SGS-THOMSON MICROELECTRONICS

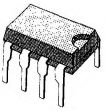
TDE3237

INTELLIGENT POWER SWITCH

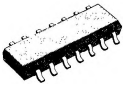
ADVANCE DATA

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

MINIDIP/2



SO14J



ORDER CODES : TDE3237DP (MINIDIP)
TDE3237FP (SO14J)

DESCRIPTION

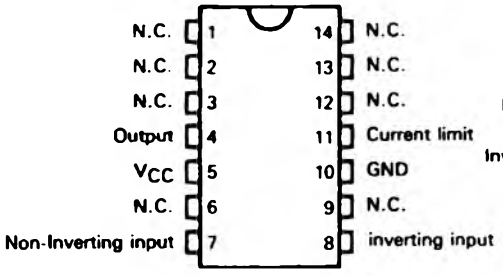
The TDE3237 is a monolithic amplifier designed for high current and high voltage applications, specially to drive lamps, relays and control of stepper motors.

This 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 I.C. from over heating. If external dissipation becomes too great, the driver will shut down to prevent excessive heating.

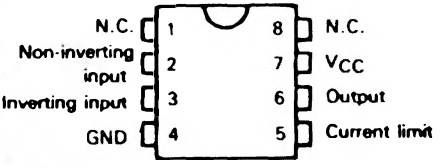
The output is also protected against short-circuits with the positive power supply.

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

PIN CONNECTIONS (top views)



SO14J



MINIDIP

ABSOLUTE MAXIMUM RATINGS

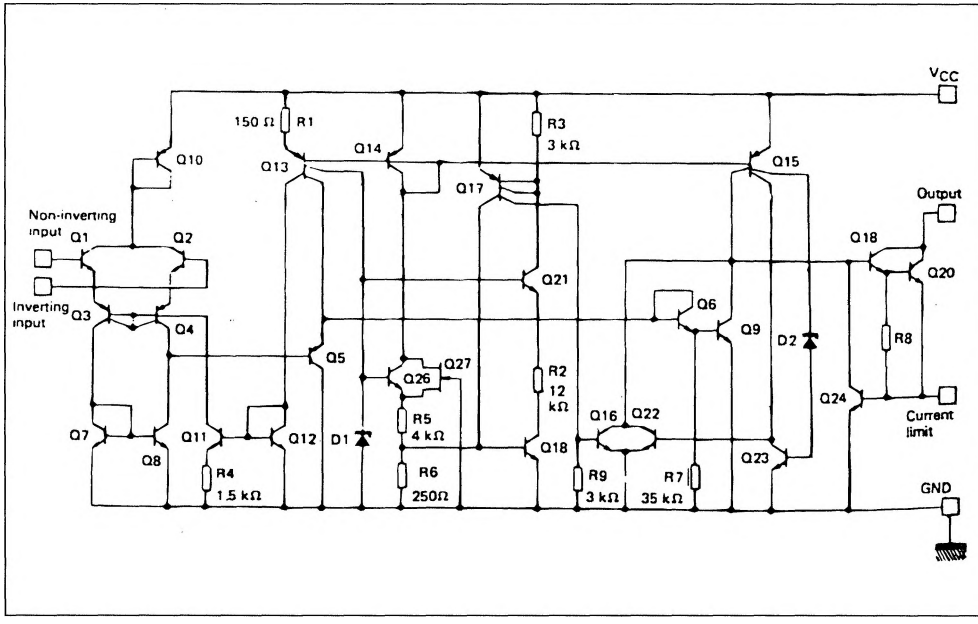
Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	36	V
V_I	Input Voltage	36	V
V_{ID}	Differential Input Voltage	36	V
I_O	Output Current	500	mA
P_{tot}	Power Dissipation	Internally Limited	W
T_{oper}	Operating Free–air Temperature Range	– 25 to + 85	°C
T_{stg}	Storage Temperature Range	– 65 to + 150	°C

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^2 glass-epoxy printed circuit 0.15 cm thick with 4 cm^2 of copper.

SCHEMATIC DIAGRAM



ELECTRICAL CHARACTERISTICS

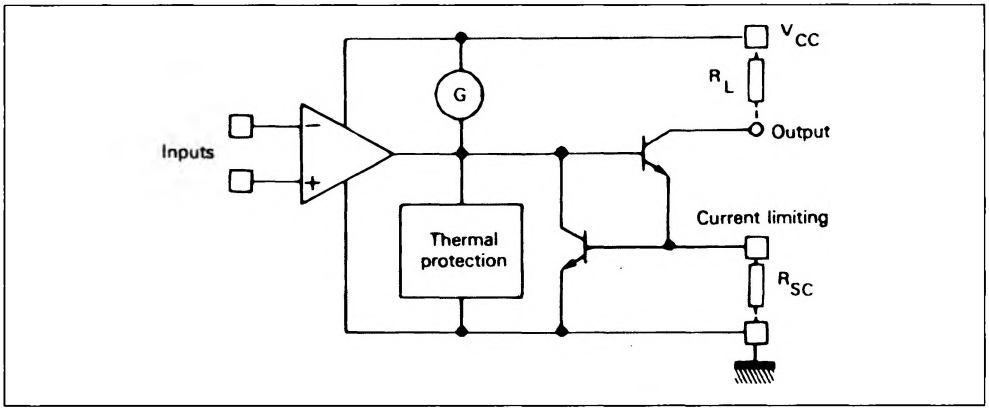
- 25 °C < T_{amb} ≤ + 85 °C, + 8 V ≤ V_{CC} ≤ 30 V, I_O ≤ 150 mA, T_j ≤150 °C (note 2) (unless otherwise specified)

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 (R_{SC} = 3.3 Ω, T_{case} = + 25 °C)	–	230	–	mA
V_{CC}–V_O	Output Saturation Voltage (output low) ($V_I^+ - V_I^- > 50$ mV, I_O = 150 mA, R_{SC} = 0)	–	1	1.5	V
I_{OL}	Output Leakage Current (output high) ($V_O = V_{CC}$ = + 24 V, T_{amb} = + 25 °C)	–	–	100	µA

Notes : 2. For operating at high temperatures, the TDE3237 must be derated on a 150 °C maximum junction temperature and a junction-ambient thermal resistance as showed in the thermal characteristics data base.

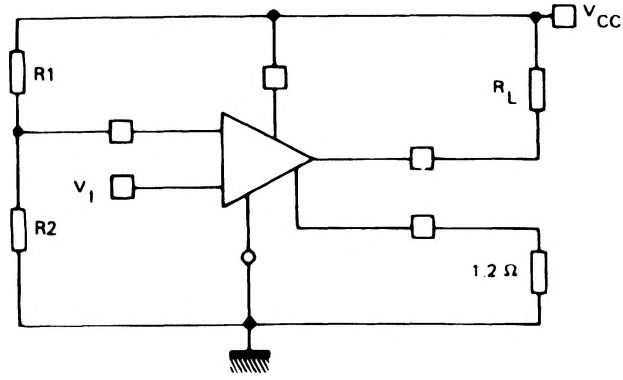
3. The offset voltage given is the maximum value of input voltage required to drive the output voltage within 2 V of the ground or the supply voltage.

SIMPLIFIED SCHEMATIC

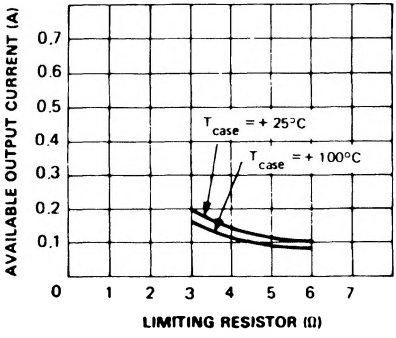


TYPICAL APPLICATION

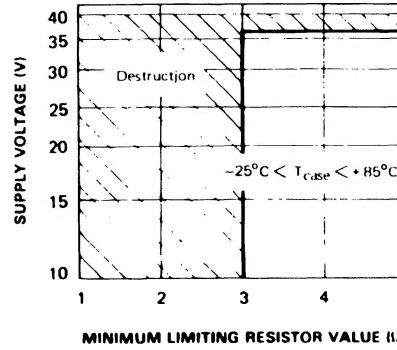
BASIC CIRCUIT



AVAILABLE OUTPUT CURRENT VERSUS LIMITING RESISTOR



SUPPLY VOLTAGE VS MINIMUM LIMITING RESISTOR VALUE



SATURATION OUTPUT VOLTAGE VERSUS CASE TEMPERATURE AND AVAILABLE OUTPUT CURRENT