

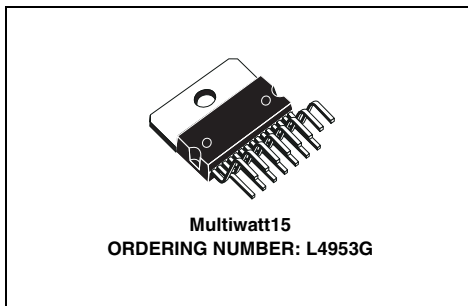


**THE DATASHEET OF  
L4953G**



## MULTIFUNCTION VOLTAGE REGULATOR FOR CAR RADIO

- 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 (FAULT)
  - THERMAL PROTECTION (FAULT)
- RESET FUNCTION
- IGNITION COMPARATOR
- REVERSE BATTERY AND LOAD DUMP PROTECTION
- THERMAL SHUTDOWN



and a power switch.

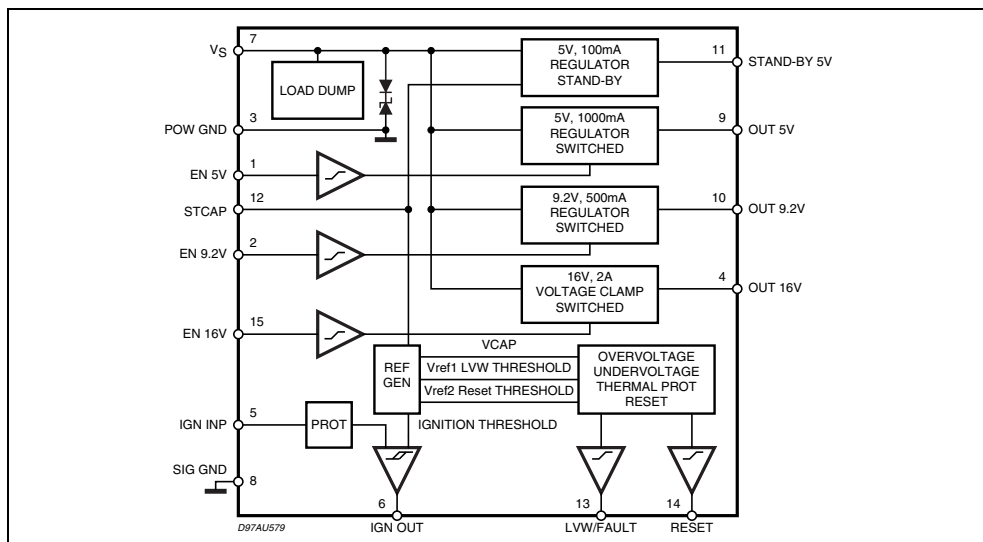
The IC includes a monitoring circuit to warn if a low voltage or no voltage condition is occurring. In stand-by output is active as long as possible even when in thermal shutdown or any other fault conditions.

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  $\mu\text{P}$  to store data.

### DESCRIPTION

The L4953G contains a triple voltage regulator

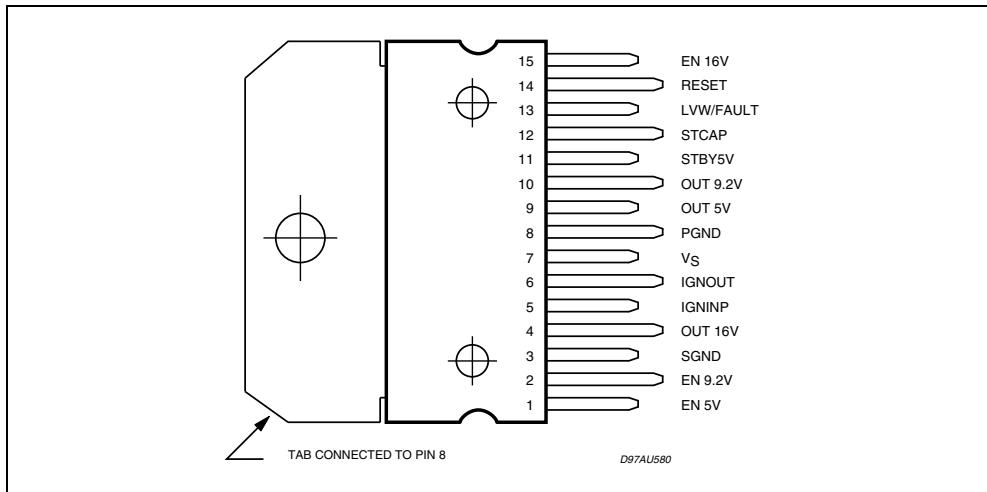
### BLOCK DIAGRAM



## 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	Max. 2	°C/W

**ELECTRICAL CHARACTERISTICS**(V<sub>S</sub> = 14V, T<sub>amb</sub> = 25°C, unless otherwise specified.)

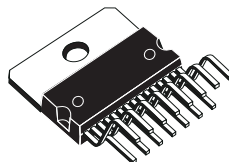
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V <sub>S</sub>	Operating Supply Voltage		11		18	V
En	Output Noise Voltage	Any reg. supply, f = 100Hz to 200KHz		200	400	μV
<b>5V STAND-BY OUTPUT VOLTAGE</b>						
V <sub>sst-by</sub>	Stand-by Output Voltage		4.75	5	5.25	V
ΔV <sub>line</sub>	Line Regulation	11V < V <sub>S</sub> < 16V		5	50	mV
ΔV <sub>load</sub>	Load Regulation	5mA < I <sub>out</sub> < 100mA		12	100	mV
V <sub>dropout</sub>	Dropout Voltage	I <sub>out</sub> = 100mA, V <sub>S</sub> = 5.5V		0.2	0.6	V
I <sub>qst-by</sub>	Quiescent Current @ Stand-by	I <sub>load</sub> = 5mA		0.3	0.65	mA
<b>5V/1000mA SWITCHED OUTPUT VOLTAGE</b>						
V <sub>out5</sub>	5V Output Voltage	no load	4.75	5	5.25	V
ΔV <sub>line</sub>	Line Regulation	7V < V <sub>S</sub> < 18V		5	50	mV
ΔV <sub>load</sub>	Load Regulation	5mA < I <sub>out</sub> < 1A		12	50	mV
V <sub>dropout</sub>	Dropout Voltage	I <sub>out</sub> = 1A, V <sub>S</sub> = 5.5V		1	1.5	V
I <sub>q</sub>	Quiescent Current	75mA < I <sub>out</sub> < 1A		30	100	mA
I <sub>lim</sub>	Current Limit	Output Shorted to GND	1	1.3		A
SWon	Switch ON		3.5			V
SW off	Switch OFF				1.5	V
SW hyst	Switch Hysteresis		100	200	350	mV
R <sub>in</sub>	Input Impedance		10	40		KΩ
<b>9.2V/500mA SWITCHED OUTPUT VOLTAGE</b>						
V <sub>out9.2</sub>	9.2V Output Voltage	no load		9.2±5%		V
ΔV <sub>line</sub>	Line Regulation	11V < V <sub>S</sub> < 18V		5	50	mV
ΔV <sub>load</sub>	Load Regulation	5mA < I <sub>out</sub> < 500mA		12	50	mV
V <sub>dropout</sub>	Dropout Voltage	5.5V < V <sub>in</sub> < 9.2V, I <sub>out</sub> = 500mA		0.4	0.9	V
I <sub>q</sub>	Quiescent Current	50mA < I <sub>out</sub> < 500mA		10	25	mA
I <sub>lim</sub>	Current Limit	Output Shorted to GND	500	600		mA
SVR	Supply Voltage Rejection	f = 3KHz	45	75		dB
SWon	Switch ON		3.5			V
SW off	Switch OFF				1.5	V
SW hyst	Switch Hysteresis		100	200	500	mV
R <sub>in</sub>	Input Impedance		10	40		KΩ
<b>HIGH SIDE DRIVER WITH CLAMPED OUTPUT (16V)</b>						
V <sub>out16</sub>	Max. Output Voltage	V <sub>S</sub> = 18V	14.6		16.2	V
I <sub>O</sub>	Output Continuous Current	V <sub>S</sub> = 16V	2			A
V <sub>dropout</sub>	Dropout Voltage	5V < V <sub>in</sub> < 15V, I <sub>out</sub> = 2A		0.5	1	V
SWon	Switch ON		3.5			V
SW off	Switch OFF				1.5	V
SW hyst	Switch Hysteresis		100	200	500	mV
R <sub>in</sub>	Input Impedance		10	40		KΩ

**ELECTRICAL CHARACTERISTICS** (continued)(V<sub>S</sub> = 14V, T<sub>amb</sub> = 25°C, unless otherwise specified.)

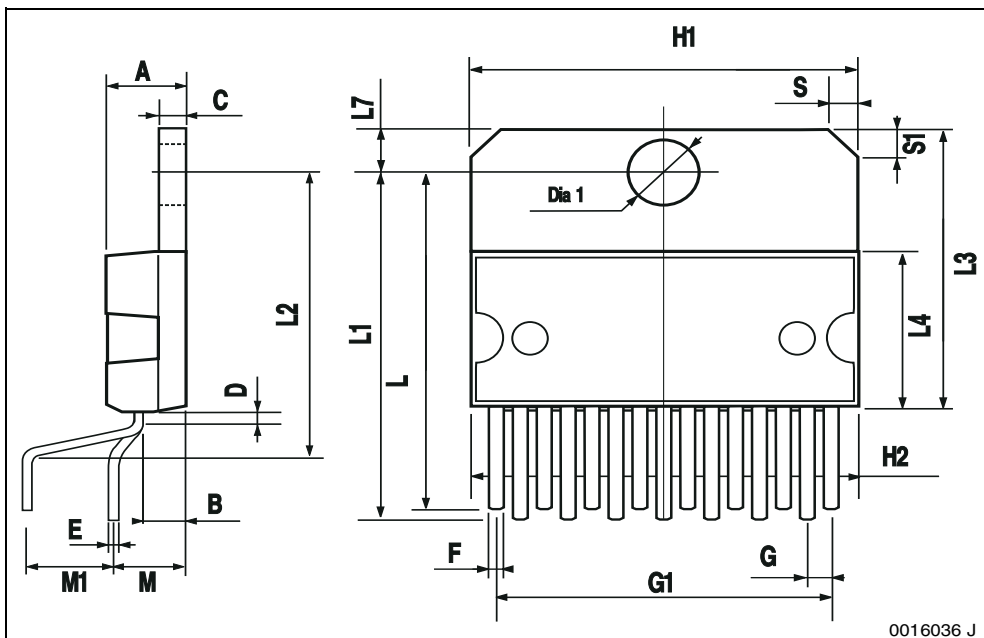
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
<b>FAULT</b>						
TH <sub>fault</sub>	Fault Threshold		7		8.5	V
HYST <sub>fault</sub>	Fault Threshold Hysteresis		100	200	400	mV
OUT <sub>fault</sub>	Fault Output Voltage				1.5	V
I <sub>leak</sub>	Fault Leakage Current				50	μA
<b>RESET</b>						
THON <sub>reset</sub>	Reset ON Threshold	MIN @ V <sub>MEM</sub> = 4.75V MAX @ V <sub>MEM</sub> = 5.25V	0.938		0.97	Vst-by
THOFF <sub>reset</sub>	Reset OFF Threshold		0.97		0.99	Vst-by
HYST <sub>reset</sub>	Reset Threshold Hysteresis		75	175	300	mV
OUT <sub>reset</sub>	Reset Output Voltage	I <sub>LOAD</sub> = 2mA			1.5	V
I <sub>leak</sub>	Reset Leakage Current				50	μA
<b>IGNITION</b>						
TH <sub>ign</sub>	Ign Comparator Positive Threshold		5.5	6	7.5	V
HYST <sub>ign</sub>	Ign Comparator Threshold Hysteresis		100	300	500	mV
IGN <sub>high</sub>	Ignition Comparator Output High		3.5		Vst-by	V
IGN <sub>low</sub>	Ignition Comparator Output Low		-0.5		1.5	V

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A5						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	0.87	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	4.73	5.08	5.43	0.186	0.200	0.214
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 (Vertical)



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