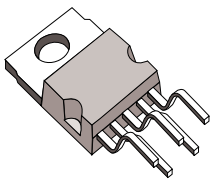
SGS-THOMSON MICROELECTRONICS

L387A

VERY LOW DROP 5V REGULATOR WITH RESET

- PRECISE OUTPUT VOLTAGE (5 V ± 4 %)
- VERY LOW DROPOUT VOLTAGE
- OUTPUT CURRENT IN EXCESS OF 500mA
- POWER-ON, POWER-OFF INFORMATION (RESET FUNCTION)
- HIGH NOISE IMMUNITY ON RESET DELAY CAPACITOR



Pentawatt®

ORDERING NUMBER : L387A

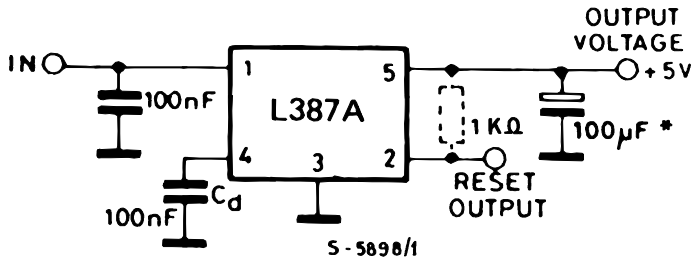
DESCRIPTION

The L387A is a very low drop voltage regulator in a Pentawatt® package specially designed to provide stabilized 5V supplies in consumer and industrial applications. Thanks to its very low input/output voltage drop this device is very useful in battery powered equipment, reducing consumption and prolonging battery life. A reset output makes the L387A particularly suitable for microprocessor systems. This output provides a reset signal when power is applied (after an external programmable delay) and goes low when power is removed, inhibiting the microprocessor. An hysteresis on reset delay capacitor raises the immunity to the ground noise.

ABSOLUTE MAXIMUM RATINGS

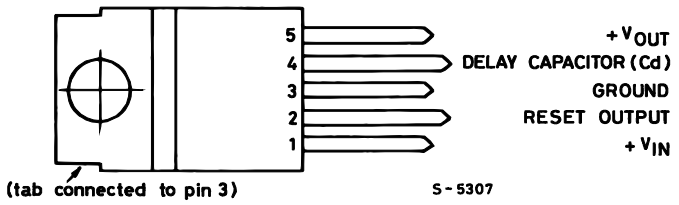
Symbol	Parameter	Value	Unit
V_i	D.C. Input Voltage	35	V
T_j, T_{stg}	Junction and Storage Temperature Range	–55 to 150	°C

APPLICATION CIRCUIT

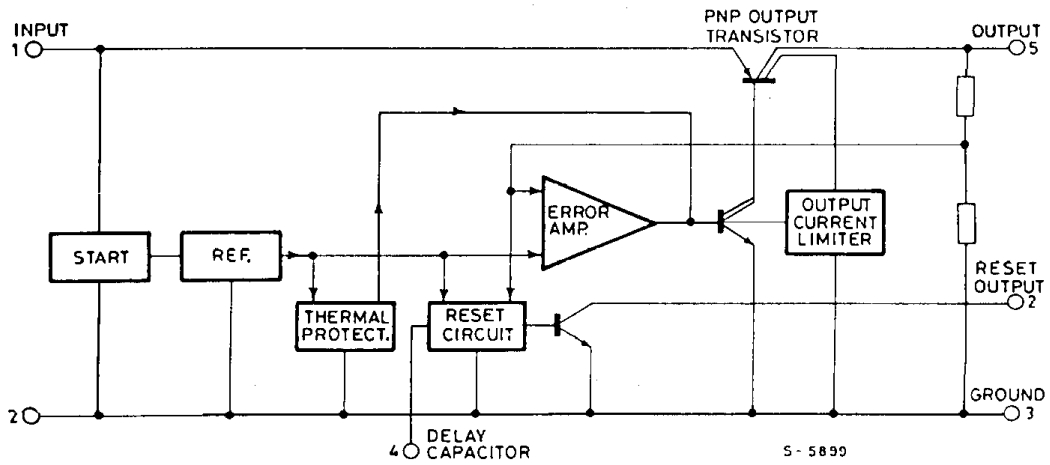


* Min 33 µF and max. ESR ≤ 3 Ω over temperature range.

PIN CONNECTION (Top views)



BLOCK DIAGRAM



THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	4	°C/W

ELECTRICAL CHARACTERISTICS (refer to the test circuit, V_i = 14.4 V, T_j = 25 °C, C_o = 100 µF; unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	I_o = 5 mA to 500 mA T_j = 25 °C – 40 ≤ T_j ≤ 125 °C	4.80 4.75	5.00 5.00	5.20 5.25	V V
V_I	Operating Input Voltage	(*), Over Full T Range (– 40 to 125 °C) (see note **)			26	V
ΔV_o	Line Regulation	V_i = 6 V to 26 V I_o = 5 mA		5	50	mV
ΔV_o	Load Regulation	I_o = 5 mA to 500 mA		15	60	mV
$V_I - V_o$	Dropout Voltage	$V_O = V_{O\ NOM}$ – 100 mV I_o = 350 mA I_o = 500 mA		 0.40 0.60	 0.65 0.8	 V V
I_q	Quiescent Current	I_o = 0 mA I_o = 150 mA I_o = 350 mA I_o = 500 mA		5 20 60 100	15 35 100 160	mA mA mA mA
		V_i = 6.2 V I_o = 500 mA		160	180	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 = 100 µF V_i = 12 V ± 5 V_{pp}			60	
I_{SC}	Output Short Circuit Current			1.2	1.6	A
V_R	Reset Output Voltage	I_R = 3 mA 1 < V_o < 4.70 V I_R = 16 mA 1.5 < V_o < 4.75 V Over Full T (– 40 °C ≤ T_j ≤ 125 °C)			0.5 0.8	V V
I_R	Reset Output Leakage Current	V_o in Regulation V_R = 5V Over Full T Range			50	µA
t_d	Delay Time for Reset Output	Cd = 100 nF Over Full T Range		25		ms
$V_{RT\ (off)}$		V_o @ Reset out H to L Transition, Over Full T Range	4.75	V_o – 0.15		V
I_{C4}	Charging Current (current generator)	V_4 = 3 V	10	20	30	µA
$V_{RT\ (on)}$	Power on V_oThreshold	V_o @ Reset out L to H Transition , Over Full T Range		$V_{RT\ (off)}$ + 0.05 V	V_o – 0.04 V	V
V_4	Comparator Threshold (pin 4)	V_4 @ Reset out H to L Transition	3.2		3.9	V
		V_4 @ Reset out L to H Transition	3.7		4.3	V
V_H	Hysteresis Voltage	Over Full T Range		450		mV

(*) For a DC voltage 26 < Vi < 37 V the device is not operating.
(**) Design limits are guaranteed (but not 100 % production tested) over the indicated temperature and supply voltage ranges. These limits are not used to calculate outgoing quality levels.

Figure 1 : Dropout Voltage vs. Output Current.

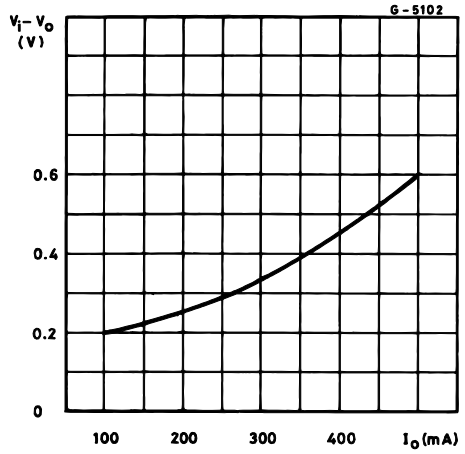


Figure 2 : Quiescent Current vs. Output Current.

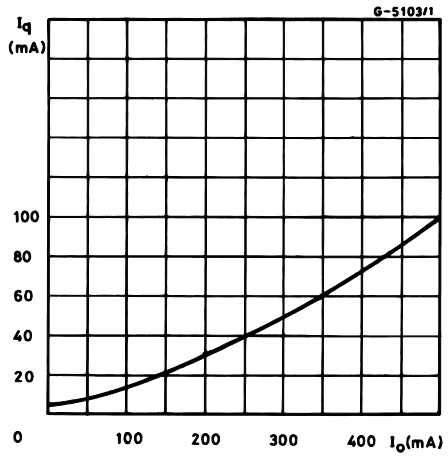
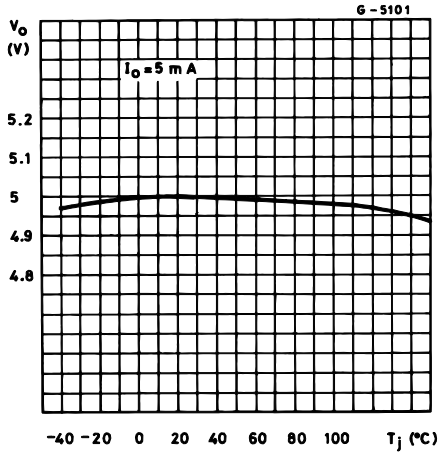


Figure 3 : Output Voltage vs. Temperature.



PENTAWATT PACKAGE MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			4.8			0.189
C			1.37			0.054
D	2.4		2.8	0.094		0.110
D1	1.2		1.35	0.047		0.053
E	0.35		0.55	0.014		0.022
F	0.8		1.05	0.031		0.041
F1	1		1.4	0.039		0.055
G		3.4		0.126	0.134	0.142
G1		6.8		0.260	0.268	0.276
H2			10.4			0.409
H3	10.05		10.4	0.396		0.409
L		17.85			0.703	
L1		15.75			0.620	
L2		21.4			0.843	
L3		22.5			0.886	
L5	2.6		3	0.102		0.118
L6	15.1		15.8	0.594		0.622
L7	6		6.6	0.236		0.260
M		4.5			0.177	
M1		4			0.157	
Dia	3.65		3.85	0.144		0.152