



## DUAL 2-A SOURCE DRIVER

- OUTPUT CURRENT UP TO 2.5 A
- WIDE RANGE OF SUPPLY VOLTAGES : + 8 to + 32 V
- CAN WITHSTAND OVERVOLTAGES OF AS HIGH AS 60 V BETWEEN  $V_{CC}$  AND GROUND
- INTERNAL ZENER DIODE PROVIDES FAST SWITCHING OF INDUCTIVE LOADS
- OUTPUT VOLTAGE CAN BE LOWER THAN GROUND

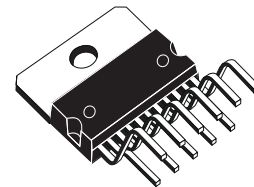
### DESCRIPTION

The TDF1778 is a dual source driver delivering high output currents and capable to drive any type of loads (Electrovalves, contactors, lamps).

This device is essentially blow-out proof, each output is protected against short-circuits. If internal dissipation becomes too high, drivers will shut down to prevent excessive heating. An "ALARM" output is provided to indicate the action of the thermal protection. To reactivate the power outputs, the reset input must be forced to low state.

"SENSE" information of both power outputs are ORed together and then processed internally.

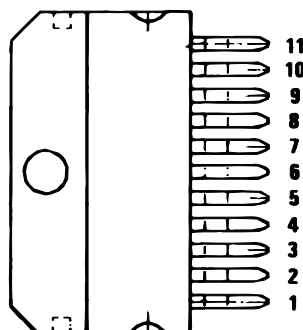
A "STROBE" input is also provided to offer the possibility of disabling the power outputs.



**MULTIWATT11**

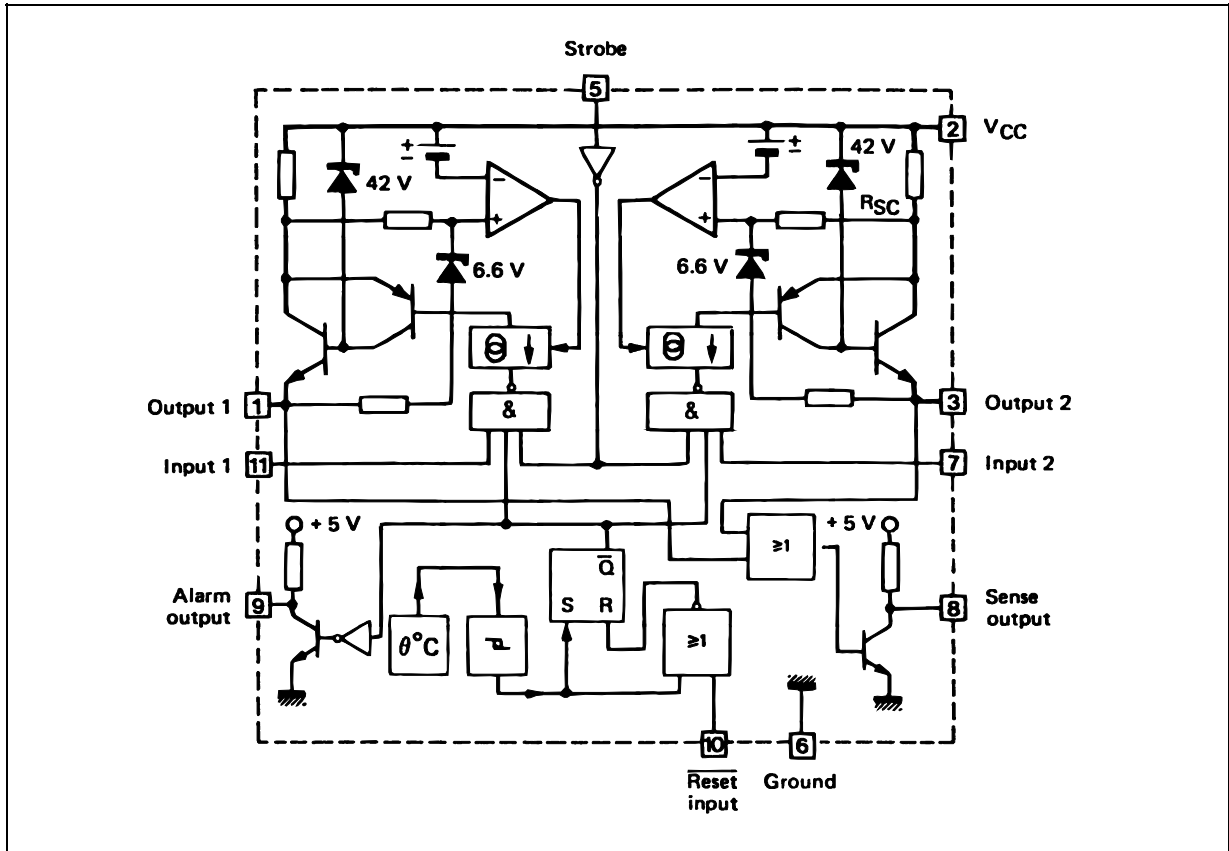
**ORDERING NUMBER : TDF1778SP**

### PIN CONNECTION



- 1 - Output 1
- 2 - VCC
- 3 - Output 2
- 4 - N.C.
- 5 - Strobe
- 6 - Ground
- 7 - Input 2
- 8 - Sense output
- 9 - Alarm output
- 10 - Reset input
- 11 - Input 1

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CC}$	Supply Voltage	35 V (60 V/10 ms)	V
$V_I, V_{reset}$	Input Voltage (pins 7, 10 and 11)	- 30 to + 50	V
$V_{strobe}$	Strobe Input Voltage	- 0.5 to $V_{CC}$	V
$I_O$	Output Current	Internally Limited	A
$P_{tot}$	Power Dissipation	Internally Limited	W
$T_{oper}$	Operating Ambient Temperature Range	- 40 to + 85	°C
$T_j$	Junction Temperature	+ 150	°C

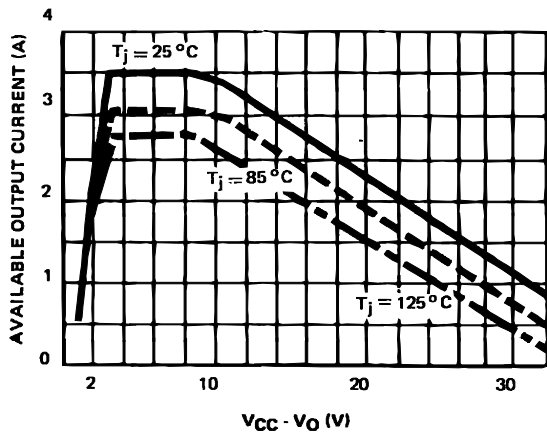
THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction-case Thermal Resistance	Max. 3	°C/W
$R_{th(j-a)}$	Junction-ambient Thermal Resistance	Max. 40	°C/W

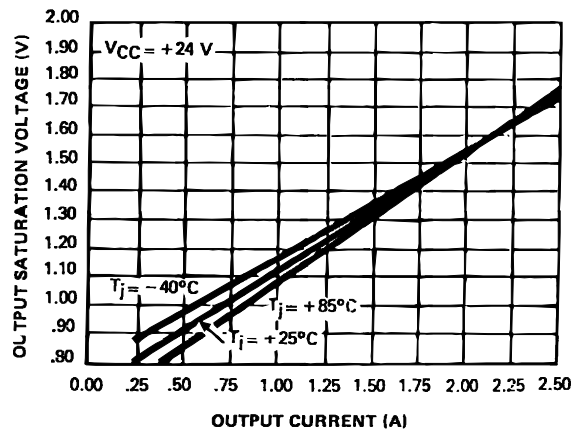
**ELECTRICAL CHARACTERISTICS** ( $V_{CC} = +24V$ ,  $-40^{\circ}C < T_j < +85^{\circ}C$ , unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit
$V_{CC}$	Power Supply Voltage	8	–	32	V
$I_{CC}$	Power Supply Current (pin 6), $I_{O1} = I_{O2} = 2A$	–	–	20	mA
$V_{IL}$ $V_{IH}$	Logic Input Voltage (pins 7, 10, 11)	– 2	– –	0.8 –	V
$V_I$	Logic Input Threshold (pin 5)	–	0.8	–	V
$I_{IH}$	High Level Input Current (pins 7, 10, 11) $V_I = +2V$	–	20	50	$\mu A$
$I_{IL}$	Low Level Input Current (pins 7, 10, 11) $V_I = +0.8V$	–5	0	+5	$\mu A$
$V_{OH}$	High Level Logic Output Voltage (pins 8, 9) $I(8) = I(9) = -30 \mu A$	2.4	4	–	V
$V_{OL}$	Low Level Logic Output Voltage (pins 8, 9) $I(8) = I(9) = 2 mA$	–	–	0.4	V
$V_{CC} - V_{O1}$ $V_{CC} - V_{O2}$	Output Saturation Voltage ( $V(7)$ high, $V(11)$ high, $I_O = 2A$ )	– –	1.5	1.8	V
$I_{OL}$	Low Level Input Current (pins 1, 3) $V(7)$ Low, $V(11)$ Low, $V_O = 0V$	–	400	1000	$\mu A$
$V_{CC} - V_{O1}$ $V_{CC} - V_{O2}$	Switch-off Output Voltage (inductive load)	40 –	44 –	48	V
$I_{O1}, I_{O2}$	Available Output Current (pins 1, 3), $V(7)$ High, $V(11)$ High, $V_{CC} - V_O = 32V$ , $T_j = 25^{\circ}C$	100	–	–	mA
$I_{Oalarm}$	Available "Alarm" Output Current, $V(9) = +4V$	4	8	–	mA
$I_{Osense}$	Available "Sense" Output Current, $V(8) = +4V$	4	8	–	mA
$I_{IHsense}$	Output Sensing High Level Input Current (pins 1, 3) $V_I = +2V$	–	1	2	mA
$V_{IHsense}$	High Level "Sense" Input Voltage (pins 1, 3)	0.8	1.9	2.5	V

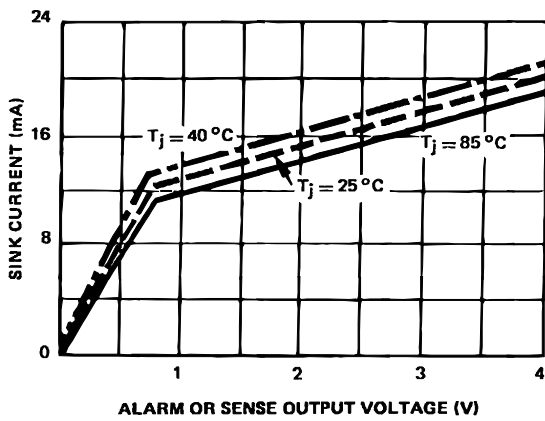
AVAILABLE OUTPUT CURRENT



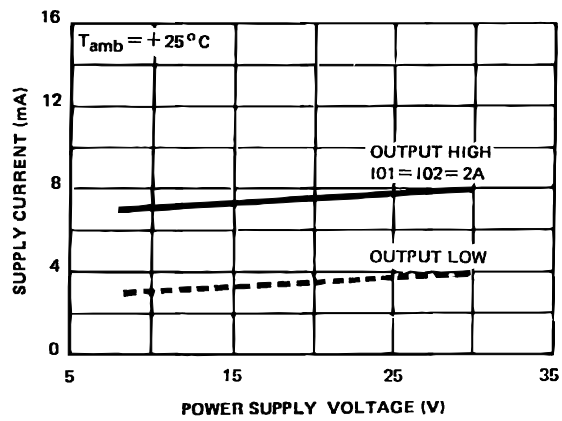
OUTPUT SATURATION VOLTAGE



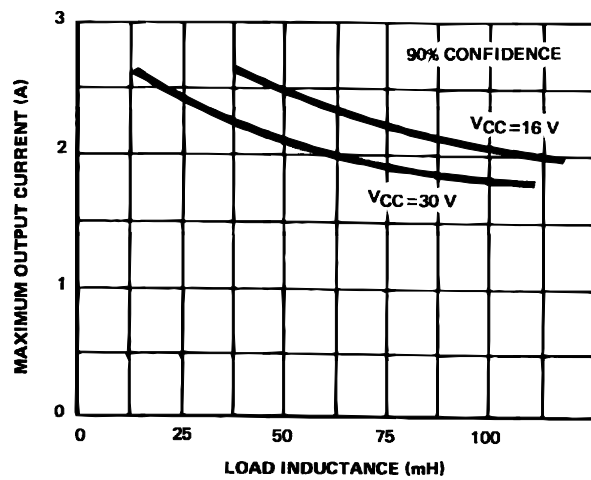
AVAILABLE ALARM OR SENSE OUTPUT CURRENTS



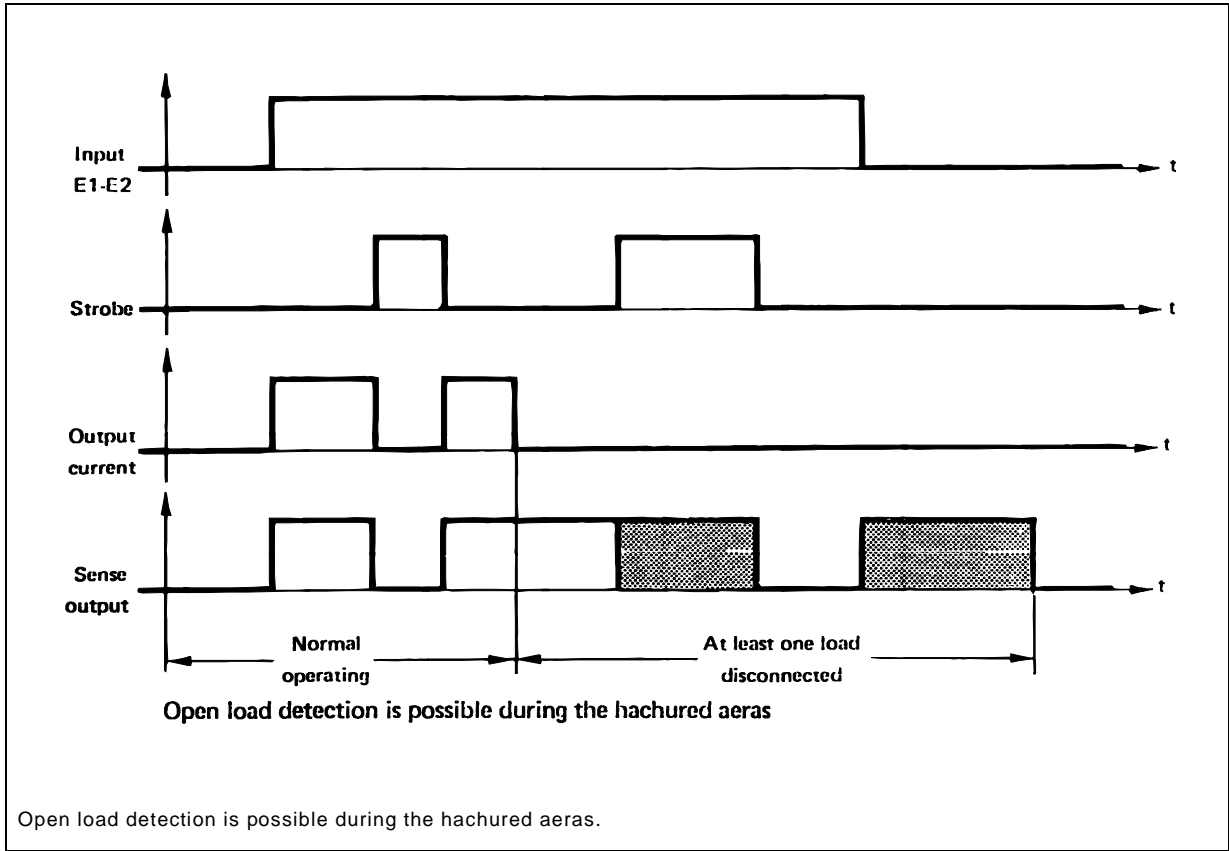
POWER SUPPLY CURRENT



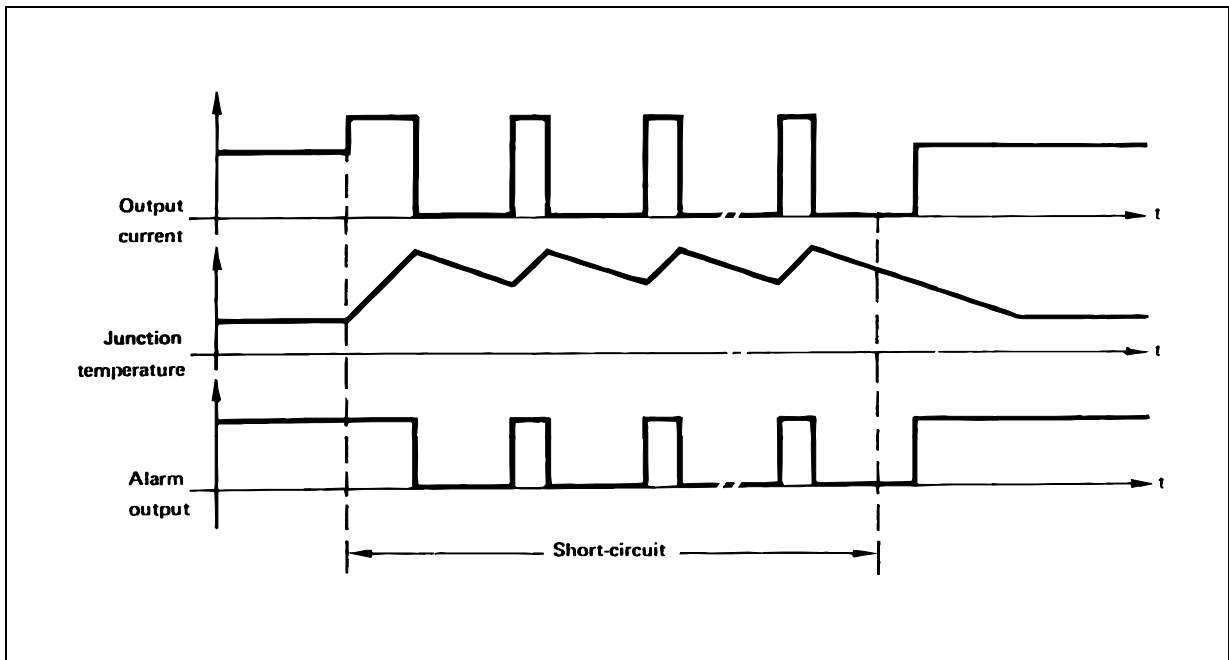
MAXIMUM OUTPUT CURRENT VS LOAD INDUCTANCE



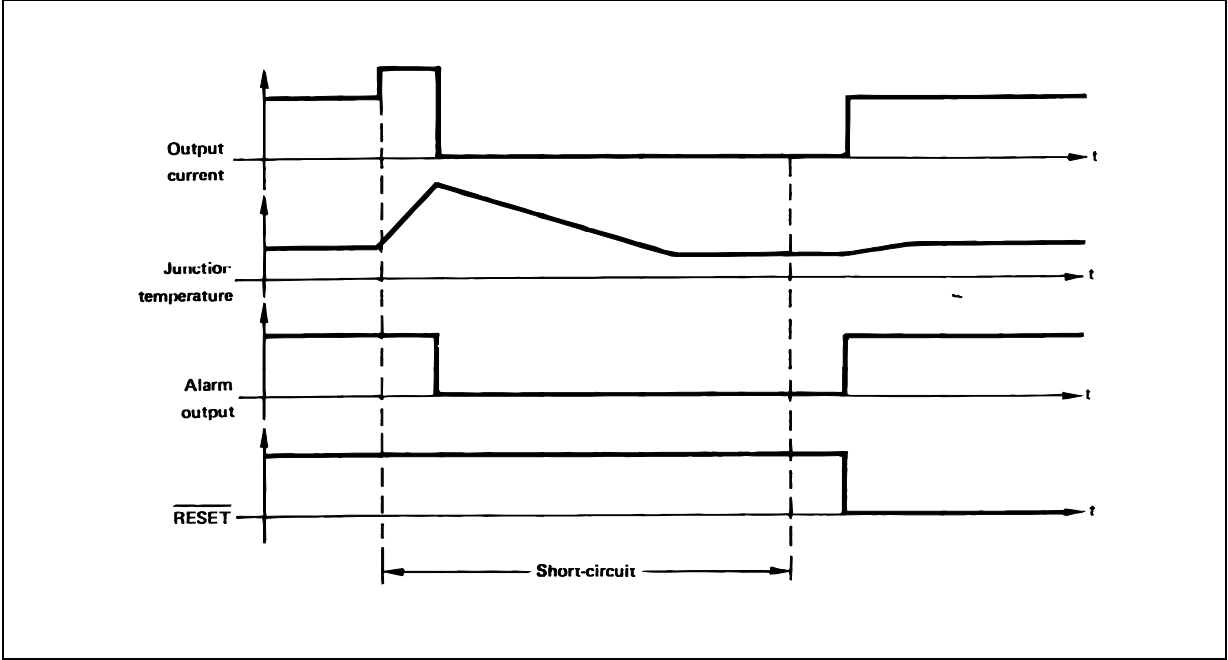
**OPEN LOAD DETECTION**



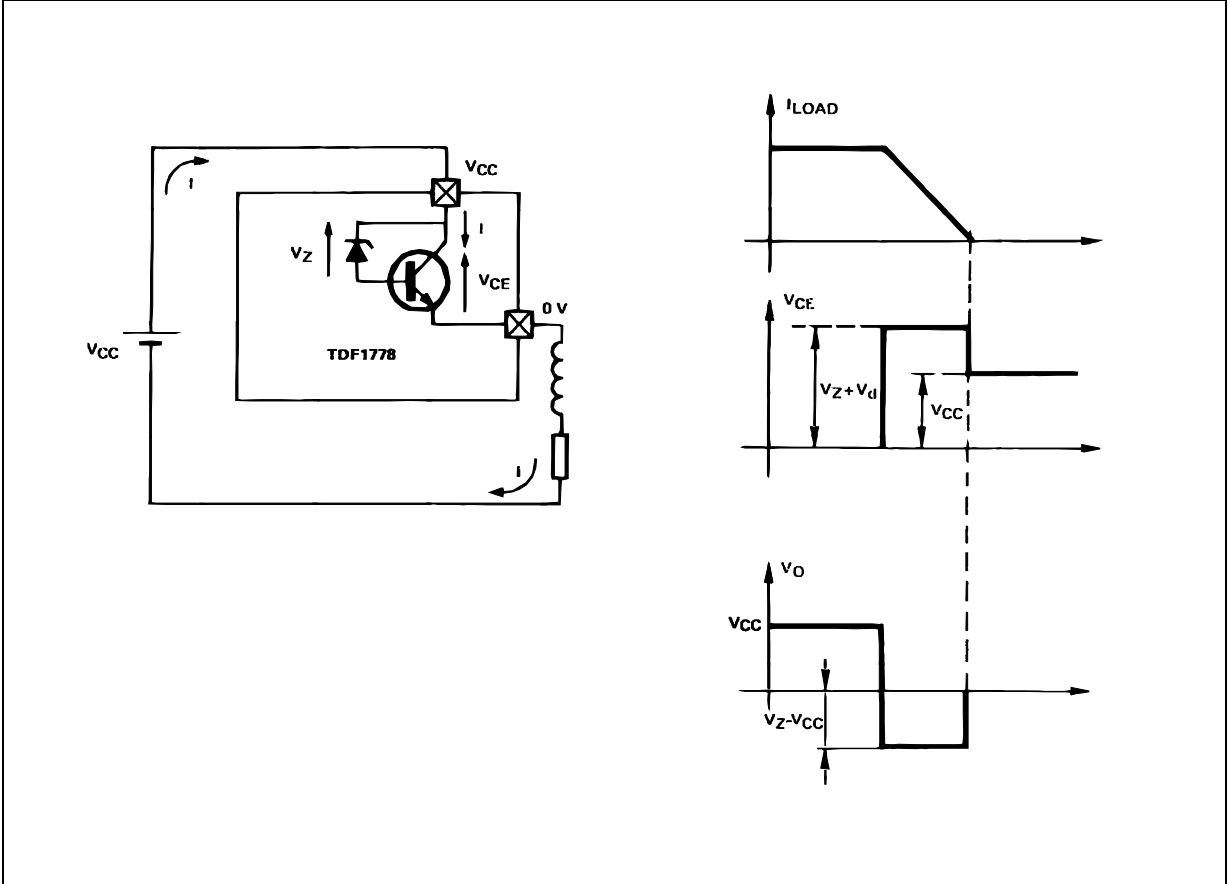
**SHORT CIRCUIT CONDITIONS WAVEFORMS WITH AUTOMATIC RESET/ $\overline{\text{RESET}} = 0$**



SHORT CIRCUIT WAVEFORMS WITH CONTROLLED RESET/RESET = 1

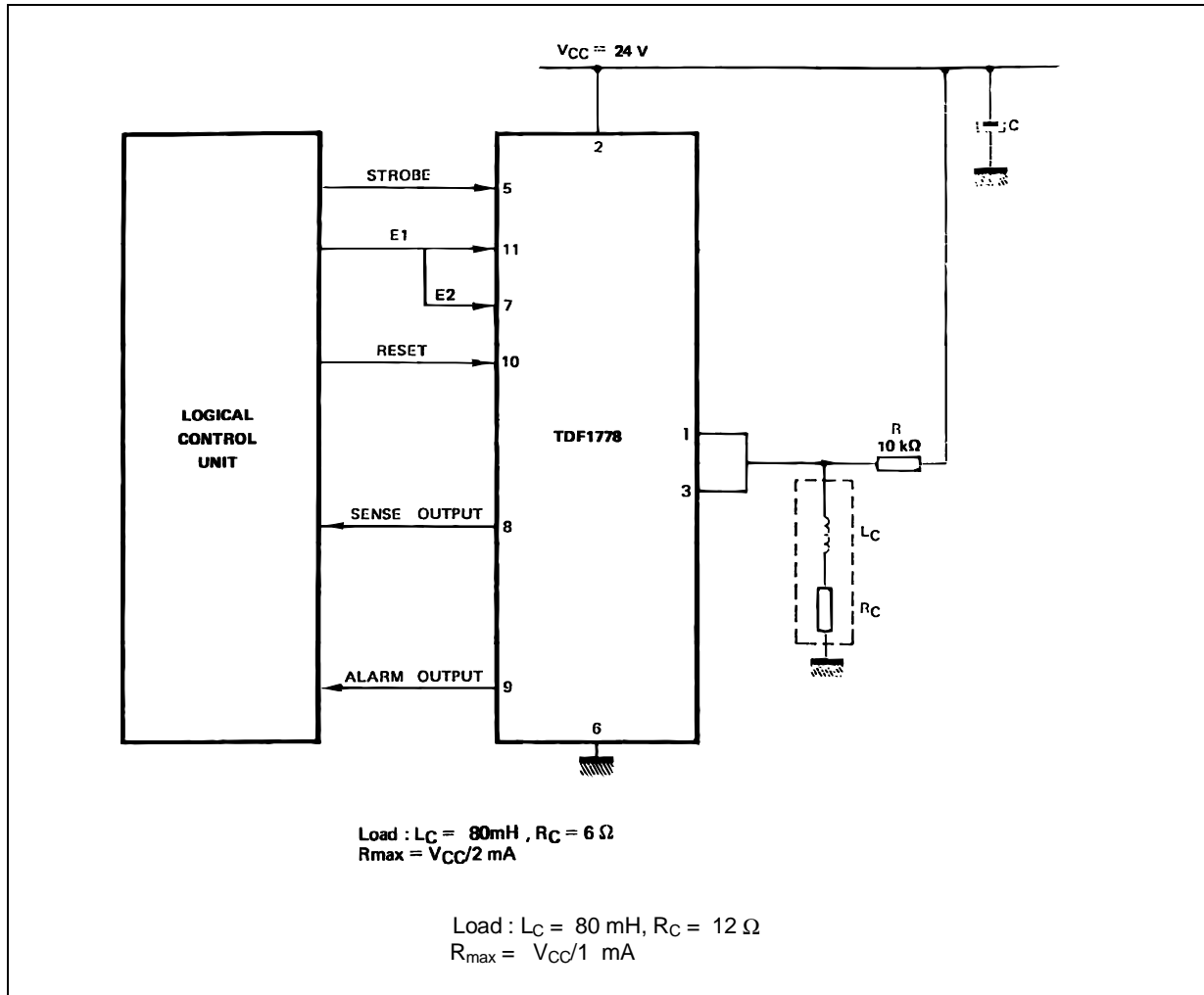


DEMAGNETIZATION UNDER INDUCTIVE LOAD



## TYPICAL APPLICATION

TYPICAL APPLICATION WITH TDF1778 TWO INDUCTIVE LOADS 2 A - 24 V



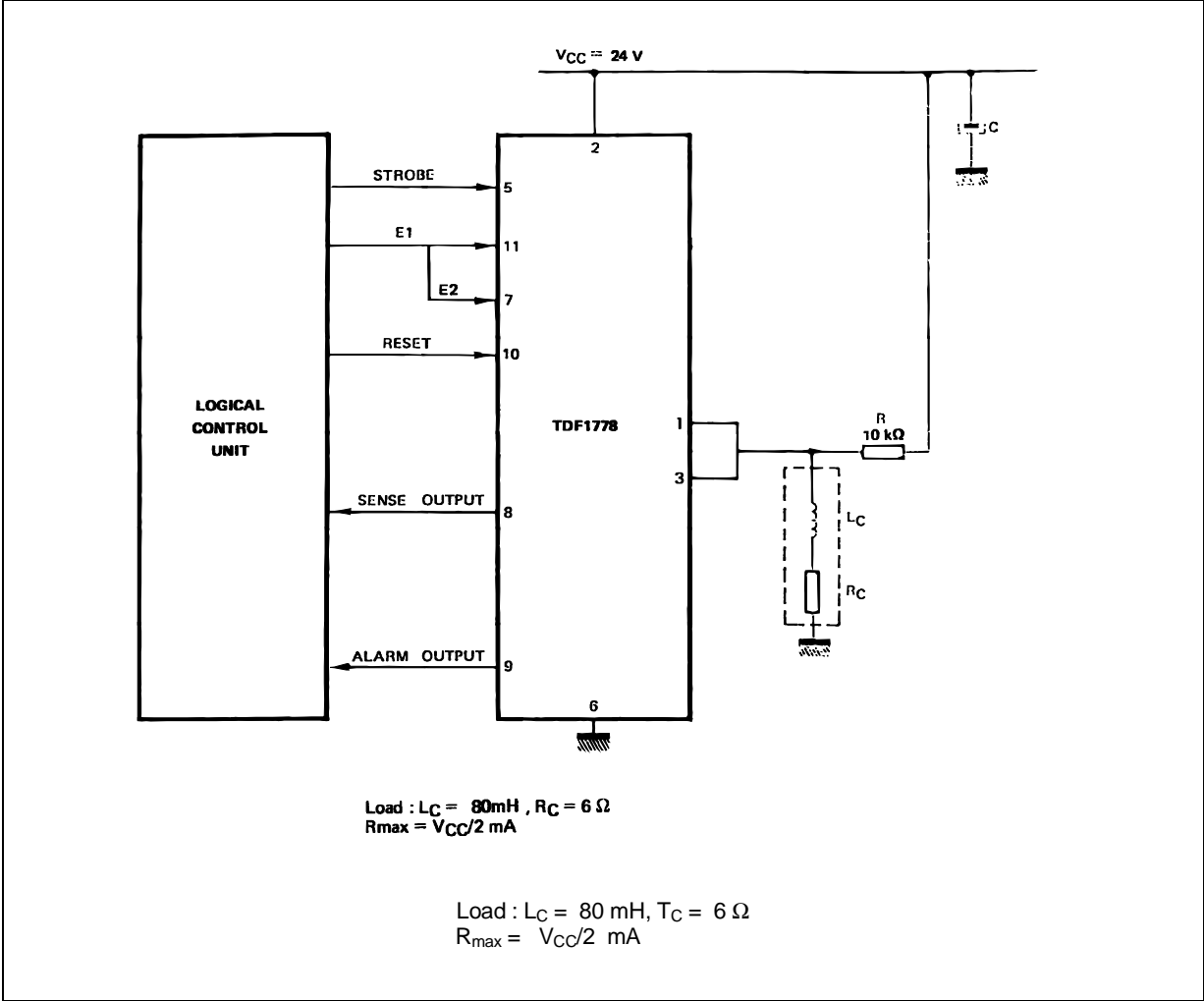
## MAIN FEATURES

This application protected against short circuits.  
 The load disconnection is detected when inputs E1 and E2 are low and the sense output is high.

When thermal protection is activated the pin 9 is low.  
 Inputs and outputs are TTL compatible.

**TDF1778**

TDF1778 HIGH CURRENT APPLICATION WITH INDUCTIVE LOAD 24 V - 4 A



**MAIN FEATURES**

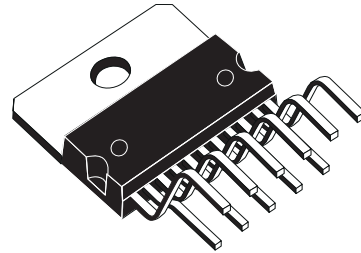
This application has the same features as the dual 2 A -12 V application.



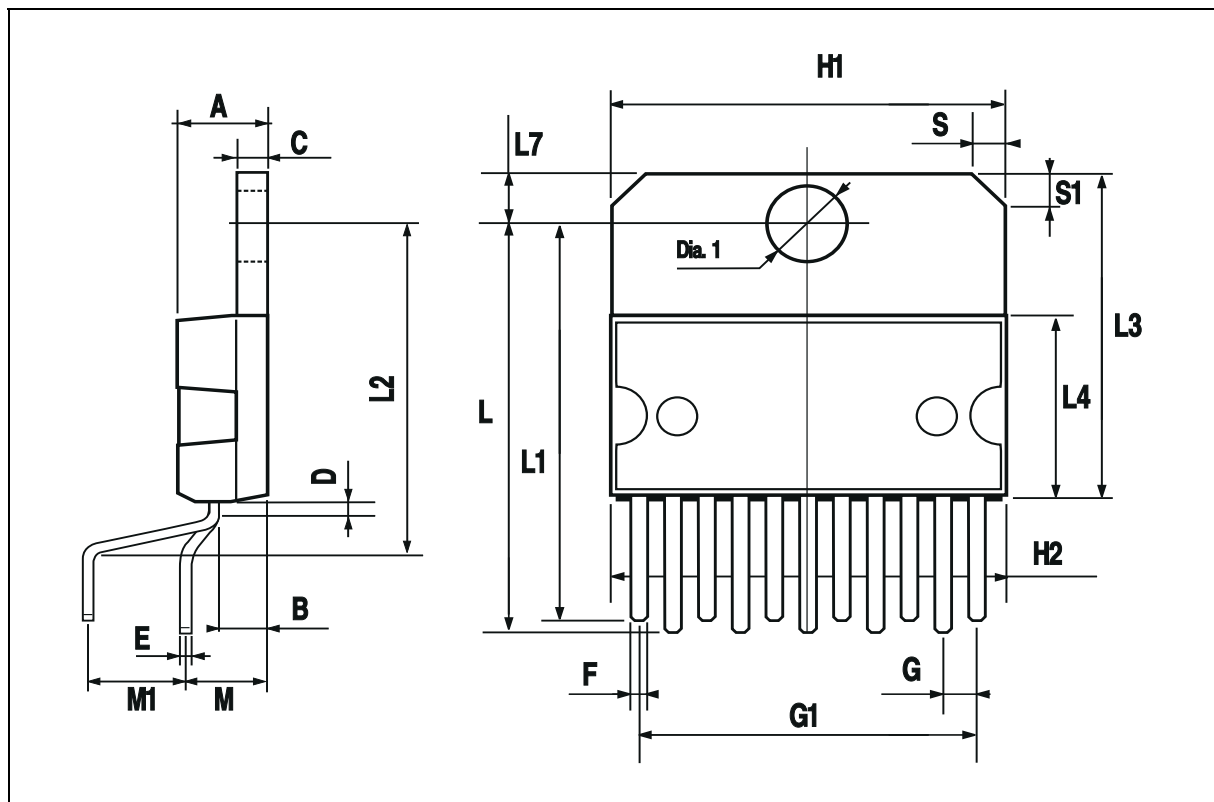


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			5			0.197
B			2.65			0.104
C			1.6			0.063
D		1			0.039	
E	0.49		0.55	0.019		0.022
F	0.88		0.95	0.035		0.037
G	1.45	1.7	1.95	0.057	0.067	0.077
G1	16.75	17	17.25	0.659	0.669	0.679
H1	19.6			0.772		
H2			20.2			0.795
L	21.9	22.2	22.5	0.862	0.874	0.886
L1	21.7	22.1	22.5	0.854	0.87	0.886
L2	17.4		18.1	0.685		0.713
L3	17.25	17.5	17.75	0.679	0.689	0.699
L4	10.3	10.7	10.9	0.406	0.421	0.429
L7	2.65		2.9	0.104		0.114
M	4.25	4.55	4.85	0.167	0.179	0.191
M1	4.73	5.08	5.43	0.186	0.200	0.214
S	1.9		2.6	0.075		0.102
S1	1.9		2.6	0.075		0.102
Dia1	3.65		3.85	0.144		0.152

## OUTLINE AND MECHANICAL DATA



**Multiwatt11 V**



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