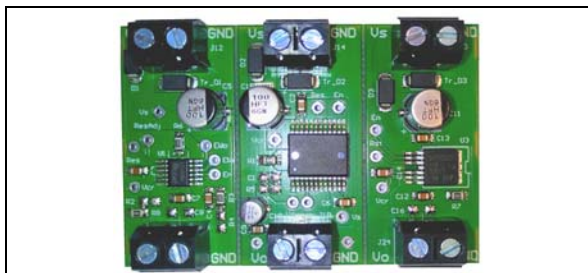


## L5150GJ-L5300AH7-L4995AK Evaluation Board

Data brief



### Features

Max transient supply voltage	$V_{CC}$	40 V <sup>(1)</sup>
Max DC output voltage	$V_o$	5 V
Output current	$I_o$	L5150GJ 150 mA
		L5300AH7 300 mA
		L4995AK 500mA
Quiescent current with regulator disabled	$I_q$	L5150GJ 5 $\mu$ A
		L5300AH7 5 $\mu$ A
		L4995AK 3 $\mu$ A

1. Operating input voltage for L5150GJ and L5300AH7 and transients for L4995AK.

- Simple detachable application board dedicated for L5150GJ, L5300AH7 and L4995AK
- Provides electrical connectivity for easy prototyping
- General Device features:
  - Power on reset
  - Low voltage reset
  - Enable

- Early warning (only for L5150GJ)

#### • Protections

- Thermal shutdown
- Short circuit

### Applications

To provide stable 5V supply in Automotive applications, BCM, Power Train, HVAC, Door Zone, Seat position, Electric park brake, Window lift, LED light control, Sun roof module, Gear box, and so on.

### Description

The board has been designed to facilitate the evaluation of certified (according to AEC-Q100) Voltage Regulators for Automotive applications. The board offers an effective solution for fast system prototyping and device evaluation. The EV-AUTO-LDOS comes ready-to-use with the required capacitors on the VCC power supply line. On-board minimum set of electrical components enables the user to directly connect the load and the power supply without any additional effort in external component design and connection. The board can be used in a unique solution or split in three stand-alone parts. Each part is completely independent from the electronic point of view and allows the performance evaluation of a single voltage regulator.

Table 1. Device summary

Order Code	Reference
EV-AUTO-LDOS	L5150GJ, L5300AH7, L4995AK Evaluation Board

# 1 Overview

The board comes pre-assembled with L5150GJ, L5300AH7 and L4995AK voltage regulators designed to supply 5V automotive grounded loads, providing standard protections (such as Thermal shutdown and Short circuit).

Those ICs are housed in the following packages: HPAK for L5300AH7, PowerSSO-12 for L5150GJ and PowerSSO-24 for L4995AK.

The voltage regulators use a P-channel MOS transistor as a regulating element; with this structure a very low dropout voltage is obtained. The output voltage is regulated with a 2% precision.

The voltage regulator automatically adapts its own quiescent current to the output current level.

**Figure 1. Evaluation board schematic L5150GJ**

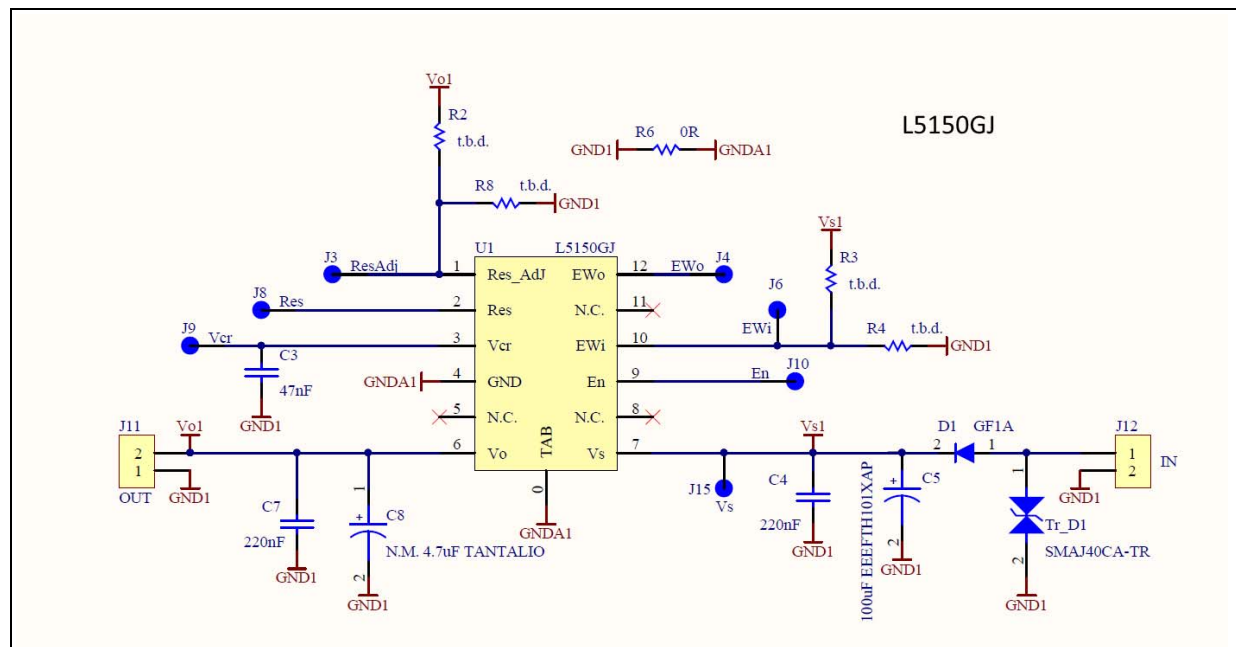


Figure 2. Evaluation board schematic L4995AK

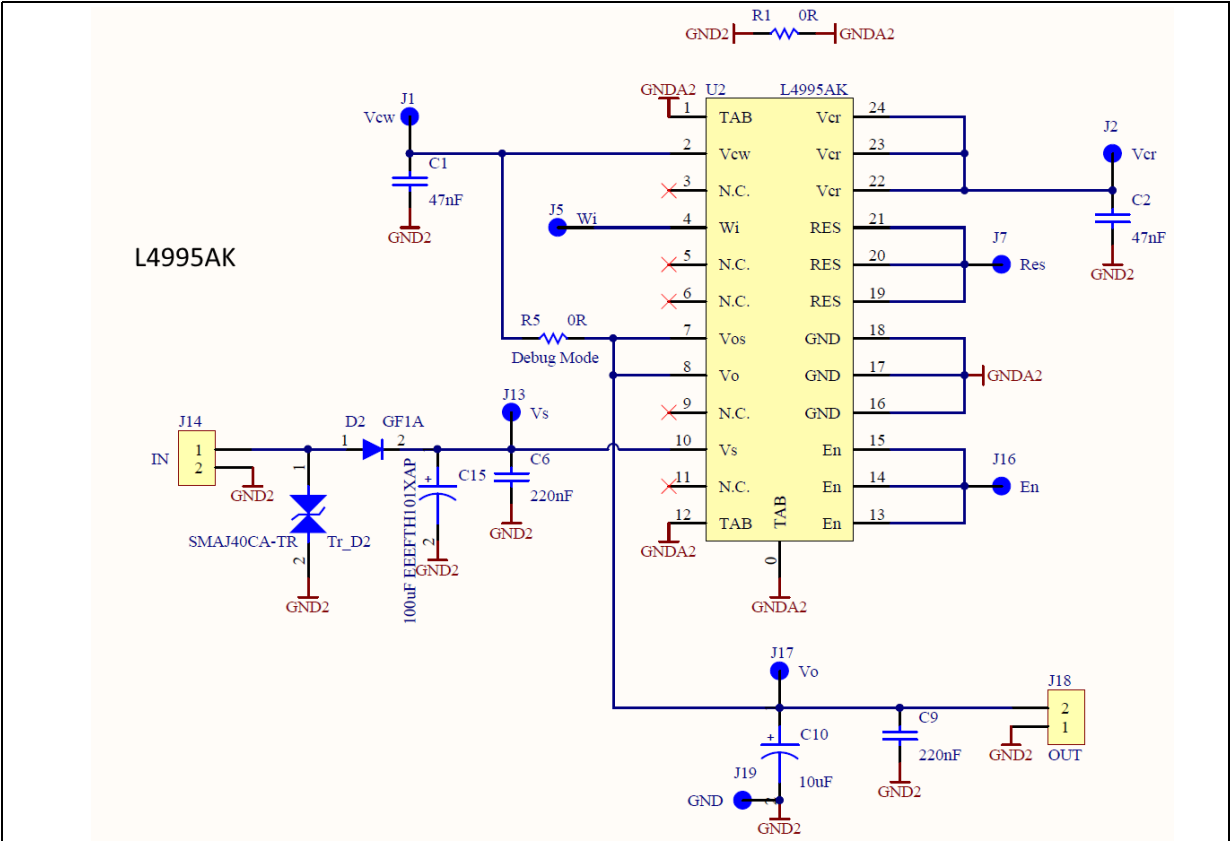
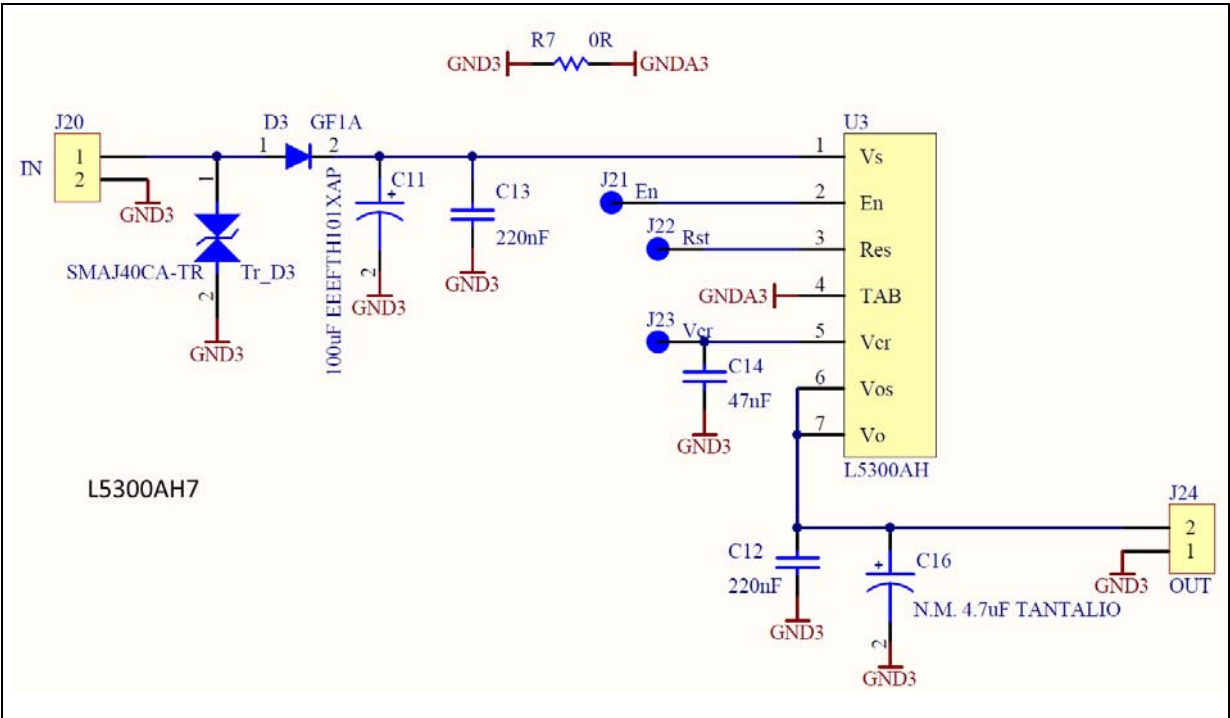


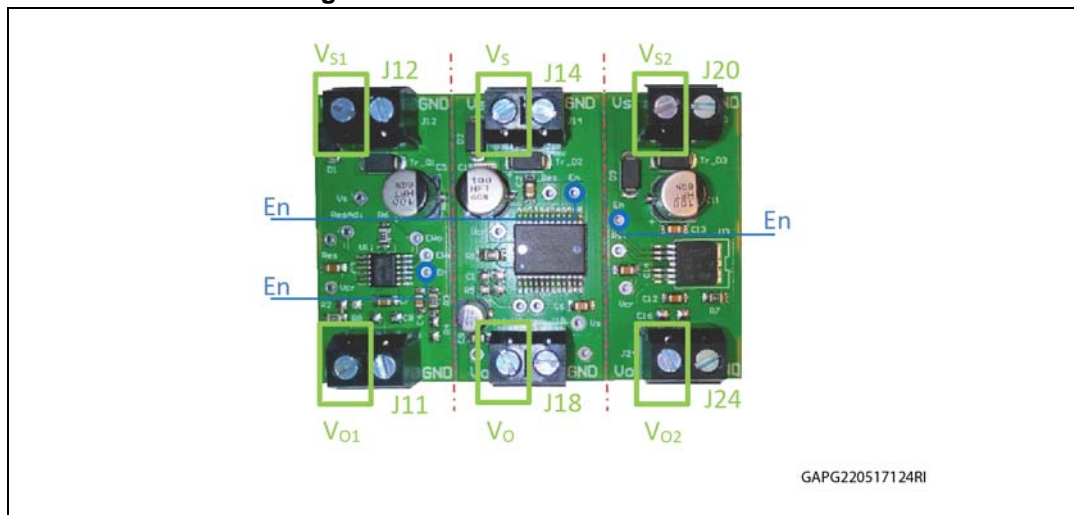
Figure 3. Evaluation board schematic L5300AH7



## 2 Board connections

*Figure 4: Evaluation board connections* shows the placement of the connectors to be used to supply the evaluation board and connecting the load.

**Figure 4. Evaluation board connections**



**Table 2. Pin connection and function (L4995AK)**

Connector	Pin number	Pin name	Pin function
J14	1	V <sub>S</sub>	Input voltage
J14	2	GND2	Ground
J18	1	GND2	Ground
J18	2	V <sub>O</sub>	5 V Regulated output voltage

**Table 3. Pin connection and function (L5150GJ)**

Connector	Pin number	Pin name	Pin function
J11	1	GND1	Ground
J11	2	V <sub>O1</sub>	5 V Regulated output voltage
J12	1	V <sub>S1</sub>	Input voltage
J12	2	GND1	Ground

**Table 4. Pin connection and function (L5300AH7)**

Connector	Pin number	Pin name	Pin function
J20	1	V <sub>S2</sub>	Input voltage
J20	2	GND3	Ground

Table 4. Pin connection and function (L5300AH7) (continued)

Connector	Pin number	Pin name	Pin function
J24	1	GND3	Ground
J24	2	V <sub>O2</sub>	5 V Regulated output voltage

All devices are supplied with an enable input, where a high signal switches the regulators on. When the enable pin is set to low the output is switched-off and the current consumption of the device is drastically reduced.

#### Specific configuration only for L5150GJ

- The Output Voltage Reset threshold can be adjusted via an external voltage divider (R2 and R8) according to the following formula:

$$V_{\text{thre}} = [(R2 + R8) / R8] * V_{\text{Res\_adj}}$$

The Output Voltage Reset threshold can be decreased down to 3.5 V. Typical value for V<sub>Res\_adj</sub> is 2.5V<sup>(a)</sup>.

- The EWi input signal is compared with the internal voltage reference (typically 2.5 V). The use of an external voltage divider makes the comparator very flexible in the application. This function can be used to supervise the supply input voltage and to give additional information to the microprocessor such as low voltage warnings<sup>(b)</sup>.

a. The board is configured with the threshold of the Reset function to the default value of 8 % below Vo\_ref typical (R8= 0 Ohm and R2 N.M.).

b. The board is configured with the Early Warning function deactivated (EWi pin latch to Vs1 by R3= 0 Ohm and R4 N.M.).

### 3 Thermal data

**Table 5. EV-AUTO-LDOS thermal data**

Symbol	Parameter	Max	Unit
Rthj-amb – L5150GJ	Thermal resistance junction-ambient (MAX)	55	°C/W
Rthj-amb – L5300AH7		45	
Rthj-amb – L4995AK		40	

**Table 6. PCB specifications**

Parameter		Value
Boards dimensions	EV-AUTO-LDOS	62 x 42 mm
	L5150GJ	20 x 42 mm
	L5300AH7	20 x 42 mm
	L4995AK	22 x 42 mm
Number of Cu layer		2
Layer Cu thickness		35 µm
Board finish thickness		1.6 mm +/- 10%
Board Material		FR4
Thermal vias separation		0.2 mm
Thermal vias diameter		1 mm

## 4 Revision history

**Table 7. Document revision history**

<b>Date</b>	<b>Revision</b>	<b>Changes</b>
06-Jun-2017	1	Initial release.

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