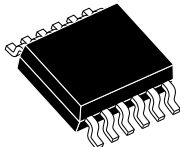


Automotive linear voltage regulator with configurable output voltage having 500 mA current capability


PowerSSO-12

Features

Max supply voltage (load dump)	V_s	40 V
Max output voltage tolerance	ΔV_o	$\pm 2\%$
Output current	I_o	500 mA
Quiescent current	I_{qn}	$\leq 1 \mu A^{(1)}$

1. Maximum value with regulator disabled



- AEC-Q100 qualified
- Operating DC power supply voltage range from 2.15 V to 28 V
- Battery and post regulation operating modes are allowed
- Low dropout voltage
- Low quiescent current consumption
- User-selectable output voltage (0.8 V; 1.2 V; 1.5 V; 1.8 V; 2.5 V; 2.8 V; 3.3 V or 5 V)
- Output voltage precision $\pm 2\%$
- Enable input for enabling/disabling the voltage regulator
- Output voltage monitoring with reset output
- Negligible ESR effect on output voltage stability for load capacitor
- Programmable autonomous watchdog through external capacitor
- Undervoltage-lockout UVLO
- Fast output discharge
- Thermal shutdown and short-circuit protection
- Advanced thermal warning output and overvoltage diagnostic
- Programmable short-circuit output current
- Wide operating temperature range (from $T_j = -40^\circ C$ to $175^\circ C$)
- Documentation available for Customers that need support when dealing with ASIL Requirements as per ISO 26262

Product status link

[L99VR02J](#)

Description

The **L99VR02J** is a low dropout linear voltage regulator designed for automotive applications available in PowerSSO-12 packages. The LDO delivers up to 500 mA of load current, and consumes as low as 1 μA of quiescent current when the regulator is disabled. The input is 40V tolerant for load dump, while the operating input voltage allowed is in the range between 2.15 V and 28 V. The L99VR02J can be configured, through SELx pins, to generate a fixed output voltage (0.8 V; 1.2 V; 1.5 V; 1.8 V; 2.5 V; 2.8 V; 3.3 V or 5 V). High output voltage accuracy ($\pm 2\%$) is kept over wide temperature range, line and load variation. The L99VR02J integrates features such as enable, reset, autonomous watchdog, advanced thermal warning, fast output discharge and IShort control. The regulator output current is internally limited so that the device is protected against short circuit and overload, besides it features over temperature protection; the short current value is configurable by an external resistance. The L99VR02J can operate both in post regulation, attached to a pre-regulated voltage, or directly connected to battery.

1 Block diagram and pin descriptions

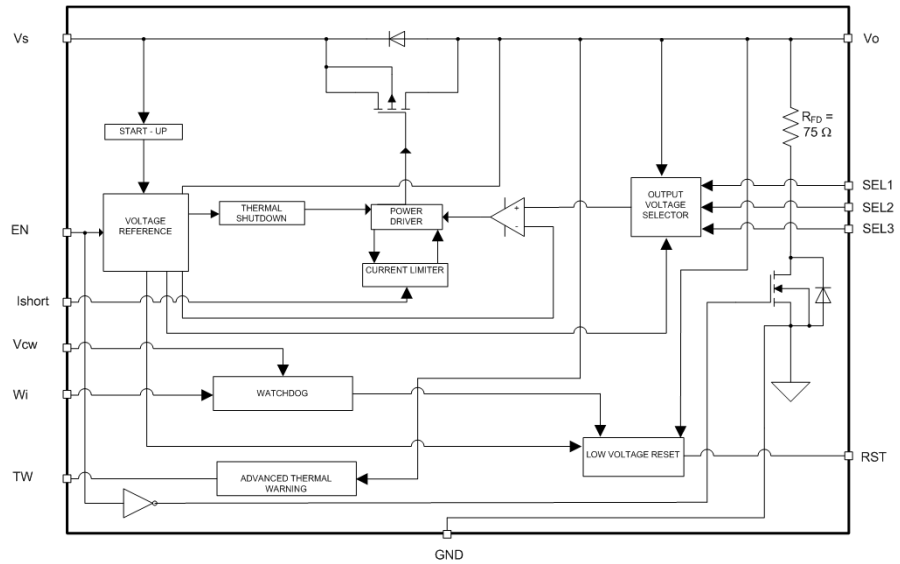
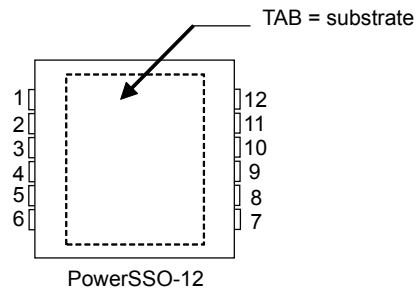
Figure 1. Functional block diagram of L99VR02J


Table 1. Pins description

N°	PowerSSO-12 pin name	Function
1	VS	Supply voltage. Block directly to ground with ceramic capacitor $\geq 4.7 \mu\text{F}$ and a 100 nF capacitor as close as possible to the pin.
2	SEL1	Output voltage selectors.
3	SEL2	
4	SEL3	
5	TW	Advanced Thermal warning output. If the device detects a junction temperature above the warning threshold, the pin is pulled low. If an overvoltage condition occurs, a square wave is provided through the TW output. Leave floating if not used.
6	IShort	Programmable short circuit output current input pin. A resistor between Ishort pin and GND sets the short circuit output current value.
7	EN	Enable input. With the Enable high, regulator, watchdog and reset are operating. With the Enable low, regulator, watchdog and reset are shutdown, while the fast discharge circuit is turned on. Connect the Enable to Vs to keep the device always enabled
8	GND	Ground reference.
9	Vcw	Watchdog timer adjust. A capacitor between Vcw pin and GND sets the time response of the watchdog monitor.
10	Wi	Watchdog refresh input. If the square wave frequency at this input pin is too low, a low pulse at RST pin is generated.
11	RST	Reset output. It is pulled down when output voltage goes below VO_th or frequency at Wi is too low. Leave floating if not used.
12	VO	Voltage regulator output. Block to ground with a capacitor $\geq 3.3 \mu\text{F}$ (needed for regulator stability).
TAB		Connected to ground

Figure 2. Pin configurations



2 Ordering information

Table 2. Ordering information table

Package	Order codes				
	Tape and reel				
PowerSSO-12	L99VR02JTR				
P/N	ENABLE	RESET	AUTONOMOUS WATCHDOG	ADVANCED THERMAL WARNING	ISHORT CTRL
L99VR02J	x	x	x	x	x

Revision history

Table 3. Document revision history

Date	Version	Changes
07-Mar-2019	1	Initial release.
26-Oct-2020	2	Updated features and description in cover page. Updated Section 1 Block diagram and pin descriptions.

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