Automotive multichannel power management ICs



Multifunctional voltage regulators for automotive applications

Automotive-qualified power management ICs (PMICs) integrate, in a single package, DC-DC converters, linear regulators, high-side drivers, stand-by regulators and functions useful to supply car radios, microcontrollers, USB ports, clusters, ECU, ADAS systems and automotive electronic appliances in general.
These multichannel voltage regulators simplify the application design reducing component count and adding a full set of protection functions required by the automotive field, a digital control bus when needed, direct connection to the battery and low quiescent current consumption.

KEY FEATURES

- DC-DC converters
- Linear regulators
- Stand-by regulators
- Integrated switches
- Voltage supervisors
- Independent enables
- Watch-dog / Reset / Warnings
- High switching frequency
- I2C / I2S control bus or hardware controls
- Very low quiescent and stand-by currents
- Battery compatibility
- Thermal protection
- Load dump protection

KEY BENEFITS

- Automotive qualification
- One IC can supply more devices, allowing compact solution
- Can be used for pre- or post-regulation
- Flexibility due to output programmability
- Switches and required protections already embedded, no external components needed

KEY APPLICATIONS

- Car radios
- Infotainment systems
- Clusters
- USB hubs and chargers



THE NEW L596X FAMILY

L5963 is the multi-channel voltage regulator which starts a new family of voltage regulators with the target of simplifying the design and reducing the space occupied by the power management.

It includes two PWM battery-compatible regulators with a switching frequency up to 2 MHz able to deliver 3 A of current each, programmable with the use of external resistors. One linear regulator, a high-side driver and voltage supervisors complete the product.

L5964 and L5965, inspired by this multichannel voltage regulator, carry on the family, adding, respectively, a higher current capability with micro-controller management ability (reset, watchdog) and the essential safety features and compactness needed to supply ADAS systems.

DEVICE SUMMARY

Part number	Package		V_{in} (V)	V_{out} (V)	I_{out} (A)	Frequency	Topology	Other features
L4953G	Multiwatt15	ST-BY	11 to 18	5	0.1	-		• Enables • 2 x HSD • Warnings
		2 x LDO		9.2/5	0.5/1	-		
L4954	Multiwatt15	ST-BY	11 to 16	5	0.1	-		• Enables • Reset • 3 x HSD • Warnings
		3 x LDO		10/8.5/5	0.04/0.175/0.65	-		
L5950	Multiwatt15	5 x LDO	9 to 18	10/8.5/5/5/ 8-10	0.35/0.175/ 0.35/0.25/1.0	-		• Enables • I2C interface • 3 x HSD
L5956	PowerSO20 Multiwatt15	ST-BY	9 to 18	5	0.3	-		• Enables • HSD
		LDO		8.5	0.5	-		
		2 x LDO	6 to 18	5/3.3	0.8/0.8	-		
L5957	PowerSO20 Multiwatt15	ST-BY	9 to 18	5	0.3	-		• Enables • HSD
		2 x LDO		8.5/3.3	0.5/0.8			
		LDO	6 to 18	5	0.8	-		
L5958	Flexiwatt27	2 x ST-BY	9 to 18	3.3/1.8	0.1/0.1	-		• Reset • HSD
		4 x LDO		8.5/5/3.3/1.8	0.2/0.3/0.25/0.35	-		
L5959	Multiwatt15	ST-BY	9 to 18	3.3	0.1	-		• Reset • Voltage monitors • 2 x HSD • Enables
		3 x LDO		8.5/8-10/3.3	0.2/1/0.8	-		
L5962	PowerSO36	Buck	4.1 to 27	1.2 to 8	2.5	Up to 400 kHz	Internal power switches	• I2C bus for LDO2 • Reset • 2 x HSD • Enable for buck
		ST-BY		3.3 / 5	0.15	-		
		LDO1		5 / 8.5	0.35	-		
		LDO2		3.3 to 10	1	-		
L5963	PowerSSO36 VQFPN-48	Buck1	3.5 to 26	1 to V_{IN}	2.5	Up to 2 MHz	Monolithic synchronous, voltage mode, internal power switches	• Power goods • High-side driver • Enables
		Buck2	3.5 to 26		3.0	Up to 2 MHz		
		LDO / ST-BY	3.5 to 26		0.25	-		
L5964*	VQFPN-48 LQFP64	Buck1	3.3 to 26	0.9 to V_{IN}	3.5	Up to 2.3 MHz	Monolithic synchronous, current mode, internal power switches	• DC-DC parallel mode (7A) • Watchdog / Reset • Voltage supervisors • Enables
		Buck2	3.3 to 26	0.9 to V_{IN}	3.5	Up to 2.3 MHz		
		LDO / ST-BY	3.3 to 26	1 to 10	0.25	-		
L5965*	VQFPN-48	Buck1 controller	4 to 32	Adjustable by OTP	-	Up to 400 kHz	Monolithic synchronous, current mode, internal power switches	• OTP programming • SPI interface • Diagnostics • Voltage supervisors • Designed for Advanced Driver Assistance Systems
		Buck2	4 to 32		3/1.5	Up to 2.4 MHz		
		Buck3	3 to 5.5		1.5	Up to 2.4 MHz		
		Buck4	3 to 5.5		1	Up to 2.4 MHz		
		Boost	3 to 5.5		0.3			
		LDO	3 to 5.5		0.6			
		Vref	-		0.02			

(*) under development

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