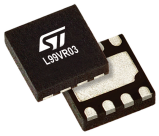
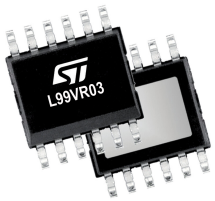
L99VR03

Data brief

Automotive low dropout linear voltage regulator having 300 mA of current capability



VFDFN8L
3x2x0.9 mm



PWSSO12
4.9x3.9x1.5 mm

Product status link
L99VR03

Product summary		
Order code	**Package**	**Packing**
3.3 V output voltage		
L99VR033QTR	VFDFN8L	Tape and reel
L99VR033PTR	PWSSO12	
5.5 V output voltage		
L99VR035QTR	VFDFN8L	Tape and reel
L99VR035PTR	PWSSO12	

Features

Max. supply voltage	V_S	40 V
Output current	I_O	300 mA
Quiescent current	I_{qn}	800 nA(1)
		3.5 µA(2)

1. *Maximum value with regulator disabled.*
2. *Maximum value with regulator enabled.*

- AEC-Q100 qualified
- Wide input voltage operating range up to 40 V
- Low quiescent current consumption
- Output voltage options: 3.3 V or 5 V
- Output voltage precision ±2%
- Enable input for enabling/disabling the voltage regulator
- Thermal shutdown and short-circuit current limitation
- Undervoltage-lockout UVLO
- Wide operating temperature range T_J = -40 °C to 175 °C
- Sustaining slow ramp-up applications
- Supply voltage rejection: > 60 dB at 1 kHz
- Performant line and load regulation

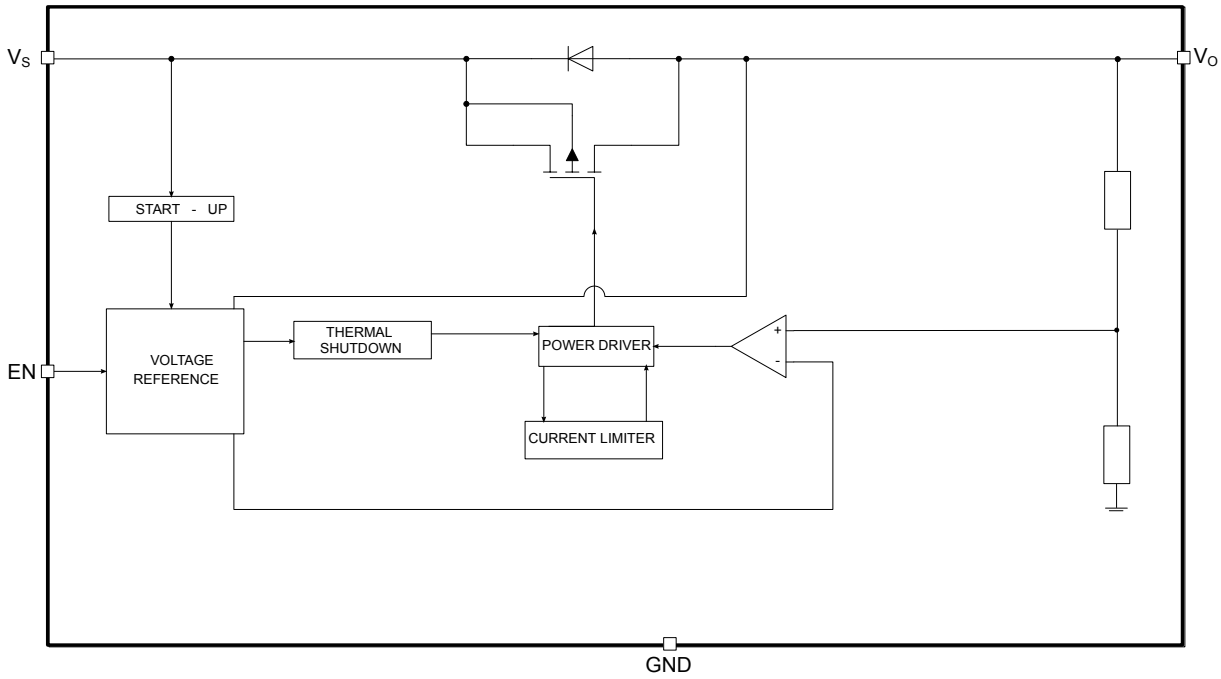
Description

L99VR03 is a low dropout linear voltage regulator designed for automotive applications available in VFDFN8L wettable flanks and PWSSO12 package. The LDO delivers up to 300 mA of load current and consumes as low as 800 nA of quiescent current when the regulator is disabled and only 3.5 µA quiescent current at no load. The device is quite suitable for standby microprocessor control-unit systems, especially in automotive applications. The input voltage operating range is up to 40 V. The L99VR03 features enable. The L99VR03 is available in different output voltage options (3.3 V or 5 V). High output voltage accuracy (±2%) is kept over wide temperature range, line and load variation. The regulator output current is internally limited so that the device is protected against short-circuit, as it features over temperature protection.

1 Block diagram and pin description

1.1 Block diagram

Figure 1. **Functional block diagram**



1.2 Pin description

Figure 2. **Pin connection (top view)**

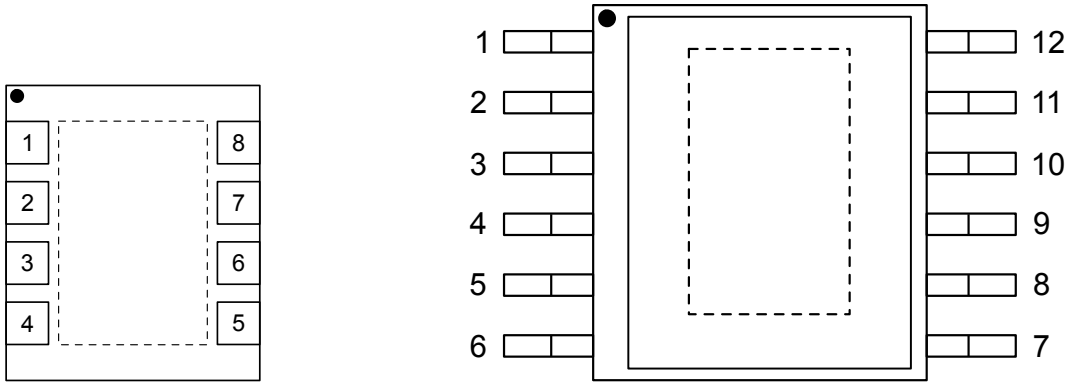


Table 1. **VFDFN8L package pin function**

#	Name	Function
1	V_S	LDO supply voltage
2	DNC	Do not connect, leave the pin floating
3	V_O	LDO output voltage
4	GND	Ground reference
5	DNC	Do not connect, leave the pin floating
6	DNC	Do not connect, leave the pin floating
7	DNC	Do not connect, leave the pin floating
8	EN	Enable input set V_{EN}: High = Turn on the device Low = Turn off the device EN pin cannot be leaved floating
TAB	TAB	Connected to the ground

Table 2. PWSSO12 package pin function

#	Name	Function
1	V_S	LDO supply voltage
2	DNC	Do not connect, leave the pin floating
3	V_O	LDO output voltage
4	GND	Ground reference
5	DNC	Do not connect, leave the pin floating
6	DNC	Do not connect, leave the pin floating
7	DNC	Do not connect, leave the pin floating
8	DNC	Do not connect, leave the pin floating
9	DNC	Do not connect, leave the pin floating
10	DNC	Do not connect, leave the pin floating
11	DNC	Do not connect, leave the pin floating
12	EN	Enable input set V_{EN}: High = Turn on the device Low = Turn off the device EN pin cannot be leaved floating
TAB	TAB	Connected to the ground

2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

2.1 VFDFN (3x2x0.9 mm 8L wettable flanks) package information

Figure 3. VFDFN (3x2x0.9 mm 8L wettable flanks) package outline

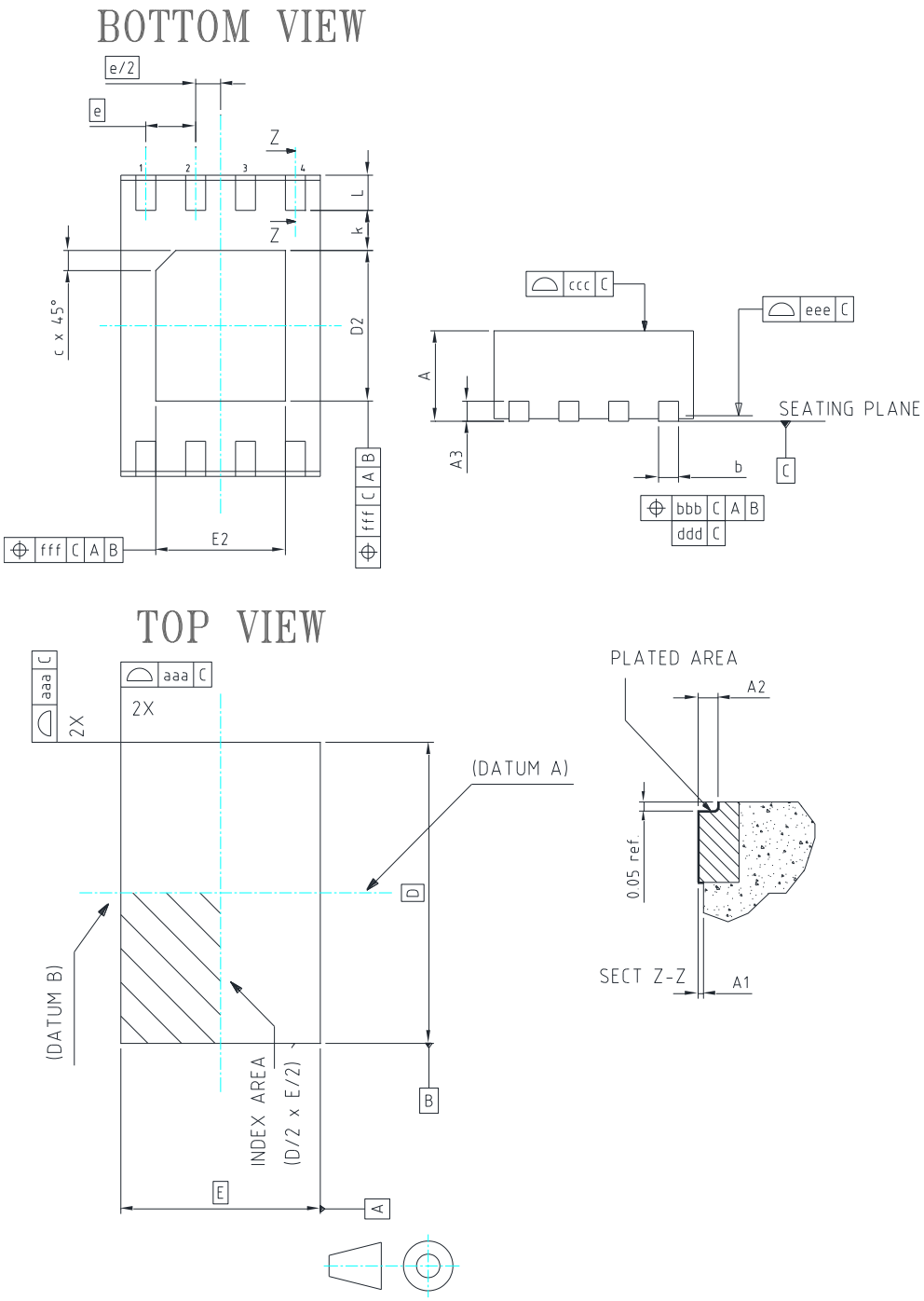


Table 3. **VFDFN (3x2x0.9 mm 8L wettable flanks) package mechanical data**

Symbol	Dimensions in mm		
	Min.	Typ.	Max.
A	0.80	0.90	1.00
A1	0.00	0.02	0.05
A2	0.100	-	-
A3		0.203 REF	
L	0.25	0.35	0.45
b	0.15	0.20	0.25
D	-	3.00 BSC	-
E	-	2.00 BSC	-
D2	1.40	1.50	1.60
E2	1.20	1.30	1.40
e		0.5 REF	
N		8	
Tolerance of form and position			
aaa		0.05	
bbb		0.10	
ccc		0.10	
ddd		0.05	
eee		0.08	
fff		0.10	

2.2 PWSSO12 (4.9x3.9x1.5 mm exposed pad down) package information

Figure 4. **PWSSO12 (4.9x3.9x1.5 mm exposed pad down) package outline**

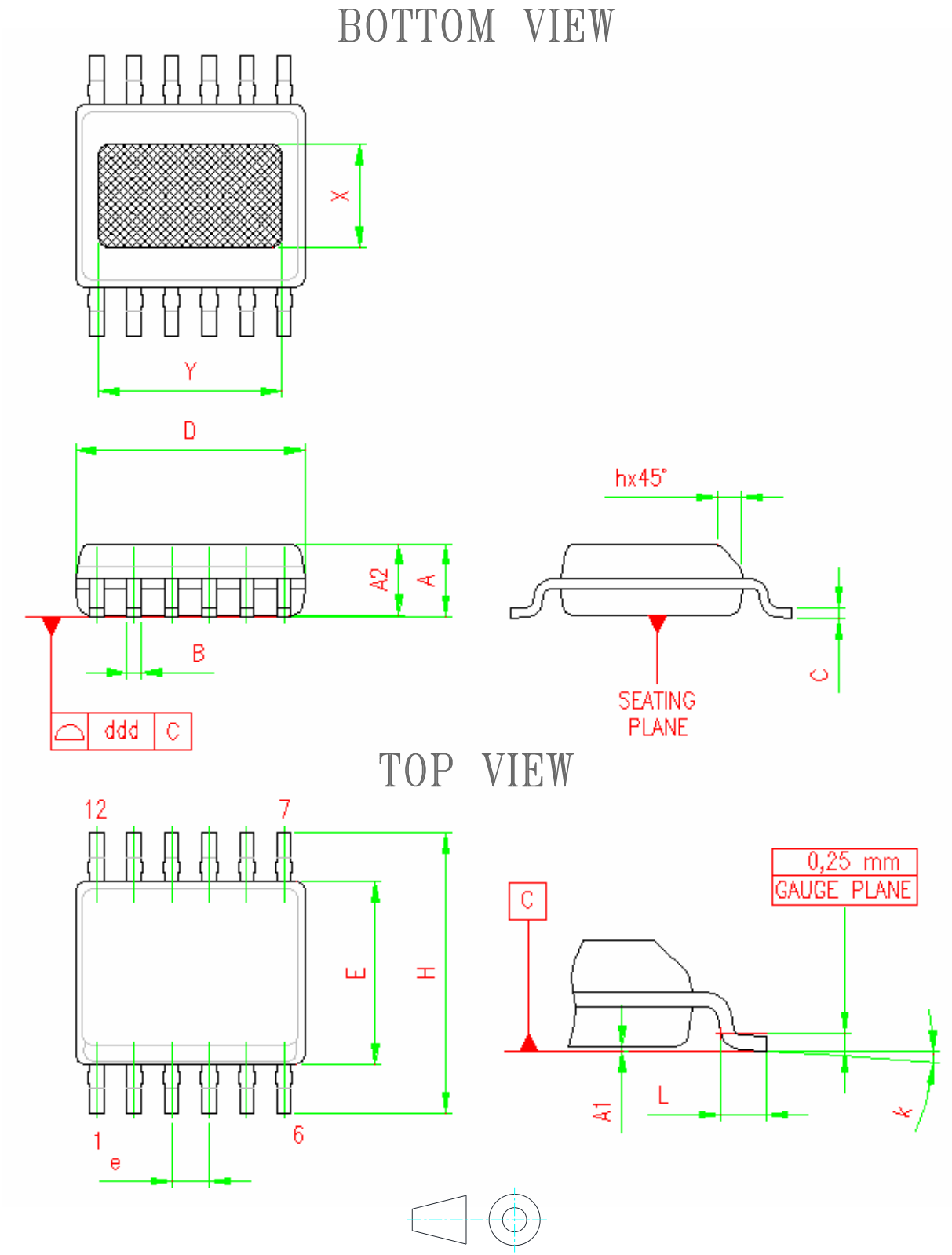


Table 4. **PWSSO12 (4.9x3.9x1.5 mm exposed pad down) package mechanical data**

Symbol	Dimensions in mm		
	Min.	Typ.	Max.
A	1.25	-	1.70
A1	0.00	-	0.10
A2	1.10	-	1.60
B	0.2	-	0.41
C	0.190	-	0.25
D	4.80	-	5.00
E	3.80	-	4.00
e	-	0.80	-
H	5.80	-	6.20
h	0.25	-	0.50
L	0.40	-	1.27
k	0d	-	8d
X	2.20	-	2.80
Y	2.90	-	3.50
ddd	-	-	0.10

Revision history

Table 5. **Document revision history**

Date	Version	Changes
05-Jul-2024	1	Initial release.

Contents

List of tables

List of figures

IMPORTANT NOTICE – READ CAREFULLY

STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgment.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of purchasers’ products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, refer to www.st.com/trademarks. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.