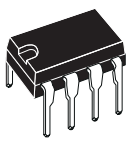
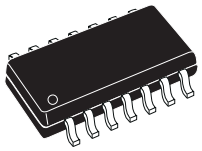
TDE3237

INTELLIGENT POWER SWITCH

- HIGH OUTPUT CURRENT
- ADJUSTABLE SHORT-CIRCUIT PROTECTION
- INTERNAL THERMAL PROTECTION WITH HYSTERESIS TO AVOID THE INTERMEDIATE OUTPUT LEVELS
- LARGE SUPPLY VOLTAGE RANGE: 8 TO 30V





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ORDERING NUMBERS:

TDE3237DP TDE3237FP

DESCRIPTION

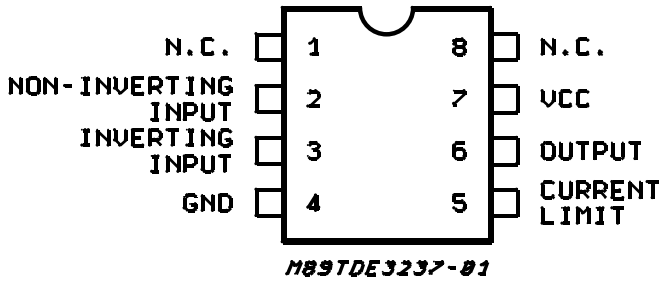
The TDE3237 is a monolithic amplifier designed for high-current and high-voltage applications, speclally to drive lamps, relays and stepping motors.

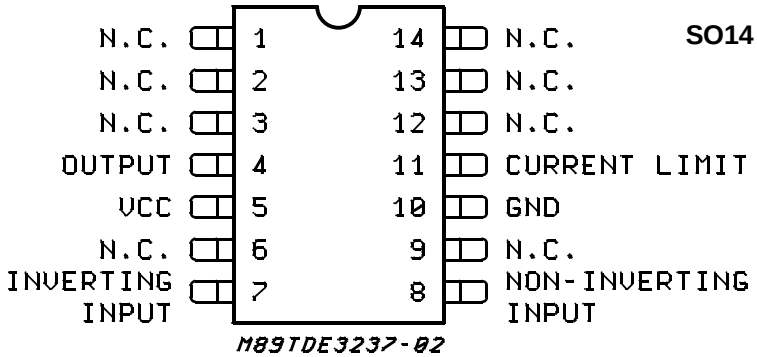
The device is essentially blow-out proof. Current limiting is available to limit the peak output current to a safe value, the adjustment only requires one external resistor. In addition, thermal shut down is provided to keep the IC from overheating. If external dissipation becomes too great, the driver will shut down to prevent excessive heating.

The output is also protected from short-circuits with the positive power supply.

The device operates over a wide range of supply voltages from standard ±15V operational amplifier supplies down to the single 12V or 24V used for industrial electronic systems.

PIN CONNECTIONS





ABSOLUTE MAXIMUM RATINGS

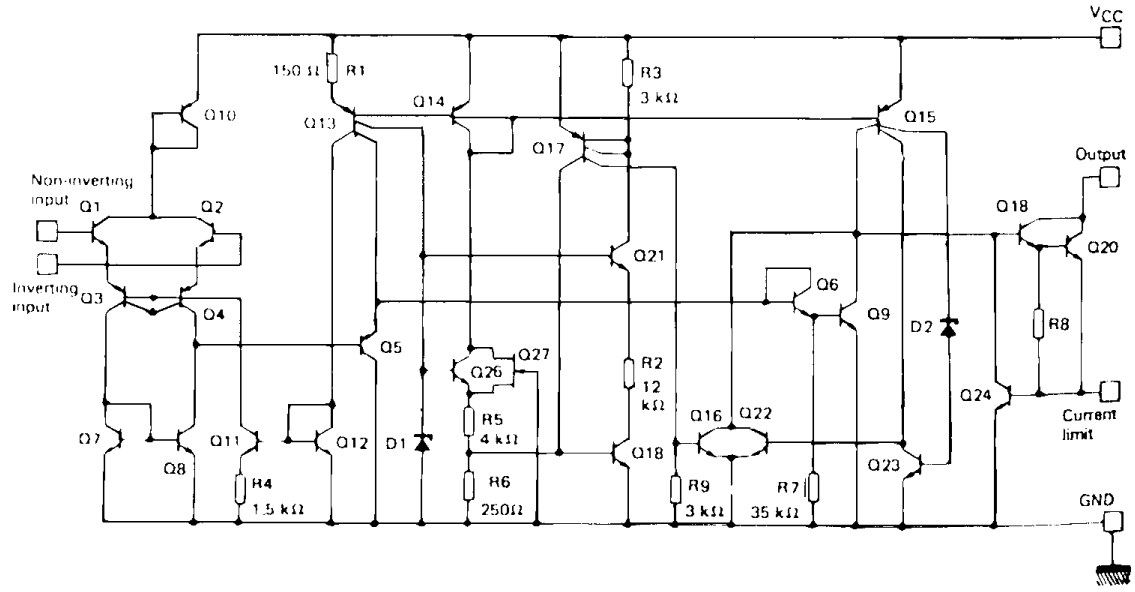
Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	36	V
V_{ID}	Differantial Input Voltage	36	V
V_I	Input Voltage	36	V
I_O	Output Current	500	mA
P_{tot}	Power Dissipation	Internally Limited	W
T_{stg}	Storage Temperature Range	– 65 to + 150	°C
T_{oper}	Operating Free-air Temperature Range	– 25 to + 85	°C

THERMAL CHARACTERISTICS

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Maximum Junction-case Thermal Resistance (note 1)	Minidip	50	°C/W
$R_{th(j-a)}$	Maximum Junction-ambient Thermal Resistance (note 1)	Minidip	120	°C/W
	Junction-ceramic Substrate (case glued to substrate)	SO14	90	°C/W
	Junction-ceramic Substrate (case glued to substrate, substrate temperature maintened constant)	SO14	65	°C/W

Note : 1. Devices bonded on 40 cm glass-epoxy printed circuit 0.15cm thick with 4cm^2 of copper

SCHEMATIC DIAGRAM



ELECTRICAL CHARACTERISTICS T_{amb} = – 25 to +85 °C, V_{CC} = 8 to ≤30 V, unless otherwise specified (note 1).

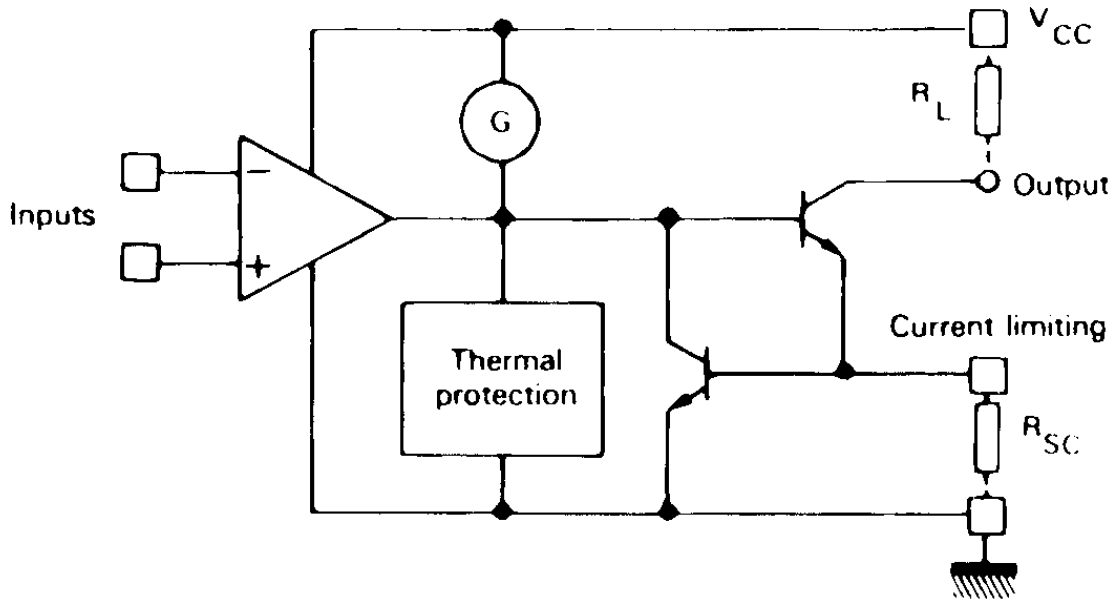
Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{IO}	Input Offset Voltage - (note 3)	–	2	50	mV
I_{IB}	Input Bias Current	–	0.1	1.5	µA
I_{CC}	Supply Current (V_{CC} = + 24 V, I_O = 0)	–	3	5	mA
V_{CM}	Common-mode Input Voltage Range	2	–	V_{CC}–2	V
I_{SC}	Short-circuit Current Limit (T_{case} = + 25 °C, R_{SC} = 3.3 Ω)	–	230	–	-mA
V_{CC}–V_O	Output Saturation Voltage (output high) (R_{SC} = 0, V_I+–V_I– ≥ 50 mV, I_O = 150 mA	–	1	1.5	V
I_{OL}	Low Level Output Current (V_O = V_{CC} = + 24 V T_{amb} = + 25 °C)	–	–	100	µA

Notes :

2) For operating at high temperature, the TDE3237, must be derated based on a + 150 C maximum junction temperature and a junction-ambient thermal as showed in the thermal characteristics data base.

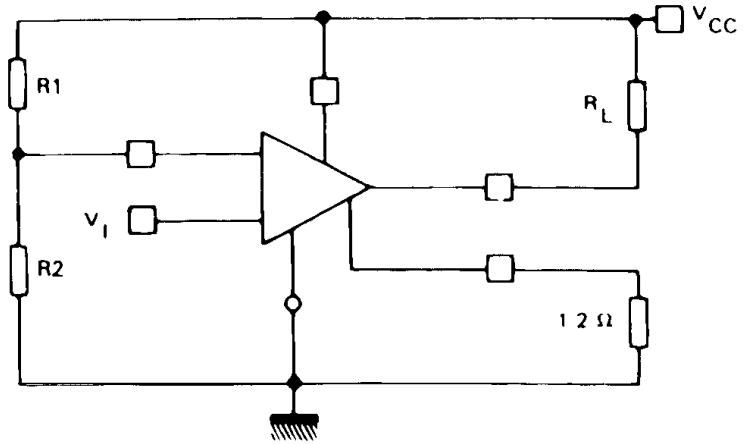
3) The offset voltage given is the maximum value of input voltage required to drive the output voltage within 2 V of the ground or the supply voltage.

SIMPLIFIED SCHEMATIC

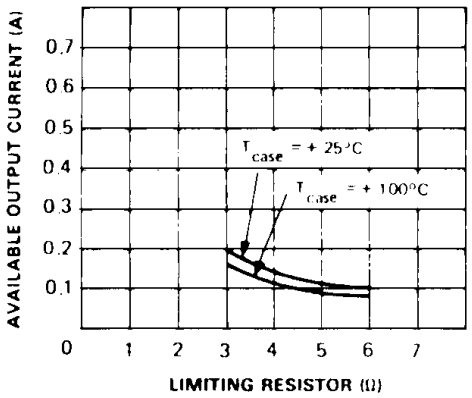


TYPICAL APPLICATION

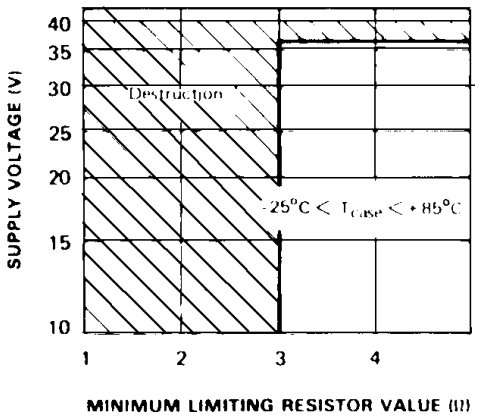
BASIC CIRCUIT



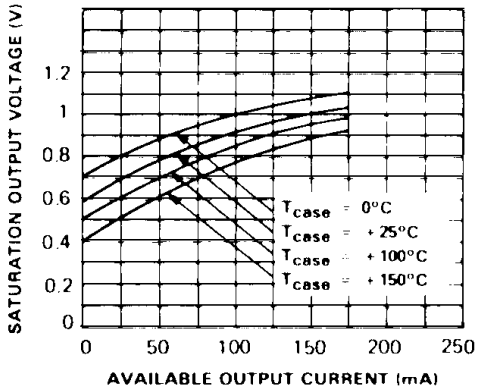
AVAILABLE OUTPUT CURRENT VERSUS LIMITING RESISTOR



SUPPLY VOLTAGE VS MINIMUM LIMITING RESISTOR VALUE



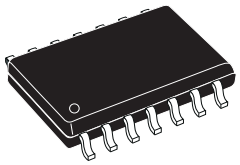
SATURATION OUTPUT VOLTAGE VERSUS CASE TEMPERATURE AND AVAILABLE OUTPUT CURRENT



DIM.	mm			inch		
	MIN..	TYP.	MAX..	MIN..	TYP..	MAX..
A			1.75			0.069
a1	0.1		0.25	0.004		0.009
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 (1)	8.55		8.75	0.336		0.344
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		7.62			0.300	
F (1)	3.8		4	0.150		0.157
G	4.6		5.3	0.181		0.209
L	0.4		1.27	0.016		0.050
M			0.68			0.027
S	8° (max)					

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

OUTLINE AND MECHANICAL DATA



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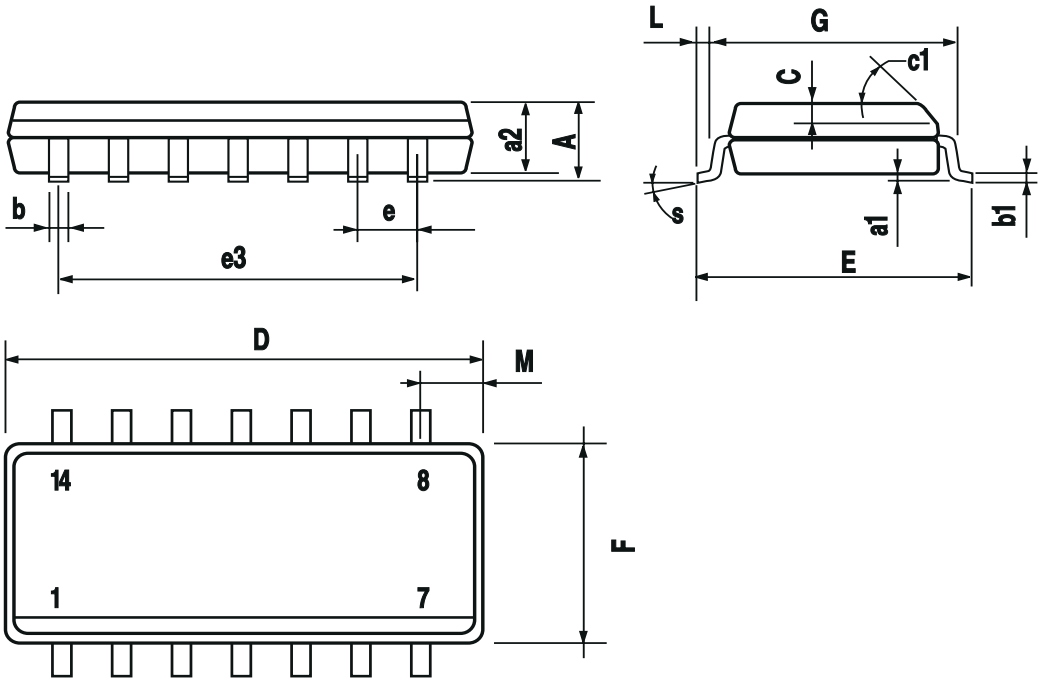
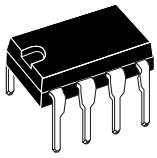


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		3.32			0.131	
a1	0.51			0.020		
B	1.15		1.65	0.045		0.065
b	0.356		0.55	0.014		0.022
b1	0.204		0.304	0.008		0.012
D			10.92			0.430
E	7.95		9.75	0.313		0.384
e		2.54			0.100	
e3		7.62			0.300	
e4		7.62			0.300	
F			6.6			0.260
I			5.08			0.200
L	3.18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

OUTLINE AND MECHANICAL DATA



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