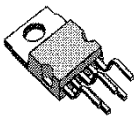
L487

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.



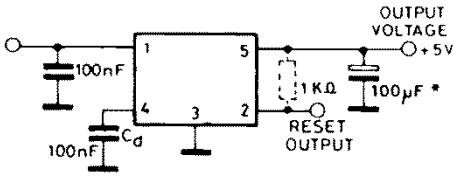
Pentawatt®

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 = 300ms)	80	V
	Negative transient peak voltage (t = 100ms)	–80	V
T_{op}	Operating junction temperature	–40 to 150	°C
T_{stg}	Storage temperature	–55 to 150	°C

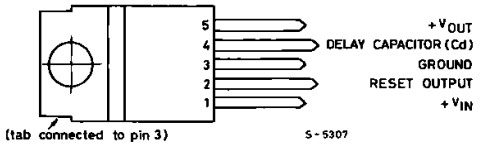
TEST CIRCUIT



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

L487

CONNECTION DIAGRAM (top view)



BLOCK DIAGRAM

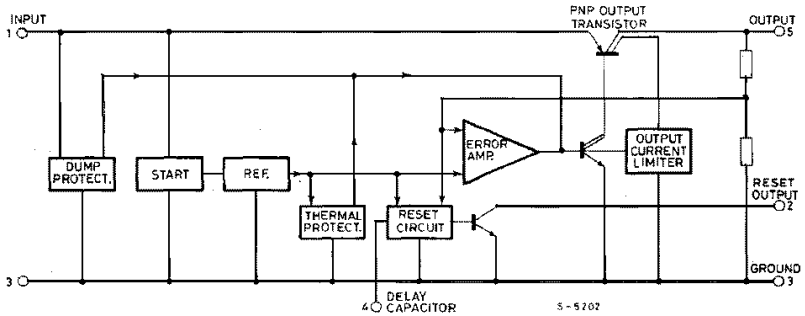


Fig.1 - Dropout voltage vs. output current

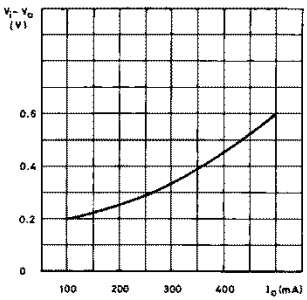


Fig.2 - Quiescent current vs. output current

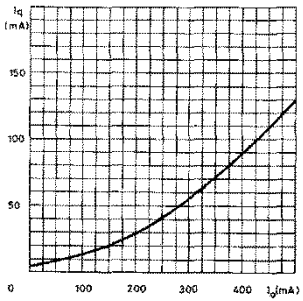
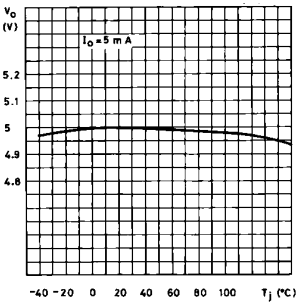


Fig.3 - Output voltage vs. temperature



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)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	I_o = 5mA to 500mA	4.80	5.00	5.20	V
V_i	Operating Input Voltage	(*) See note			28	V
ΔV_o	Line Regulation	V_i = 6V to 26V I_o = 5mA		5	50	mV
ΔV_o	Load Regulation	I_o = 5mA 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		6	15	mA
		I_o = 150mA		20	40	
		I_o = 500mA		130	210	
		V_i = 6.2 V I_o = 500mA			250	mA
$\frac{\Delta V_o}{\Delta T}$	Temperature Output Voltage Drift			–0.5		mV/°C
SVR	Supply Voltage Rejection	I_o = 350 mA f = 120 Hz 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 = 1 6mA $V_o \leq$ 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)			$V_{RT(off)}$ –10m V		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

For dimensional information on the Pentawatt package see the L387A data sheet. For more information on this device see the SGS-Thomson Microelectronics Application Note: 'Low Drop Voltage Regulators for Automotive Electronics' by S.Ciscato.

This device can be used as a replacement for L387A, L4947, LM2927T, L78MR05 or 4848 (in house part number with 'SGS 88719' printed on it).