

LINEAR INTEGRATED CIRCUITS

PRELIMINARY DATA

VERY LOW DROP 5V VOLTAGE REGULATOR WITH RESET

- PRECISE OUTPUT VOLTAGE ($5V \pm 4\%$)
- 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.



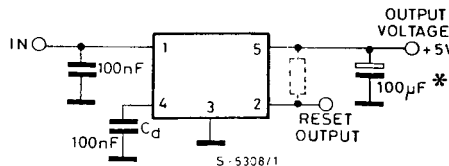
Pentawatt[®]

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

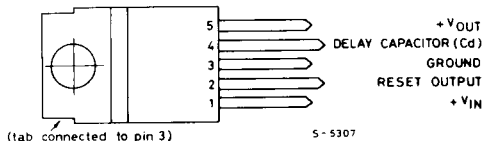
TEST CIRCUIT



* Min. $33\mu F$ and max. $ESR \leq 3\Omega$ over temperature range

L487

CONNECTION DIAGRAM (top view)



BLOCK DIAGRAM

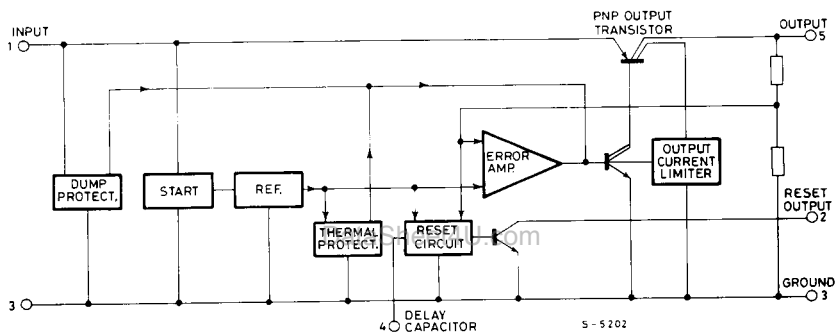


Fig. 1 - Dropout voltage vs. output current

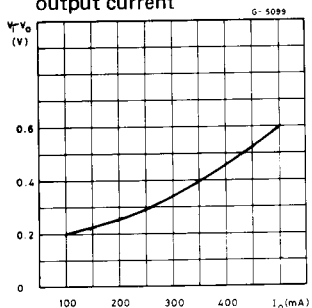


Fig. 2 - Quiescent current vs. output current

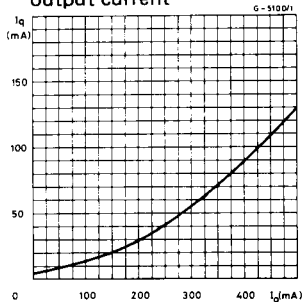
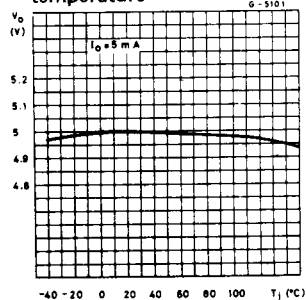


Fig. 3 - Output voltage vs. temperature



THERMAL DATA

$R_{th\ j-case}$ Thermal resistance junction-case

max 4 °C/W

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

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

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

MECHANICAL DATA (Dimensions in mm)

