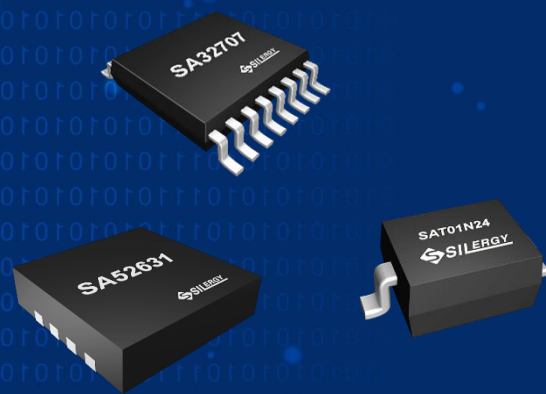


Automotive Solutions

**Q2 2024
AEC-Q100 QUALIFIED**



Typical Applications

Info/T-BOX/Gateway

- Backlight LED Driver
- Power Supply
- Audio Amplifier
- Battery Gauge
- Light Sensor
- CAN/SBC
- SerDes
- MCU
- MOS

ABS/ESC/SDM/EPS

- Power Supply
- Motor Driver
- Half-bridge/Full-bridge Pre-driver
- MCU (ASIL-B/D)
- CAN
- MOS

BMS, TRACTION, OBC/DCDC

- SiC MOSFET
- Isolated Driver
- Battery Monitoring
- Isolated Power Supply
- Current Sense Amplifier
- MCU (ASIL-B/D)
- CAN

ADAS

- Power Supply
- High-side Driver
- Power Management IC
- MCU
- CAN
- MOS
- SerDes

USB & Wireless Charging

- Power Supply
- ESD Protection
- Wireless Charging
- MCU
- MOS

Lighting

- Power Supply
- LED Driver
- MCU
- CAN
- ESD Protection

Body

- Power Supply
- Half-bridge/Full Bridge Driver
- Half-bridge/Full Bridge Pre-drive
- High-side and Low-side Driver
- Electronic Fuse
- MCU
- CAN

Sensor

- Tire Pressure Monitoring System (TPMS)
- Pressure Sensor
- Temperature Sensor
- Optical Sensor

Automotive Qualified

Silergy and Its Supplier Quality System and Certificates

- ISO9001
- ISO14001
- ISO26262
- ISO27001
- ROHS/HF/REACH
- Responsible Business Alliance (RBA)
- IATF 16949 (suppliers)
- ISO17025 (suppliers)
- ISO45001 (suppliers)
- Sony Green Partner

Quality Control

- On-Site Foundry and Assembly Teams
- Daily Short-Term and Long-Term Reliability Monitoring
- Quarterly Supplier Quality Review
- Annual Supplier Audits



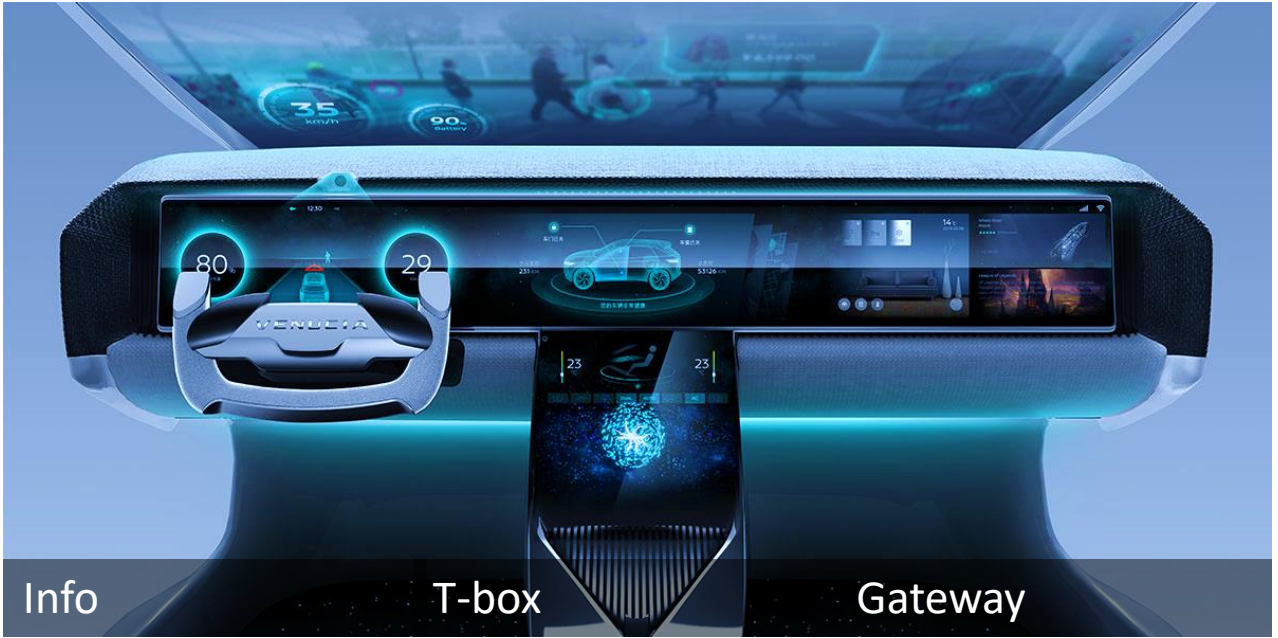
NEW

NEW

Category	P/N	Application	Feature	Package	Sampling
Buck	SA24401/BFCA	Info, T-Box, Gateway	Low I _Q , 40V, 0.6A Buck	SO8E	✓
Buck	SA24403FCA	Info, T-Box, Gateway	40V, 3.5A Buck	SO8E	✓
Buck	SA24406XNQ	IVI, T-BOX, Gateway	36V, 6A Buck	QFN3.5×4-14	✓
Buck	SA24493TLQ	IVI, T-BOX, Gateway	36V, 3A Buck	QFN2×2-12	✓
Buck	SA23001ADFD	Info, T-Box, Gateway	5.5V, 1A Buck, with Mode	DFN2x2-8	✓
Buck	SA23002ADFD	Info, T-Box, Gateway	5.5V, 2A Buck, with Mode	DFN2x2-8	✓
Buck	SA23002B/CDFD	Info, T-Box, Gateway	5.5V, 2A Buck, with PG	DFN2x2-8	✓
Buck	SA23003ATWD	Info, T-Box, Gateway	5.5V, 3A Buck, with Mode	DFN1.4x1.8-6	✓
Buck	SA23006XHQ	Info, T-Box, ADAS	5.5V, 6A Buck, with PG, Mode, SS	QFN2×3-9	✓
Buck	SA26066WYQ	Info, T-Box, Gateway	7V, 6A Buck	QFN2x3-14	✓
Buck	SA33101HSP	MDC/T-BOX	0.7-5.3V, Buck Controller	SSOP18E	✓
Buck	SA33103QCQ	MDC/T-BOX	VOU _T :0.7-15V, 60V Sync Buck Controller	QFN4×4-24	✓
Buck-Boost	SA22307TVA	Info, T-Box, Gateway	36V, 7A Buck-Boost	QFN5x5-30	✓
Boost	SA22115VPA	Info, T-Box, Gateway	16V, 15A Sync-Boost	QFN3x4-15	✓
LDO	SA21345AFCA	Info, T-Box, Body	36V, 0.3A LDO	SO8E	✓
LDO	SA21345GFAA	Info, T-Box, Body	36V, 0.15A 5V LDO	SO8	✓
LDO	SA21345NFCP	Info, T-Box, Body	36V, 0.15A, 5V Output LDO	SO8E	✓
LDO	SA21340FCA	Info, T-Box, Body	36V, 0.3A LDO, PG	SO8E	✓
LDO	SA21340IFCP	Info, T-Box, Body	36V, 0.3A 3.3V LDO, PG	SO8E	✓
LDO	SA21340PFCP	Info, T-Box, Body	36V, 0.3A, 3.3V Output LDO	SO8E	✓
LDO	SA21305AUYS	Automotive BGA SSD	3.3V, 1350mA LDO	CSP2.4×2.4 -36	✓
Protection Switch	SA21816QSQ	Info, T-Box	18V Protection Switch	QFN3x4-20	✓
High side Switch	SA21803AHTP	BCM, MDC, Power Distribution	Smart High-Side Power Switch	TSOP14E	✓
Linear Charger	SA61930QIA	BUB in T-Box, eCall	LDO + Linear Charger	QFN4x4 16	✓
Linear Charger	SA61930BQIA	BUB in T-Box, eCall	LDO + Linear Charger	QFN4x4 16	✓
USB Charger	SA61931QCA	QC3.0 USB Charger	QC3.0, DCP, 18W	QFN4x4 24	✓
PMIC	SA47302QDQ	Camera	16V Camera PMIC	QFN3x3-16	✓
Amplifier	SA59202DAA	BUB in T-Box, eCall	25V, 12bit Gas Gauge	DFN3x3-8	✓
Amplifier	SA59101/SA59102	WPC,OBC,DCDC, EV/HEV	26V, Bidirectional Current-sense Amplifier	SOT363	✓
ADC	SA59400FBP	BMS, Automotive Sensor	Bidirectional 12bit ADC with Temperature Sensor	MSOP10	✓
ADC	SA59401FBP	BMS, Automotive Sensor	Bidirectional 16bit ADC with Temperature Sensor	MSOP10	✓
LED Driver	SA32707HFA	Lighting	3Ch*150mA Linear Driver	TSSOP16E	✓
LED Driver	SA32774QJQ	Lighting	24-channel LED driver for rear light	QFN7x7-48	✓
LED Driver	SA32772LQEQ	Lighting	12-channel LED driver for rear light	QFN5x5-32	✓

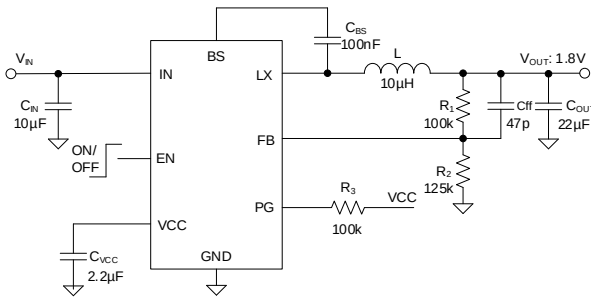
Selection Guide

Category	P/N	Application	Feature	Package	Sampling
Boost/Flyback	SA32703FAP	OBC, DCDC, Traction	11V 1A Boost/Flyback Controller	SO8	✓
Boost/Flyback	SA22300FAP	Lidar,OBC,Traction,BMS	36V Boost/Flyback Controller	SO8	✓
Boost/Flyback	SA22301HOP	Lidar,OBC,Traction,BMS	36V Boost/Flyback Controller	SSOP14E	✓
Motor Driver	SA52106VAA	HVAC, Mirror, BCM	6x Half-bridge	QFN5x5-24	✓
Motor Driver	SA52106HHP	HVAC, Mirror, BCM	6x Half-bridge	TSSOP24E	✓
Motor Driver	SA52108HHP	HVAC, Mirror, BCM	8x Half-bridge	TSSOP24E	✓
Motor Driver	SA52112VAQ	HVAC, Mirror, BCM	12x Half-bridge	QFN5x5-24	✓
Motor Driver	SA52270FFP	Door handle, Door lock, BCM	40V 15A H-bridge	SOP16	✓
Gate Driver	SA52631DAD	WPC, ESP, ABS, BCM	High-side and Low-Side Driver	DFN3x3-8	✓
Gate Driver	SA52631FAP	WPC, ESP, ABS, BCM	High-side and Low-Side Driver	SOP8	✓
ISO DCDC	SA52731AAT	Isolated interface power supply, BMS	Single 3.3V or 5V Supply	SOT23-5	✓
Audio	SA51023HDA	T-Box, Info	High CMRR, Line receiver	TSSOP14	✓
Audio	SA51024HGA	T-Box, Info	10W Class-D AMP	TSSOP28E	✓
Audio	SA51034HFA	T-Box, Info	8W Class-D AMP	TSSOP16E	✓
Audio	SA51054HFA	T-Box, Info	22W Class-D AMP	TSSOP16E	✓
Audio	SA51500HFP	T-Box, Info	8W Class-D Audio Power Amplifier, Load Dump	TSSOP16E	✓
Audio	SA51510HFP	T-Box, Info	22W Class-D Audio Power Amplifier, Load Dump	TSSOP16E	✓
Audio	SA55602HNP	Car Audios, Home Audios	Mono Audio Digital to Analog Converter	TSSOP24	✓
Reference	SA89550AOT	BMS,OBC,EV/HEV	5V Shunt Voltage Reference	SOT-23	✓
Reference	SA89550BAOT	BMS,OBC,EV/HEV	4.096V Shunt Voltage Reference	SOT-23	✓
Reference	SA89550CAOT	BMS,OBC,EV/HEV	3.3V Shunt Voltage Reference	SOT-23	✓
Reference	SA89550DAOT	BMS,OBC,EV/HEV	2.5V Shunt Voltage Reference	SOT-23	✓
ESD	SAT01N24AMA	ESD Protection	ESD for LIN	SOD323	✓
ESD	SAT03N24AOA	ESD Protection	ESD for CAN	SOT-23	✓
Light Sensor	SA88010RS22-J00	Wiper	Light Sensor-IR	2.0x1.5x0.6	✓
Light Sensor	SA88011AS22-J00	Body, Cluster, Info	Light Sensor	2.0x1.5x0.6	✓
BMS AFE	SA63122GGF	BMS, EV/HEV	Stackable 18S Monitor and Passive Cell Balancer with Daisy Chain	TQFP10x10-64E	✓
BMS Bridge	SA63000HFP	BMS, EV/HEV	SPI Interface: 2MHz-6MHz	TSSOP16E	✓
MCU	SA32B12QEQ/AQEQ SA32B12GFF	Roof, Door, Seatbelt, Airbag, Smart Cockpit, HVAC, T-BOX, Shifter, BCM, EPB, Lighting	1xM4F, 120MHz, Flash 128KB, 2xCAN	QFN5x5-32 /LQFP7x7-48	✓
MCU	SA32B14GFF/GDF		1xM4F, 120MHz, Flash 256KB, 3xCAN	LQFP7x7-48 /LQFP10x10-64	✓
MCU	SA32B16GFF/GDF/GEF		1xM4F, 120MHz, Flash 512KB, 3xCAN	LQFP7x7-48 /LQFP10x10-64 /LQFP14x14-100	✓



Low Quiescent Current 4.25V-40V Input,
0.6A Output Current Synchronous Step Down Regulator

SA24401/SA24401B



Features

- Low $R_{DS(ON)}$ for Internal Switches (Top/Bottom): 225mΩ/150mΩ
- 4.25V to 40V Input Voltage Range
- 0.6A Output Current Capability
- Low Quiescent Current:
 - SA24401: 5µA
 - SA24401B: 1.8µA
- Switching Frequency:
 - SA24401: 500kHz
 - SA24401B: 2.1MHz
- Internal Soft-start Limits the Inrush Current
- Short Circuit Protection
- Thermal Shutdown and Auto Recovery
- Power Good Indicator
- Compact Package: SO8E
- Automotive AEC- Q100 Grade 1 certified

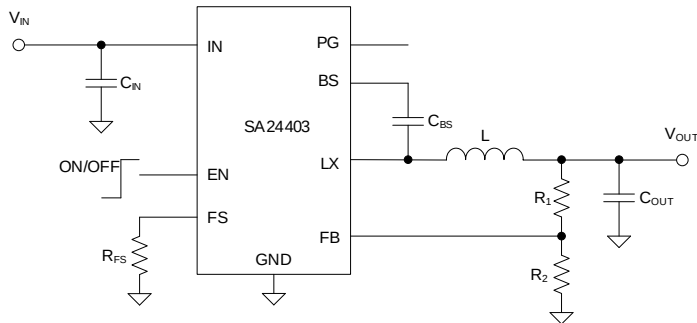
Applications

- Info, T-box, Gateway, EPS, ETC

Buck Regulators

SA24403

**4.2V-40V Input , 3.5A High Efficiency Fast Response
Synchronous Step Down Regulator**



Features

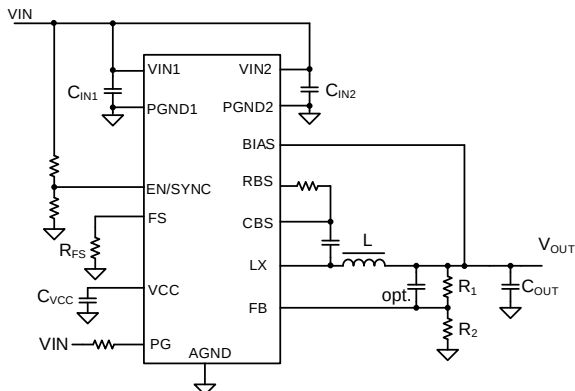
- Low $R_{DS(ON)}$ for Internal Switches (Top/Bottom): 115/80mΩ
- 4.2-40V Input Voltage Range
- Internal Compensation
- Internal 1ms Soft-start Limits the Inrush Current
- Adjustable Switching Frequency Range: 300kHz to 2.2MHz
- 3.5A Output Current Capability
- $\pm 2\%$ 0.6V Reference Over $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$
- Cycle-by-cycle Peak Current Limitation
- Short Circuit Protection
- Thermal Shutdown and Auto Recovery
- RoHS Compliant and Halogen Free
- Compact Package: SO8E
- Automotive AEC- Q100 Grade 1 Qualified

Applications

- Info, T-box, Gateway, EPS, ETC
- OBC, DCDC, ABS, ESC
- Cluster
- Lighting

36V Input, 6A Synchronous Step Down Regulator

SA24406



Features

- 4 to 36V Input Voltage Range
- 6A Output Current Capability
- Low $R_{DS(ON)}$ for Internal Switches (Top/Bottom): 41/21 mΩ
- Typical 30uA Quiescent Current and 1uA Shutdown Current
- 300kHz to 2.2MHz Switching Frequency
- Synchronizes to External Clock
- Spread Spectrum function
- Hic-Cup Mode Output Short Circuit Protection
- EN ON/OFF Control with Accurate Threshold
- Cycle-by-Cycle Peak Current Limit
- Power Good Indicator
- $1V \pm 1\%$ Reference Voltage Over $-40^{\circ}C$ to $150^{\circ}C$ Temperature Range
- Package: QFN3.5×4-14
- Automotive AEC- Q100 Grade 1 Qualified

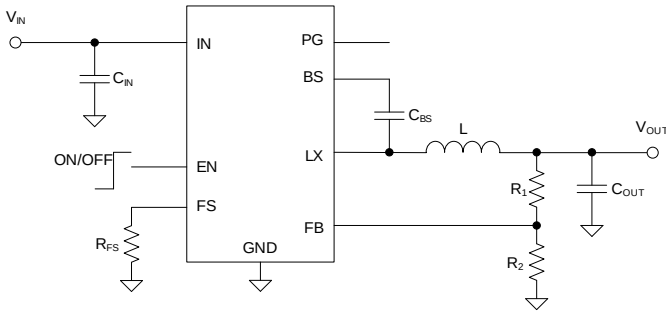
Applications

- IVI
- T-BOX
- Gateway

Buck Regulators

SA24493

36V Input, 3A Synchronous Step Down Regulator



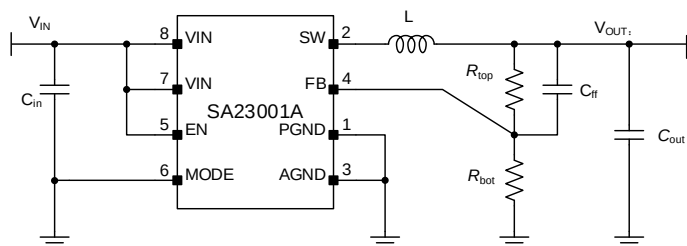
Features

- 4.15-36V Input Voltage Range
- Low $R_{DS(ON)}$ for Internal Switches (Top/Bottom): 113/70 m Ω
- Internal Compensation
- Internal 1ms Soft-start Limits the Inrush Current
- Adjustable Switching Frequency Range: 300kHz to 2.2MHz
- 3A Output Current Capability
- $\pm 2\%$ 0.6V Reference Over $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$
- Cycle-by-Cycle Peak Current Limitation
- Short Circuit Protection
- Spread Spectrum Function
- Thermal Shutdown and Auto Recovery
- RoHS Compliant and Halogen Free
- Compact Package: QFN2 $\times$ 2-12
- AEC-Q100 Qualified

Applications

- IVI
- T-BOX
- Gateway

2.8V-5.5V Input, 1A Single Synchronous Buck Converter



Features

- 2.8V to 5.5V Input Voltage Range
- Up to 1A Output Current
- External Adjustable Voltage with $\pm 1.5\%$ Reference Accuracy
- $1\mu\text{A}$ Shutdown Current (Typical)
- Fixed 2.35MHz Switching Frequency Minimizes Required External Components
- Selectable PWM and PFM Operating Modes
- 100% Duty-Cycle Capable
- Cycle-by-Cycle Current-Limit Protection
- Hiccup-Mode Short-Circuit Protection
- Thermal Shutdown
- Package: DFN2 $\times$ 2-8
- Automotive AEC- Q100 Grade 1 certified

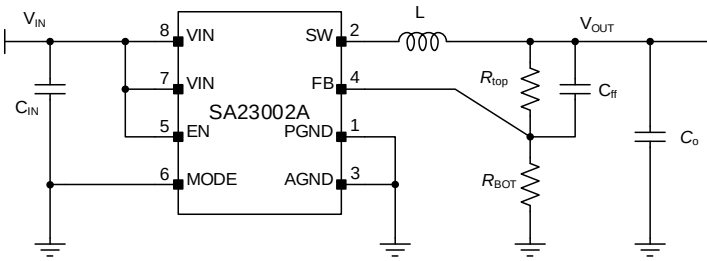
Applications

- Info, T-box, Gateway, Cluster
- Automotive Display
- ADAS

Buck Regulators

SA23002A

2.8V-5.5V Input, 2A Single Synchronous Buck Converter



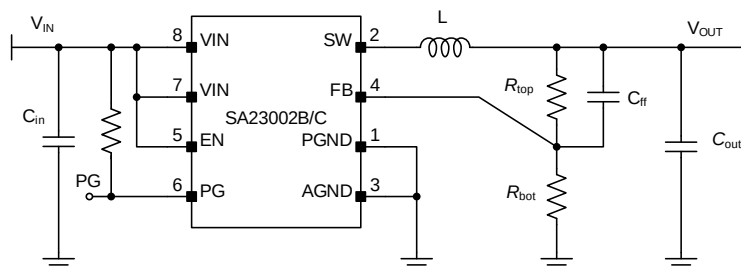
Features

- 2.8V to 5.5V Input Voltage Range
- Up to 2A Output Current
- External Adjustable Voltage with $\pm 1.5\%$ Reference Accuracy
- Typical $1\mu\text{A}$ Shut Down Current
- Fixed 2.35MHz Switching Frequency
- PWM and PFM Operating Selectable
- 100% Duty Cycle for Lowest Dropout
- Cycle by Cycle Current Limit Protection
- Hiccup Mode Short-Circuit Protection (SCP)
- Thermal Shutdown
- Package: DFN2 $\times$ 2-8
- Automotive AEC- Q100 Grade 1 certified

Applications

- Info, T-box, Gateway, Cluster
- Automotive Display
- ADAS

2.8V-5.5V Input, 2A Single Synchronous Buck Converter



Features

- 2.8V to 5.5V Input Voltage Range
- External Adjustable Voltage with $\pm 1.5\%$ Reference Accuracy
- Typical $1\mu\text{A}$ Shut Down Current
- Fixed 2.35MHz Switching Frequency
- Light Load Operating Mode
 - SA23002B is PFM Mode
 - SA23002C is PWM Mode
- Power Good Indicator
- Internal Soft Start
 - SA23002B: typical 0.2ms
 - SA23002C: typical 0.4ms
- 100% Duty Cycle for Lowest Dropout
- Cycle by Cycle Current Limit Protection
- Hiccup Mode Short-Circuit Protection (SCP)
- Thermal Shutdown
- Package: DFN2 $\times$ 2-8
- Automotive AEC- Q100 Grade 1 certified

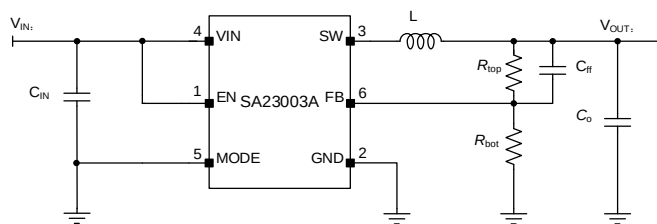
Applications

- Info, T-box, Gateway, Cluster
- Automotive Display
- ADAS

Buck Regulators

SA23003A

2.8V-5.5V Input, 3A Single Synchronous Buck Converter



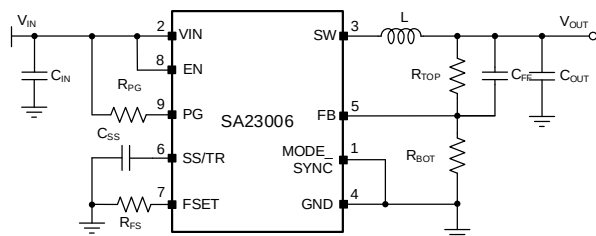
Features

- 2.8V to 5.5V Input Voltage Range
- Up to 3A Output Current
- External Adjustable Voltage with $\pm 1.5\%$ Reference Accuracy
- $1\mu\text{A}$ Shutdown Current (Typical)
- Fixed 2.35MHz Switching Frequency Minimizes Required External Components
- Fixed Frequency PWM and PFM Operating Modes
- 100% Duty-Cycle Capable
- Cycle-by-Cycle Current-Limit Protection
- Hiccup-Mode Short-Circuit Protection
- Thermal Shutdown
- Package: DFN1.4 $\times$ 1.8-6
- Automotive AEC-Q100 Grade 1 Certified

Applications

- Info, T-box, Gateway, Cluster
- Automotive Display
- ADAS

2.8V-5.5V Input, 6A Single Synchronous Buck Converter



Features

- 2.8V to 5.5V Input Voltage Range
- Up to 6A Output Current
- External Adjustable Output Voltage with $\pm 1.2\%$ Reference Voltage Accuracy
- $1\mu\text{A}$ Shutdown Current (Typical)
- Adjustable Switching Frequency of 1.8MHz to 3MHz
- PWM or PFM Operation Selectable in Light Load
- Adjustable Soft-Start Time
- 100% Duty-Cycle for Lowest Dropout
- Optional Frequency Jittering Function
- Cycle-by-Cycle Current Limit Protection
- Hiccup Mode Short-Circuit Protection
- Power Good Indicator
- Thermal Shutdown
- Compact QFN2 $\times$ 3-9 Package
- Automotive AEC-Q100 Grade 1 Certified

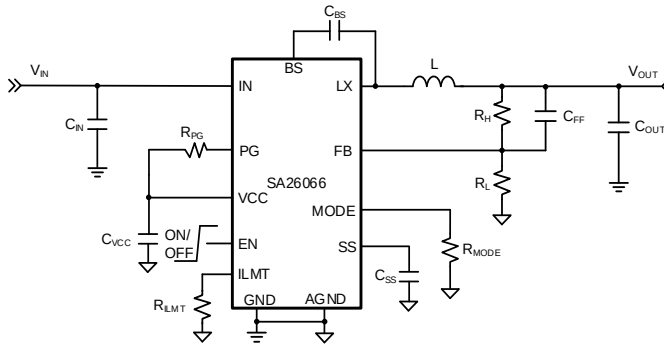
Applications

- Info, T-box
- Automotive Display
- ADAS

Buck Regulators

SA26066

7V Input 6A Synchronous Step-Down Regulator



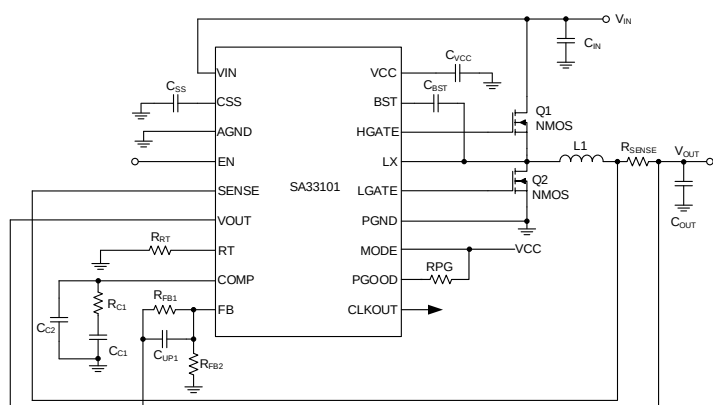
Features

- 3V to 7V Input Voltage Range
- Up to 6A Output Current
- $\pm 1\%$ Reference Voltage over -40°C to $+125^{\circ}\text{C}$ Junction Temperature Range
- Internal $22.1\text{m}\Omega$ Power Switch and $8.1\text{m}\Omega$ Synchronous Rectifier
- Instant-PWM™ Provides Fast Transient Response
- 660kHz, 1100kHz, and 2200 kHz Operating Frequency
- Selectable PFM/FCCM Operation
- Programmable Valley Current Limit
- Cycle-by-Cycle Valley and Peak Current Limit (OCP) and Reverse Current Limit if FCCM is Selected
- Output Overvoltage (OVP), Output Undervoltage (UVP), Overtemperature (OTP)
- Hiccup Mode after 32 Consecutive Cycles of Valley Current-Limit Protection
- Pre-Biased Startup
- Power-Good Indicator
- Compact Package: QFN2x3-14
- Automotive AEC-Q100 Grade 1 Certified

Applications

- Info, T-box, Gateway, Cluster
- Automotive Display
- ADAS

36V Synchronous Buck Controller



Features

- AEC-Q100-Grade 1 -40°C~125°C
- Wide Input Voltage Ranges from 4.0 V to 36V
- Start-up Input Voltage: 4.5V
- Output Voltage Range from 0.7V to 5.3V
- Fold Back Reference Voltage: 640mV $\pm$ 1%
- Adjustable Switching Frequency: 250kHz to 1MHz
- Spread Frequency Function
- Adjustable Soft-start Time
- Pre-bias Start-up
- Output Voltage Abnormal Detection, Shows on PGOOD Pin, UVD/OVD
- Cycle by Cycle Current Limit Protection
- Thermal Shut down When T_j>160°C
- Reliable Protection: SOP/UVD/OVD/OVP/OTP
- Package: SSOP18E

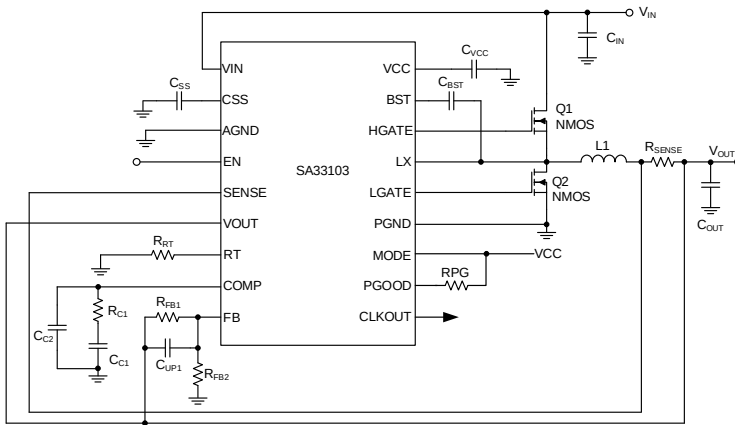
Applications

- DC/DC Converter
- Power Module
- Automotive Power Supply Unit
- Power Source for Control Units Including EV
- Inverter and Charge Controller

Buck Controller

SA33103

60V Synchronous Buck Controller



Features

- Wide Input Voltage Ranges from 4.0 V to 60V
- Start-up Input Voltage: 4.5V
- Output Voltage Range from 0.7V to 15V
- Fold Back Reference Voltage: $640\text{mV} \pm 1\%$
- Adjustable Switching Frequency: 200kHz to 1MHz
- Spread Frequency Function
- Adjustable Soft-start Time
- Pre-bias Start-up
- Output Voltage Abnormal Detection, Shows on PGOOD Pin, UVD/OVD
- Cycle by Cycle Current Limit Protection
- Thermal Shut down When $T_j > 160^\circ\text{C}$
- Reliable Protection: SOP/UVD/OVD/OVP/OTP
- Package: QFN4x4-24

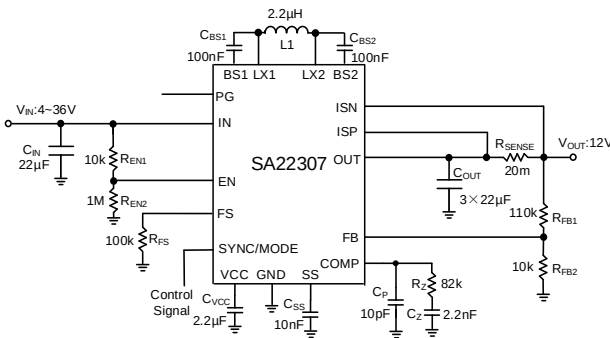
Applications

- DC/DC Converter
- Power Module
- Automotive Power Supply Unit
- Power Source for Control Units Including EV
- Inverter and Charge Controller



High Efficiency, 4V-36V Input Single Inductor Synchronous Step Up/Down Regulator

SA22307



Features

- 4V to 36V Input Voltage Range
- 3V to 20V Output Voltage Range
- Low $R_{DS(ON)}$ for Internal Switches: 35mΩ
- External Soft-start Limits the Inrush Current
- 1μA shutdown current
- 7A Internal Switch Peak Current Capability
- Programmable Frequency 200kHz~600kHz
- 1.0V±2% Reference over -40°C to 125°C
- Light Load Operating Mode Selection: PSM or FCCM
- Power Good Indicator
- Hiccup Mode for Output Short-circuit Protection
- Output Over Current Protection
- Thermal Shutdown with Auto Recovery
- Compact Package: QFN5×5-30
- Automotive AEC- Q100 Grade 1 Qualified

Applications

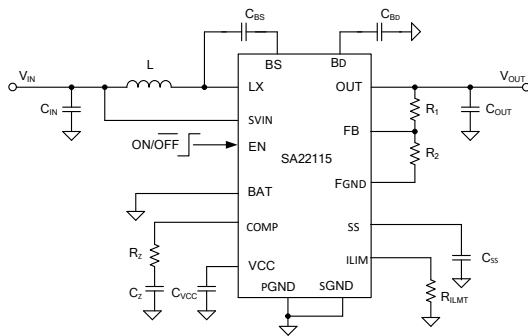
- Info, T-Box, Gateway
- ADAS
- Smart Cockpit

Boost Regulators



SA22115

High Efficiency, 15A Synchronous Boost Regulator

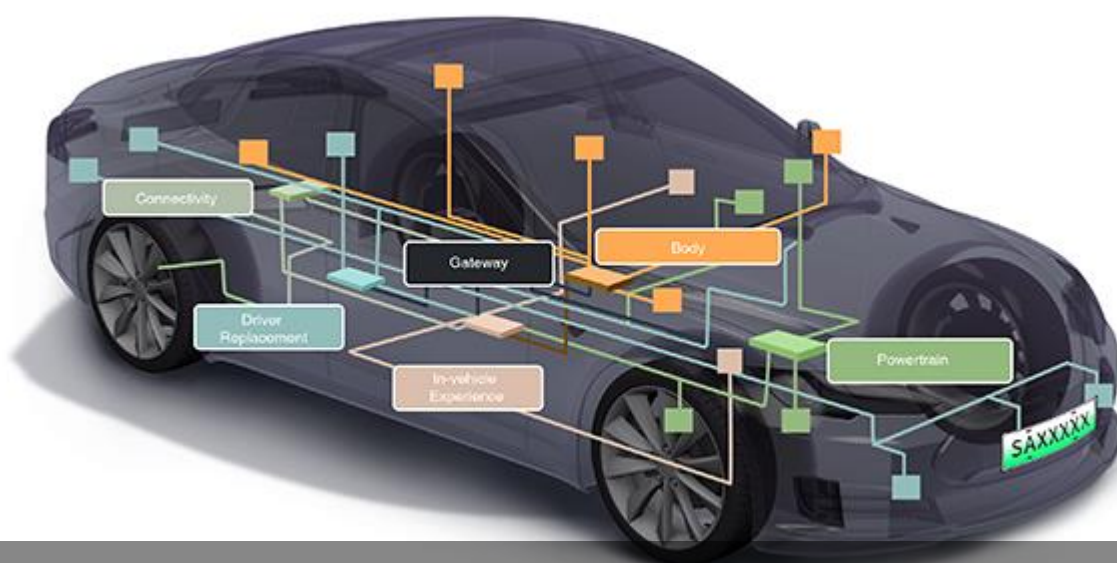


Features

- Wide Input Range:
 - 2.7V to 16V Start-up Voltage
 - 1.2V to 16V Operation Voltage
- 400kHz Pseudo-constant Frequency
- True Shutdown Function
- Low RDS(ON) Internal Switch
 - Main FET: 10mΩ
 - Rectifier FET: 20mΩ
 - Disconnect FET: 30 mΩ
- External Loop Compensation
- Programmable Peak Current Limit Threshold
- Battery Voltage Monitoring
- Programmable Soft-Start Limits the Inrush Current
- Input Voltage UVLO
- Over Temperature Protection
- Output Over Voltage Protection
- RoHS Compliant and Halogen Free
- Compact Package: QFN3×4-15
- Automotive AEC- Q100 Grade 1 Certified

Applications

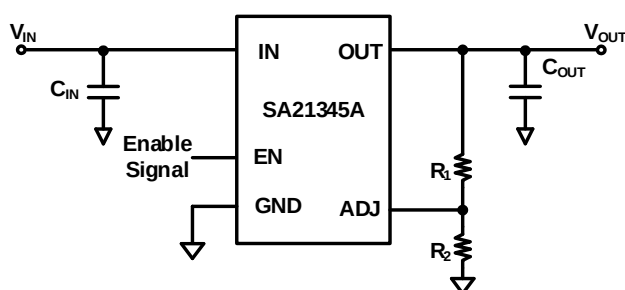
- Backup Battery
- Info, T-box, Gateway



Body

36V, 300mA LDO Regulator

SA21345A



Features

- Wide Input Voltage Range: 4V to 36V
- Low Dropout Voltage (300mV @ 300mA)
- Ultra-low Quiescent Current
- Extremely Low Shutdown Current
- Stability with Tantalum or Ceramic Capacitors
- Excellent Load and Line Regulation
- 300mA Maximum Load Current
- Enable Control Input
- Over Current Protection
- Thermal Shutdown
- Compact SO8E Package
- Automotive AEC- Q100 Grade 1 Certified

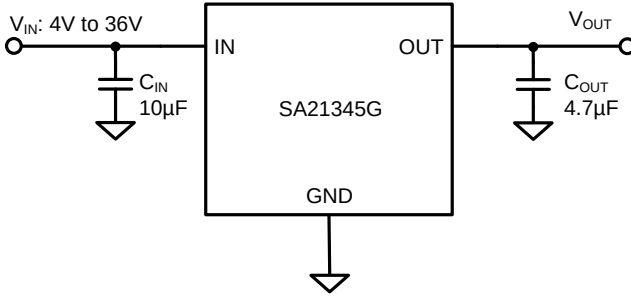
Applications

- Info, T-box, Gateway
- Body
- ADAS
- Lidar

LDO

SA21345G

150mA LDO Regulator



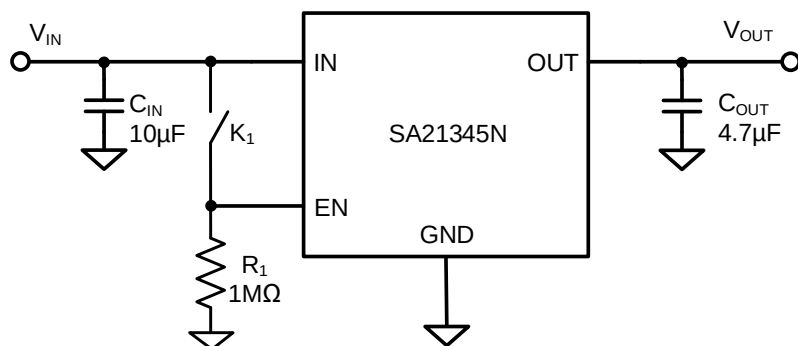
Features

- Wide Input Voltage Range: 4V to 36V
- Low Dropout Voltage (150mV @ 150mA)
- Ultra-low Quiescent Current
- Fixed 5V Output Voltage
- Stability with Tantalum or Ceramic Capacitors
- Excellent Load And Line Regulation
- 150mA Maximum Load Current for SO8
- Over Current Protection
- Thermal Shutdown Protection
- Compact SO8 Package
- RoHS Compliant and Halogen Free
- Automotive AEC- Q100 Grade 1 Certified

Applications

- Info, T-box, Gateway
- Body
- ADAS
- Lidar

150mA LDO Regulator



Features

- Wide Input Voltage Range: 4V to 36V
- Fixed 5V Output Voltage
- Output Voltage Accuracy: 2%
- Low Dropout Voltage of (150mV@150mA)
- Ultra-low Quiescent Current
- Extremely Low Shutdown Current
- Stability with Tantalum or Ceramic Capacitors
- Excellent Load and Line Regulation
- 150mA Maximum Load Current for SO8E
- Enable Control Input
- Over Current Limit Protection
- Thermal Shutdown Protection
- Compact Package: SO8E
- RoHS Compliant and Halogen Free
- Automotive AEC-Q100 Grade 1 Qualified

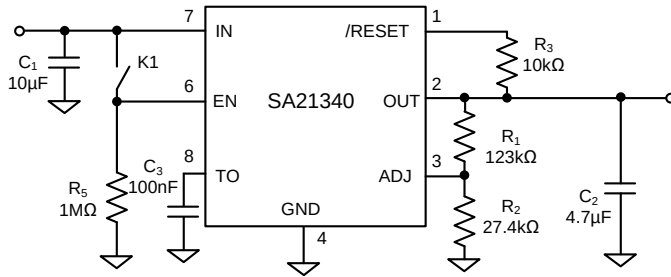
Applications

- Info, T-box, Gateway
- Automotive LED Lighting ECU
- Automotive Body Modules

LDO

SA21340

300mA, 36V Fast-Response LDO Regulator



Features

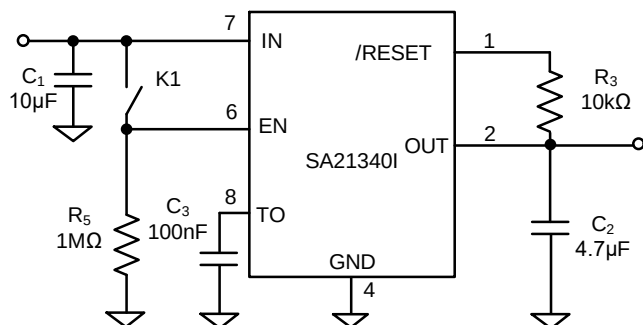
- High-current Capability: 300mA Over Full Temperature Range
- Low-dropout Voltage of 300mV at Full Load 300mA.
- Adjustable Output Voltage
- Low Ground Current
- Over Current Limit Protection
- Output Short Circuit Protection(Hiccup Mode)
- Over Temperature Protection.
- Reset Output with Programmable Timeout Period
- Packages: SO8E
- RoHS Compliant and Halogen Free
- Automotive AEC- Q100 Grade 1 Qualified

Applications

- Info, T-box, Gateway
- Body
- ADAS
- Lidar

SA21340I

36V 300mA LDO with Programmable Reset



Features

- High-current Capability: 300mA Over Full Temperature Range
- Low-dropout Voltage of 300mV at Full Load 300mA
- Fixed 3.3V Output Voltage
- Low Ground Current
- Over Current Limit Protection
- Output Short Circuit Protection (Hiccup Mode)
- Over Temperature Protection
- Reset Output with Programmable Timeout Period
- Packages: SO8E
- RoHS Compliant and Halogen Free
- Automotive AEC- Q100 Grade 1 Qualified

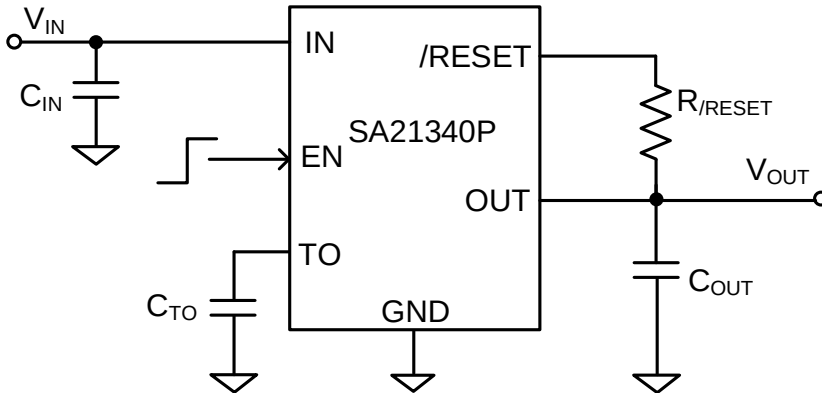
Applications

- Info, T-box, Gateway
- Body
- ADAS
- Lidar

LDO

SA21340P

36V 300mA LDO with Programmable Reset



Features

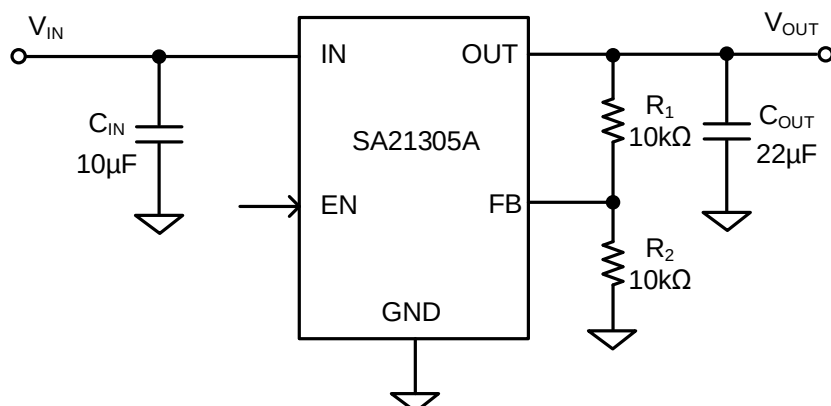
- Wide Input Range: 4V to 36V
- Fixed 3.3V Output Voltage
- Output Voltage Accuracy: 2%
- Low Drop-out Voltage of 300mV at Full Load 300mA
- 300mA Maximum Load Current
- Ultra-low Quiescent Current
- Extremely Low Shutdown Current
- Stability with Tantalum or Ceramic Capacitors
- Excellent Load and Line Regulation
- Enable Control Input
- Over Current Limit Protection
- Output Short Circuit Protection (Hiccup Mode)
- Over Temperature Protection
- Thermal Shutdown
- RoHS Compliant and Halogen Free
- Package: SO8E
- Automotive AEC- Q100 Grade 1 Qualified

Applications

- Industrial/Automotive Application
- Portable/Battery-Powered Equipment
- Gateway Application
- Remote Keyless Entry Systems
- Cellular Handsets
- SMPS Post-regulator/ DC-DC Modules
- Medical Imaging

1350mA Low Dropout Regulator

SA21305A



Features

- Input Voltage Range: 1.65V to 3.3V
- Output Current up to 1350mA
- PSRR at 1kHz : 55dB(Typ)
- Adjustable Output FB Voltage Accuracy : $\pm 1\%$ @ $T_A = 25^\circ\text{C}$
- Drop Output Voltage : Max=0.4V
- Packages CSP 2.4mm $\times$ 2.4mm -36
- RoHS Compliant and Halogen Free
- AEC Q100 Grade 2
- -40°C to $+105^\circ\text{C}$ Ambient Temperature Range

Applications

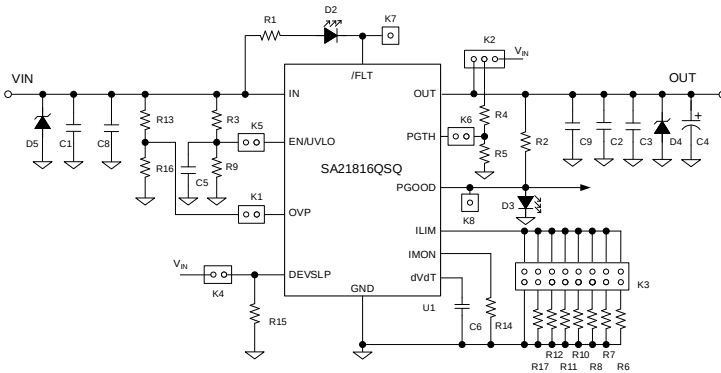
- Automotive BGA SSD

Protection Switch



SA21816

Protection Switch with True Reverse Blocking



Features

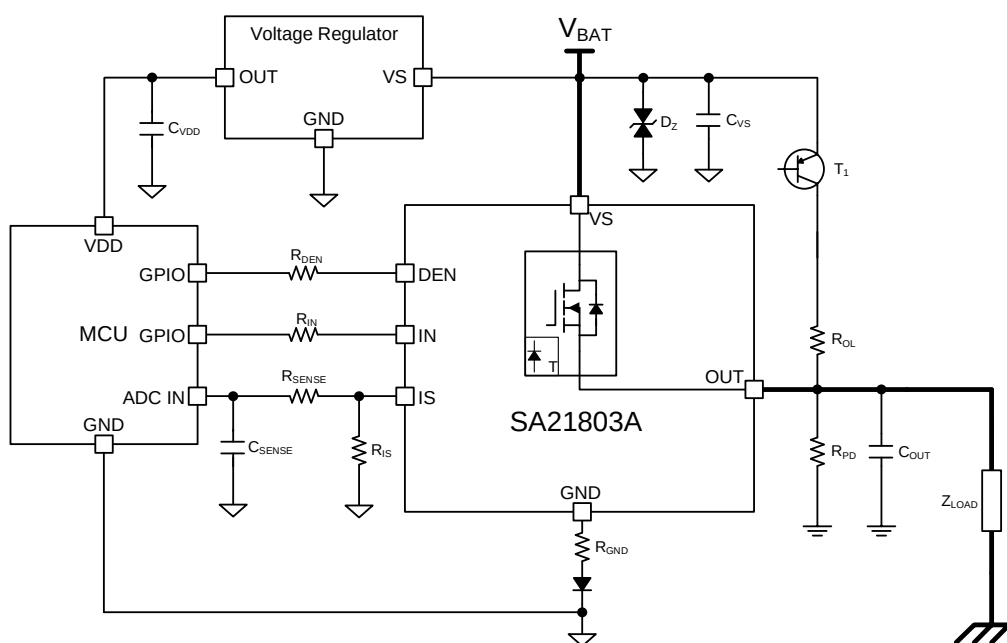
- AEC-Q100 Grade 1 Qualified
- 2.7V to 18V Operating Voltage, 21V (Max)
- Ultra Low $R_{DS(ON)}$: 46mΩ (Typical)
- 0.6A to 5.3A Adjustable Current Limit
- IMON Current Indicator Output
- 130μA Operating IQ (Typical)
- Reverse Current Blocking
- Programmable dV/dt Control
- Power Good and Fault Outputs
- -40°C to 125°C Junction Temperature Range
- RoHS Compliant and Halogen Free
- Compact package: QFN3×4-20

Applications

- Info, T-box
- ADAS Cameras and Radar Sensors
- USB Hubs
- Power MUX

Single Channel, Smart High-Side Power Switch

SA21803A



Features

- AEC-Q100/ Q104 Qualified for Automotive Applications
- One Channel Device
- Very Low Shutdown Current
- 3.3V and 5V Compatible Logic Inputs
- Logic Ground Independent from Load Ground
- Very Low Power DMOS Leakage Current in OFF State
- Diagnostic Functions
 - Proportional Load Current Sense
 - Open Load in OFF State
 - Short Circuit to Battery and Ground
 - Over Temperature
 - Stable Diagnostic Signal During Short Circuit
 - Enhanced k_{ILIS} Dependency with Temperature and Load Current
- Protection Functions
 - Stable Behavior during Under Voltage
 - Reverse Polarity Protection with External Components
 - Secure Load Turn-off during Logic Ground Disconnect with External Components
 - Over Temperature Protection with Latch
 - Overvoltage Protection with External Components
 - Voltage Dependent Current Limitation
 - Enhanced Short Circuit Operation



Applications

- Suitable for Resistive, Inductive and Capacitive Loads
- Replaces Electromechanical Relays, Fuses and Discrete Circuits
- Most Suitable for Loads with High Inrush Current, Such as Lamps
- Suitable for 12V and 24V Truck and Transportation System

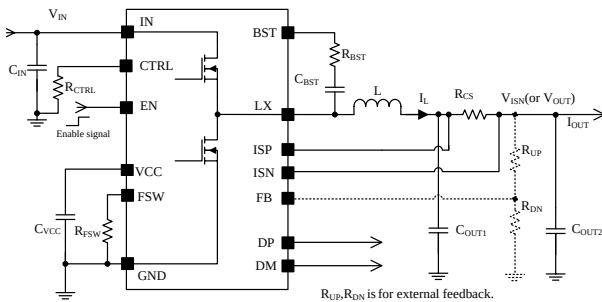
Battery



BUB in T-box

SA61931

**4.5- 40V Wide Input, 3A High Efficiency
CV/CC Step-Down Regulator with USB and QC3.0 Handshaking**



Features

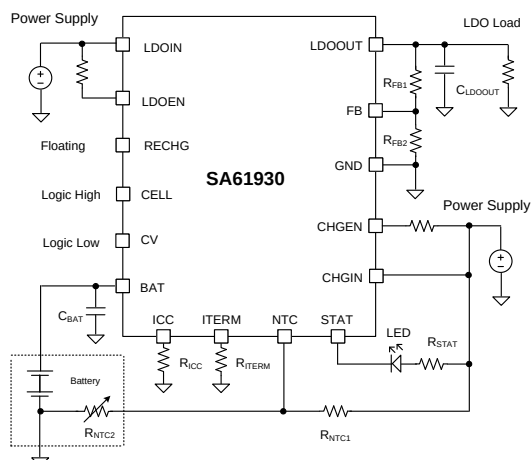
- 4.5-40V Wide Input Voltage Range
- Build in Low $R_{DS(ON)}$ Power Switches
- 60-400kHz Programmable Switching Frequency
- Cable Voltage Drop Compensation
- Output Constant Current Limit
- Maximum 5V/3A Output Power
- Maximum 9V/2A Output Power
- Maximum 12V/1.5A Output Power
- Integrated Soft-start and Compensation
- Hiccup Mode During Output Short
- Input Voltage UVLO and OVP
- Output Over Voltage Protection
- Thermal Shutdown Protection
- Output Apple-divide Mode, DCP and QC3.0 Handshaking
- QC 3.0 Certificate
- 8kV ESD HBM Protection on DP and DM
- AEC-Q100 Grade1 Automotive Qualified
- Compact Package: QFN4x4-24

Applications

- Car Charger
- Cigarette Lighter Adapter
- Other CV/CC Applications

500mA Linear Regulator and 400mA Linear Charger

SA61930



Features

- 4.5V~36V Wide Input Operation Voltage Range
- Integrated a 500mA Linear Regulator with Over Load and Short Circuit Protection
- Integrated a 400mA Linear Charger
- Support 1-cell or 2-cell Li-ion and Li-polymer Batteries
- Support 4.05V, 4.1V and 4.2V Cell Voltage Battery
- $\pm 0.5\%$ Battery Charge Voltage Accuracy
- Programmable Constant Charge Current and Termination Current
- 100mA~400mA Constant Charge Current with $\pm 10\%$ Accuracy
- 20mA~100mA Termination Current with $\pm 20\%$ Accuracy
- Thermal Regulation and Thermal Shutdown
- Compact Package: QFN4 $\times$ 4-16
- AEC-Q100 Grade1 Qualified

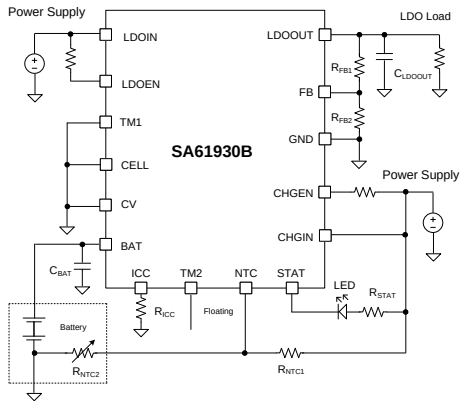
Applications

- T-box
- Portable Battery-powered Equipment

Battery

SA61930B

500mA Linear Regulator and 100mA Linear Charger
for Automotive Battery Backup System



Features

- 4.5V-36V Wide Input Operation Voltage Range
- Integrated a 500mA Linear Regulator with Over Load and Short Circuit Protection
- Integrated a 100mA Linear Charger
- Support up to 2-cell Ni-MH Batteries by Linear Charging
- $\pm 0.5\%$ Battery Charge Voltage Accuracy
- Programmable Constant Charge Current
- 20mA~100mA Constant Charge Current with $\pm 20\%$ Accuracy
- Thermal Regulation and Thermal Shutdown
- Compact Package: QFN4 $\times$ 4-16
- AEC-Q100 Grade1 Qualified

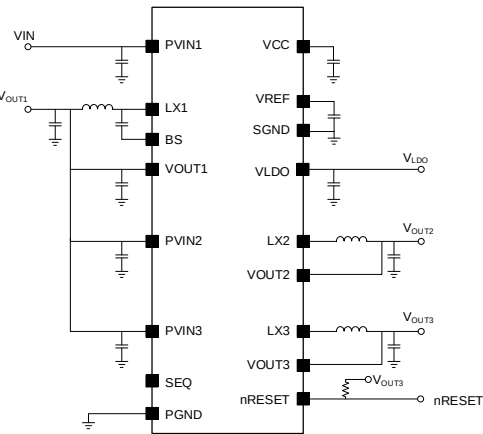
Applications

- T-box
- Portable Battery-Powered Equipment



SA47302

Automotive Camera PMIC



Features

- AEC-Q100-Grade 1 Qualified
- 2.2MHz Fixed Switching Frequency
- Primary Synchronous Buck Converter1
 - Fixed Output Voltage: 3.3V/3.8V (optional)
 - Maximum Continue Output Current:1.5A
 - Low $R_{DS(ON)}$ High Side and Low Side Switches:220mΩ/120mΩ
- Secondary Synchronous Buck Converter 2
 - Fixed Output Voltage: 1.1V/1.2V (optional)
 - Maximum Continue Output Current:1.5A
 - Low $R_{DS(ON)}$ High Side and Low Side Switches:220mΩ/180mΩ
- Secondary Synchronous Buck Converter 3
 - Fixed Output Voltage: 1.8V
 - Maximum Continue Output Current:1A
 - Low $R_{DS(ON)}$ High Side and Low Side Switches:320mΩ/220mΩ
- Secondary LDO
 - Output Voltage:2.8V/2.9V/3.3V(optional)
 - Maximum Output Current:300mA
- Spread Spectrum Frequency Modulation
- Compact Package: QFN3×3-16

Applications

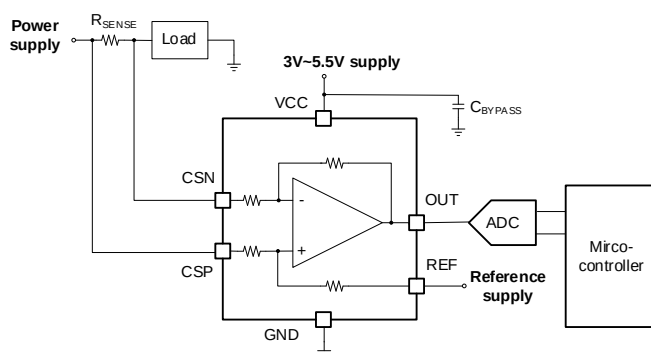
- Automotive Camera Modules

Current Sense



High- or Low-Side, Bidirectional, High Accuracy Current-sense Amplifier

SA59101/SA59102

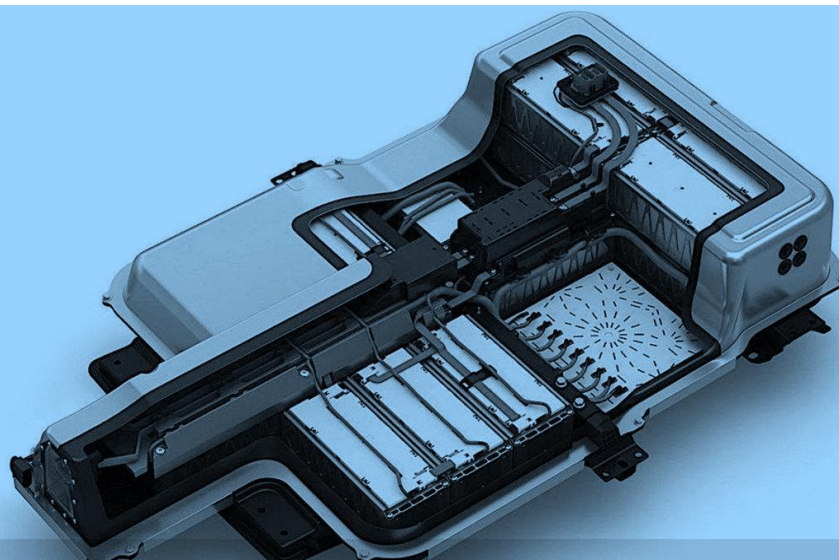


Features

- Voltage-output, Current-sense Amplifier
- Wide Common Mode Operation Range: -0.3V~26V
- Gain=50V/V(SA59101), Gain=100V/V(SA59102)
- Amplifier's Output Referenced to VREF input
- Shunt Input Voltage Range:
 - SA59101: -40mV to 40mV (VCC=5V, VREF=2.5V)
 - SA59102: -20mV to 20mV (VCC=5V, VREF=2.5V)
- Low Offset Voltage:
 - SA59101: $\pm 100\mu\text{V}$ (Maximum)
 - SA59102: $\pm 50\mu\text{V}$ (Maximum)
- 0.5 $\mu\text{V}/^\circ\text{C}$ Offset Drift (Maximum)
- $\pm 0.5\%$ Gain Error (Maximum)
- 10ppm/ $^\circ\text{C}$ Gain Drift (Maximum)
- Quiescent Current: 100 μA (Maximum)
- Packages: SOT363

Applications

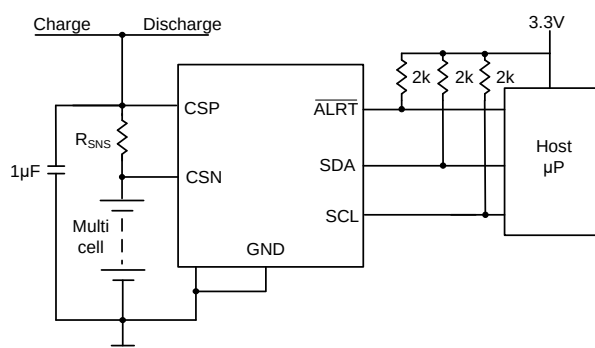
- Body Control Module
- OBC
- DCDC
- Motor Control



Electric Vehicles Backup Battery Systems

SA59202

Multi Cell Battery Gas Gauge



Features

- High Accuracy Coulomb Counter Measures Accumulated Battery Charge and Discharge
- Operation Voltage Range: 3.6V to 25V
- 12-bit ADC Measures Voltage and Current
- 1% Voltage, Current and Charge Accuracy
 - $\pm 64\text{mV}$ Sense Voltage Range for Current ADC
 - High Side Sense for Current ADC
 - Low Value External Current Sense Resistor
- Low Quiescent Current
- Configurable Alert Output/Charge Complete Input
- I2C Interface
- Compact DFN3 $\times$ 3-8 Package
- AEC-Q100 Qualified for Automotive Applications
 - Temperature Grade 2: -40°C to $+105^{\circ}\text{C}$

Applications

- Power Tools
- Portable Equipment
- Electric and Hybrid Electric Vehicles
- Backup Battery Systems

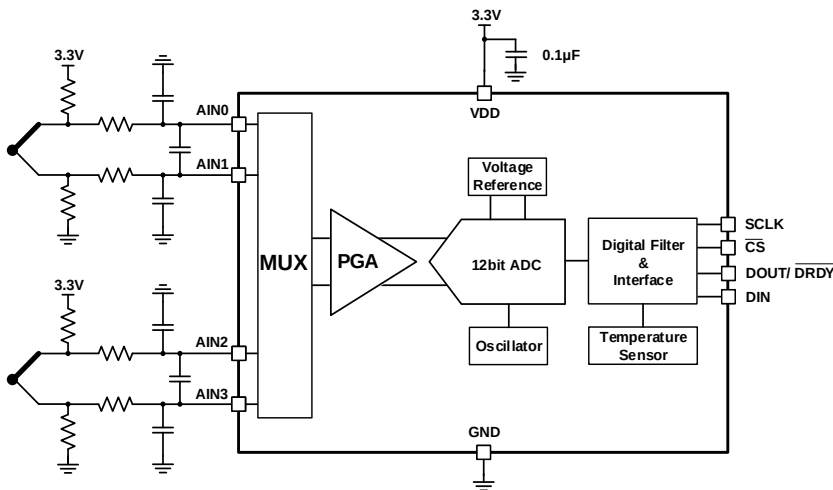
ADC



BMS

SA59400

Bidirectional, Zero-Drift, High-accuracy 12bit ADC with Internal Reference and Temperature Sensor



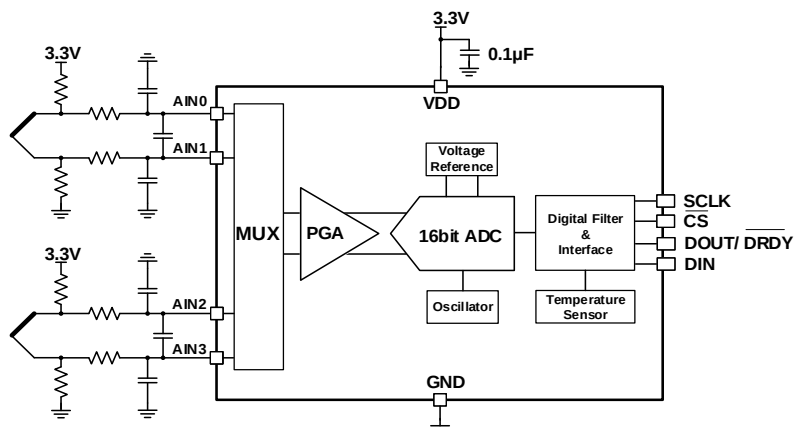
Features

- Wide Supply Range: 2.7V to 5.5V
- Low Current Consumption:
 - Continuous Mode: 350µA
 - Single-Shot Mode: Automatic Power Down
- Programmable Data Rate: 120 SPS to 4630 SPS
- Single-Cycle Settling
- Internal Low-Drift Voltage Reference
- Internal Temperature Sensor:
 - 3°C (Maximum) Error: -40°C to 125°C
- Internal Oscillator
- Internal PGA
- Four Single-Ended or Two Differential Inputs
- MSOP10 Package

Applications

- BMS
- Automotive Sensor

Bidirectional, Zero-Drift, High-accuracy 16bit ADC with Internal Reference and Temperature Sensor



Features

- Wide Supply Range: 2.7V to 5.5V
- Low Current Consumption:
 - Continuous Mode: 350μA
 - Single-Shot Mode: Automatic Power Down
- Programmable Data Rate: 8 SPS to 890 SPS
- Single-Cycle Settling
- Internal Low-Drift Voltage Reference
- Internal Temperature Sensor:
 - 3°C (Maximum) Error: -40°C to 125°C
- Internal Oscillator
- Internal PGA
- Two Differential Inputs
- MSOP10 Package

Applications

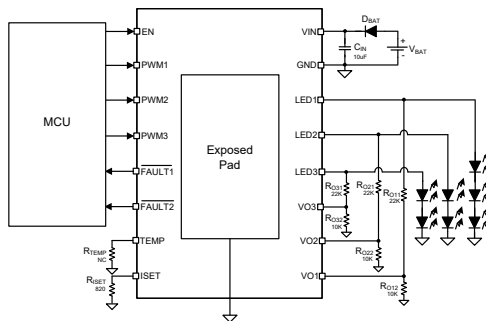
- BMS
- Automotive Sensor

LED Driver



Lighting

SA32707 28V, 0.15A, 3-channel Linear LED Driver with ON OFF Dimming

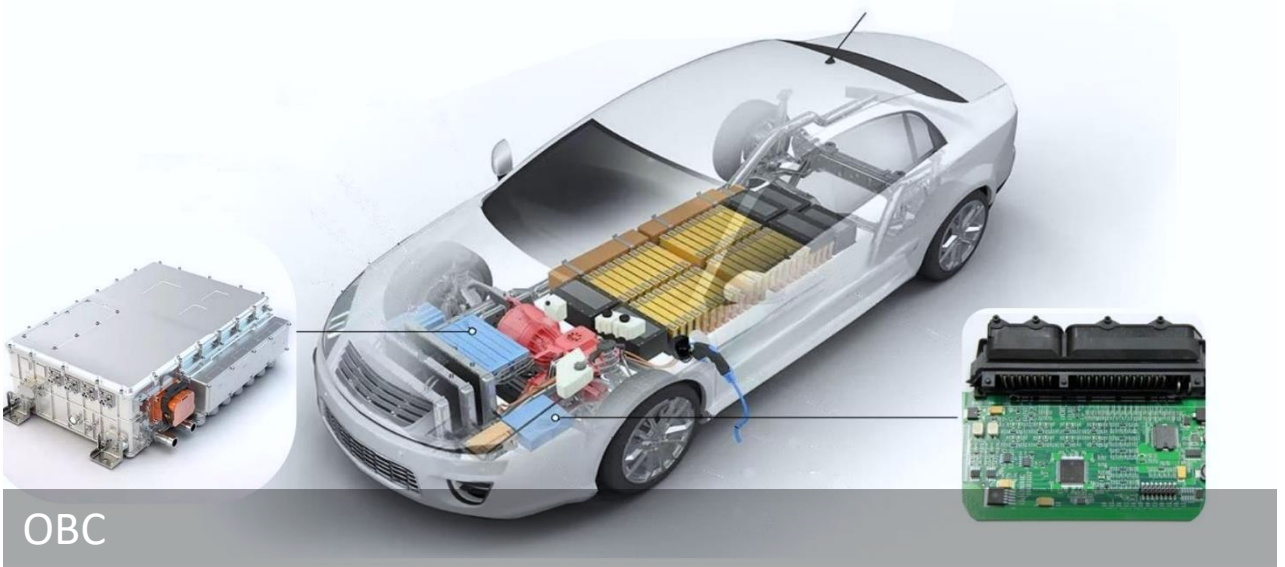


Features

- Wide Input Voltage Range 5V to 28V
- Current Accuracy for Full Temperature Range:
 - $\pm 2.5\%$ per Device when $I_{OUTx} > 30\text{mA}$
 - $\pm 1.5\%$ per Channel when $I_{OUTx} > 30\text{mA}$
- Low Dropout Voltage:
 - Maximum Dropout Voltage: $400\text{mV}@60\text{mA}$
 - Maximum Dropout Voltage: $900\text{mV}@150\text{mA}$
- Thermal Foldback Function
- Parallel Outputs for Higher Current Using Multiple ICs or Multiple Channels of A Single IC
- Short LED Detection with Deglitch Timer
- Single LED Short Detection with Deglitch Timer
- Open LED Detection with Deglitch Timer
- Separate Single LED Short Fault Pin and Open/Short Led Fault pin
- Compact Package: TSSOP16E
- AEC-Q100 Qualified with the Following Results:
 - Device Temperature Grade1: -40°C to 125°C
 - Device HBM ESD All pins $\pm 2000\text{V}$
 - Device CDM ESD Other pins $\pm 500\text{V}$
 - Corner pins (1, 8, 9, and 16) $\pm 750\text{V}$

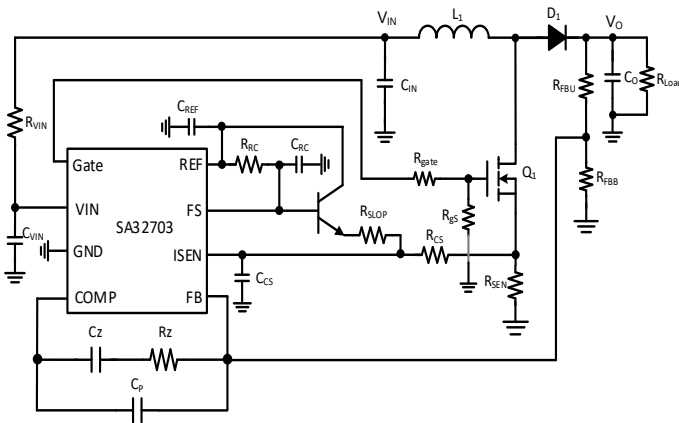
Applications

- DRL
- Position Light
- Fog Light
- Rear Light
- Turn Light
- Interior light
- OBC Indicator Light



Boost/Flyback Current Mode Controller

SA32703



Features

- AEC-Q100-Grade 1 -40°C~125°C
- 5.0-11V Input Voltage Range
- $\pm 2\%$ Accuracy for REF and FB Reference
- Typical 150- μ A Starting Up Current and 800- μ A Operating Supply Current Exclude MOS Driving Current
- Flexible Frequency and Minimum off Time Set by FS Pin and up to 1 MHz Switching Frequency
- Cycle by Cycle Current Limit(1V) and over Current Limit (1.5V) for ISEN
- Typical 4ms Internal Soft Start and Fault (OCP、OTP、REF_UVLO、VIN_UVLO) Soft-start
- Package: SO8

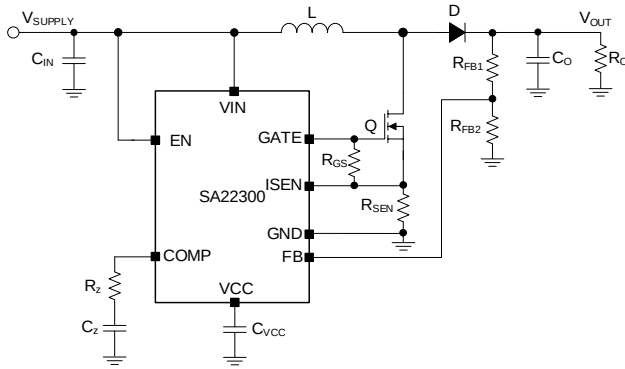
Applications

- OBC
- DC/DC
- Traction Inverter

Boost Regulators

SA22300

36V, Boost/Flyback/Sepic Controller



Features

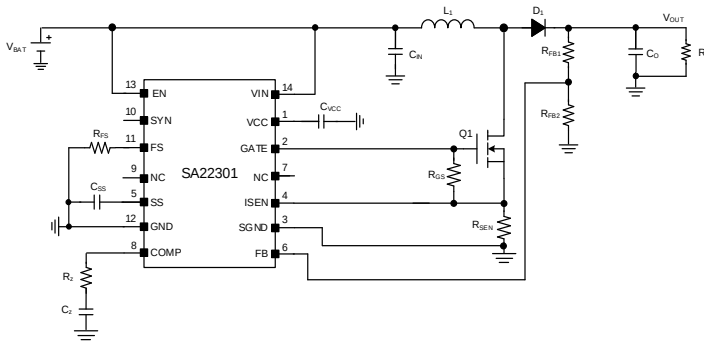
- Wide Input Voltage Range: 3.45V to 36V
- $1.2V \pm 2\%$ Reference Voltage
- Fixed Frequency Operation
- Internal Soft-Start
- Typical $1.6\mu A$ Shutdown Current
- Cycle-by-Cycle Current Limit Protection
- Hiccup-Mode Overcurrent Protection (OCP)
- Hiccup-Mode Short-Circuit Protection (SCP)
- 1.5A Peak Gate Source Current
- 1.5A Peak Gate Sink Current
- Thermal Shutdown
- Package: SOP8
- Automotive AEC- Q100 Grade 1 Certified

Applications

- OBC, DCDC, Traction, BMS
- Smart Cockpit
- LiDAR

36V, Boost/Flyback/SePIC Controller

SA22301



Features

- Wide Input Voltage Range: 4.75V to 36V
- Flexible Switching Frequency Range From 100kHz to 1000kHz
- 2.5V $\pm$ 2% Reference Voltage
- Typical 1.4 μ A Shutdown Current
- External Soft-Start Adjustable by Capacitor
- Cycle-by-Cycle Current Limit Protection
- Hiccup Mode Overcurrent Protection
- 1A Peak Gate Source Current
- 1.3A Peak Gate Sink Current
- Thermal Shutdown
- Package: SSOP14E
- Automotive AEC- Q100 Grade 1 certified

Applications

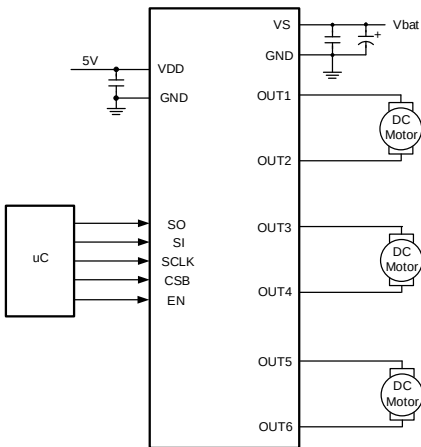
- OBC, DCDC, Traction, BMS
- Smart Cockpit
- LiDAR

Motor Driver



SA52106VAA

Hex Half-H-Bridge Driver with SPI Control



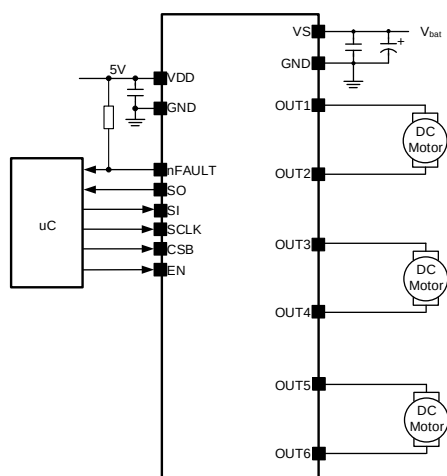
Features

- Six half-bridge Drivers
- 0.55A Output Current per Channel@13.5V
- Low Power Mode
- Compatible with 5V/3.3V System
- Serial Data Interface, up to 5MHz
- Fault Reporting
- PWM Capable Outputs for Frequency 80Hz, 100Hz and 200Hz with 8-bit Duty cycle resolution
- Internal Over Current Protection, Short Circuit Protection, Under Load Detection, Under Voltage Lockout, Over Voltage Lockout and Thermal shutdown
- AEC-Q100 Qualified
- QFN5x5-24 package

Applications

- HVAC
- Mirror
- BDC, ZCU

Six Half-Bridge Driver with SPI Control



Features

- 6 Half-bridge Outputs
- 4.5V to 32V Operating Voltage
- Up to 1A Output Current for Each Output
- Low-power Sleep Mode
- Compatible with 5V/3.3V System
- Serial Peripheral Interface, up to 5MHz
- Daisy Chain Functionality
- PWM Capable Output for Frequency 80Hz, 100Hz, 200Hz and 2kHz with 8-Bit Duty Cycle Resolution
- Integrated Protection: Overcurrent Protection , Short Circuit Protection, Open Load Detection, Under Voltage Lockout, Over Voltage Protection and Thermal Shutdown
- nFAULT Pin Output
- AEC-Q100 Qualified
- Compact Package:TSSOP24E

Applications

- Automotive
- LED
- HVAC
- DC Brushed Motors

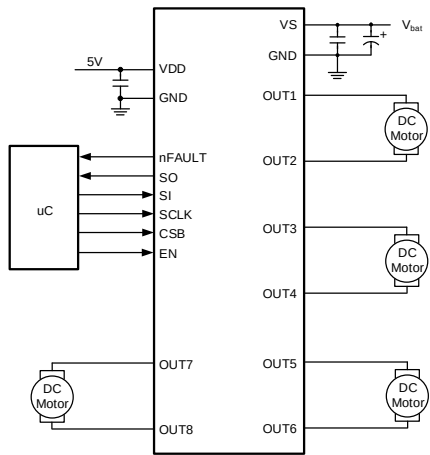
Motor Driver



Rear Mirror

SA52108

Eight Half-H-Bridge Driver with SPI Control



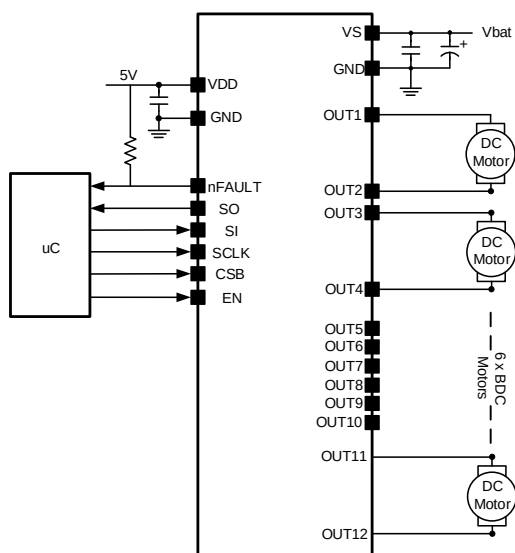
Features

- 8 Half-bridge Outputs
- 4.5V to 32V Operating Voltage
- Up to 1A Output Current for Each Output
- Low-power Sleep Mode
- Compatible with 5V/3.3V System
- Serial Peripheral Interface, up to 5MHz;
- Daisy Chain Functionality
- PWM Capable Output for Frequency 80Hz,100Hz, 200Hz and 2kHz with 8-bit Duty Cycle Resolution
- Integrated Protection: Overcurrent Protection, Short Circuit Protection, Open Load Detection, Under Voltage Lockout, Over Voltage Protection and Thermal Shutdown
- nFAULT Pin Output
- AEC-Q100 Qualified
- Compact Package: TSSOP24E

Applications

- HVAC
- Mirror
- BDC, ZCU

Twelve Half-H-Bridge Driver with SPI Control



Features

- 12 Half-bridge Outputs
- 4.5V to 32V Operating Voltage
- Up to 1A RMS Output Current for Each Output
- Low-power Sleep Mode
- Compatible with 5V/3.3V System
- Serial Peripheral Interface, up to 5MHz;
- Daisy Chain Functionality
- PWM Capable Output for Frequency 80Hz, 100Hz, 200Hz and 2kHz with 8-bit Duty Cycle Resolution
- Integrated Protection: Overcurrent Protection, Short Circuit Protection, Open Load Detection, Under Voltage Lockout, Over Voltage Protection and Thermal Shutdown
- nFAULT Pin Output
- AEC-Q100 Qualified
- Compact Package: QFN5x5-24

Applications

- HVAC
- Mirror
- BDC, ZCU

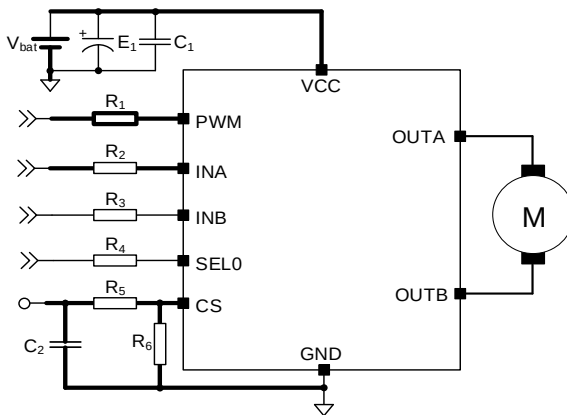
Motor Driver



Door Handle

SA52270

15A H-bridge Motor Driver for Automotive Applications



Features

- Output Current: 15 A
- Undervoltage Lockout
- Overvoltage Clamp
- Thermal Shutdown
- Cross-conduction Protection
- Current Limitation
- Protection against Loss of Ground and Loss of VCC
- Output Short Circuit Protections
- Low Power Standby Mode
- PWM Work Mode
- Current Sense Output
- Diagnostic Function
- AEC-Q100 Grade 1 Qualified
- Compact Package: SOP16

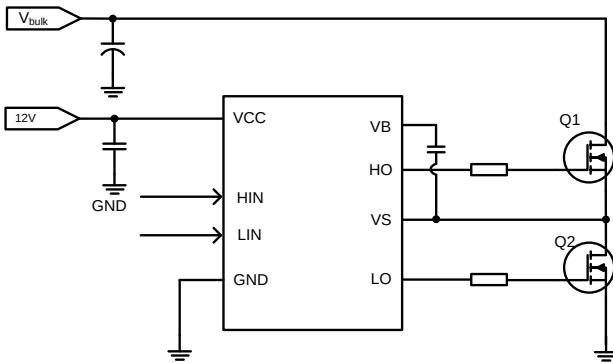
Applications

- Door Lock
- Door Handle
- OBC Lock
- BCM



40V High-side and Low-Side Gate Driver

SA52631DAD/FAP



Features

- High Voltage Range up to 40 V
- 0.75A Source and 1.25A Sink Current
- VCC Operation Range from 4.4V to 14V
- CMOS/TTL Compatible
- Fast Propagation Delay Time
- Compact Package: DFN3x3-8/SOP8
- AEC-Q100 Qualified

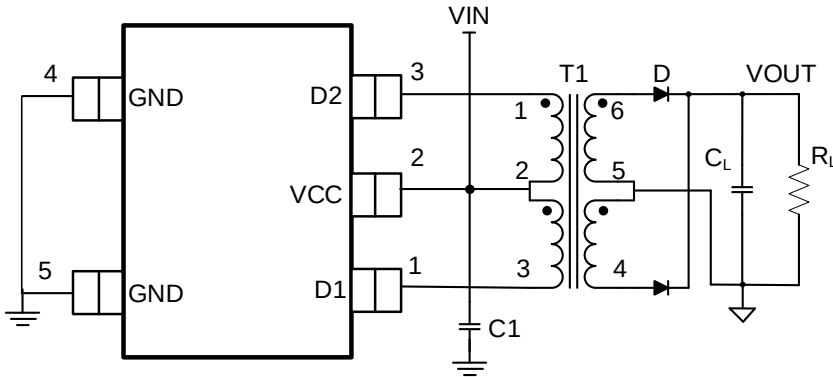
Applications

- ABS
- ESC
- WPC
- Domain Controller
- Body

ISO DCDC

SA52731

Transformer Driver for Isolated Power Supplies



Features

- Single 3.3-V or 5-V Supply
- Push-Pull Driver for Small Transformers
- High Primary-side Current Drive: 500mA
- Spread Spectrum Clocking
- Thermal Shutdown
- Soft Start
- AEC-Q100 Grade1 Qualified
- Compact Package: SOT23-5

Applications

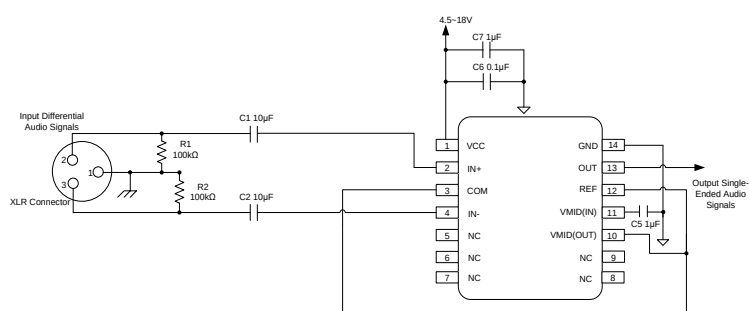
- BMS
- Isolated Interface Power Supply for CAN, RS-485, RS-422, RS-232, SPI, I2C, Low-Power LAN
- Industrial Equipment
- Medical Equipment



Smart Cockpit

High Common-Mode Rejection Line Receiver

SA51023



Features

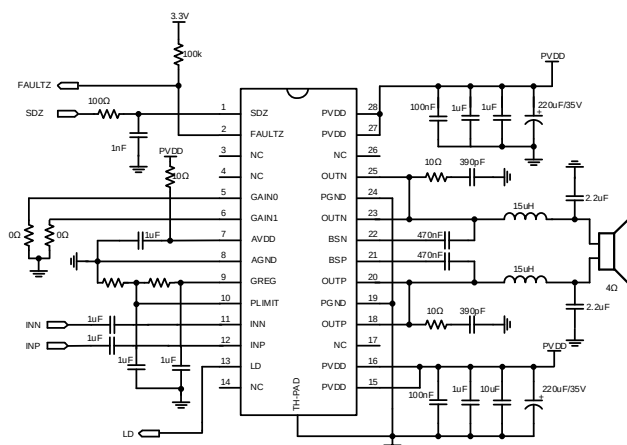
- High Common-mode Rejection: 106dB(Typical)
- High Input Impedance: 1MΩ Differential
- Ultra-low Total Harmonic Distortion + Noise: <0.001%
- Low Quiescent Current: 4.1mA (Typical)
- Short-circuit Protection
- Integrated EMI Filters
- Wide Supply Range: 4.5V to 18V
- Qualified According to AEC-Q100 Grade 1
- -40°C to 125°C Ambient Temperature Range
- Available in Small TSSOP-14 Package

Applications

- Differential Audio Interfaces
- Audio Input Circuitry
- Line Drivers
- Audio Power Amplifiers
- Audio Analyzers
- High-End Audio and Video (A/V) Receivers

SA51024

Analog Class-D AUDIO IC For Automotive Application



Features

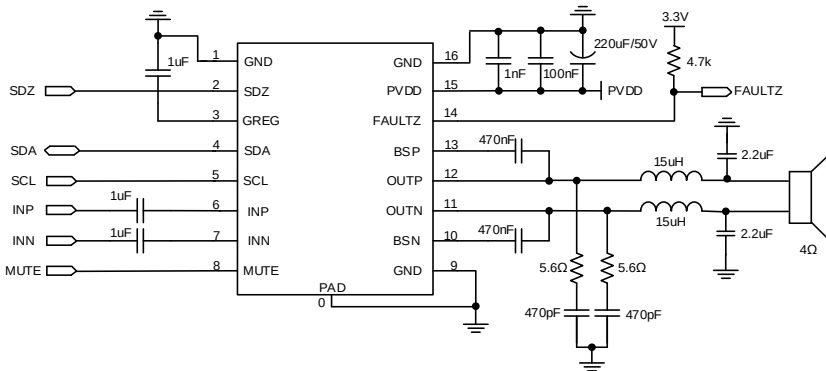
- 10W into a 4Ω Load at <1% THD+N from a 12V Supply
- Qualified for Automotive Applications
- AEC-Q100 Qualified with the Following Results
 - Device Temperature Grade 1: -40°C to 125°C Ambient Operating Temperature Range
 - Device HBM ESD Classification Level H2
 - Device CDM ESD Classification Level C3
- Highly Efficient Class-D Operation Eliminating Need for Heat Sink
- Operates from 5.5V to 18V
- Adjustable Power Limit
- Four Selectable, Fixed-gain Settings
- Load Diagnostic Functions
 - Open and Shorted Output Load
 - Output-to-Ground and Output-to-PVDD Shorts
- Comprehensive Click and Pop Suppression
- Space-saving Surface Mount TSSOP28E Package

Applications

- Noise Generation for HEV/EV
- Emergency Call Systems (e Call)
- Cluster
- AVAS
- Linear Motor Driver

Analog Class-D Audio IC For Automotive Application

SA51034/SA51054



Features

- SA51034: 8W into a 4Ω Load at <0.1% THD+N from a 12V Supply
- SA51054: 22W into a 4Ω Load at <10% THD+N from a 14.4V Supply
- Qualified for Automotive Applications
- AEC-Q100 Qualified with the Following Results:
 - Device Temperature Grade 1: -40°C to 125°C Ambient Operating Temperature Range
 - Device HBM ESD Classification Level H2
 - Device CDM ESD Classification Level C3
- Highly Efficient Class-D Operation Eliminating Need for Heat Sink
- Operates from 4.5V to 18V
- Thermal and Over-Current Protection
- Load Diagnostic Functions:
 - Open and Shorted Output Load
 - Output-to-Ground and Output-to-PVDD Shorts
- Comprehensive Click and Pop Suppression
- Space-Saving Surface Mount TSSOP16E Package

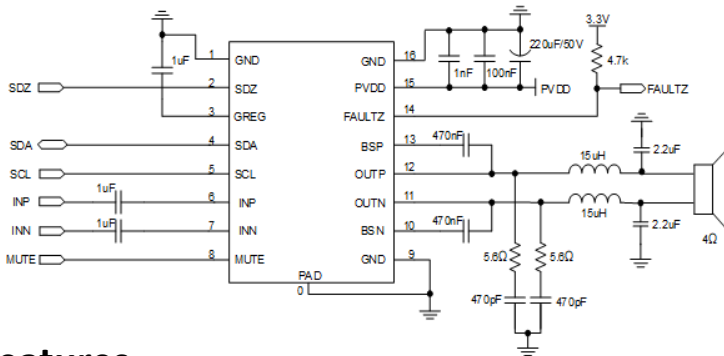
Applications

- Noise Generation for HEV/EV
- Emergency Call Systems (e Call)
- Cluster
- AVAS
- Linear Motor Driver

Audio

SA51500

Analog Class-D Audio IC For Automotive Application



Features

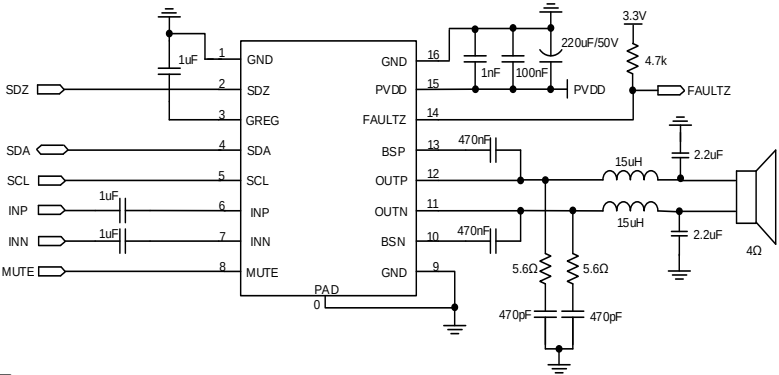
- Wide Voltage Range
 - 4.5V to 28V with Under and Over Voltage Protection
 - 40V Load-dump Protection per ISO-16750-2
- High Output Power Capability
 - 8W4 Ω, 0.1% THD+N at 14.4V
 - 12W4Ω, 1% THD+N at 12V
- Excellent Audio performance
 - 0.03% THD+N at 1W4 Ω 12V
 - 102dB A-weighted SNR
- Comprehensive Protection
 - Under Voltage, Over Voltage, Over Temperature, Over Current, DC Detection Protection with Auto Recovery
 - Selectable Power Limit Function for Speaker Protection
- Load Diagnostic Functions
 - Open and Shorted Output Load
 - Output-to-ground and Output-to-PVDD Shorts and Shorted Output Indicator
- AEC-Q100 Qualified with the Following Results:
 - Device Temperature Grade 1: -40°C to 125°C Ambient Operating Temperature Range
 - Device HBM ESD Classification Level H2
 - Device CDM ESD Classification Level C3
- Differential Single-ended Input
- Spread Spectrum and Programmable Edge Rate to Optimize EMC Performance
- Space-Saving Surface Mount TSSOP16E Package

Applications

- Emergency Call Systems (e Call)
- Cluster
- AVAS
- Automotive Telematics

Analog Class-D Audio IC For Automotive Application

SA51510



Features

- Wide Voltage Range
 - 4.5V to 28V with Under and Over Voltage Protection
 - 40V Load-dump Protection per ISO-16750-2
- High Output Power Capability
 - 22W4Ω, 0.1% THD+N at 14.4V
 - 38W8Ω, 1% THD+N at 28V
- Excellent Audio performance
 - 0.03% THD+N at 1W4Ω 12V
 - 102dB A-weighted SNR
- Comprehensive Protection
 - Under Voltage, Over Voltage, Over Temperature, Over Current, DC Detection Protection with Auto Recovery
 - Selectable Power Limit Function for Speaker Protection
- Load Diagnostic Functions
 - Open and Shorted Output Load
 - Output-to-ground and Output-to-PVDD Shorts and Shorted Output Indicator
- AEC-Q100 Qualified with the Following Results:
 - Device Temperature Grade 1: -40°C to 125°C Ambient Operating Temperature Range
 - Device HBM ESD Classification Level H2
 - Device CDM ESD Classification Level C3
- Differential Single-ended Input
- Spread Spectrum and Programmable Edge Rate to Optimize EMC Performance
- Space-Saving Surface Mount TSSOP16E Package

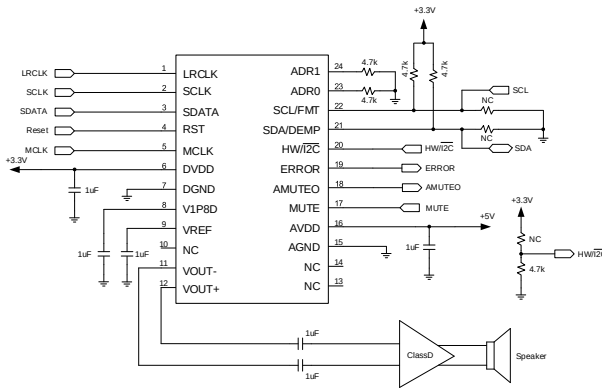
Applications

- Emergency Call Systems (e Call)
- Cluster
- AVAS
- Automotive Telematics

Audio

SA55602

Mono Audio Digital to Analog Converter

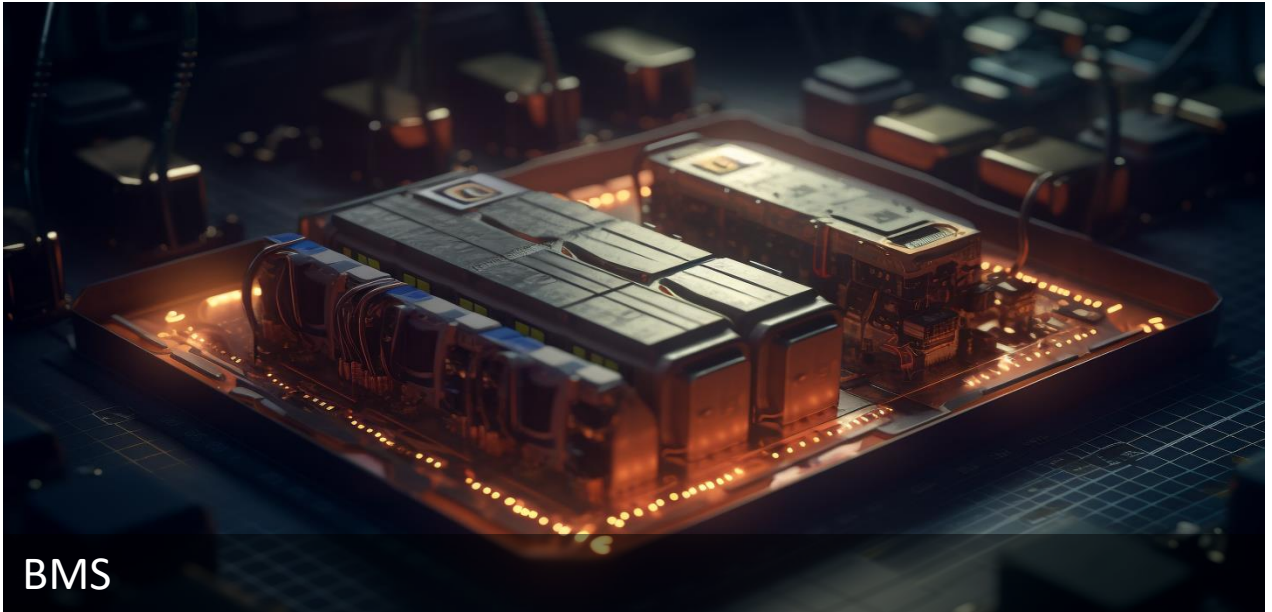


Features

- Power supply
 - 5 V for Analog and 3.3 V for Digital
- Large Differential Voltage Output
 - 8.6 VPP at 0dBFS(default)
- Excellent Audio performance
 - -90dB THD+N at 0dBFS
 - 115 dB A-weighted SNR
 - 115 dB Dynamic Range SNR
- Low power consumption
 - Power-Save Mode: 6.5uA AVDD quiescent current
 - Play mode: 1.7mA AVDD quiescent current at fs=48kHz MCLK=512*fs
- Abundant Audio Interface
 - Input Sampling Rates: 8 kHz to 192 kHz
 - I/F Format: I2S, Left-/Right-Justified
 - Input Data Length: 16, 20, 24, 32 Bits
- Flexible Mode Control
 - I2C mode with 4 Slave address
 - Hardware Mode
- Hardware Mode Control
 - Audio I/F Format Select: I2S or Left-Justified
 - Digital De-Emphasis Filter Select: 44.1 kHz or disable
 - Sampling mode is Auto
- Digital Filter
 - Digital De-Emphasis Filter
 - Sharp roll off filter: Passband ripple: ± 0.0018 dB, stop band Attenuation: -75dB
 - Slow roll off filter: Passband ripple: ± 0.001 dB, stop band Attenuation: -112 dB
- Analog Filter
 - Analog Low-Pass Filter Included
- Comprehensive Error Detection and Protection
 - Zero Detection
 - Clock Error Detection
 - Supply Under Voltage Detection
 - Analog Mute by Detected Faults
 - Output Current Limit Protection
- AEC-Q100 Grade1 Qualified
- Compact Package: TSSOP24

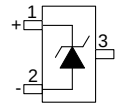
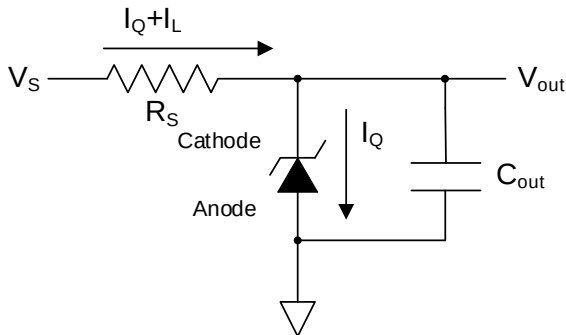
Applications

- Car Audios
- Home Audios



Precision Micro-power Shunt Voltage Reference

SA89550/SA89550B/ SA89550C/SA89550D



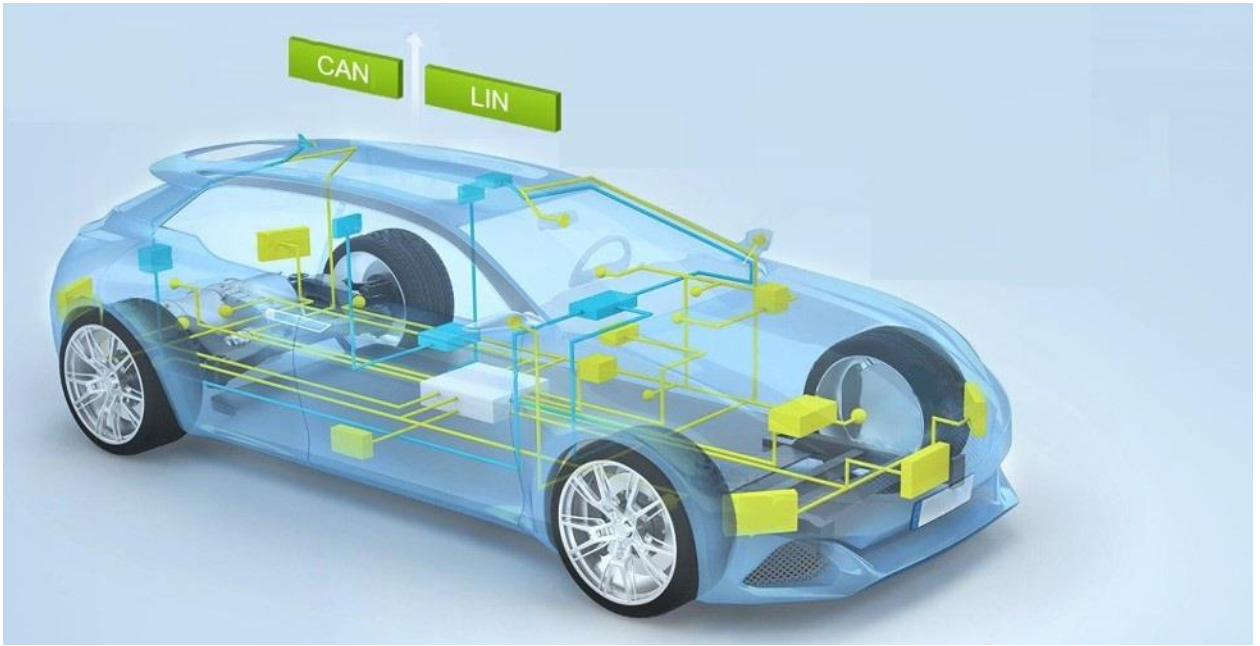
Features

- No output Capacitor Required
- Tolerates Capacitive Loads
- Fixed Reverse Breakdown Voltage:
 - SA89550: 5V
 - SA89550B: 4.096V
 - SA89550C: 3.3V
 - SA89550D: 2.5V
- Output Voltage Tolerance $\pm 0.1\%$ (Maximum)
- Low output noise (10Hz to 10kHz) 38 μ Vrms (Typical)
- Wide Operating Current Range I_{RMIN} to 15mA
- Industrial Temperature Range -40°C to 125°C
- Low Temperature Coefficient ± 43 ppm/ $^{\circ}\text{C}$ (max)
- Small Package: SOT-23
- AEC Q100 Grade 1 Qualified

Applications

- BMS
- OBC
- EV/HEV

ESD Protection



SAT01N24AMA

LIN Bus TVS Protection

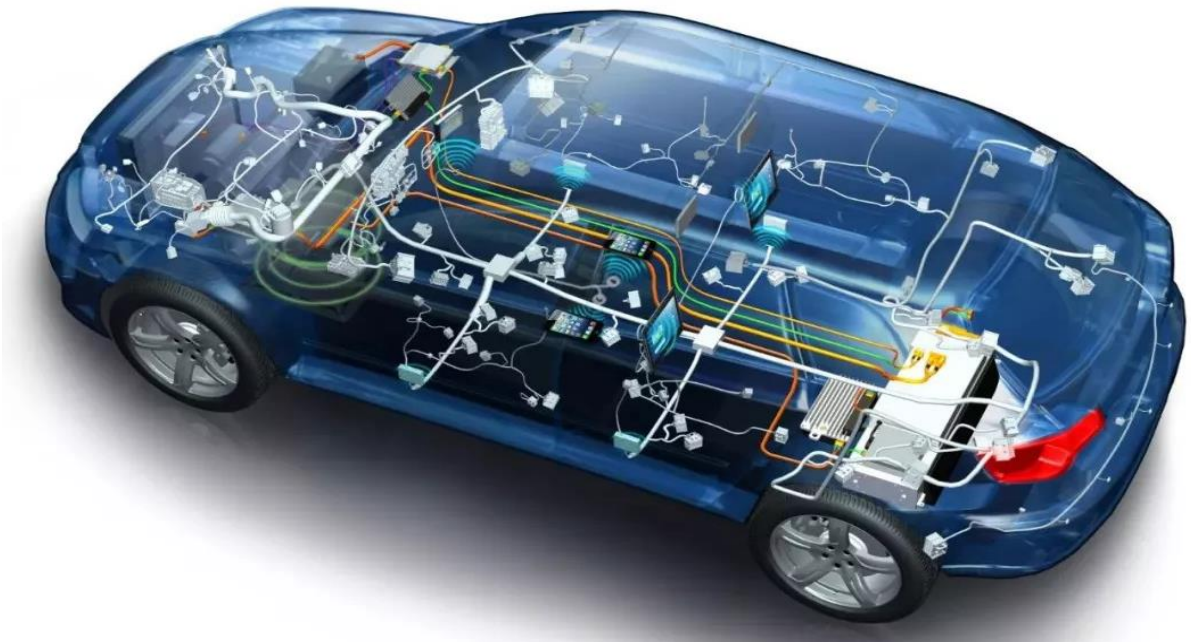


Features

- Transient protection for high-speed data lines
- IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (Air) $\pm 30\text{kV}$ (Contact)
- IEC 61000-4-5 (Surge) 4A (8/20 μs)
- Protects one automotive LIN-bus line
- Low capacitance: 12pF (Typical)
- Low leakage current: 0.01 μA @ VRWM (Typical)
- Each I/O pin can withstand over 1000 ESD strikes for $\pm 8\text{kV}$ contact discharge
- AEC-Q101 Qualified
- SOD-323 package

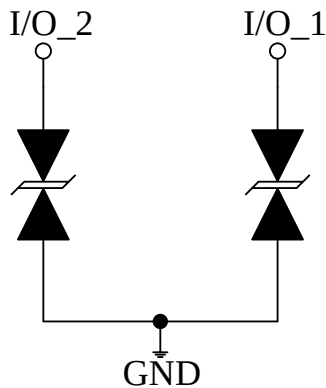
Applications

- LIN Bus Protection



CAN Bus TVS Protection

SAT03N24AOA



Features

- Transient protection for high-speed data lines
- IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (Air) $\pm 30\text{kV}$ (Contact)
- IEC 61000-4-5 (Surge) 4A (8/20 μs)
- Protects two data, control or CAN bus lines
- Low capacitance: 12pF (Typical)
- Low leakage current: 0.01 μA @ VRWM (Typical)
- Each I/O pin can withstand over 1000 ESD strikes for $\pm 8\text{kV}$ contact discharge
- AEC-Q101 Qualified
- SOT-23 package

Applications

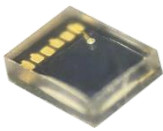
- CAN Bus Protection

Sensor



SA88010RS22-J00

Silicon PIN Infrared Photodiode

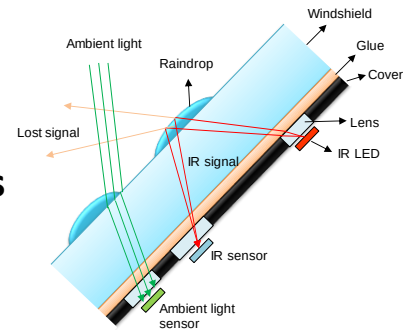


Features

- Package type: Optical DFN
- Dimensions: 2.0mmx1.5mmx0.6mm
- Peak sensitivity occurs with 870nm wavelength
- Fast rising and falling speed
- AEC-Q102 Qualified

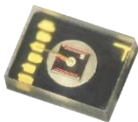
Applications

- Wiper



SA88011AS22-J00

Ambient Light Sensor

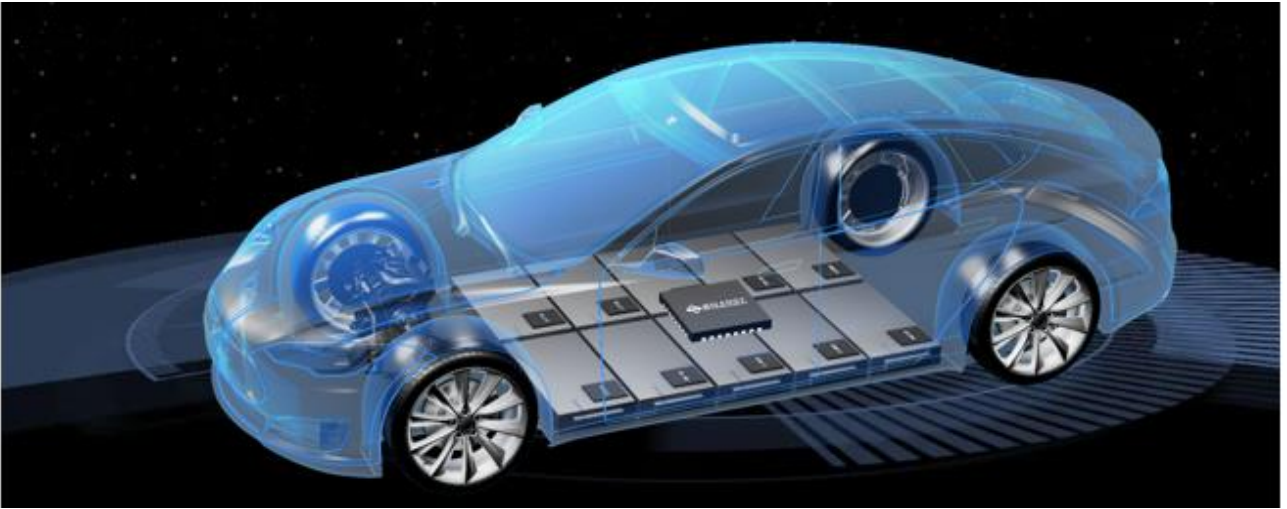


Features

- Package Type: Optical DFN
- Dimensions: 2.0mmx1.5mmx0.6mm
- High Sensitivity at Visible Range
- Spectral Response Close to Human Eyes Photopic Curve
- AEC-Q102 Qualified

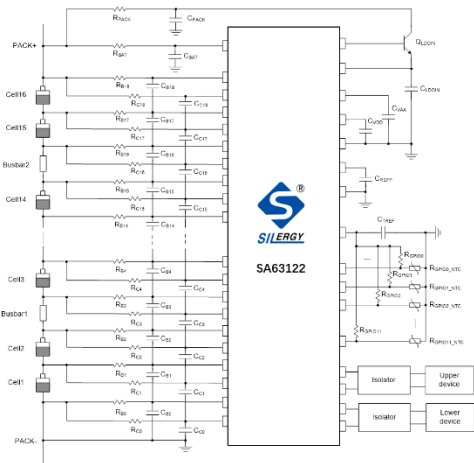
Applications

- Body
- Cluster
- Info



18S Monitor and Passive Cell Balancer for Automotive Battery Management System

SA63122



Features

- Measure 6 to 18 cells with 16-bit ADC, up to 100V
- 18-channel battery cell or bus bar voltage measurement
 - $\pm 1\text{mV}$ accuracy (1.5V to 4.5V, 25°C)
 - $\pm 3\text{mV}$ accuracy (1.5V to 4.5V, -20°C to 65°C)
 - $\pm 5\text{mV}$ accuracy (-2V to 5V, -40°C to 125°C)
- 12 channels GPIO for battery pack temperature measurement
 - $\pm 0.12\% V_{TREF}$ accuracy (10% V_{TREF} to 90% V_{TREF} , -20°C to 65°C)
 - $\pm 0.24\% V_{TREF}$ accuracy (0 to 100% V_{TREF} , -40°C to 125°C)
- Integrated balance FETs, 300mA per channel
 - Smart thermal management (cell, PCB, die)
 - Auto-pause balance during ADC measurement
 - Online PWM adjustable balance current
 - Offline balance when host is sleep
- Reversely wake host up on OVUV/OTUT when host is sleep
 - Programmable de-bouncing counter
 - Two OTUT thresholds (cell, PCB) for each channel
- Robust daisy-chain communication
 - High speedreading 218cells within 4.8ms
 - One command smart addressing scheme
 - Optional ring architecture
- GPIOs supports I2C master
- AEC-Q100 grade1: -40°C to +125°C
- ASIL-D Functional Safety-Compliant
- Package: TQFP 10×10 -64E

Applications

- High-Voltage Battery Stacks
- Electric Vehicles and Hybrid Electric Vehicles
- Backup Battery Systems

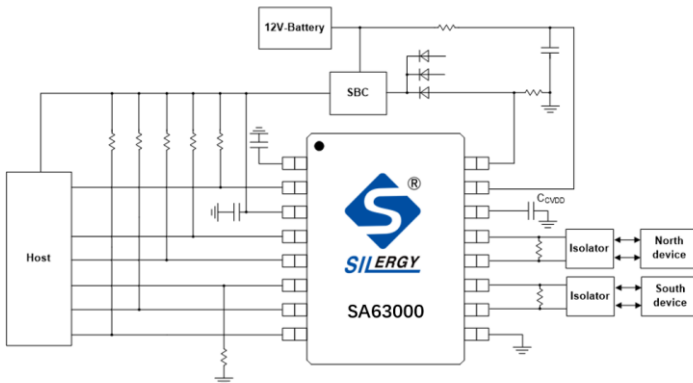


BMS AFE Interface



SA63000

SPI Communication Transceiver for Automotive Battery Management System



Features

- 12V/5V Operation Voltage
- ASIL-D Functional Safety-Capable
- SPI Interface: 2MHz-6MHz
- 256-Byte TX FIFO and 32-Byte RX FIFO
- 2 Operating Modes
 - Sleep Mode: Support reversely wake-up host with 5uA quiescent current
 - Active Mode: Support ring architecture communication and asserting fault to inform host
- AEC-Q100 Grade1: -40°C To +125°C
- ASIL-D Functional Safety-Capable
- Package Info: TSSOP16E

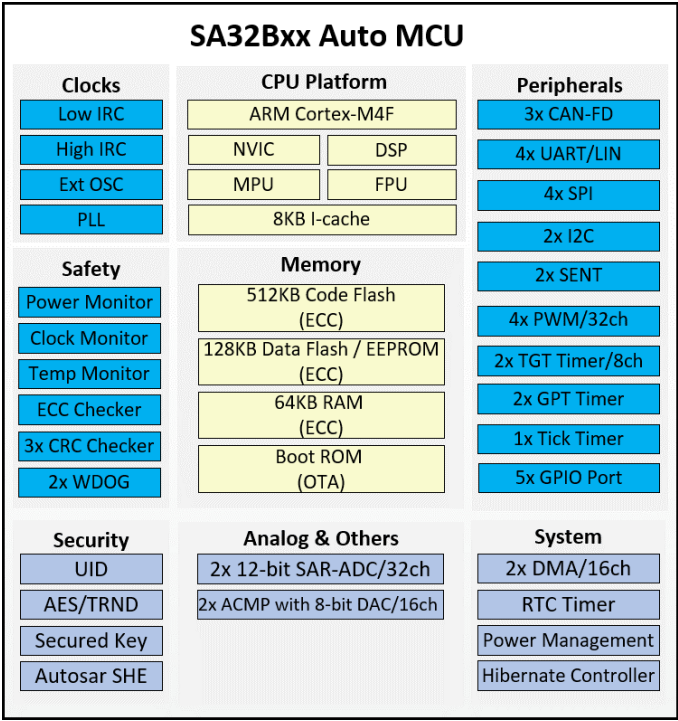
Applications

- Battery Management Systems (BMS)
- Electric and Hybrid Vehicles (EV/HEV)

SA32 B-series MCUs are ARM Cortex-M4F core based high reliability MCUs for automotive market with rich peripherals and packages. This series meets AEC-Q100 G1 standard and ISO26262 ASIL-B level function safety. With its performance, reliability and function safety design, this series is suited for automotive applications like body control, T-box, OBC, BMS, airbag, HVAC, heat management, etc.

Part Number	CPU	Frequency (MHz)	C-Flash (KB)	D-Flash (KB)	SRAM (KB)	CAN-FD	UART/LIN	SPI	Package	Targeted Applications
SA32B12QEQ	M4F	120	128	128	64	1	2	1	QFN5x5-32	Roofs, Windows, Shifter, Seatbelt, Airbag, Parking Brake, Lighting, Wireless Charger, HVAC, T-BOX, OBC, LV BMS, Low-cost BCM, Smart Cockpit, etc.
SA32B12AQEQ	M4F	120	128	128	64	1	2	2	QFN5x5-32	
SA32B12GFF	M4F	120	128	128	64	3	3	3	LQFP7x7-48	
SA32B14GFF	M4F	120	256	128	64	3	3	3	LQFP7x7-48	
SA32B14GDF	M4F	120	256	128	64	3	4	3	LQFP10x10-64	
SA32B16GFF	M4F	120	512	128	64	3	3	3	LQFP7x7-48	
SA32B16GDF	M4F	120	512	128	64	3	4	3	LQFP10x10-64	
SA32B16GEF	M4F	120	512	128	64	3	4	4	LQFP14x14-100	

➤ Block Diagram



MCU

➤ SA32B Ecosystem



Documents

- Datasheet
- Reference Manual
- Errata
- HW Design Guide
- Application Notes



Application

- T-BOX
- Rear Lighting
- LV BMS
- Auto AC Compressor
- AVAS



Evaluation Board

- General EVB Suit
- Rear Lighting EVB



SDK

Software Develop Kit

- Driver Interface Library
- Demo Code
- FreeRTOS



MCAL

- MCAL
- MCAL Application Note
- MCAL Configuration Service



Debugger & Programmer

- U-LINK
- J-LINK
- I-JET
- ACROVIEW AP6000/8000



IDE

- KEIL
- IAR
- Vscode+GCC



Function Safety

- Safety Manual
- FMEDA
- Assessment Report
- Safety Package



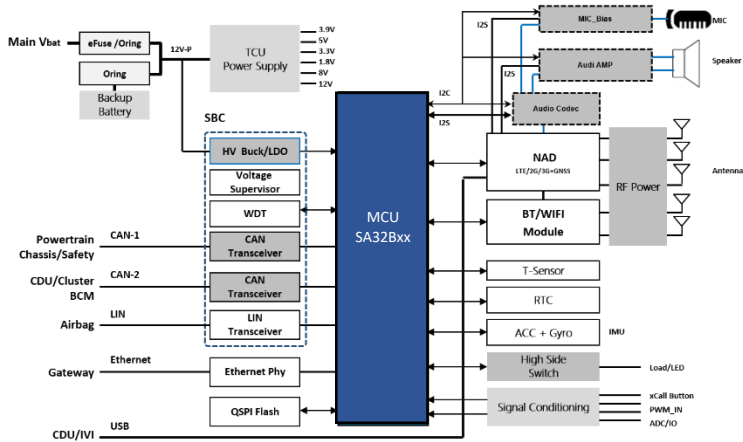
Technical Support

- Local FAE/AE

➤ SA32B Target Application: T-Box

Key Features

- Big capacity flash 256KB-2MB;
- Support several low power modes, the smallest standby current $\leq 50\mu A$;
- Rich peripherals, included LIN/CAN/SPI/UART/PWM, etc.;
- Support high precision analog peripherals, 2x 12-bit SAR ADC, 32channels, sample rate up to 1Mbps/ 2x ACMP;
- Multiple Packages, LQFP64/100/144



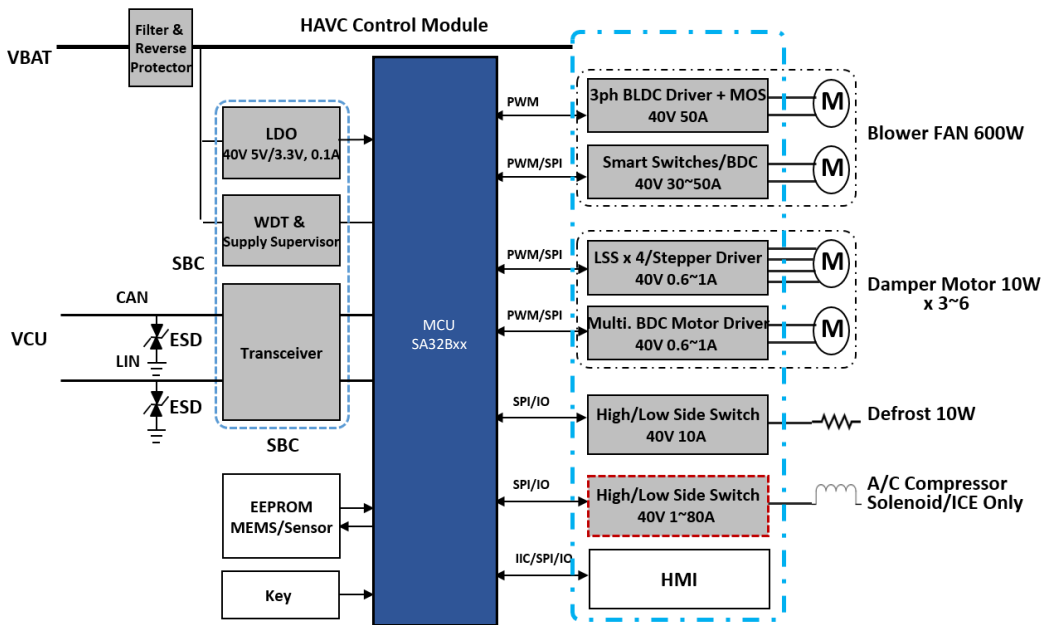
Silergy Solutions

Product	Function	Key Features	Package
SA32B16	MCU	M4F, 120MHz, 512KB	LQFP48/64/100
SA51034	Audio Amp	8W Class-D Audio Power Amplifier	TSSOP16E
SA51500	Audio Amp	8W Class-D Audio Power Amplifier, Load dump	TSSOP16E

➤ SA32B Target Application: HVAC

Key Features

- Big capacity flash 512KB-2MB;
- Support several low power modes, the smallest standby current $\leq 50\mu\text{A}$;
- Rich peripherals, included LIN/CAN/SPI/UART/PWM, etc.;
- Support high precision analog peripherals, 2x 12-bit SAR ADC, 32channels, sample rate up to 1Mbps/ 2x ACMP ;
- Multiple Packages, LQFP64/100/144



Silergy Solutions

Product	Function	Key Features	Package
SA32B16	MCU	M4F, 120MHz, 512KB	LQFP48/64/100
SA52108	Motor Driver	8-half bridge driver	TSSOP24E
SA52112	Motor Driver	12-half bridge driver	QFN5x5-24
SA21345A	LDO	36V, 300mA LDO	SO8E

MCU

➤ SA32B Target Application: LV BMS

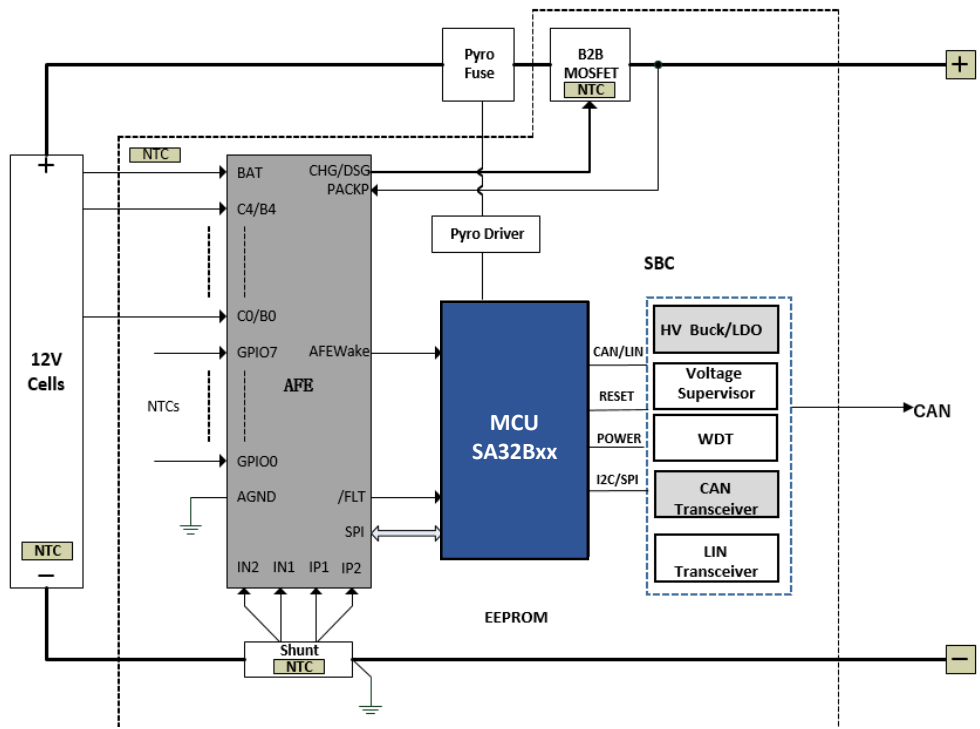
Key Features

SA32B Series

- Big capacity flash 512KB-2MB;
- Support several low power modes, the smallest standby current ≤50uA;
- Rich peripherals, included LIN/CAN/SPI/UART/PWM, etc.;
- Support high precision analog peripherals, 2x 12-bit SAR ADC, 32channels, sample rate up to 1Mbps/ 2x ACMP;
- Multiple Packages, LQFP64/100/144

AFE and Bridge

- Bridge IC and 18S AFE;
- Support ISO 26262 ASIL-D;
- Support Daisy-Chain communication



Silergy Solutions

Product	Function	Key Features	Package
SA32B16	MCU	M4F, 120MHz, 512KB	LQFP48/64/100
SA63122	AFE	18S AFE, ASIL-D, Dasiy-chain Com	TQFP10x10-64E
SA63000	Bridge	SPI Communication Transceiver for Automotive BMS	TSSOP16E

➤ SA32B Target Application: Rear Lighting

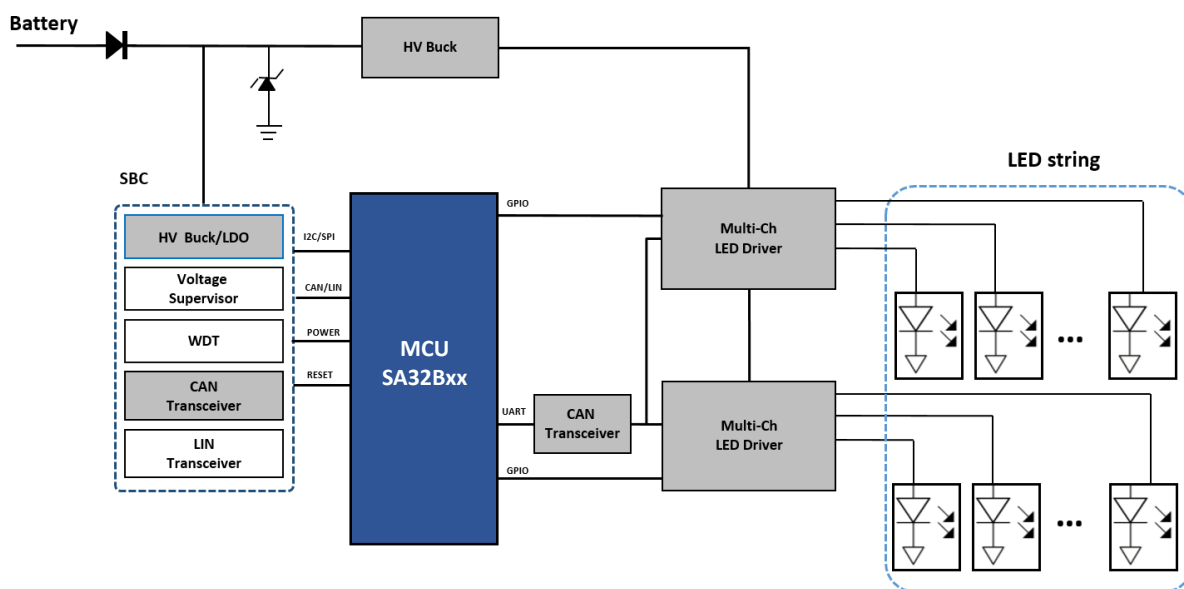
Key Features

SA32B Series

- Big capacity flash 128KB-2MB;
- Support several low power modes, the smallest standby current $\leq 50\mu\text{A}$;
- Rich peripherals, included LIN/CAN/SPI/UART/PWM, etc.;
- Support high precision analog peripherals, 2x 12-bit SAR ADC, 32channels, sample rate up to 1Mbps/ 2x ACMP ;
- Multiple Packages, LQFP64/100/144

12/24-Channel LED driver

- 12/24 Chn, each channel support up to 100mA current;
- Up to 2Mbps UART Over CAN to improve EMI;
- Support Cascade connection by multiple chips.



Silergy Solutions

Product	Function	Key Features	Package
SA32B14	MCU	M4F, 120MHz, 256KB	LQEP64/48
SA32B16	MCU	M4F, 120MHz, 512KB	LQEP48/64/100
SA32774	LED Driver	24 CHN, Max current 100mA for each CHN	QFN7x7-48
SA32772L	LED Driver	12 CHN, Max current 100mA for each CHN	QFN5x5-32

Contact Us

Silergy Corp. was founded by a group of technology innovators and business leaders with an average 30 years' experience. We design innovative mixed-signal and analog ICs that utilize our industry-leading process technologies. Widely used in automotive, industrial, consumer, computing and communication devices, our products are designed to improve efficiency and to conserve or measure energy use.

Silergy Corp is a Cayman Island company with its operations headquarters in Hangzhou, China. The company stock is traded on Taiwan Stock Exchange (TWSE: 6415).

We are committed to providing industry-leading performance at an affordable solution cost.

HANGZHOU

No.6, Lianhui St., Binjiang District, Hangzhou, Zhejiang, China
+86-571-87759971

SHENZHEN

Rm.1006, Tower A, Skyworth Building, High-tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China, P.R.C, Zip code: 518057
Telephone: +86-755-83664630

SHANGHAI

Wanyuan road no. 2163 building B 3A-5room Minhang district Shanghai
Telephone: +86-21-61510950

NEW TAIPEI

10F., No.653, Bannan Rd., Zhonghe Dist., New Taipei City 23557, Taiwan
Telephone: +886-2-2221-5266 Fax: +886-2-2221-5778

KOREA

(Zip code 446-982), #1202, 120, Heungdeok Jungang-Ro, Giheung-Gu, Yongin-Si, Gyeonggi-Do, Korea
Telephone: +82-70-8667-8128

JAPAN

Kannai Tosei Bldg. II 4Chome 45-1 Sumiyoshicho, Naka-ku, Yokohama-shi Kanagawa, 231-0031, Japan
Tel: +81-45-228-9856
Fax: +81-45-228-9857
Email: sales.japan@silergy.com

INDIA

501, Prestige Towers, Residency Road, Bangalore, Karnataka, India
Tel: +91-9891139579
Email: Rajiv.kumar@silergy.com

EMEA

Telephone: +44 121 449 1010
sales.emea@silergy.com
(support for sales, quotations, FAE technical support, product recommendations)

AMERICAS

North American Headquarters
2600 Great America Way, Suite 601
Santa Clara, Ca 95054
+14087465696
Email: sales.americas@silergy.com

Website: <https://www.silergy.com>

Email: sales@silergycorp.com (support for sales, quotation, order, etc.)

Email: marketing@silergycorp.com (FAE technical support, product recommendation)

Official Accounts :

