

Automotive-grade voltage regulators



October 2008

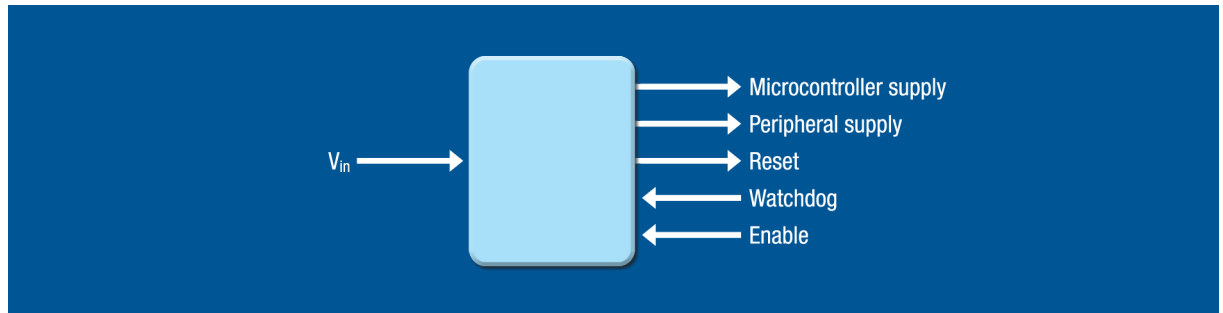
www.st.com/automotive



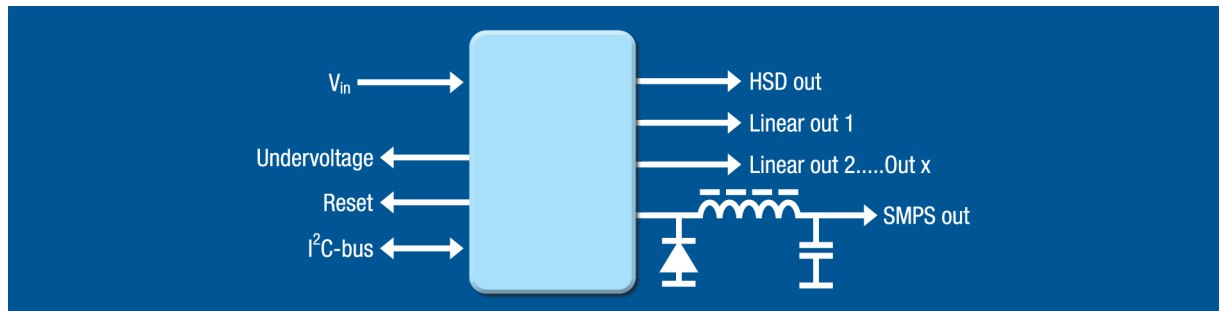
www.BDTIC.com/ST

Automotive-grade voltage regulators

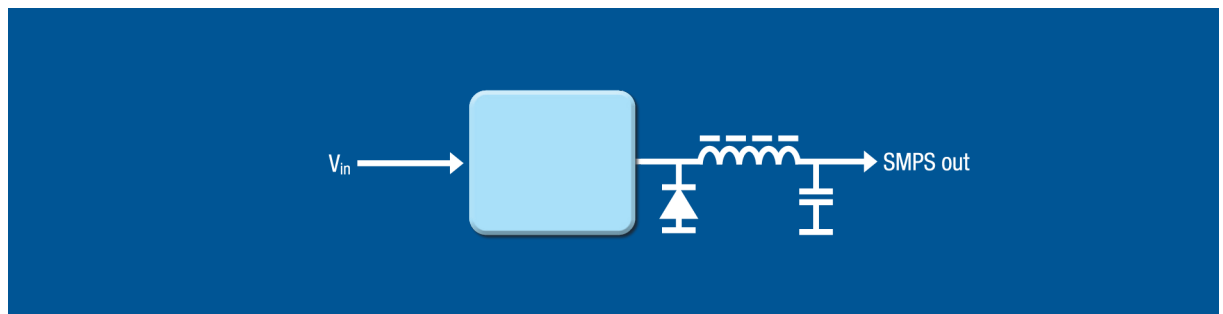
General-purpose multifunction



Application-specific for car radio



Step-down switching DC-DC converters

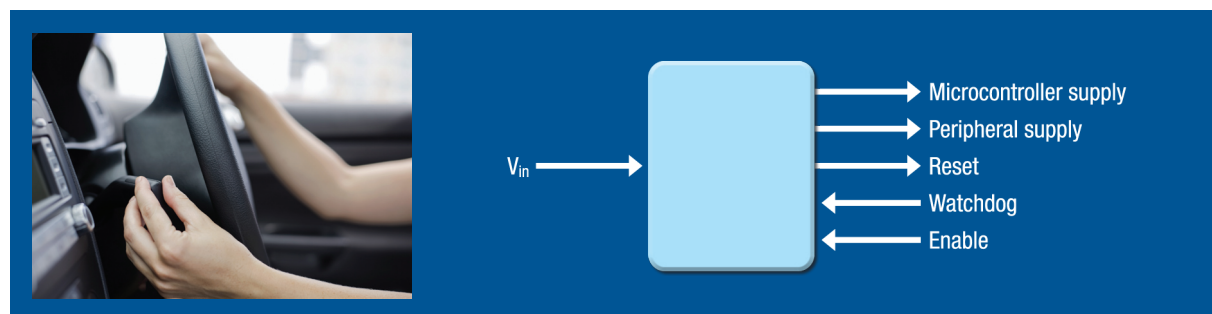


STMicroelectronics offers a wide selection of automotive-standard voltage regulators, switch-mode regulators and application-specific types for powertrain, body, safety and infotainment systems. All regulators are housed inside innovative packages with superior thermal performance. A set of features allows optimization of applications for functional flexibility and safety in order to withstand the harsh environment of the automotive supply network.

New-generation voltage regulators use P-channel MOSFETs in the regulation path using STMicroelectronics advanced BCD technology. Subsequently, no charge pump is needed. A very advanced regulation topology makes it possible to reduce the output capacity down to 220 nF without compromising stability or line and load regulation performance.

For high current loads, STMicroelectronics now also offers a new family of high-efficiency SMPS buck regulators, supporting a DC load current up to 2 A. These regulators are ideally suited to cover the enlarged supply-voltage range from 7 V to 18 V required for cars using the start-stop function and energy recuperation at the 12 V battery level. Finally, this regulator family is also suitable to drive high-power LEDs in current-mode operation.

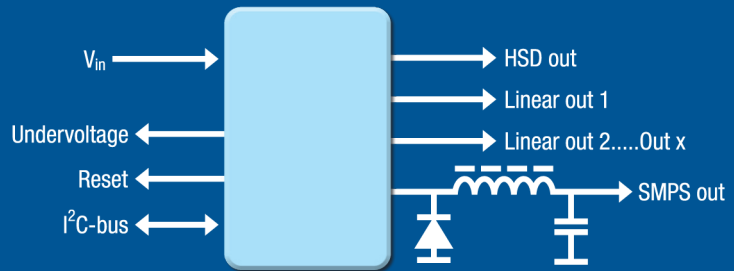
Multifunctional general-purpose voltage regulators



Part number	Package	Outputs	Output voltage (V)	Output current (mA)	Accuracy +/- %	Drop voltage typ (V)	Reset	Enable	Early warning	Watchdog	Watchdog enable	Quiescent current typ (µA)	
												off-mode	on-mode
L4988D L4988MD	SO-8 SO-20	1	5	200	2	0.27	X			X	X	-	130
L4947PD	PowerSO-20	1	5	500	4	0.4	X					-	5000
L4925PD	PowerSO-20	1	5	500	2	0.3	X					-	190
L4949ED L4949EP	SO-8 SO-20	1	5	100	1	0.3	X		X			-	200
L4979D L4979MD	SO-8 SO-20	1	5	150	2	0.2	X			X		6	100
L4989D L4989MD	SO-8 SO-20	1	5	150	3	0.18	X			X	X	-	110
L4993D L4993MD	SO-8 SO-20	1	5	150	2	0.2	X			X	X	-	100
L4995RJ L4995RK	PowerSSO-12 PowerSSO-24	1	5	500	2	0.27	X					3	90
L4995AJ L4995AK	PowerSSO-12 PowerSSO-24	1	5	500	2	0.27	X	X				3	90
L4995J L4995K	PowerSSO-12 PowerSSO-24	1	5	500	2	0.27	X	X		X		3	90
L4938ND L4938NPD	SO-20 PowerSO-20	2	5+ adjustable	50 + 500	2	0.3	X		X			-	65
L4938ED L4938EPD	SO-20 PowerSO-20	2	5+ adjustable	100 + 400	2	0.3	X ⁽²⁾		X			-	65
L5150BN ⁽¹⁾	SOT-223	1	5	150	2	0.27						-	48
L5150CJ ⁽¹⁾	PowerSSO-12	1	5	150	2	0.27	X ⁽²⁾		X			-	55
L5150GJ ⁽¹⁾	PowerSSO-12	1	5	150	2	0.27	X ⁽²⁾	X	X			5	55
L9777A	PowerSSO-12	2	5 + 5 tracking	200 + 100	2	0.2	X ⁽²⁾			X	X	-	110
L9777B	PowerSSO-12	2	5 + 5 tracking	200 + 50	2	0.2	X ⁽²⁾			X	X	-	110
L4931ABD35-TRY	SO-8	1	3.5	250	1	0.4		X				50	600
L4931CD27-TRY	SO-8	1	2.7	250	2	0.4		X				50	600
L4931CD33-TRY	SO-8	1	3.3	250	2	0.4		X				50	600
LD1085PY	T0-220 full pack	1	Adjustable from 1.25	3000	2	1.3						-	5000
LD1086DTTRY	DPAK	1	Adjustable from 1.25	1500	2	1.3						-	5000
LD1086VY	T0-220	1	Adjustable from 1.25	1500	2	1.3						-	5000
LF18CDT-TRY	DPAK	1	1.8	500	2	0.4						-	500
LF25ABDT-TRY	DPAK	1	2.5	500	1	0.4						-	500
LF25CDT-TRY	DPAK	1	2.5	500	2	0.4						-	500
LF33CDT-TRY	DPAK	1	3.3	500	2	0.4						-	500
LF33CPT-TRY	PPAK	1	3.3	500	2	0.4		X				50	500
LF50ABDT-TRY	DPAK	1	5	500	1	0.4						-	500
LF50CDT-TRY	DPAK	1	5	500	2	0.4						-	500
LF50CPT-TRY	PPAK	1	5	500	2	0.4		X				50	500
LF80CDT-TRY	DPAK	1	8	500	2	0.4						-	500
LF85CDT-TRY	DPAK	1	8.5	500	2	0.4						-	500
LF85CPT-TRY	PPAK	1	8.5	500	2	0.4		X				50	500

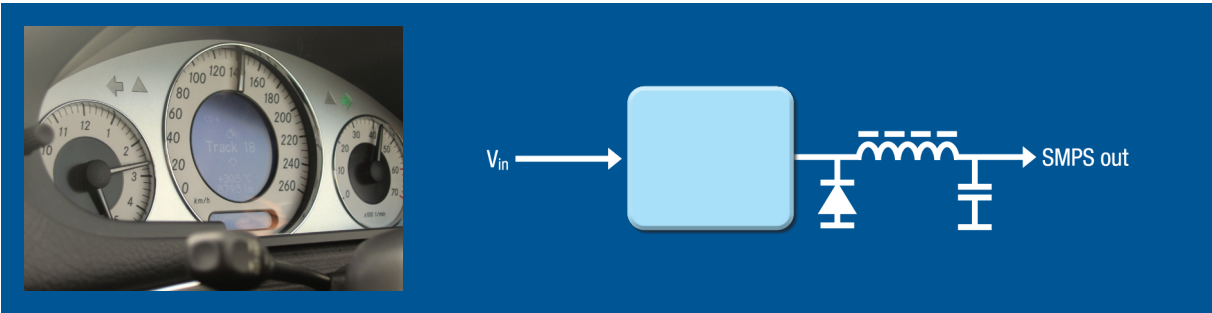
(1) Under development - (2) Adjustable reset threshold

Multifunctional voltage regulators for car radio



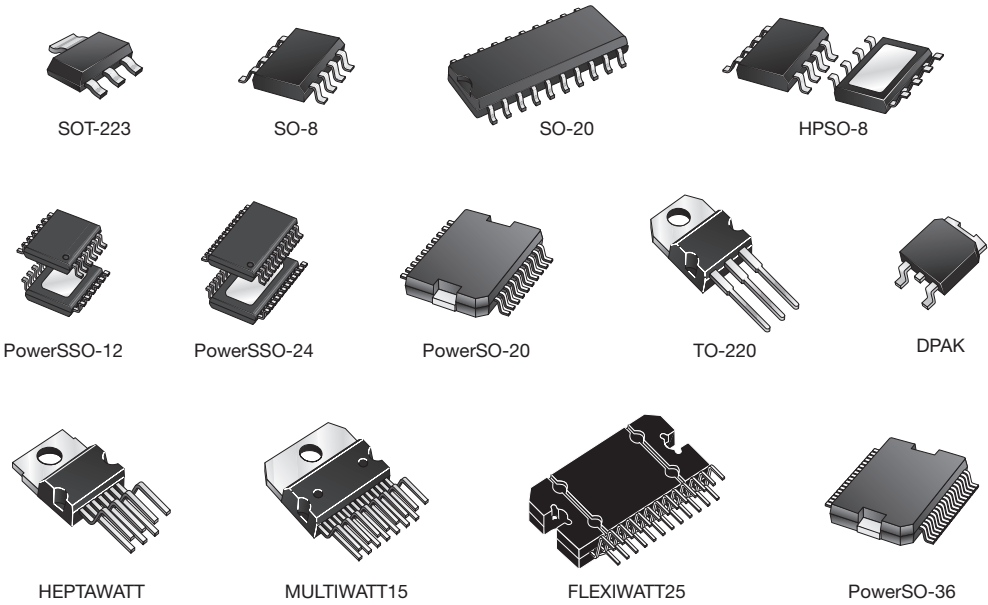
Part number	Output											High-side driver	Description	Package	Load dump protection
	REG1	REG2	REG3	REG4	REG5	REG6	Vstby1	Vstby2	PWM1	PWM2					
L4953G	5 V 1 A	9.2 V 500 mA					5 V 100 mA					HSD: 2 A clamped out	Overvoltage/undervoltage/thermal protection; reverse battery and load dump protection	Multiwatt15	X
L4943	3 to 11 V 500 mA	3 to 11 V 500 mA					3 to 7 V 500 mA					HSD: 750 mA	Configurable outputs; load dump and thermal shutdown	Multiwatt15	X
L4901A	5 V 400 mA	5 V 400 mA											Low quiescent current, overvoltage protection	HW7	X
L4902A							5 V 300 mA	5 V 300 mA					Reset, ignition buffer, LVW	HW7	X
L4952D	8.6 V 150 mA	10 V 8 mA											High-side driver with diagnostics	S020	X
L5950	10 V 350 mA	8.5 V 175 mA	5 V 350 mA	8/10 V 1 A	5 V 250 mA							HSD1: 2 A HSD2: 0.45 A HSD3: 0.45 A	Very low standby current, I2C interface, overvoltage protection, short-circuit protection, reset	Multiwatt15	X
L5951			7.8 V 100 mA				3.3 V 100 mA	5 V 100 mA					Low standby current, output to battery short protection, LVS function, J1850 bus driver	S024	X
L5952	5 V 500 mA	8.3 V 250 mA	7.7 to 8.5 V 250 mA	5 to 7.3 V 400 mA	3.3 to 5 V 500 mA							HSD1: 1 A	Linear voltage regulators configurable through I2C, Vsby pin, overcurrent and short-circuit protection, reset	Flexiwatt25	X
L5954	10 V 350 mA	8.5 V 175 mA	5 V 350 mA	5 V 250 mA	8/10 V 1 A							HSD1: 2 A HSD2: 0.45 A HSD3: 0.45 A	Short-circuit, overvoltage protection, very low quiescent current	Multiwatt15	X
L5955	10 V 40 mA	8.5 V 200 mA	3.3 V 850 mA	8/10 V 1 A	1.8/3.3/5 V 250 mA	1.8/2.5 V 200 mA	3.3 V 125 mA	1.5 V 300 mA				HSD1: 2 A HSD2: 0.45 A HSD3: 0.45 A	LVW function, overvoltage shutdown, short-circuit protection, I2C interface	Flexiwatt27	X
L5956	8.5 V 500 mA	5 V 300 mA	5 V 800 mA	3.3 V 800 mA								HSD1: 2 A	Ignition comparator, low quiescent current, overvoltage protection, reset	PowerSO-20 (su) Multiwatt15	X
L5957	8.5 V 500 mA	5 V 800 mA	3.3 V 800 mA				5 V 300 mA					HSD1: 2 A	Ignition comparator, overvoltage protection, reset	PowerSO-20 (su) Multiwatt15	X
L5958	8.5 V 200 mA	5 V 300 mA	3.3 V 250 mA	1.8 V 350 mA			3.3 V 100 mA	1.8 V 100 mA				HSD1: 2 A	Ignition comparator, overcurrent limitation, reset, two battery voltage warnings	Flexiwatt27 Flexiwatt27SMD	X
L5959	8.5 V 200 mA	8/10 V 1 A	3.3 V 800 mA				3.3 V 100 mA					HSD1: 100 mA HSD2: 300 mA	Low quiescent current, battery voltage warning, overcurrent	Flexiwatt27SMD Multiwatt15	X
L5961	5/3.3 V 60 mA	5/3.3 V 60 mA							5/3.3 V 1 A				Power management IC for MOST networks, with integrated DC/DC converter for controller supply and two linear regulators for FOR/FOT supply	PowerSS0-36 PowerSO-36	X
L5962	5/8.5 V 350 mA	3.3/10 V 1 A					3.3/5 V 150 mA			1.2 to 8 V 1.2/2.5 A		HSD1: 500 mA HSD2: 500 mA	Configurable I2C interface, battery detector, sync function, enable pin for switching regulator, Vsby pin	PowerSO-36 (su)	X

Step-down DC-DC switching converters



Part number	Description	T _{JMAX} (°C)	Operating temperature (°C)		V _{IN} (V)	V _{OUT} (V)	I _{OUT DC} (A)	F _{SW} (kHz)	Package
			min	max					
A5970D	Up to 1 A switch step-down regulator for automotive applications	150	-40	85	4.4 to 36	1.235 to V _{IN}	1	250	S0-8
A5970AD	Up to 1 A switch step-down regulator for automotive applications	150	-40	85	4.4 to 36	1.235 to V _{IN}	1	500	S0-8
A5972D	Up to 1.5 A switch step-down regulator for automotive applications	150	-40	85	4.4 to 36	1.235 to V _{IN}	1.5	250	S0-8
A5973AD	Up to 1.5 A switch step-down regulator for automotive applications	150	-40	85	4 to 36	1.235 to V _{IN}	1.5	500	HSOP8
A5973D	Up to 2 A switch step-down regulator for automotive applications	150	-40	85	4 to 36	1.235 to V _{IN}	2	250	HSOP8
A6902D	Up to 1 A switch step-down regulator with adjustable current limit for automotive applications	150	-40	85	8 to 36	1.235 to V _{IN}	Adj to 1	250	S0-8
B5973D	Up to 2 A switch step-down regulator for automotive applications	150	-40	125	4 to 36	1.235 to V _{IN}	2	250	HSOP8

Packages





© STMicroelectronics - October 2008 - Printed in Italy - All rights reserved
The STMicroelectronics corporate logo is a registered trademark of the STMicroelectronics group of companies.

All other names are the property of their respective owners.

For more information on ST products and solutions,
visit www.st.com

Order code: BRAUTVOLT1008

www.BDTIC.com/ST

