# LINEAR INTEGRATED CIRCUITS

PRELIMINARY DATA

## VERY LOW DROP 5V VOLTAGE REGULATOR WITH RESET

- PRECISE OUTPUT VOLTAGE (5V ± 4%)
- VERY LOW DROPOUT VOLTAGE
- OUTPUT CURRENT IN EXCESS OF 500mA
- POWER-ON, POWER-OFF INFORMATION (RESET FUNCTION)
- +80/-80V LOAD DUMP PROTECTION
- OVERVOLTAGE AND REVERSE VOLTAGE PROTECTION
- SHORT CIRCUIT PROTECTION AND THERMAL SHUT-DOWN

The L487 is a monolithic integrated circuit in Pentawatt® package specially designed to provide a stabilized supply voltage for automotive and industrial electronic system. Thanks to its very low voltage drop, in automotive applications the L487 can work correctly even during the cranking phase, when the battery voltage could fall as low as 6V. Furthermore, it incorporates a complete range of protection circuits against the dangerous overvoltages always present on the battery rail of the car. The reset function makes the device particularly suited to supply microprocessor based systems: a pulse is available (after an externally programmable delay) to reset the microprocessor at power-on phase; at power-off, this pulse becomes low inhibiting the microprocessor.

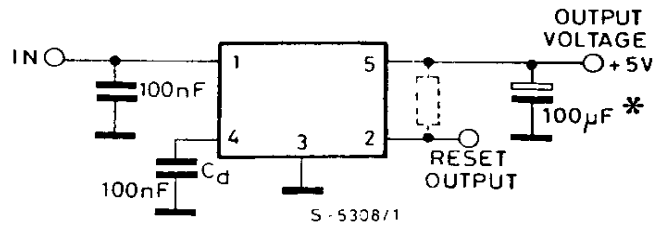
Pentawatt®

**ORDERING NUMBER:** L487

## ABSOLUTE MAXIMUM RATINGS

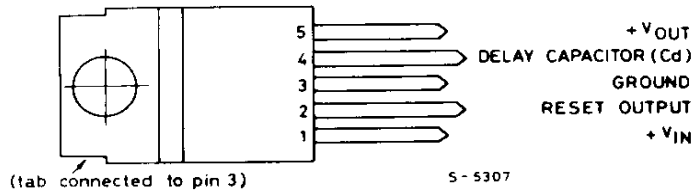
| | | | |
|---|---|---|---|
| $V_i$ | Forward input voltage | 35 | V |
| $V_i$ | Reverse input voltage | -18 | V |
| | Positive transient peak voltage (t = 300 ms) | 80 | V |
| | Negative transient peak voltage (t = 100 ms) | -80 | V |
| $T_{op}$ | Operating junction temperature | -40 to 150 | °C |
| $T_{stg}$ | Storage temperature | -55 to 150 | °C |

## TEST CIRCUIT




* Min. 33µF and max. ESR ⩽ 3Ω over temperature range

## CONNECTION DIAGRAM (top view)




## BLOCK DIAGRAM

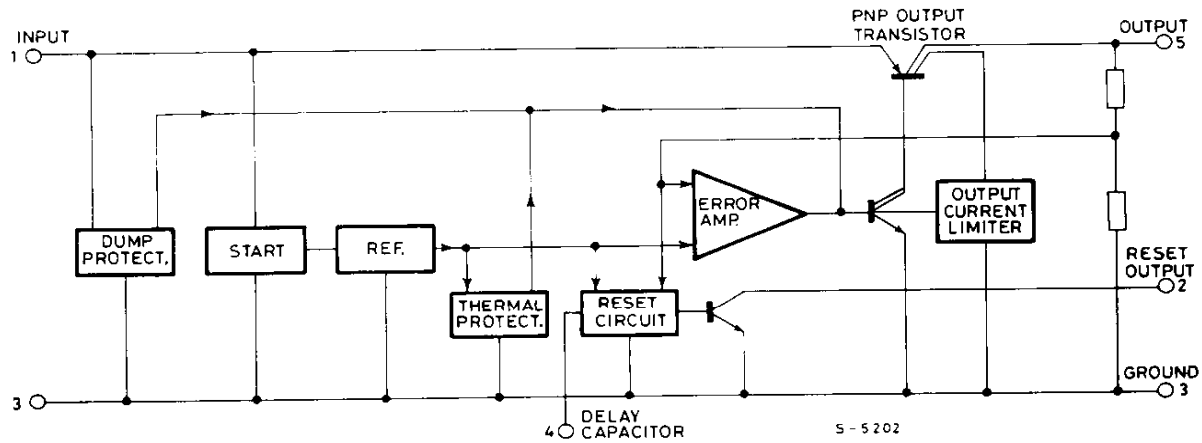



Fig. 1 - Dropout voltage vs. output current

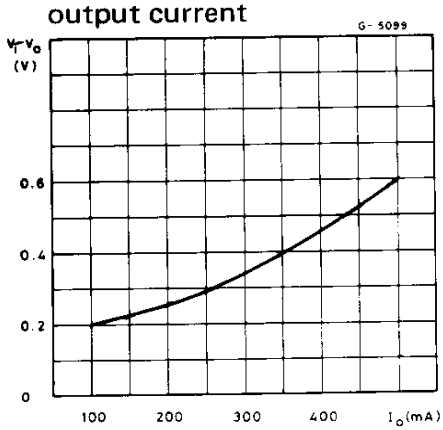



Fig. 2 - Quiescent current vs. output current

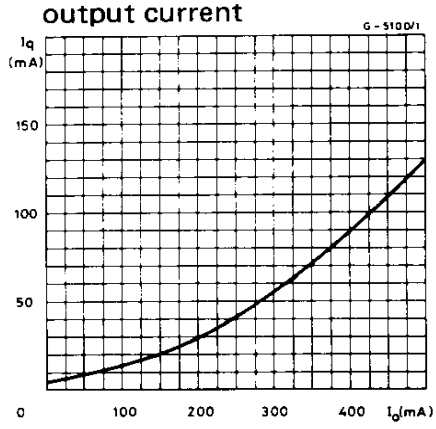
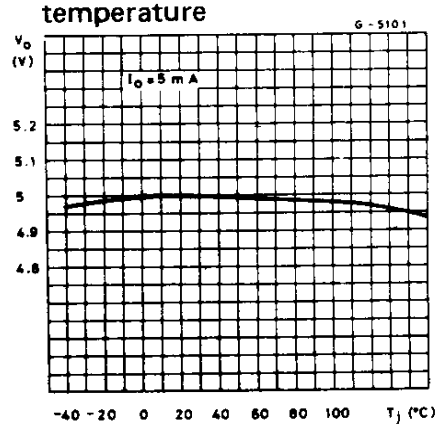



Fig. 3 - Output voltage vs. temperature




## THERMAL DATA

| | | | | |
|---|---|---|---|---|
| $R_{th\ j\text{-}case}$ | Thermal resistance junction-case | max | 4 | °C/W |

## ELECTRICAL CHARACTERISTICS (Refer to the test circuit, $V_i = 14.4V$, $T_{amb} = 25°C$, unless otherwise specified)

| Parameter | | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_o$ | Output voltage | $I_o$ = 5mA to 500mA | 4.80 | 5 | 5.20 | V |
| $V_i$ | Operating input voltage | (*) See note | | | 28 | V |
| $\Delta V_o$ | Line regulation | $V_i$ = 6 to 26V $I_o$ = 5mA | | 5 | 50 | mV |
| $\Delta V_o$ | Load regulation | $I_o$ = 5 to 500mA | | 15 | 60 | mV |
| $V_i - V_o$ | Dropout voltage | $I_o$ = 500mA | | 0.6 | 0.8 | V |
| $I_q$ | Quiescent current | $I_o$ = 0mA<br>$I_o$ = 150mA<br>$I_o$ = 500mA | | 6<br>20<br>130 | 15<br>40<br>210 | mA |
| | | $V_i$ = 6.2V $I_o$ = 500mA | | | 250 | |
| $\frac{\Delta V_o}{\Delta T}$ | Temperature output voltage drift | | | -0.5 | | mV/°C |
| SVR | Supply voltage rejection | $I_o$ = 350mA f = 120Hz<br>$C_o$ = 100µF $V_i$ = 12V ± 5Vpp | | 55 | | dB |
| $I_{sc}$ | Output short circuit current | | | 0.8 | | A |
| $V_R$ | Reset output voltage | $I_R$ = 16mA $V_o \leq$ 4.75V | | | 0.8 | V |
| $I_R$ | Reset output leakage current | $V_o$ in regulation | | | 50 | µA |
| $t_d$ | Delay time for reset output | Cd = 100nF | | 30 | | ms |
| $V_{RT(off)}$ | Reset threshold (delay charging current on) | | 4.75 | $V_o$-0.15 | $V_o$-0.04 | V |
| $I_{C4}$ | Charging current (current generator) | | 10 | | 27 | µA |
| $V_{RT(on)}$ | Reset threshold (low) | | | $V_{RT(off)}$ -10mV | | V |
| $V_4$ | Comparator threshold (pin 4) | | 3.6 | | 3.95 | V |

* For a DC input voltage $28 < V_i < 35V$ the device is not operating

## MECHANICAL DATA (Dimensions in mm)