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.

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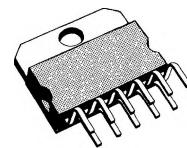
ORDER CODE : TDF1778SP

PIN CONNECTION
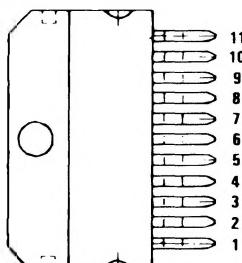
1 - Output 1
2 - VCC
3 - Output 2
4 - N.C.
5 - Strobe
6 - Ground
7 - Input 2
8 - Sense output
9 - Alarm output
10 - $\overline{\text{Reset}}$ input
11 - Input 1

BLOCK DIAGRAM
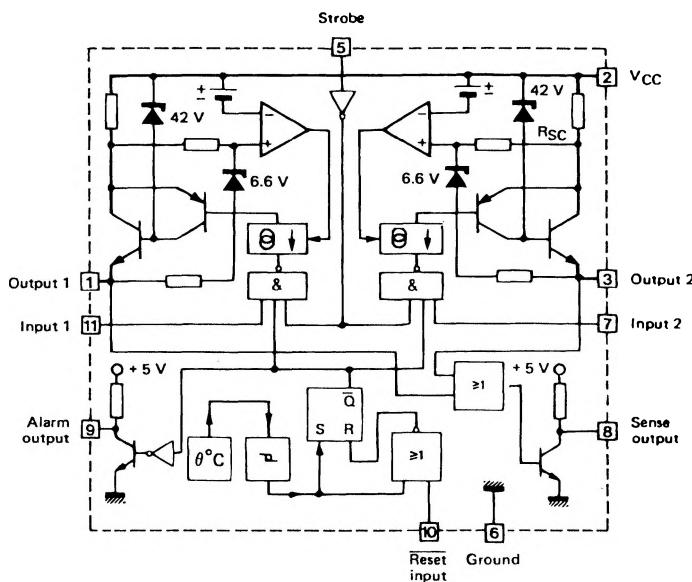
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	35 V (60V/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

$R_{th(j-c)}$	Maximum Junction—case Thermal Resistance	3	°C/W
$R_{th(j-a)}$	Maximum Junction—ambient Thermal Resistance	40	°C/W

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ELECTRICAL CHARACTERISTICS

V_{CC} = + 24 V, – 40 °C < T_j < + 85 °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), $I_{01} = I_{02} = 2$ A	–	–	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) $V_I = + 2$ V	–	20	50	μA
I_{IL}	Low Level Input Current (pins 7, 10, 11) $V_I = + 0.8$ V	– 5	0	+ 5	μA
V_{OH}	High Level Logic Output Voltage (pins 8, 9) $I(8) = I(9) = – 30$ μA	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, $I_O = 2$ A)	– –	1.5	1.8	V
I_{OL}	Low Level Input Current (pins 1, 3) V(7) Low, V(11) Low, $V_O = 0$ V	–	400	1000	μA
$V_{CC} – V_{O1}$ $V_{CC} – V_{O2}$	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, $V_{CC} – V_O = 32$ V, $T_j = 25$ °C	100	–	–	mA
I_{Oalarm}	Available "Alarm" Output Current, V(9) = + 4 V	4	8	–	mA
I_{Osense}	Available "Sense" Output Current, V(8) = + 4 V	4	8	–	mA
$I_{IHsense}$	Output Sensing High Level Input Current (pins 1, 3) $V_I = + 2$ V	–	1	2	mA
$V_{IHsense}$	High Level "Sense" Input Voltage (pins 1, 3)	0.8	1.9	2.5	V

**AVAILABLE OUTPUT CURRENT**
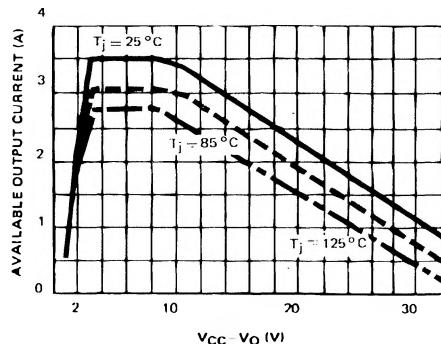
**OUTPUT SATURATION VOLTAGE**
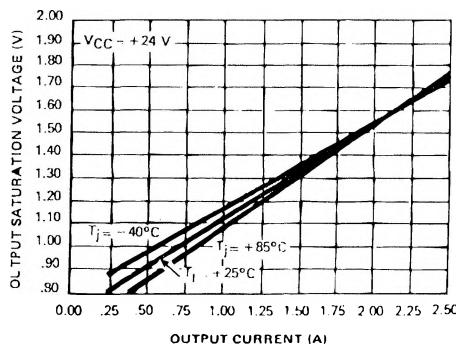
AVAILABLE ALARM OR SENSE OUTPUT CURRENTS
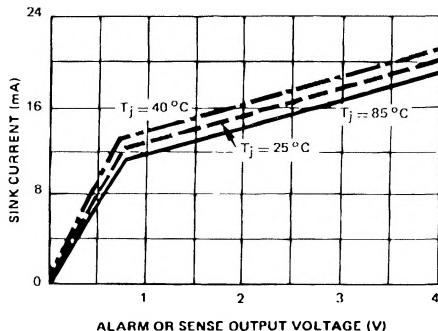
POWER SUPPLY CURRENT
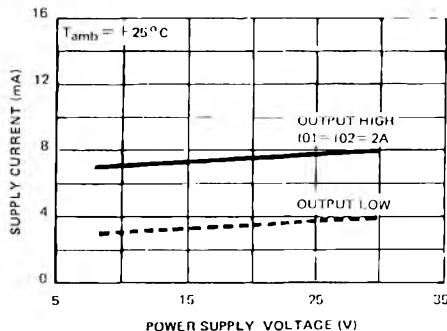
MAXIMUM OUTPUT CURRENT VS LOAD INDUCTANCE

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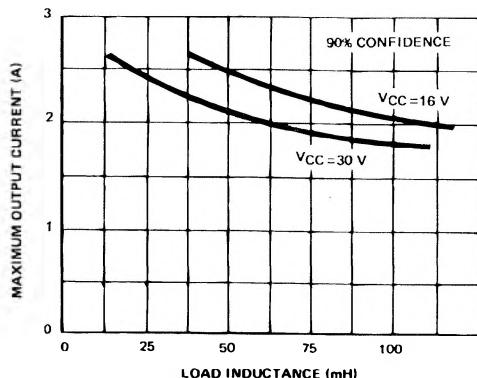
OPEN LOAD DETECTION
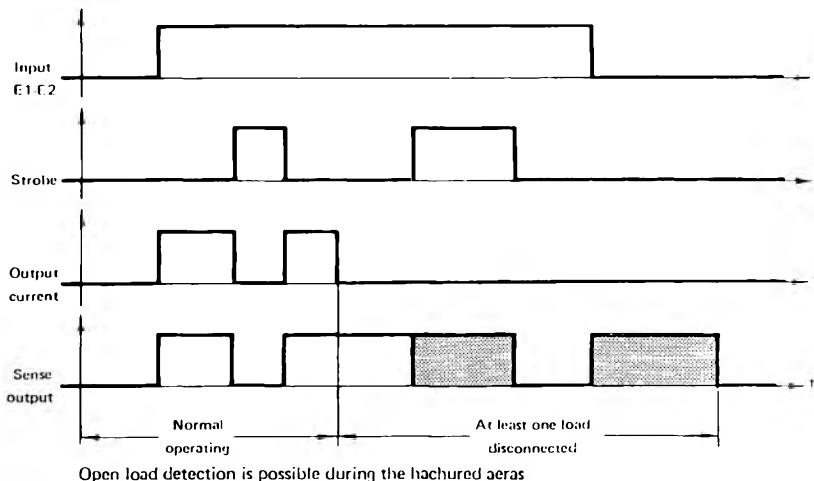
Open load detection is possible during the hachured aeras

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

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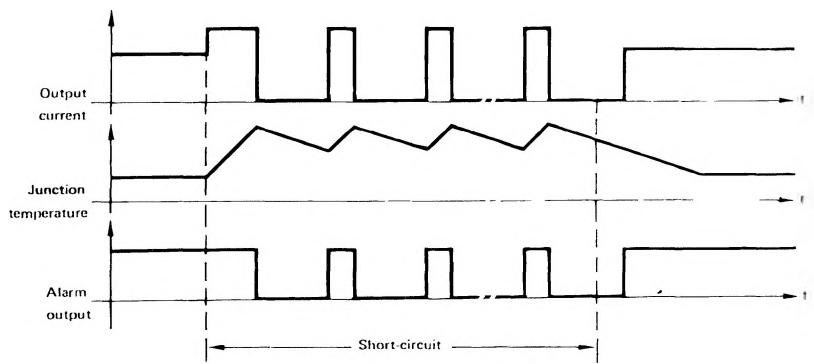
SHORT CIRCUIT WAVEFORMS WITH CONTROLLED RESET/$\overline{RESET}$ = 1
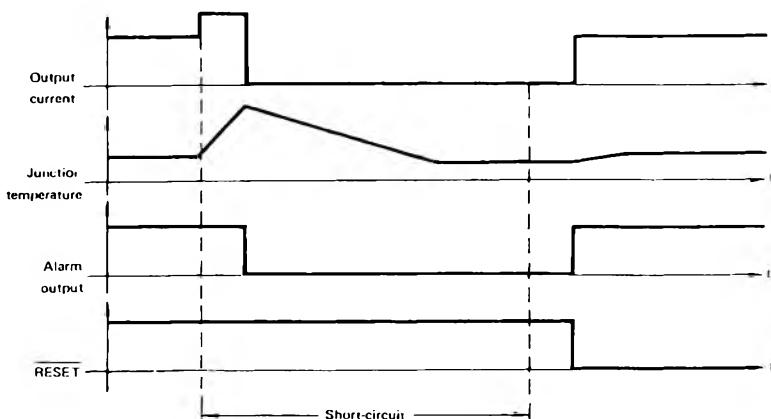
DEMAGNETIZATION UNDER INDUCTIVE LOAD

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**MICROELECTRONICS**
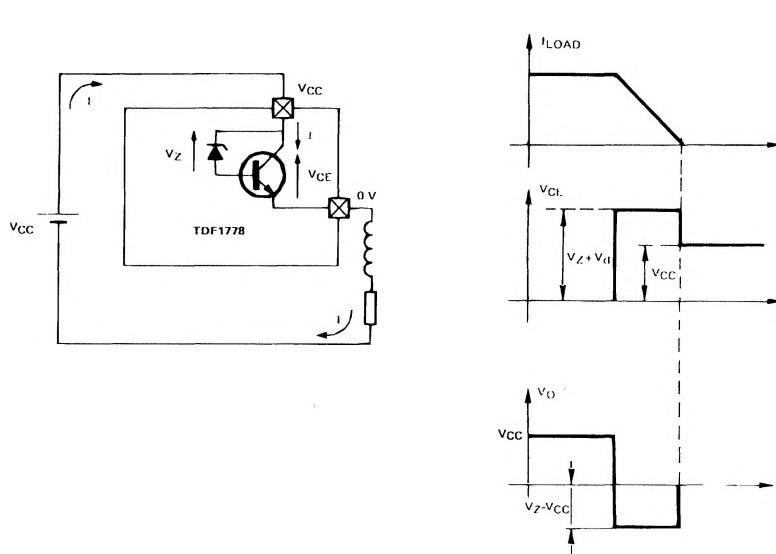
TYPICAL APPLICATION

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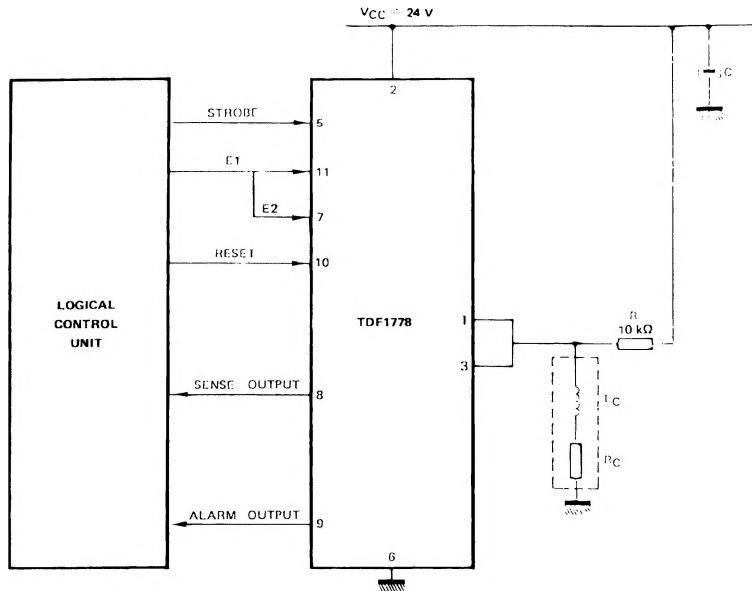
MAIN FEATURES

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 comptable.

TDF1778 HIGH CURRENT APPLICATION WITH INDUCTIVE LOAD 24 V - 4 A
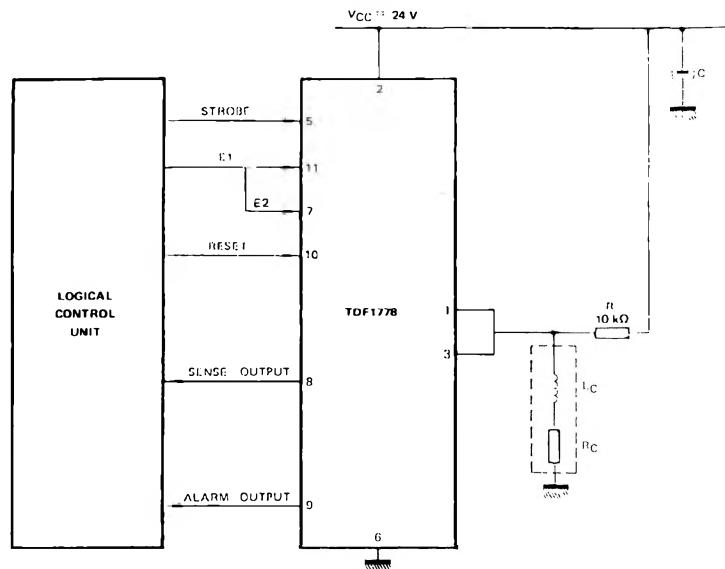
Load : L_C = 80 mH, T_C = 6 Ω
R_{max} = $V_{CC}/2$ mA

MAIN FEATURES

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

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