

**INTERFACE CIRCUIT - RELAY AND LAMP-DRIVER**

- HIGH OUTPUT CURRENT
- ADJUSTABLE SHORT-CIRCUIT PROTECTION
- THERMAL PROTECTION WITH HYSTERESIS TO AVOID THE INTERMEDIATE OUTPUT LEVELS
- LARGE SUPPLY VOLTAGE RANGE : + 8 V to + 45 V

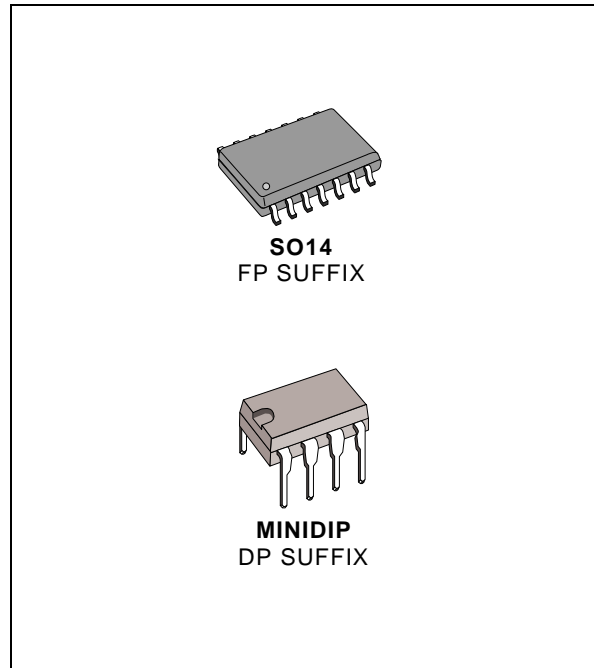
**DESCRIPTION**

The TDE1737-TDF1737 is a monolithic amplifier designed for high current and high voltage applications, specifically 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 overheating. If internal 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  $\pm 15$  V operational amplifier supplies down to the single + 12 V or + 24 used for industrial electronic systems.

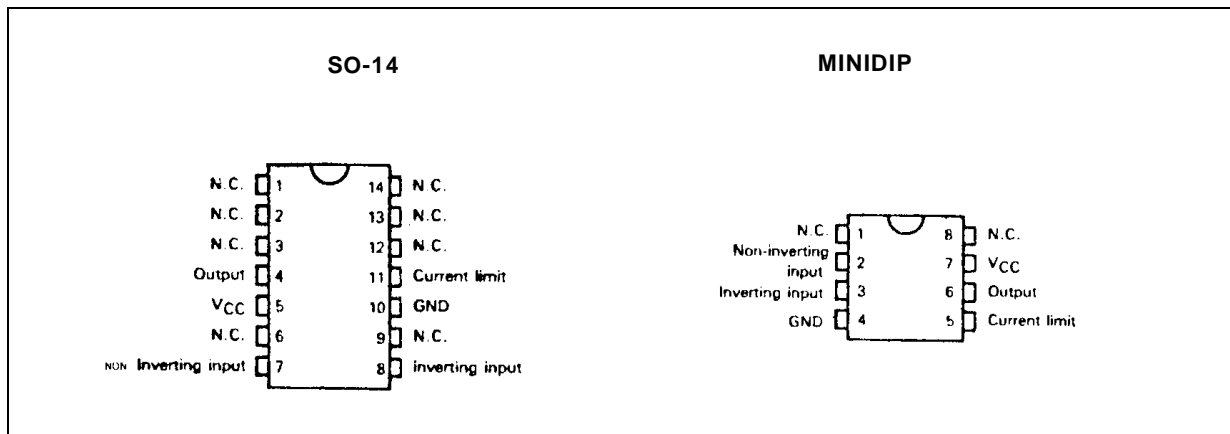


**ORDER CODES**

Part Number	Temperature Range	Package	
		DP	FP
TDE1737	- 25 °C to + 85 °C	•	•
TDF1737	- 40 °C to + 85 °C	•	•

Example : TDE1737DP

**PIN CONNECTIONS (top views)**



## TDE1737 - TDF1737

### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_s$	Supply Voltage	50	V
$V_I$	Input Voltage	50	V
$V_{ID}$	Differential Input Voltage	50	V
$I_O$	Output Current	1000	mA
$P_{tot}$	Power Dissipation	Internally Limited	W
$T_{oper}$	Operating Free-air Temperature Range for TDE1737	- 25 to + 85	°C
$T_{oper}$	Operating Free-air Temperature Range for TDF1737	- 40 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 MINIDIP	50	°C/W
$R_{th(j-a)}$	Maximum Junction-ambient Thermal Resistance MINIDIP	120	°C/W
	Junction-ceramic Substrate (case glued to substrate) SO14	90	°C/W

### ELECTRICAL CHARACTERISTICS

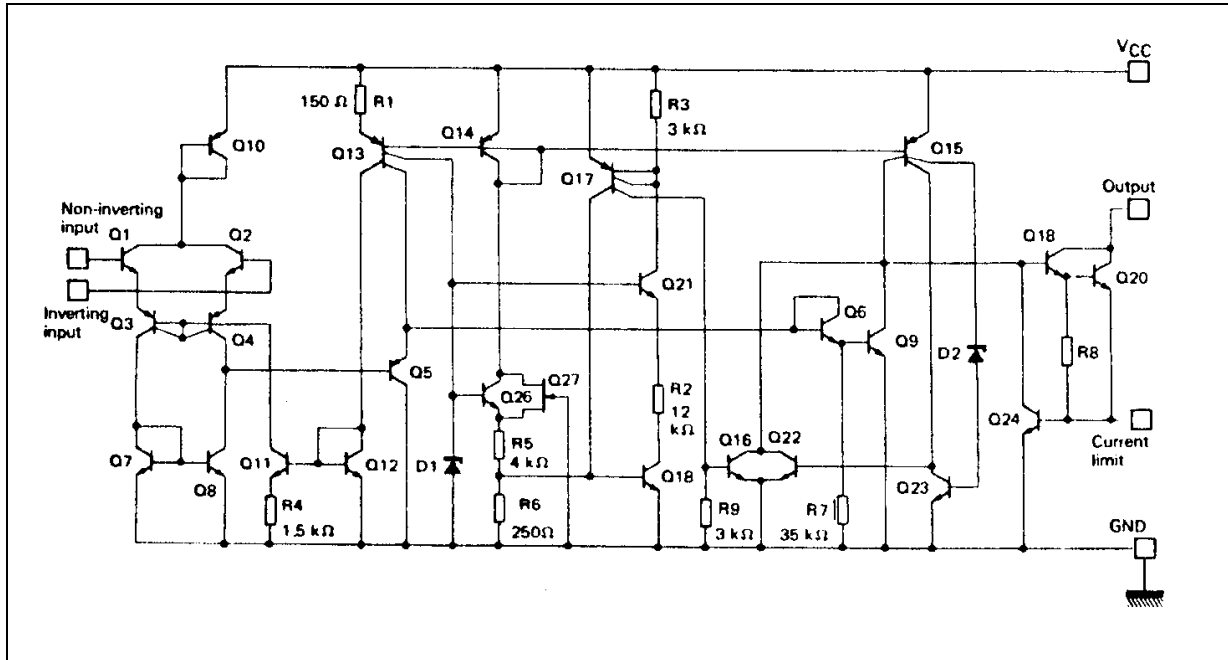
**TDE1737** – 25 °C ≤  $T_{amb}$  ≤ + 85 °C, + 8 V ≤  $V_{CC}$  ≤ + 45 V,  $I_O$  ≤ 300 mA,  $T_j$  ≤ + 150 °C  
(unless otherwise specified)

**TDF1737** – 40 °C ≤  $T_{amb}$  ≤ + 85 °C, + 8 V ≤  $V_{CC}$  ≤ + 45 V,  $I_O$  ≤ 300 mA,  $T_j$  ≤ 150 °C

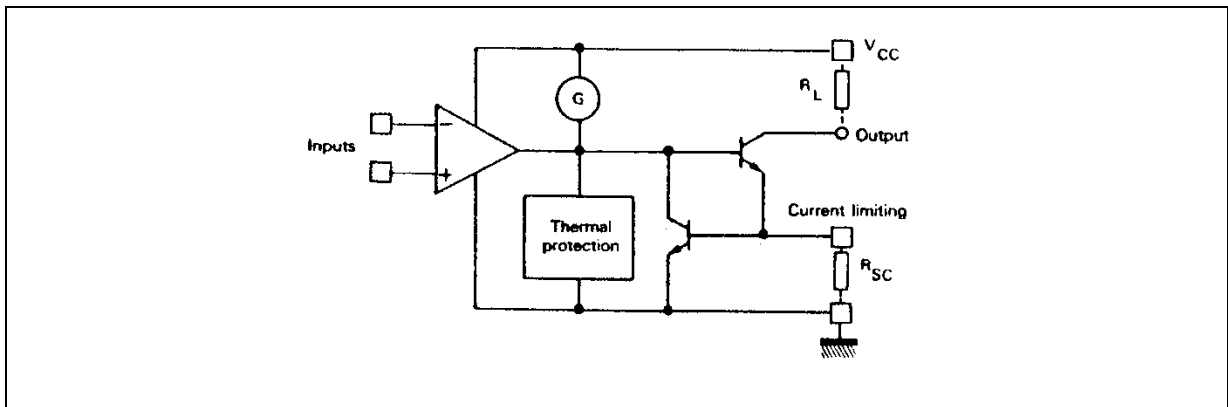
Symbol	Parameter	Min.	Typ.	Max.	Unit
$V_{IO}$	Input Offset Voltage – (note 1)	–	2	50	mV
$I_{IB}$	Input Bias Current	–	0.1	1.5	μA
$I_{CC}$	Supply Current ( $V_{CC} = + 24$ V, $I_O = 0$ )	–	3	5	mA
$V_{CM}$	Common-mode Input Voltage Range	2	–	$V_{CC}-2$	V
$I_{SC}$	Short-circuit Current Limit ( $R_{SC} = 1.5 \Omega$ , $T_{case} = + 25$ °C)	–	500	–	mA
$V_{CC}-V_O$	Output Saturation Voltage (output low) ( $V_I^+ - V_I^- \geq 50$ mV $I_O = 300$ 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)	–	–	10	μA

- Notes :**
1. 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.
  2. Devices bonded on a 40 cm<sup>2</sup> glass-epoxy printed circuit 0.15 cm thick with 4 cm<sup>2</sup> of cooper.

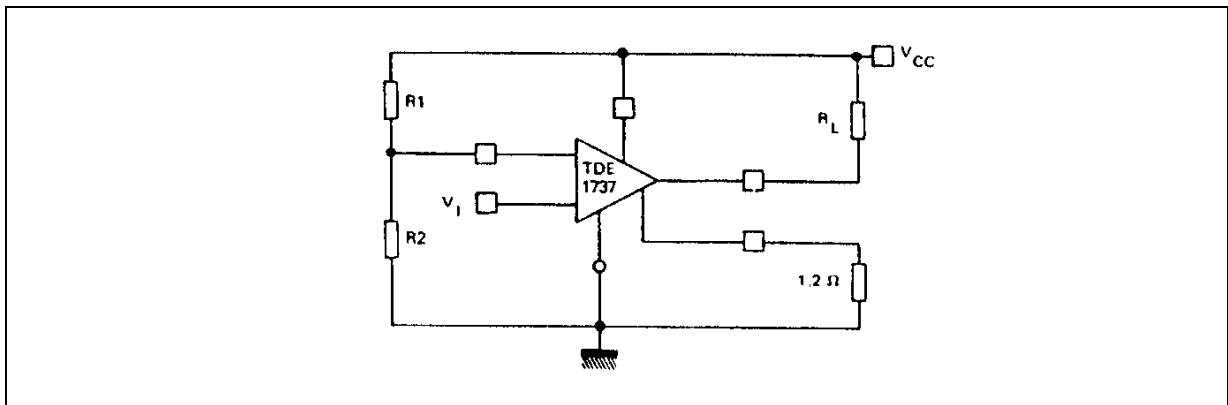
**SCHEMATIC DIAGRAM**



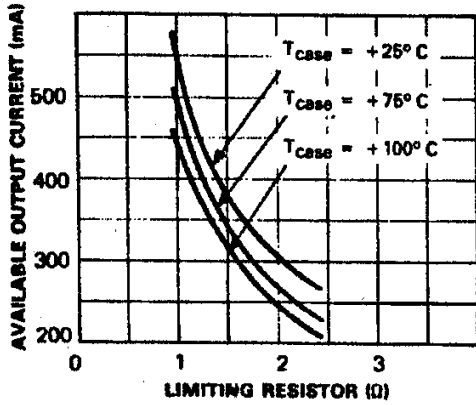
**SIMPLIFIED SCHEMATIC**



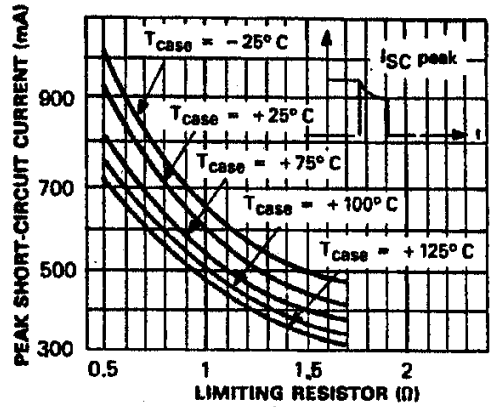
**TYPICAL APPLICATION -**



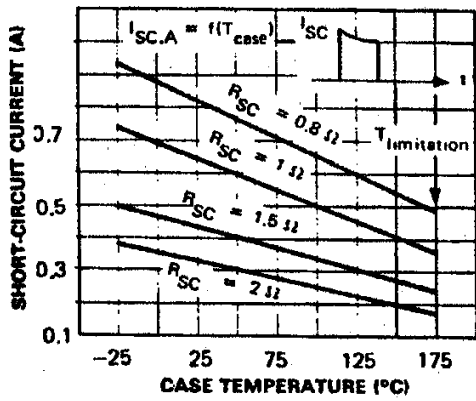
Available output current versus limiting resistors



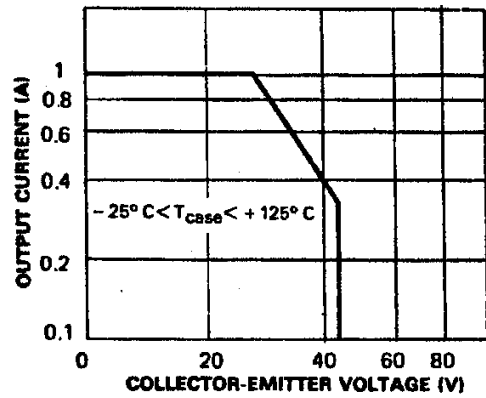
Peak short-circuit current versus limiting resistor



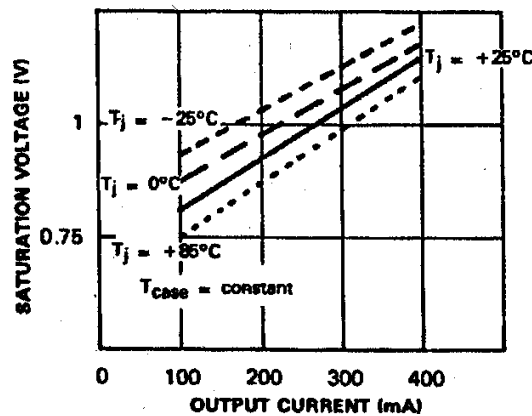
Short-circuit current versus case temperature



Safe operating area (non repetitive overload)

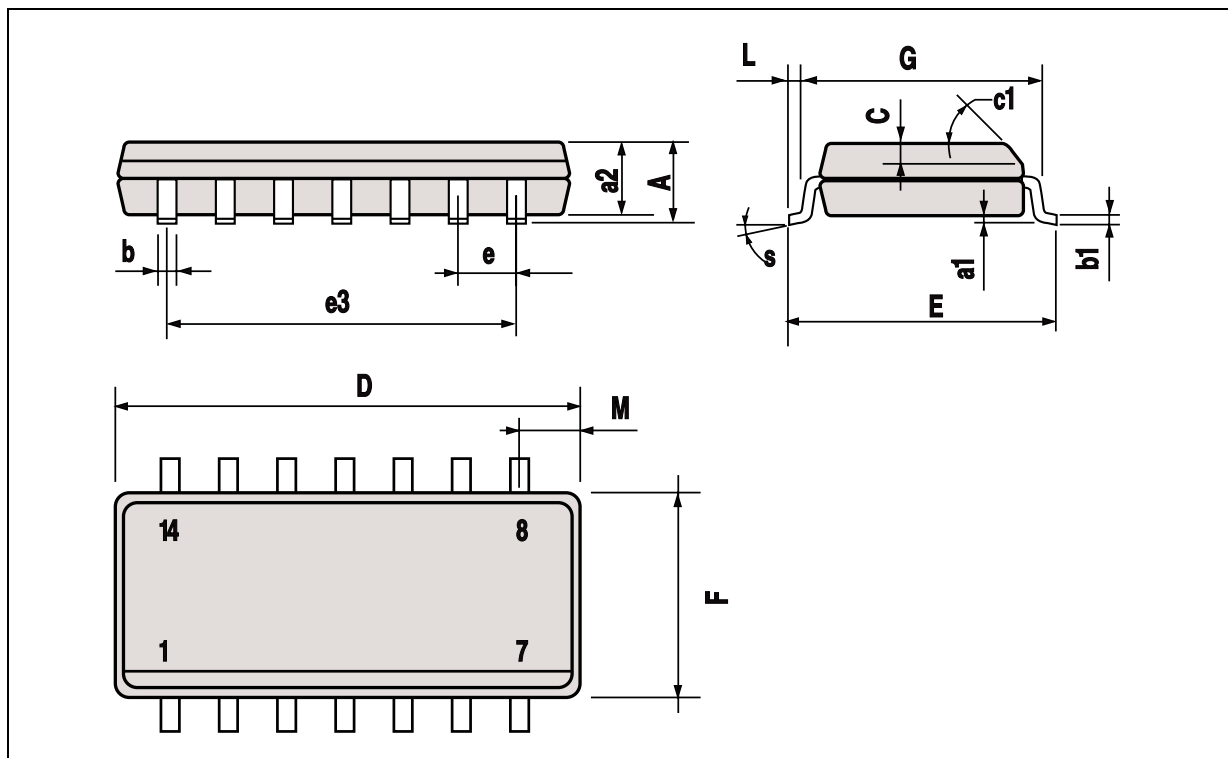


Saturation voltage versus output current



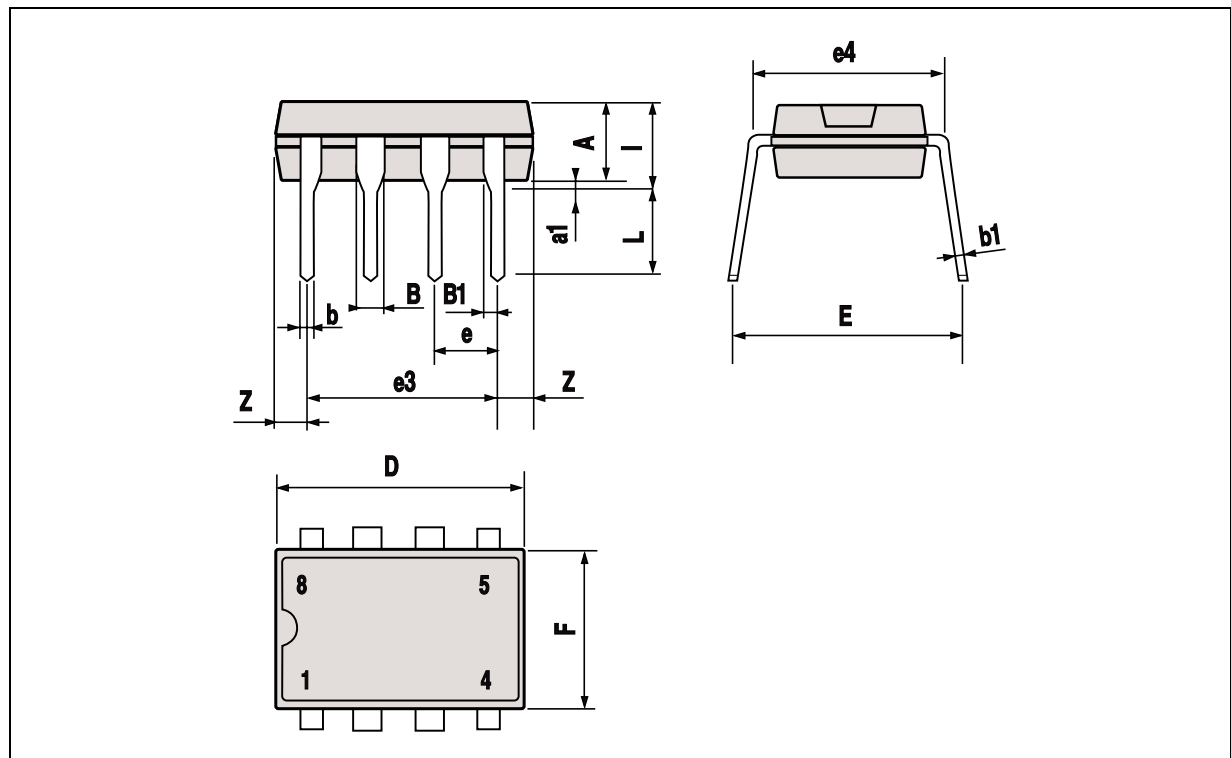
SO14 PACKAGE MECHANICAL DATA

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	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	3.8		4.0	0.15		0.157
L	0.4		1.27	0.016		0.050
M			0.68			0.027
S	8 (max.)					



MINIDIP PACKAGE MECHANICAL DATA

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
l			5.08			0.200
L	3.18		3.81	0.125		0.150
Z			1.52			0.060



Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1994 SGS-THOMSON Microelectronics - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.