(enable A) and/or the bridge B (enable B).
8	GND	Ground.
9	V_{SS}	Supply Voltage for the Logic Blocks. A100nF capacitor must be connected between this pin and ground.
10;12	Input 3;Input 4	TTL Compatible Inputs of the Bridge B.
13;14	Out 3; Out 4	Outputs of the Bridge B. The current that flows through the load connected between these two pins is monitored at pin 15.

BLOCK DIAGRAM

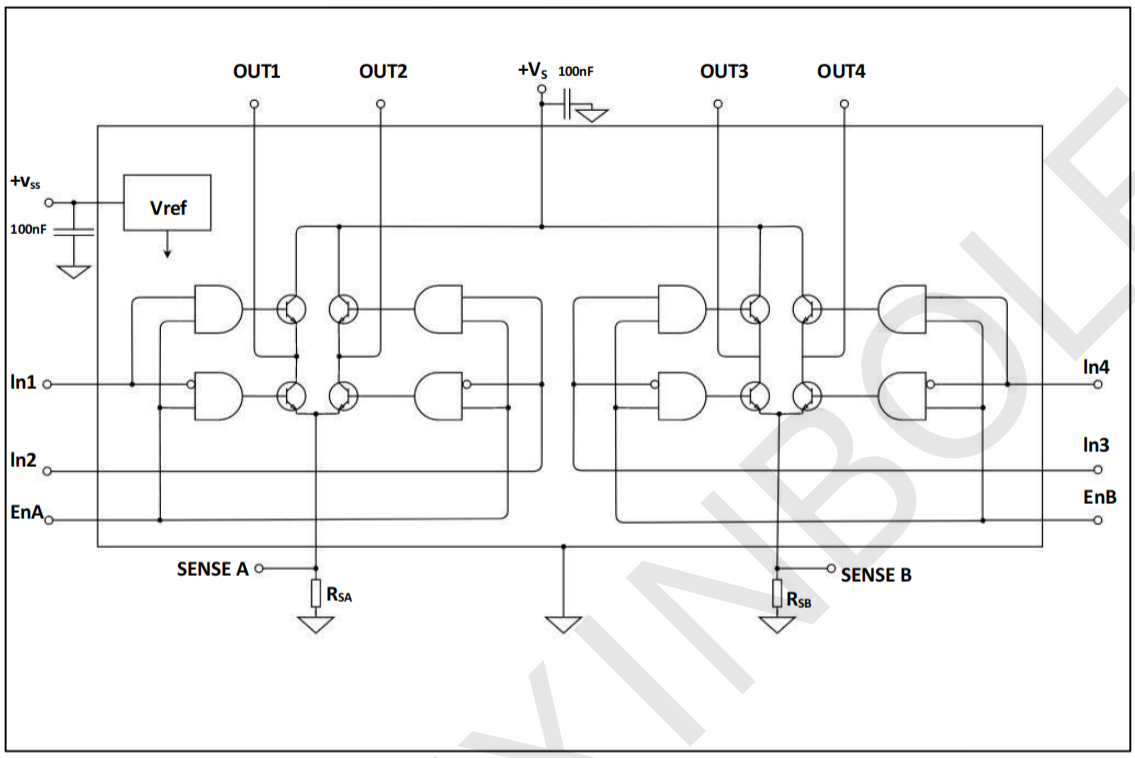


Figure 2. Block Diagram

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Power Supply	V_S	46	V
Logic Supply Voltage	V_{SS}	7	V
Input and Enable Voltage	V_I,V_{en}	−0.3 to 7	V
Peak Output Current (each Channel) −Non Repetitive (t = 100μs)	I_O	3	A
−Repetitive (80% on −20% off; ton = 10ms)		2.5	A
−DC Operation		2	A
Sensing Voltage	V_{sens}	−1 to 2.3	V
Total Power Dissipation (Tcase = 75 °C)	P_{tot}	25	W
Junction Operating Temperature	T_{op}	−25 to 120	°C
Storage and Junction Temperature	T_{stg}, T_j	−40 to 130	°C

Thermal Data

Parameter		Symbol	Value	Unit
Thermal Resistance Junction-case	Max.	Rthj-case	5	°C/W
Thermal Resistance Junction-ambient	Max.	Rthj-amb	37	°C/W

Electrical Characteristics

(V_S = 36V; V_{SS} = 5V, Tj = 25°C; unless otherwise specified)

Parameter	Symbol	Test Conditions		Min .	Typ .	Max.	Unit
Supply Voltage (pin 4)	V_S	Operative Condition		V_{IH}+2.5		46	V
Logic Supply Voltage (pin 9)	V_{SS}			4.5	5	7	V
Source Saturation Voltage	$V_{CEsat(H)}$	I_L = 1A		0.95	1.35	1.7	V
		I_L = 2A			2	2.7	
Sink Saturation Voltage	$V_{CEsat(L)}$	I_L = 1A		0.85	1.2	1.6	V
		I_L = 2A			1.7	2.3	
Total Drop	V_{CEsat}	I_L = 1A		1.8		3.2	V
		I_L = 2A				4.9	
Sensing Voltage (pins 1, 15)	V_{sens}			−1		2	V
Quiescent Supply Current (pin 4)	I_S	V_{en}=H;I_L=0	V_i = L		13	22	mA
			V_i = H		50	70	
		V_{en} = L	V_i = X			4	mA
Quiescent Current from VSS (pin9)	I_{SS}	V_{en}=H;I_L=0	V_i = L		24	36	mA
			V_i = H		7	12	
		V_{en}= L,V_i=X				6	mA
Input Low Voltage (pins 5, 7, 10,12)	V_{iL}			−0.3		1.5	V
Input High Voltage (pins 5, 7, 10,12)	V_{iH}			2.3		V_{SS}	V
Low Voltage Input Current (pins 5,7, 10, 12)	I_{iL}	V_i = L				−10	μA
High Voltage Input Current (pins 5,7, 10, 12)	I_{iH}	V_i = H ≤ V_{SS} −0.6V			30	100	μA
Enable Low Voltage (pins 6, 11)	V_{en} = L			−0.3		1.5	V
Enable High Voltage (pins 6, 11)	V_{en} = H			2.3		V_{SS}	V
Low Voltage Enable Current (pins6, 11)	I_{en} = L	V_{en} = L				−10	μA
High Voltage Enable Current (pins6, 11)	I_{en} = H	V_{en} = H ≤ V_{SS}−0.6V			30	100	μA

Typical applications

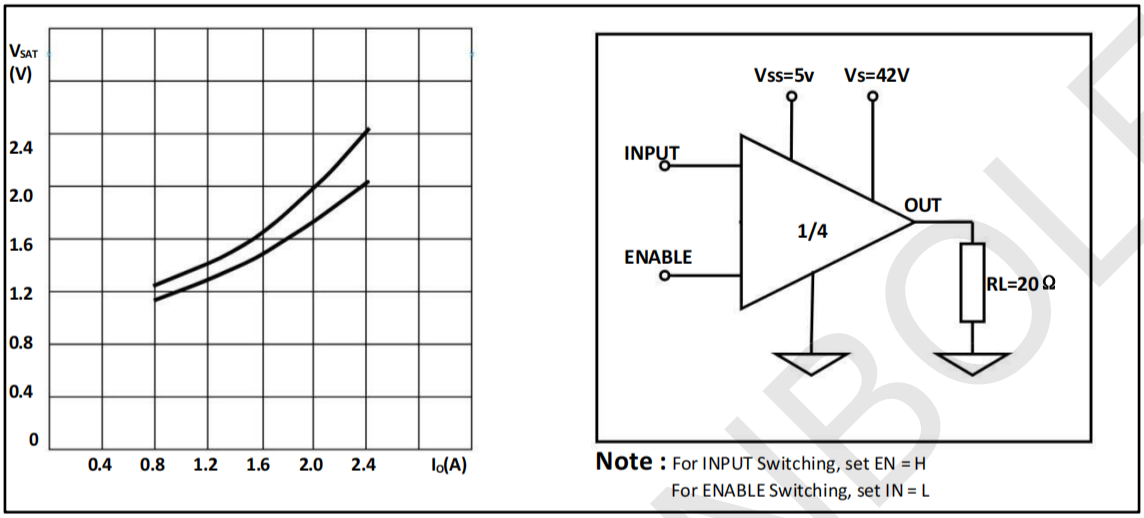


Figure 3 : Typical Saturation Voltagevs. Output Current.

Figure 4 : Switching Times Test Circuits.

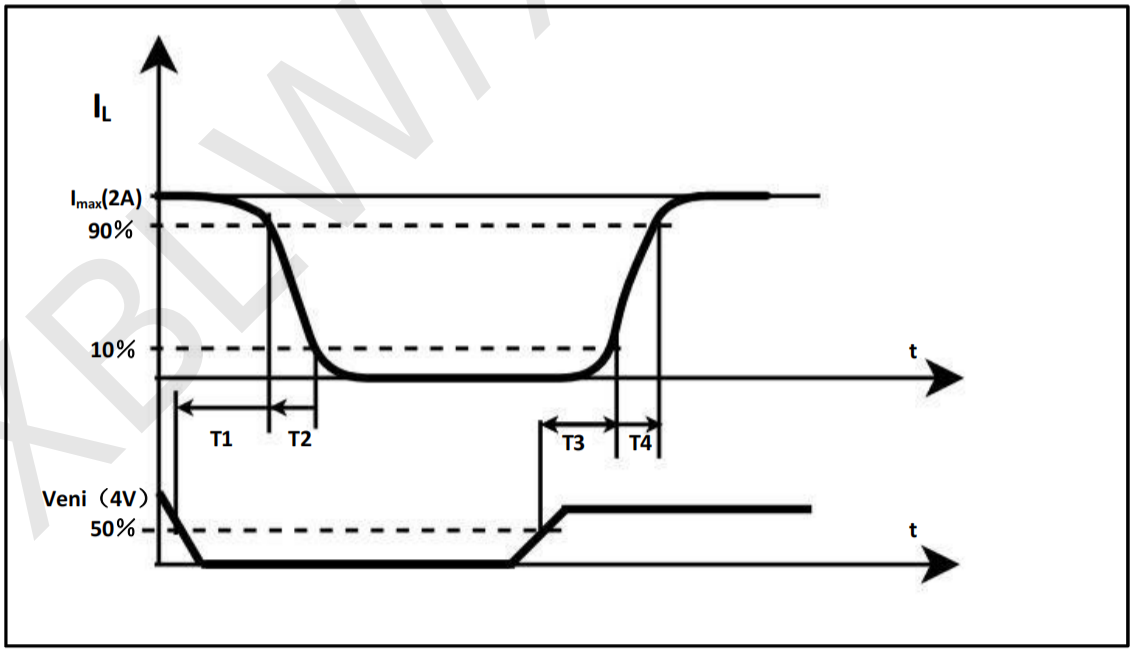
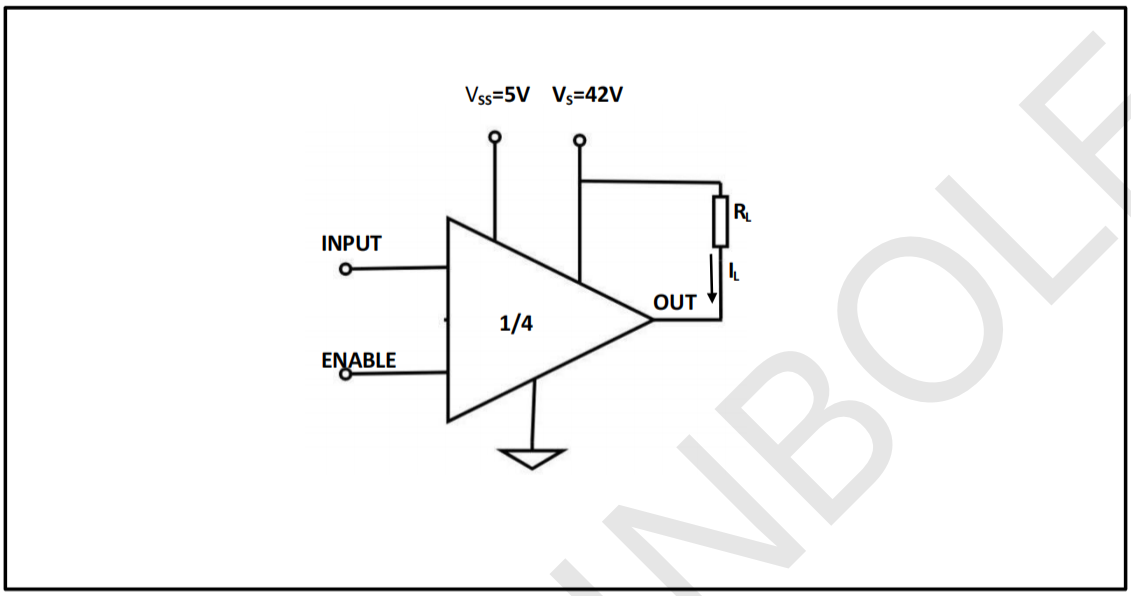


Figure 5 : Source Current Delay Times vs. Input or Enable Switching.



Note : For INPUT Switching, set EN = H
For ENABLE Switching, set IN = H

Figure 6 : Switching Times Test Circuits.

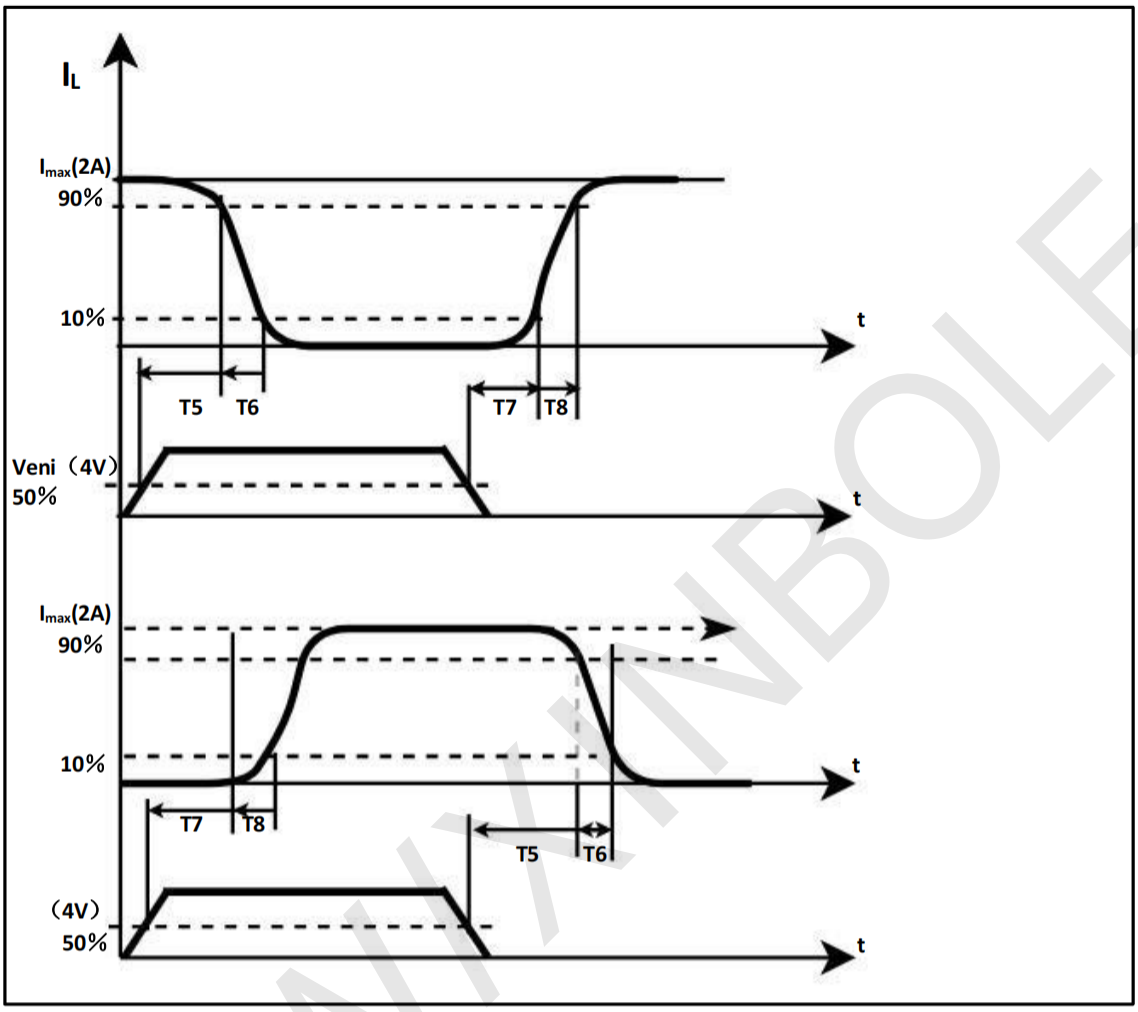


Figure 7 : Sink Current Delay Times vs. Input 0 V Enable Switching.

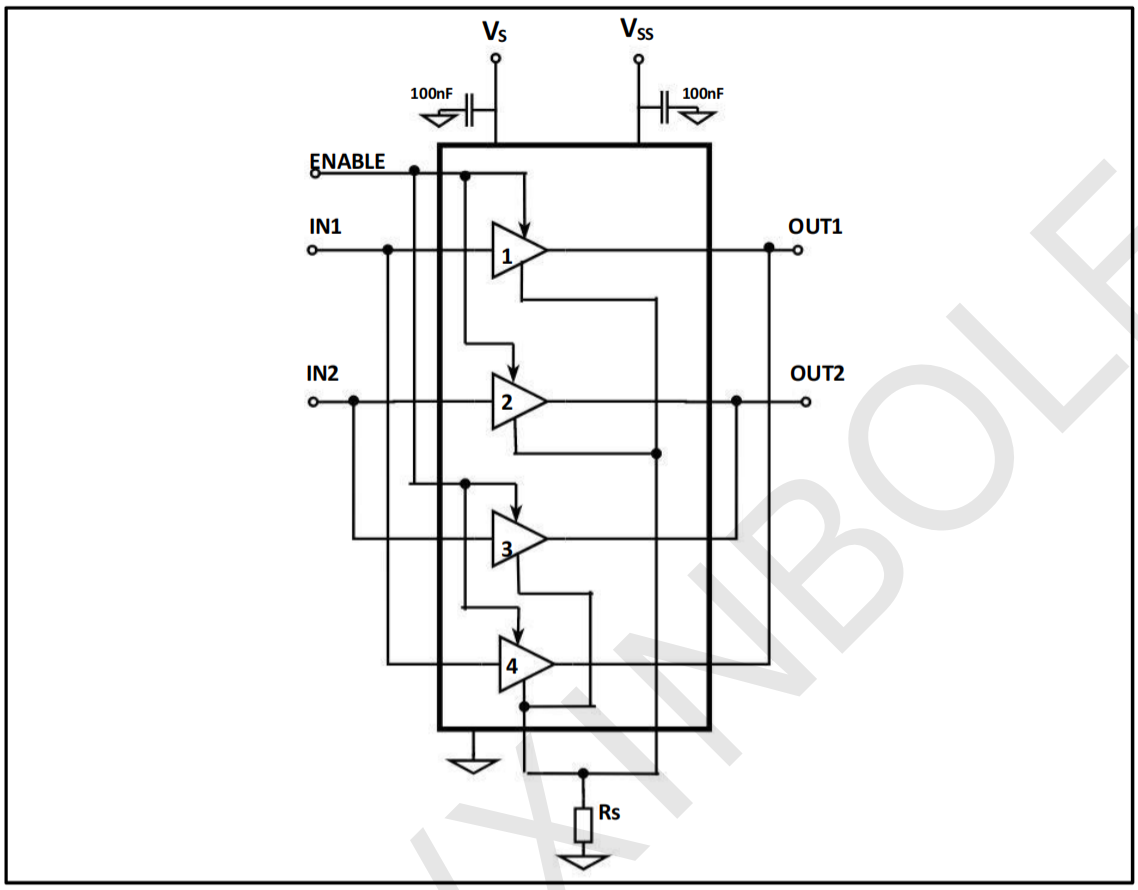


Figure 8 : For higher currents, outputs can be paralleled. Take care to parallel channel 1 with channel 4 and channel 2 with channel 3.

Application Information

1. Power output stage

The L298 integrates two power output stages (A ; B). The power output stage is a bridge configuration and its outputs can drive an inductive load in common or differential mode, depending on the state of the inputs. The current that flows through the load comes out from the bridge at the sense output : an external resistor (RSA ; RSB) allows to detect the intensity of this current.

2. Input Control

All the inputs are TTL compatible.

3. Power source decoupling

It is recommended that both VSS and VS terminals be connected to the ground with 100nF capacitance and as close to the ground as possible. Current detection resistance should also be as close to the ground as possible to improve the precision of detection. EN end should be in L state before closing and opening.

4. Output protection

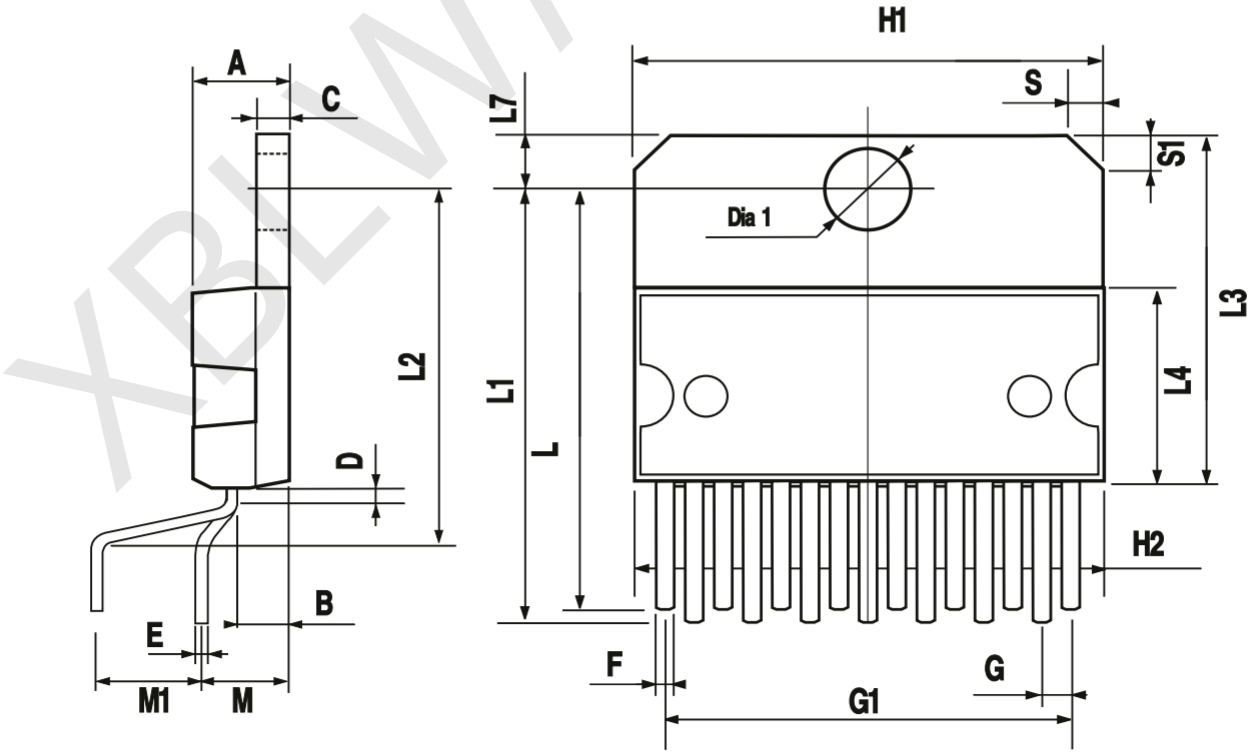
The fast diode should be used as the output protection when driving the sensitive negative load. When I = 2A, VF≤ 1.2V, trr ≤ 200n s.

5. Use in combination

When the driving current is larger than 2A, two groups of driving current can be used to expand.

· ZIP-15 (Multiwatt-15)

Size / Symbol	Dimensions In Millimeters			Size / Symbol	Dimensions In Inches		
	Min(mm)	Nom(mm)	Max(mm)		Min(in)	Nom(in)	Max(in)
A			5.000	A			0.197
B			2.650	B			0.104
C			1.600	C			0.063
D		1.000		D		0.039	
E	0.490		0.550	E	0.019		0.022
F	0.660		0.750	F	0.026		0.030
G	1.020	1.270	1.520	G	0.040	0.050	0.060
G1	17.53	17.78	18.03	G1	0.690	0.700	0.710
H1	19.06			H1	0.772		
H2			20.20	H2			0.795
L	21.90	22.20	22.50	L	0.862	0.874	0.886
L1	21.70	22.10	22.50	L1	0.854	0.870	0.886
L2	17.65		18.10	L2	0.695		0.713
L3	17.25	17.50	17.75	L3	0.679	0.689	0.699
L4	10.30	10.70	10.90	L4	0.406	0.421	0.429
L7	2.650		2.900	L7	0.104		0.114
M	4.250	4.550	4.850	M	0.167	0.179	0.191
M1	4.630	5.080	5.530	M1	0.182	0.200	0.218
S	1.900		2.600	S	0.075		0.102
S1	1.900		2.600	S1	0.075		0.102
Dia	3.650		3.850	Dia	0.144		0.152



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