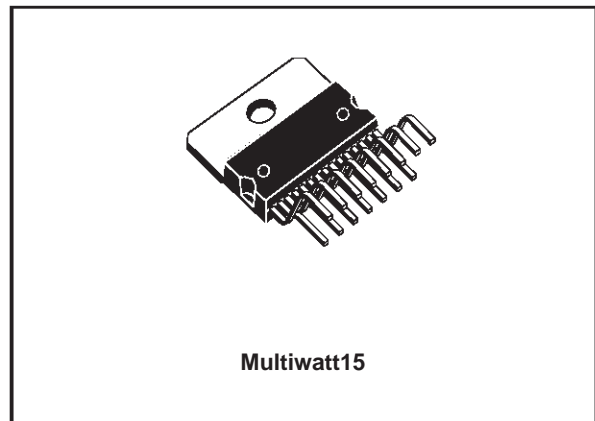


MULTIFUNCTION VOLTAGE REGULATOR FOR CAR RADIO

PRELIMINARY DATA

- 3 OUTPUTS:
9.2V (500mA);
5V (1A);
5V (100mA) STANDBY
- OUT1 (9.2V) AND OUT2 (5V) WITH INDEPENDENT ENABLE CONTROL FOR STANDBY MODE
- 2A HIGH SIDE DRIVER WITH CLAMPED OUTPUT (16V)
- LOGIC OUTPUT FOR:
 - SUPPLY UNDERVOLTAGE (LVW)
 - OVERVOLTAGE
 - THERMAL PROTECTION
- RESET FUNCTION
- IGNITION COMPARATOR
- REVERSE BATTERY AND LOAD DUMP PROTECTION
- THERMAL SHUTDOWN



The IC includes a monitoring circuit to warn if a low voltage or no voltage condition is occurring.

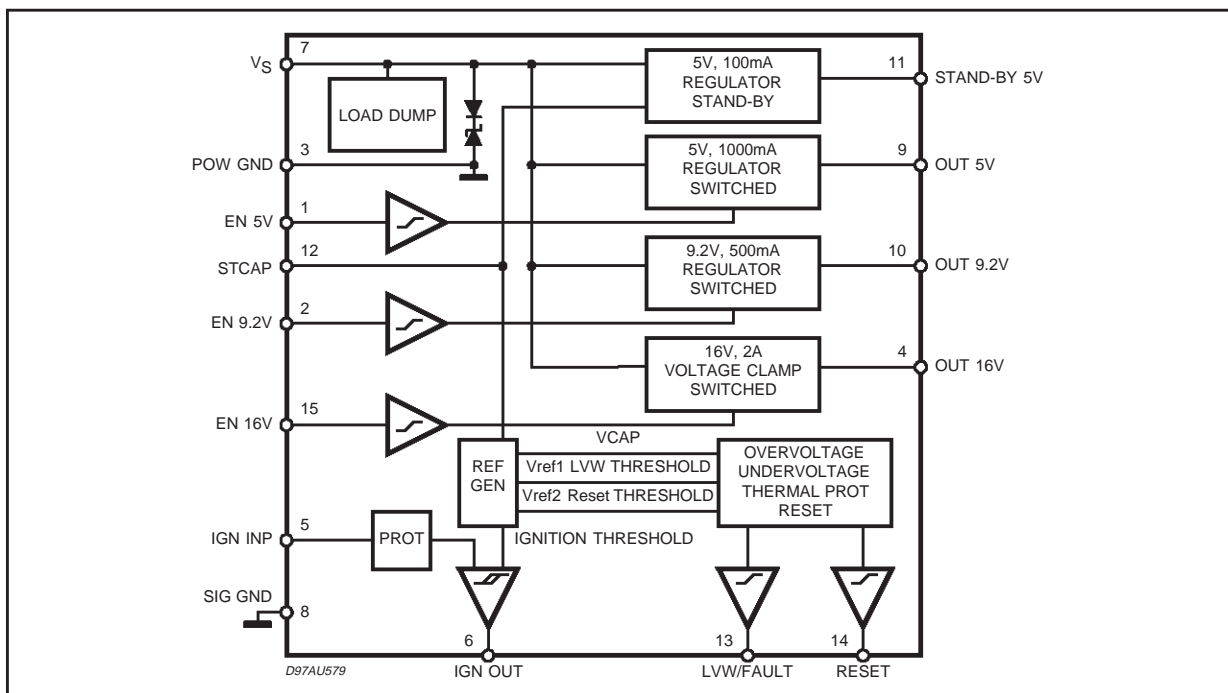
In stand-by output is active as long as possible even when in thermal shutdown or any other fault conditions.

The STCAP pin allows the use of a reserve supply capacitor that will hold enough energy for the 5V Stand-by line to allow the μ P to store data.

DESCRIPTION

The L4953G contains a triple voltage regulator and a power switch.

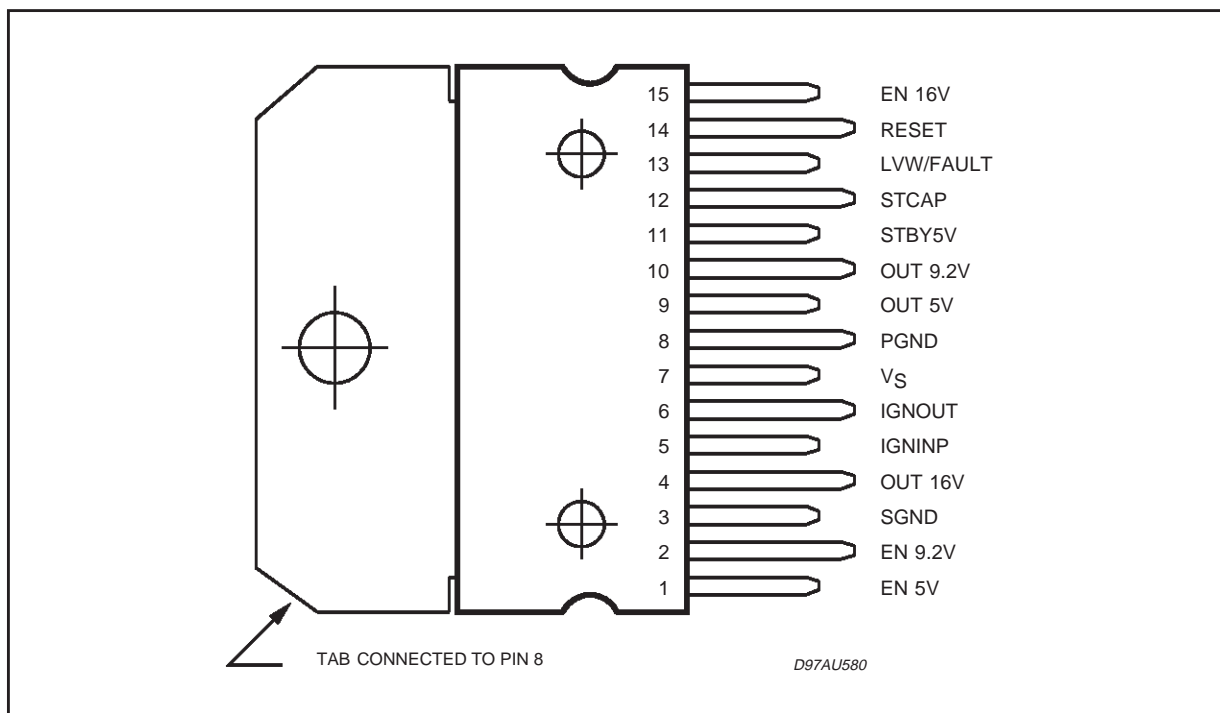
BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V _{SDC}	DC Operating Supply Voltage	-0.6 to 28	V
V _{STR}	Transient Supply Voltage	50	V
I _o	Output Current	internally limited	
T _{op}	Operating Temperature Range	-40 to 85	°C
T _{stg}	Storage Temperature	-55 to 150	°C

PIN CONNECTION (Top view)



THERMAL DATA

Symbol	Parameter	Value	Unit
R _{th j-case}	Thermal Resistance Junction-case	2	°C/W

ELECTRICAL CHARACTERISTICS ($V_S = 14V$, $T_{amb} = -40$ to $85^\circ C$, unless otherwise specified.)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_S	Operating Supply Voltage		11		18	V
En	Output Noise Voltage	Any reg. supply, $f = 100\text{Hz to } 200\text{KHz}$		200	400	μV

5V STAND-BY OUTPUT VOLTAGE

$V_{5\text{st-by}}$	Stand-by Output Voltage		4.75	5	5.25	V
ΔV_{line}	Line Regulation	$11V < V_S < 16V$		5	50	mV
ΔV_{load}	Load Regulation	$5\text{mA} < I_O < 100\text{mA}$		12	100	mV
V_{dropout}	Dropout Voltage	$I_{\text{out}} = 100\text{mA}$ $V_{\text{bat}} = 5.5V$		0.2	0.6	V
$I_{\text{qst-by}}$	Quiescent Current @ Stand-by	$SW < 1.5V$ $5V \text{ ST-BY} = 100\mu A \text{ Load}$		0.3	0.65	mA

5V/1000mA SWITCHED OUTPUT VOLTAGE

$V_{\text{out}5}$	5V Output Voltage	no load	4.75	5	5.25	V
ΔV_{line}	Line Regulation	$7V < V_S < 18V$		5	50	mV
ΔV_{load}	Load Regulation	$5\text{mA} < I_O < 1A$		12	50	mV
V_{dropout}	Dropout Voltage	$V_{\text{bat}} = 5.5V$ $I_O = 1A$		1.0	1.5	V
I_q	Quiescent Current	$75\text{mA} < I_O < 1A$		30	100	mA
I_{lim}	Current Limit	Output Shorted to GND	1	1.3		A
SW on	Switch ON	$I_O = 75\text{mA}$	3.5			V
SW off	Switch OFF				1.5	V
SW hyst	Switch Hysteresis		100	200	500	mV
R_{in}	Input Impedance		10	40		$K\Omega$

9.2V/500mA SWITCHED OUTPUT VOLTAGE

$V_{\text{out}9.2}$	9.2V Output Voltage	no load		$9.2 \pm 5\%$		V
ΔV_{line}	Line Regulation	$11V < V_S < 18V$		5	50	mV
ΔV_{load}	Load Regulation	$5\text{mA} < I_O < 500\text{mA}$		12	50	mV
V_{dropout}	Dropout Voltage	$5.5V < V_{\text{in}} < 9.2V$ $I_O = 500\text{mA}$		0.4	0.9	V
I_q	Quiescent Current	$50\text{mA} < I_O < 500\text{mA}$		10	25	mA
I_{lim}	Current Limit	Output Shorted to GND	500	600		mA
SVR	Supply Voltage Rejection	$f = 3\text{KHz}$	45	75		dB
SW on	Switch ON		3.5			V
SW off	Switch OFF				1.5	V
SW hyst	Switch Hysteresis		100	200	500	mV
R_{in}	Input Impedance		10	40		$K\Omega$

HIGH SIDE DRIVER WITH CLAMPED OUTPUT (16V)

$V_{\text{out}16}$	Max. Output Voltage	$V_S = 18V$	14.6		16.2	V
I_O	Output Continuous Current	$V_S = 16V$	2			A
V_{dropout}	Dropout Voltage	$5V < V_{\text{in}} < 15V$ $I_O = 2A$		0.5	1.0	V
SW on	Switch ON		3.5			V
SW off	Switch OFF				1.5	V
SW hyst	Switch Hysteresis		100	200	500	mV
R_{in}	Input Impedance		10	40		$K\Omega$

ELECTRICAL CHARACTERISTICS (continued)

FAULT

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
TH _{fault}	Fault Threshold		7		8.5	V
HYST _{fault}	Fault Threshold Hysteresis		100	200	400	mV
OUT _{fault}	Fault Output Voltage				1.5	V
I _{leak}	Fault Leakage Current				50	μA

RESET

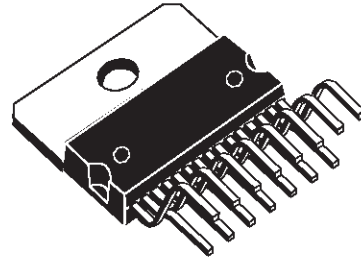
THON _{reset}	Reset ON Threshold	MIN @ V _{MEM} = 4.75V MAX @ V _{MEM} = 5.25V	0.938		0.97	Vst-by
THOFF _{reset}	Reset OFF Threshold		0.97		0.99	Vst-by
HYST _{reset}	Reset Threshold Hysteresis		75	175	300	mV
OUT _{reset}	Reset Output Voltage	I _{LOAD} = 2mA			1.5	V
I _{leak}	Reset Leakage Current				5.0	μA

IGNITION

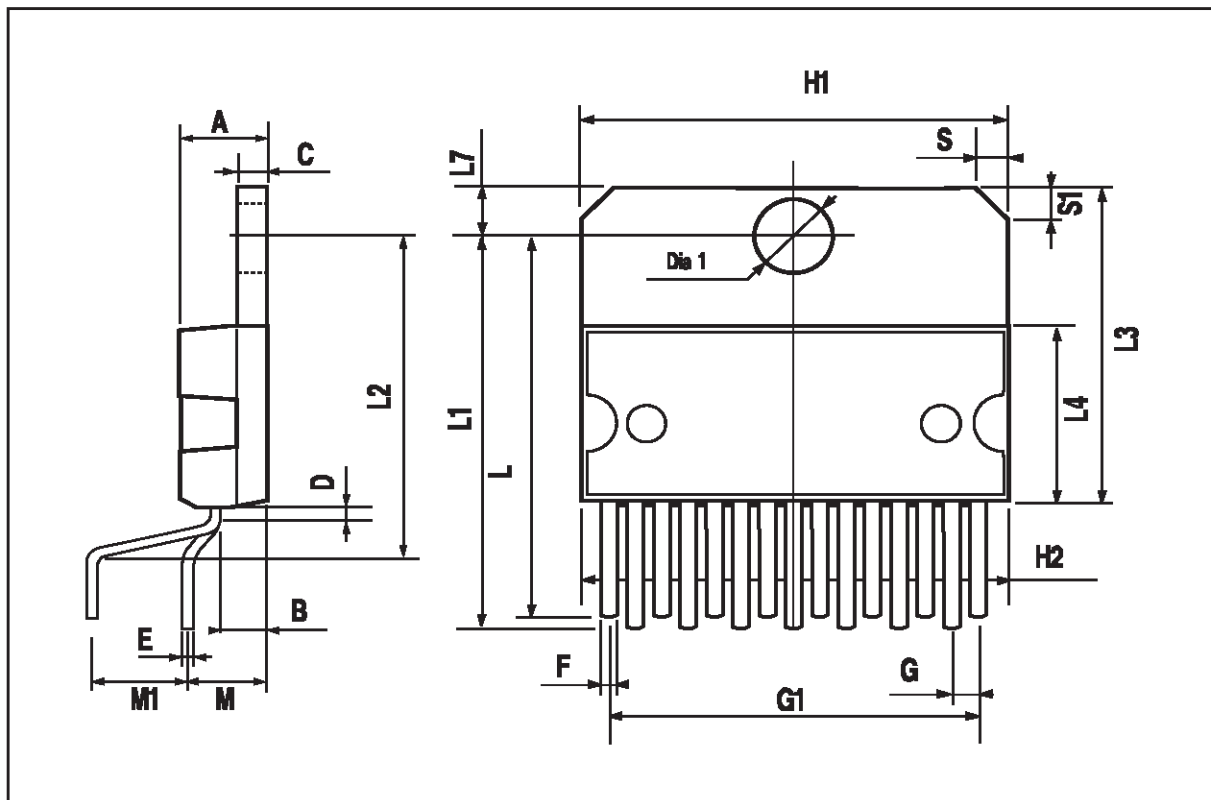
TH _{ign}	Ign Comparator Positive Threshold		5.5	6	7.5	V
HYST _{ign}	Ign Comparator Threshold Hysteresis		100	300	500	mV
IGN _{high}	Ignition Comparator Output High		3.5		Vst-by	V
IGN _{low}	Ignition Comparator Output Low		-0.5		1.5	V

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			5			0.197
B			2.65			0.104
C			1.6			0.063
D		1			0.039	
E	0.49		0.55	0.019		0.022
F	0.66		0.75	0.026		0.030
G	1.02	1.27	1.52	0.040	0.050	0.060
G1	17.53	17.78	18.03	0.690	0.700	0.710
H1	19.6			0.772		
H2			20.2			0.795
L	21.9	22.2	22.5	0.862	0.874	0.886
L1	21.7	22.1	22.5	0.854	0.870	0.886
L2	17.65		18.1	0.695		0.713
L3	17.25	17.5	17.75	0.679	0.689	0.699
L4	10.3	10.7	10.9	0.406	0.421	0.429
L7	2.65		2.9	0.104		0.114
M	4.25	4.55	4.85	0.167	0.179	0.191
M1	4.63	5.08	5.53	0.182	0.200	0.218
S	1.9		2.6	0.075		0.102
S1	1.9		2.6	0.075		0.102
Dia1	3.65		3.85	0.144		0.152

OUTLINE AND MECHANICAL DATA



Multiwatt15 V



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