Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

solutions

Semtech Products

Short Form Catalog

www.semtech.com

SEMTECH

Product Highlights

Table of Contents

This catalog is a quick introduction to the key Semtech product families and is available from your Semtech sales representative and distribution partner. For the complete product portfolio, visit www.semtech.com

SEMTECH

A World of Solutions™

AEC-Q100 Automotive Qualified

OUR EXPANDING COMMITMENT

As the automotive infotainment market increases, so does our commitment to power, protect and connect customers with the perfect IC solutions. Semtech has provided ICs for the automotive industry for many years, and our devices are used in applications ranging from protecting sensitive electronics to in-cabin lighting and touch screen interface. Today, we continue to work on expanding our list of AEC-Q100 certified products for future applications.

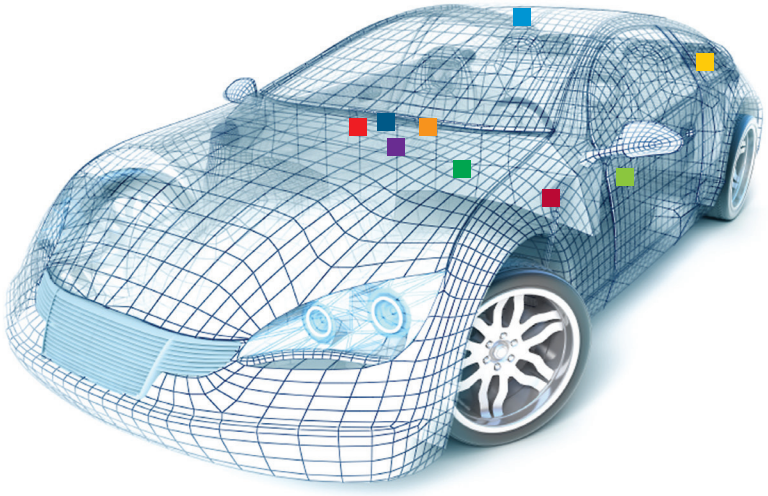
Two-wire Ethernet
ADAs, 360 Camera View, Audio

Antennas
AM/FM, DAB, GPS, Satellite, WiFi, Telematics Applications

USB 2.0
Infotainment, Phone Connectivity

USB 3.0/HDMI
Audio Video Infotainment, Back-end Display

CAN, LIN
Control Bus, Networking



SD Card/Memory
Navigation Applications

Analog Video, LVDS
ADAS, Back-up Camera Applications

Standard Ethernet
On-board Diagnostics, Networking

Audio
Infotainment, Console Display

Transient Voltage (TVS) Protection - AEC-Q100 Qualified

Part Number	V_{RWM} (V)	Lines	ESD Rating (air/contact)	Surge (8x20µs)	Cap (pF)	Package (mm)	Interface To Protect
RClamp® 2574NQ	2.5	4	±30kV/±30kV	40A	1.7	3.0x2.0x0.6	Standard Ethernet
RClamp® 0582BQ	5	2	±30kV/±25kV	15A	1.2	1.6x1.6x0.75	Two wire ethernet single twisted pair
RClamp® 0531TQ	5	1	±20kV/±12kV	4A	0.5	1.0x0.6x0.5	
RClamp® 2574NQ	2.5	4	±30kV/±30kV	40A	1.7	3.0x2.0x0.6	LVDS links
RClamp® 0531TQ	5	1	±20kV/±12kV	4A	0.5	1.0x0.6x0.5	USB 2.0
RClamp® 0582BQ	5	2	±30kV/±25kV	15A	1.2	1.6x1.6x0.75	USB 2.0
RClamp® 0531TQ	5	1	±20kV/±12kV	4A	0.5	1.0x0.6x0.5	Antenna interfaces
RClamp® 1521PQ	15	1	±15kV/±8kV	4A	0.3	1.0x0.6x0.5	Antenna interfaces
RClamp® 0582BQ	5	2	±30kV/±25kV	15A	1.2	1.6x1.6x0.75	Antenna interfaces
RClamp® 2431TQ	24	1	±13kV/±8kV	2A	0.35	1.0x0.6x0.5	Antenna interfaces
µClamp® 0511PQ	5	1	±30kV/±30kV	12A	75	1.0x0.6x0.5	Audio
SLVU2.8Q	2.8	2	±30kV/±25kV	24A	100	2.9x2.37x0.90	Analog video
µClamp® 3311PQ	3.3	1	±30kV/±25kV	5A	12	1.0x0.6x0.5	Multimedia touchpoint
µClamp® 0511PQ	5	2	±30kV/±30kV	12A	75	1.0x0.6x0.5	Multimedia touchpoint
RClamp® 0512TQ	5	2	±30kV/±30kV	20A	2	1.0x0.6x0.4	Ethernet, USB2.0, LVDS, antennas
µClamp® 0301PQ	3	1	±30kV/±25kV	5A	25	1.0x0.6x0.5	Multimedia touchpoint
RClamp® 0524PQ	5	4	±25kV/±15kV	5A	0.4	2.5x1.0x0.58	HDMI

AEC-Q100 Automotive Qualified

Single-line DC Bus Protection - AEC-Q100 Qualified

Part Number	V_{RWM} (V)	Lines	ESD Rating (air/contact)	Surge (8x20µs)	Cap (pF)	Package (mm)	Application
µClamp® 0571P	5	1	±30kV/±30kV	80A	675	1.6x1.0x0.57	Single-line DC Bus protection
µClamp® 0871P	8	1	±30kV/±30kV	65A	475	1.6x1.0x0.57	
µClamp® 1071P	10	1	±30kV/±30kV	60A	350	1.6x1.0x0.57	
µClamp® 1271P	12	1	±30kV/±30kV	45A	275	1.6x1.0x0.57	
µClamp® 1571P	15	1	±30kV/±30kV	40A	220	1.6x1.0x0.57	
µClamp® 1871P	18	1	±30kV/±30kV	35A	220	1.6x1.0x0.57	
µClamp® 2271P	22	1	±30kV/±30kV	25A	165	1.6x1.0x0.57	
µClamp® 2671P	26	1	±30kV/±30kV	23A	155	1.6x1.0x0.57	
µClamp® 3671P	36	1	±30kV/±30kV	18A	150	1.6x1.0x0.577	

Filter Devices (TVS+EMC Filter) Protection - AEC-Q100 Qualified

Part Number	V_{RWM} (V)	Lines	ESD Rating (air/contact)	Filter type	Cap (pF)	Package (mm)	Application
EClamp® 2410PQ	5	6	±17kV/±12kV	SD card termination	15	4.0x1.6x0.5	SD card
EClamp® 2357NQ	5	6	±20kV/±12kV	RC filter SD card termination	20	3.0x3.0x0.6	SD card
EClamp® 2374KQ	5	4	±15kV/±8kV	RC filter	10	1.7x1.3x0.5	Color LCD

Power Management - Regulators and Controllers - AEC-Q100 Qualified

Part Number	Type	V_{IN}		I_{OUT} Max (A)	Power-Good flag	Enable	Soft Start	PSAVE	Package (mm)
		Min	Max						
SC183CQ	Regulator	2.9	5.5	2	No	Yes	Yes	No	MLPD-10, 3x3x1
SC508A	Controller	4.5	46	30	Yes	Yes	Programmable	Yes	MLPQ-20, 3x3
SC4501Q	Regulator	1.4	16	2	No	Yes	Programmable	No	MLPD-10, 3x3
SC284AQ	Regulator	2.7 5	5.5	1.7 2	Yes	Yes	Yes	No	MLPQ-20, 3x3
SC220Q	Regulator	2.7	5.5	0.6	No	Yes	Yes	Yes	SOIC-8

Power Management - LED Drivers - AEC-Q100 Qualified

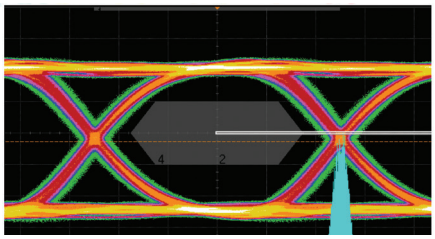
Part Number	V_{IN} (V)		V_{OUT} (V) Max	Fsw (MHz)	# LEDs per string* V_f=(3.5V)	# of Strings	String Current (mA)	Dimming Max Freq.	Package (mm)	Features
	Min	Max								
SC441A	4.5	21	36	0.7	10	4	150	up to 50kHz	TSSOP-20 EDP	Open/Short LED string disable, OCP, OTP, OVP, and FFLAG
SC445Q	4.5	27	42	0.7	12	4	150	up to 50kHz	TSSOP-20 EDP	Adj SCP level, Open/Short LED string disable, OCP, OTP, OVP, and FFLAG
SC5012/Q	4.5	45	65	0.2–2.2	18	4	150	up to 30kHz	MLPQ-24, 4x4	I^2C, FSYNC, 5000:1 Phase shifted PWM dimming

TVS Protection - Key Advantages

Semtech Transient Voltage Suppressors (TVS) safeguard circuits against damage or latch-up caused by ESD, lightning and other destructive voltage transients. Our protection devices feature low clamping voltage, low capacitance and low leakage current.

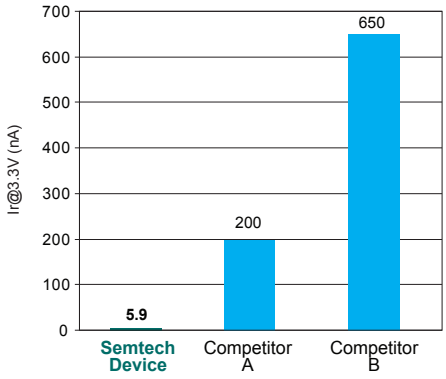
LOW CAPACITANCE

Provides robust protection while preserving signal integrity in high-speed video and data interfaces



LOW LEAKAGE

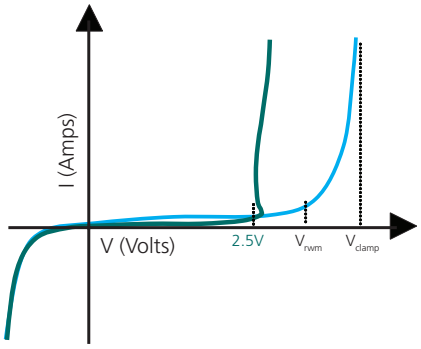
Increases battery life in handheld electronic devices



LOWER WORKING VOLTAGE

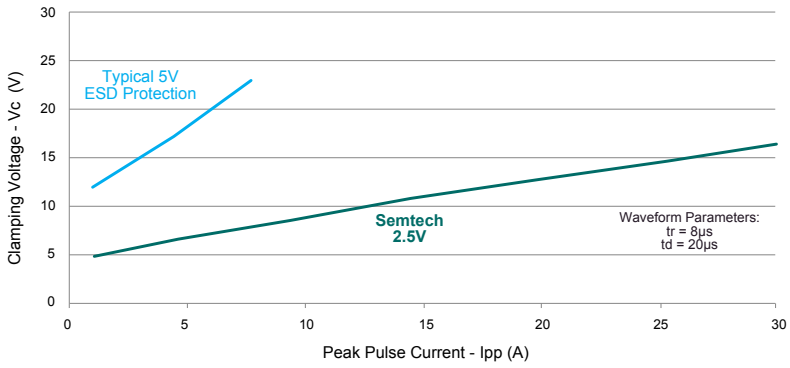
Reduces stress energy to protected IC

Typical 5V TVS IV Curve
Semtech low V_{RWM} IV Curve



LOW CLAMPING VOLTAGE

Better protection and less stress on transceiver



PRODUCT PLATFORMS

TClamp® = TransClamp
High surge lightning current handling capability

RClamp® = RailClamp
Low capacitance for high-speed applications

µClamp® = MicroClamp
Single TVS or TVS arrays for general purpose, standard TVS Process

EClamp® = EMIClamp
ESD and EMI protection with integrated inductor or resistor

KEY ESD PROTECTIONS

- ESD
- ESD-EMI filter
- High-current lightning
- Low capacitance ESD
- Low voltage ESD

TVS Key Product Applications

Key Applications

Application (Port)	Part Number	# of Lines	Voltage (V)	Max Capacitance (Line-GND)	Protection level (A) (8/20µs)*
USB 2.0 (Data Lines)	RClamp® 0552T	2	5	0.4	3
USB 2.0 (Data Lines + Vbus)	RClamp® 0582N	3	5	0.5	5
USB (OTG)	RClamp® 1624T	2+1	5+12	0.8	5
USB 3.0	RClamp® 3346P	6	3.3	0.65	4.5
HDMI, DisplayPort	RClamp® 3328P	8	3.3	0.65	5
LCD Panel	RClamp® 3324T	4	3.3	0.65	5
LCD Panel (EMI filter)	EClamp® 2388P	8	5	27	5
Single Line	µClamp® 3311Z µClamp® 0541Z µClamp® 1211Z	1 1 1	3.3 5 12	9 9 25	4 2 5
Single Line High Speed	RClamp® 0531Z	1	5	0.4	3
10/100 Ethernet	RClamp® 0534N RClamp® 3354S	4 4	5 3.3	3** 5	25 25
Gigabit Ethernet	RClamp® 3374N TClamp® 3302N	4 2	3.3 3.3	1.7** 25	40 95
T1/E1	TClamp® 0602N	2	6	25	95
CAN Bus	µClamp® 3601P µClamp® 3603T	1 3	33 36	25 50	– 2
RS485	SM712 TClamp® 1202P	2 2	12/-7 12	75 12	17 100
RS232	RClamp® 1224S	4	12	3	15
Keyboard, I/O	µClamp® 0541Z	1	5	9	2
xDSL	TClamp® 1272S TClamp® 2472S	2 2	12 24	5 3.5	25 –
2.5G Ethernet	RClamp® 0512TQ	2	5	3	–

**All devices will protect at a minimum to IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact) and IEC 61000-4-4 (EFT) 40A (5/50ns) ** I/O to I/O Capacitance*

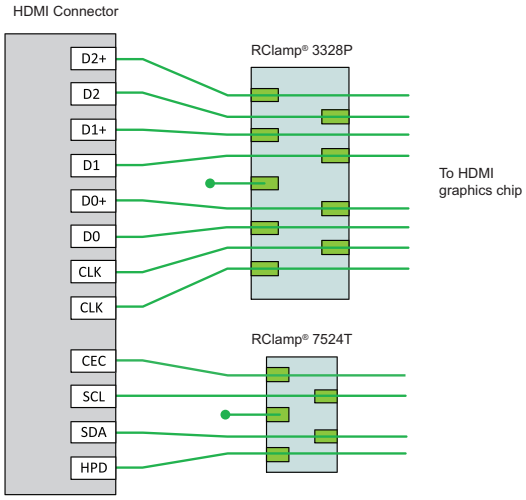
Gigabit and 10/100 Ethernet

Existing Devices	Next-Generation Improved Performance & Packaging	Pin-to-Pin Improved Performance
RClamp® 2504N	RClamp® 2574N	–
RClamp® 3304N(A)	RClamp® 3374N	–
SLVU2.8-4	RClamp® 3374N	µClamp® 2804L
SRV05-4(A)	RClamp® 0534N	RClamp® 0554S RClamp® 3354S
LC03-3.3	–	RClamp® 2502L

HDMI, Ethernet & USB 3.0 Protection

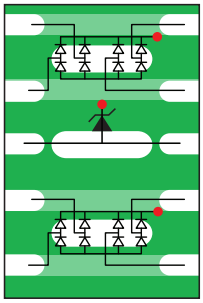
HDMI PROTECTION

- RClamp® 3328P (3.8x1.0mm)
- RClamp® 7524T (1.3x0.7mm)
- Flow-through layout
- More than 50% PCB savings
- Low capacitance (0.25 typ) to minimize signal degradation

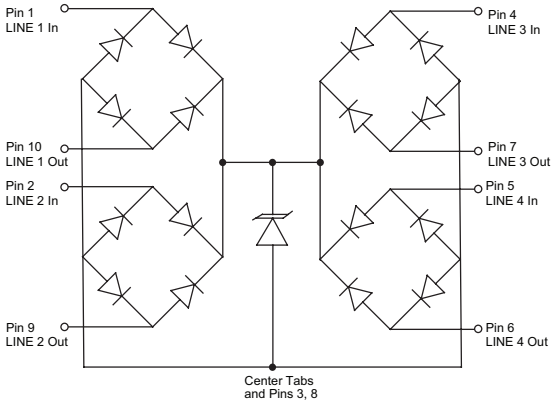


GIGABIT ETHERNET PROTECTION

- RClamp® 3374N (3x2x0.60mm)
- 3.3V working voltage
- Low capacitance: 1.7pF I/O to I/O
- Flow-through layout
- Low clamping voltage performace
- High surge rating: 40A Ipp (8x20µs)

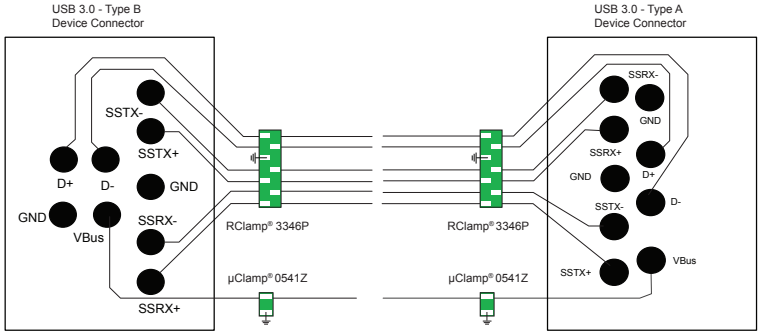


RClamp® 3374N



USB 3.0 PROTECTION

- RClamp® 3346P (2.7x0.8x0.50mm)
- µClamp® 0541Z (0.6x0.3x0.25mm)
- Extremely low clamp across entire ESD event
- Low capacitance to minimize signal attenuation
- Low dynamic resistance



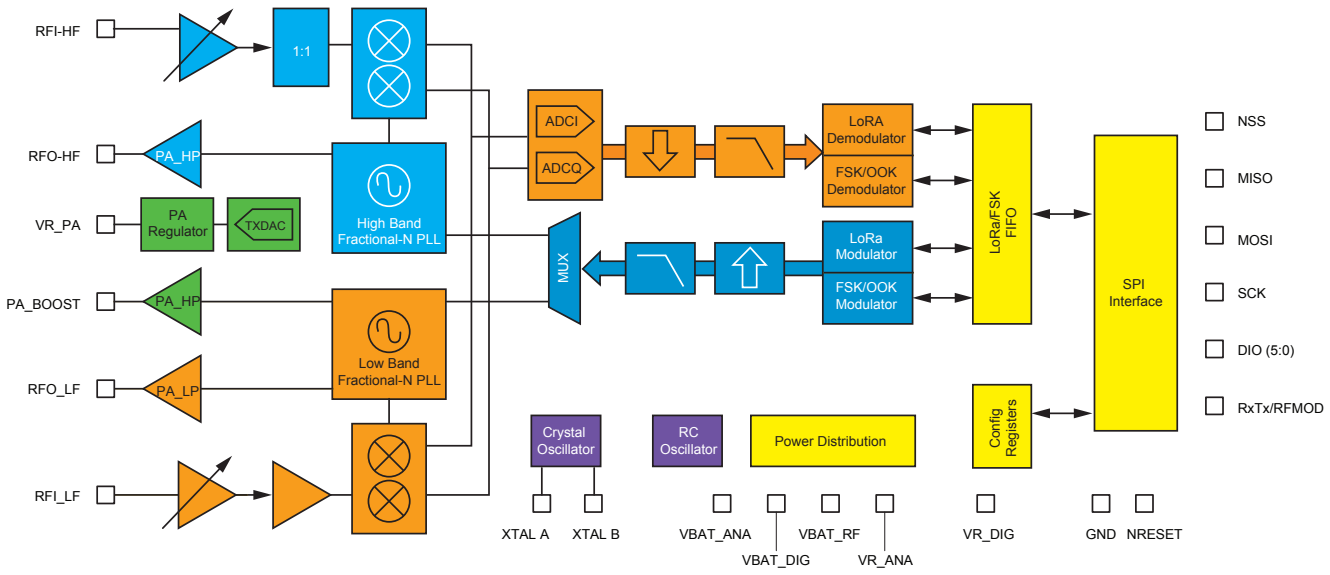
LoRa® — The Ultimate Long-Range Solutions

Ideal for eliminating repeaters, reducing infrastructure cost, extending battery lifetime, and improving network capacity

LoRa® PRODUCTS

- Long range of up to 30 miles outdoor line of sight
- Deep indoor coverage for hard to reach areas
- Bi-directional communication link with adaptive data rates
- Low power sensors with extended battery lifetime of up to 20 years
  - 100nA sleep mode
  - 9.7mA active receive mode
- LoRa, LoRaWAN™ and FSK compliant
- GFSK modes supported by a single radio
- Scalable, multi-channel, high-capacity gateways powered by SX1301/SX1308
- Available for any environment
- LoRa modulation offers 30dB improvement over FSK for co-channel interference rejection
- Programmable registers for maximum flexibility
- Footprint-compatible ICs for global coverage
- Supported by over 400 members of LoRa Alliance™ that defines the open LoRaWAN™ protocol
- Large and growing online developer community for LoRa-based products
- Public, semi-private and private networks available worldwide

SX1276 BLOCK DIAGRAM

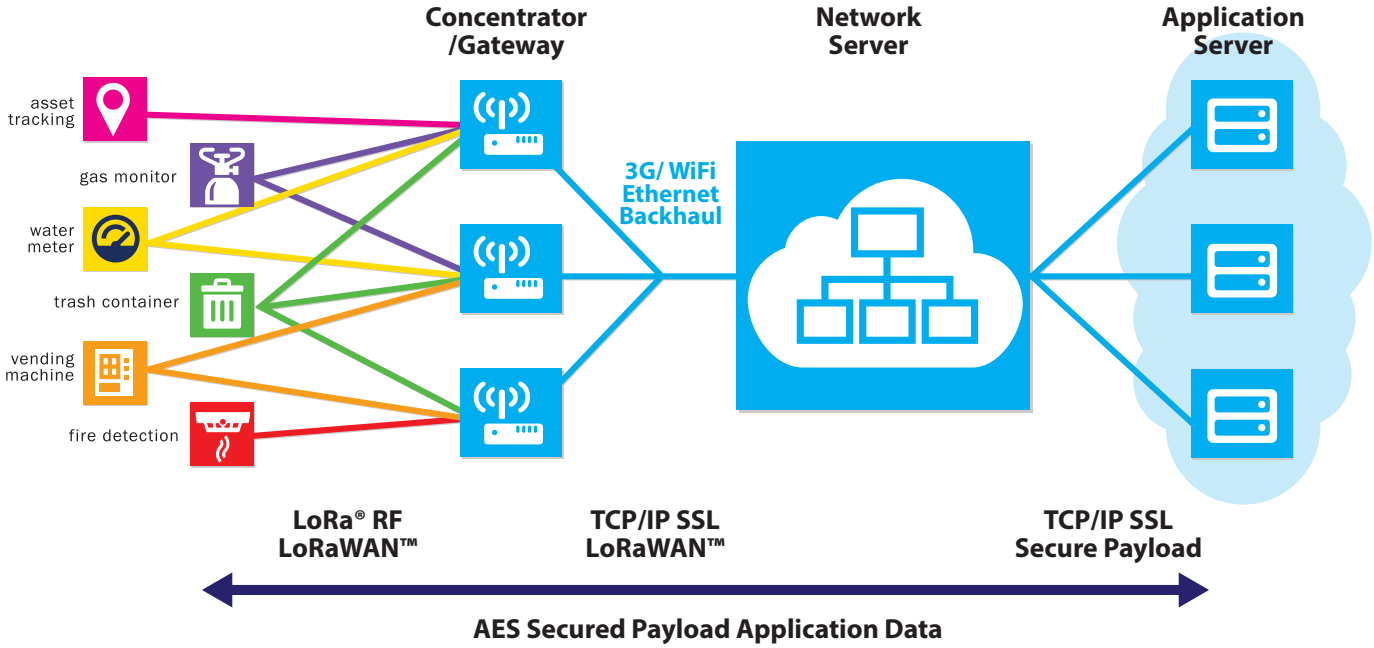


LoRa® Products

Part Number	Frequency Range (MHz)	Link Budget (dB)	RXCurrent (mA)	FSK Max DR (kbps)	LoRa DR (kbps)	Max Sensitivity (dBm)	TX Power (dBm)
SX1272	862–1020	158	10	300	0.3–40	-138	+ 20
SX1273	862–1020	150	10	300	1.7–40	-130	+ 20
SX1276	137–1020	168	11	300	0.018–40	-148	+ 20
SX1277	137–1020	158	11	300	1.7–40	-138	+ 20
SX1278	137–525	168	11	300	0.018–40	-148	+ 20
SX1279	137–960	168	11	300	0.018–40	-148	+20

LoRa® Gateway/Concentrator Solutions

The ultimate long-range, high-capacity solution for IoT and M2M networks



KEY FEATURES OF SEMTECH'S LoRa WIRELESS RF TECHNOLOGY

Long Range	Penetrates in dense urban and deep indoor environments, connecting to sensors up to 30 miles away in rural areas
Low Power	Designed specifically for low power consumption extending battery lifetime up to 20 years
High Capacity	Supports millions of messages per base station
Geolocation	Enables GPS free, low power tracking applications
Standardized	LoRaWAN specification ensures global interoperability among applications, IoT solution providers and telecom operators
Secure	Embedded end-to-end AES-128 encryption of data for optimal privacy and protection
Low Cost	Reduces costs three ways: infrastructure investment, operating expenses and end-node sensors

PICOCELL SOLUTIONS

- LoRa Picocell platforms are designed for a variety of indoor applications such as home, small business and buildings.
- SX1308 picocell IC is coupled with a SX1255 or SX1257 LoRa RF transceiver, and is expected to help bring low cost LoRaWAN networks to market for consumers and private enterprises.

GATEWAY SOLUTIONS

- Multi-channel, multi-modem receiver including LoRa and FSK modems
- Inherent two-way communication
- Receives simultaneously different data rates on same channel

RF ICs for Gateways and Picocells

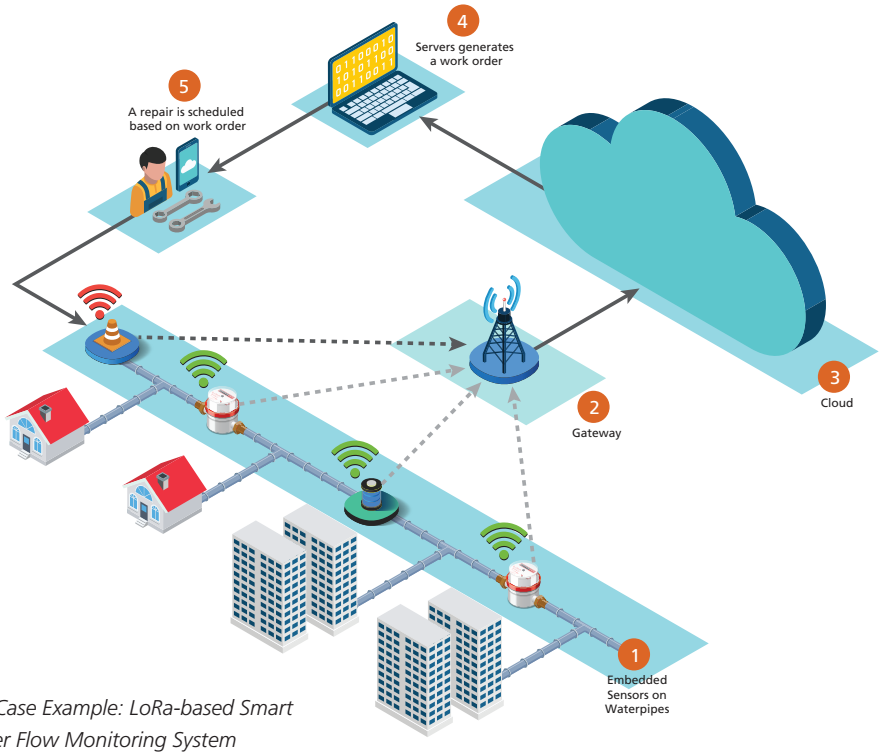
Part Number	Tx/Rx	Operating Temp. Range	LoRa Modem	FSK Modem	Capacity
SX1301	Tx/Rx	-40–85°C	9	1	Varies by application
SX1308	Tx/Rx	0–70°C	9	1	Varies by application

RF Transceivers

Part Number	Tx/Rx	Band (MHz)	Tx Power	NF
SX1257	Tx/Rx	860–1000	-20–8	7
SX1255	Tx/Rx	400–510	-20–8	7

LoRa-based Smart Sensors

With over 20 years of experience providing RF communications and sensing ICs for battery-operated sensors. Semtech offers the widest range of RF ICs for ultra long range, narrow-band, and wide-band M2M communications.



Use Case Example: LoRa-based Smart Water Flow Monitoring System

High-Link Budget

- 30dB higher than competing devices when using a low-cost BOM

High Rx Sensitivity Solutions

- Up to -148dBm of sensitivity

7x Lower Power Consumption

- 100nA sleep
- 2.5mA Rx
- 27mA @ +13dBm Tx

Support for Major Wireless Communications Protocols

- LoRaWAN™
- IEEE 802.15.4g
- Wireless M-Bus
- 6LoWPAN

RF ICs for Smart Sensors

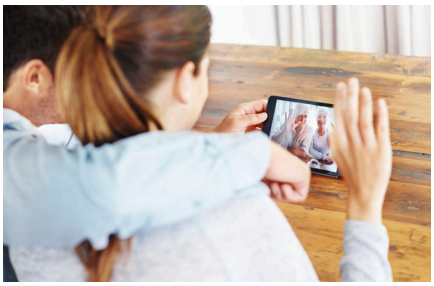
Part Number	Description	Link Budget (dB)	Rx Current (mA)	Evaluation Kit
SX1232	860–11020MHz Low Power G/FSK/OOK/ASK RF Transceiver	143	9.3	SX1232-32SKA868/915
SX1272	860–11020MHz Long Range LoRa G/FSK Transceiver	158	10	SX1272DVK1BAS (868MHz) SX1272DVK1CAS (915MHz)
SX1273	860–11020MHz Long Range LoRa G/FSK Transceiver	150	10	SX1272DVK
SX1276	138–11020MHz Long Range LoRa G/FSK Transceiver	168	9.9	SX1276DVK1IAS (169/868MHz) SX1276DVK1IAS (433/868MHz) SX1276DVK1IAS (490/915MHz)
SX1277	138–11020MHz Long Range LoRa G/FSK Transceiver	158	9.9	SX1276DVK
SX1278	138–1510MHz Long Range LoRa G/FSK Transceiver	168	9.9	SX1276DVK
SX1279	138–1960MHz Long Range LoRa G/FSK Transceiver	168	9.9	SX1276DVK
SX1231	290–11000MHz G/FSK/OOK/ASK RF Transceiver	140	16	SX1231SKB433/868/915
SX1233	290–11000MHz G/FSK/OOK/ASK RF Transceiver	140	16	SX1233-33SKA868/915
SX1211	862–1960MHz Low Power FSK/OOK/ASK RF Transceiver	125	3	SX1211SKA868/915
SX1212	310–510MHz Low Power FSK/OOK/ASK RF Transceiver	122.5	3	SX1212SKA868/915

Touch & Proximity Controllers

The superior sensitivity of the Semtech touch sensor platform enables sensing through a thick overlay material. Semtech's proximity detection has an extended range (>10cm). These devices all come in a tiny footprint with zero components per input.

Key Features

- Extreme low power
- Support button, slider and wheel design
- Proximity detection (>10cm)
- Built-in LED drivers (up to 15mA)
- 256-step intensity control (Lin/Log)
- Auto lightening
- Field programmable
- Fast scan time (15ms)
- Overlay (>5mm)
- Smart auto-offset compensation
- Ultra-small footprint
  - QFN-28 (4x4mm)
  - QFN-32 (5x5mm)
  - QFN-32 (4x4mm)
  - TSSOP-24 (4.4x7.8mm)



Applications

- Tablet eBook
- Flat panel TV
- LCD monitors
- White goods & appliances
- Printers
- Automotive audio consoles
- Personal media players
- Set Top Boxes (STBs)
- Game consoles
- Industrial systems

Touch & Proximity Controller Products

Part Number	Sensor Inputs	LED Driver	Interface	Proximity	Button	Slider	Wheel	IR Detect	Buzzer	Overlay (mm)	Auto Comp	Intensity (256-step)	Fade-in/out	Auto Lightening	Field Prog. Memory	Package (mm)
SX9510	8	8	I²C/ Analog	✓	✓	–	–	✓	✓	>5	✓	Lin./Log.	✓	✓	✓	QFN (4x4) TSSOP (4.4x7.8)
SX9511	8	8	I²C/ Analog	✓	✓	–	–	✓	✓	>5	✓	Lin./Log.	✓	✓	✓	QFN (4x4) TSSOP (4.4x7.8)
SX9512	8	8	I²C/ Analog	–	✓	–	–	–	✓	>5	✓	Lin./Log.	✓	✓	✓	QFN (4x4) TSSOP (4.4x7.8)
SX9513	8	8	I²C/ Analog	–	✓	–	–	–	✓	>5	✓	Lin./Log.	✓	✓	✓	QFN (4x4) TSSOP (4.4x7.8)
SX8633	12	8	I²C	✓	✓	–	–	–	–	>5	✓	Lin./Log.	✓	✓	✓	QFN (5x5)
SX8634	12	8	I²C	✓	✓	✓	–	–	–	>5	✓	Lin./Log.	✓	✓	✓	QFN (5x5)
SX8635	12	8	I²C	✓	✓	–	✓	–	–	>5	✓	Lin./Log.	✓	✓	✓	QFN (5x5)
SX8636	8	8	I²C	✓	✓	–	–	–	–	>5	✓	Lin./Log.	✓	✓	✓	QFN (4x4)
SX8638	8	8	I²C	✓	✓	✓	–	–	–	>5	✓	Lin./Log.	✓	✓	✓	QFN (4x4)
SX8639	8	8	I²C	✓	✓	–	✓	–	–	>5	✓	Lin./Log.	✓	✓	✓	QFN (4x4)

Smart Proximity Sensors

Semtech advanced capacitive sensing solutions provides best-in-class sensitivity (down to sub fF) with unique human discrimination feature to enhance near range proximity detection. These products are commonly used in wireless-enabled consumer devices (i.e. smartphones, tablets, notebook) for smarter RF control.

Key Features

- Highest performance sensor on the market that enables longest distance/smallest area
- Strongest immunity to common RF noise (minimize interference)

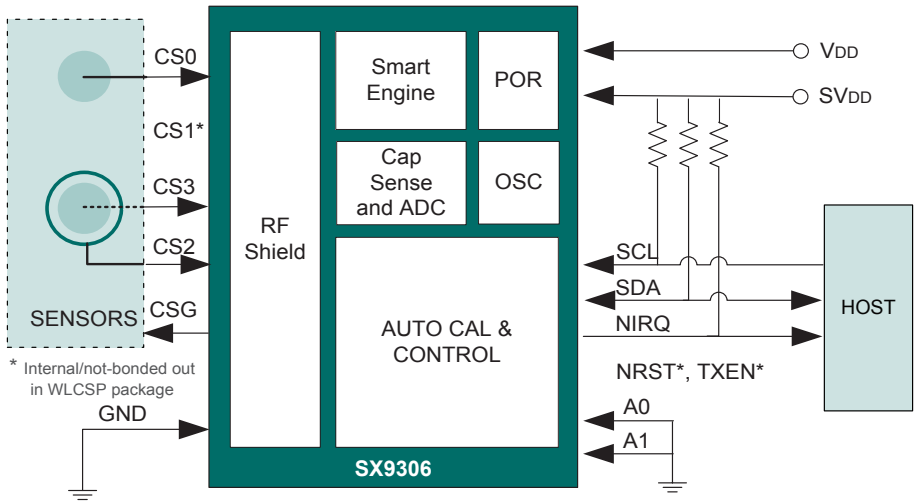
- Lowest power for extended battery life (2.5uA at Sleep, <10uA at Doze)
- Capacitive resolution down to 0.04fF
- Patented on-chip smart engine for human detection
- Built-in automatic calibration
- Advanced temperature comp.
- Active sensor guard
- Programmable I²C or standalone mode
- Extremely small footprint

Applications

- Smartphone
- Tablet
- Wearables
- Notebooks (Ultrabook, Detachable, 2-in-1)
- Hotspot
- Portable gaming devices
- Wireless-enabled devices

Smart Proximity Sensor Products

Part Number	# of Sensors	Interface	Prox.	Active Guard	Human Sensing	RF Shield	Configurable Proximity Mode	Auto Calibration	Package (mm)
SX9300	2	I²C	✓	✓	On-chip Smart Engine	–	–	✓	QFN (3x3)
SX9306	3 or 4	I²C	–	✓	On-chip Smart Engine	✓	✓	✓	WLCSP (1.2x1.6) QFN (3x3)
SX9500	4	I²C	✓	✓	–	–	–	✓	QFN (3x3)
SX9501	4	Analog	✓	✓	–	–	–	✓	QFN (3x3)



SX9306 Block Diagram

High Performance Touchscreen Solutions

Semtech offers fully integrated touch controllers in both capacitive and resistive technologies with ultra low power consumption (as low as 0.4uA) and robust on-chip ESD protection (up to ±15kV ESD) to support different human interface design in portable handheld applications (i.e. smartphones, wearable devices). Many of these products have the capability to sense in the X, Y and Z dimensions allowing for multi-touch and gesture control as well as providing tactile feedback to enhance the user experience.

Key Features

- Low power (0.4µA)
- Compatible with a wide range of resistive panels
- Enables multi-touch gestures with 4-wire touch panel
- Built-in proximity detection with any panel (>5cm)
- Integrated haptic motor control (LRA & ERM)
- 12-bit resolution

Applications

- Portable navigation devices
- Automotive center consoles
- Digital photo frames
- DSC, video cameras
- Handheld games & mobiles
- POS terminals
- Control panels

Smart Sensing IC Solutions Products

Part Number	Interface	Multi-touch	Proximity Sensing	Haptics	Package (mm)
SX8650	I²C	–	–	–	WLCSP (1.5x2.0), QFN (3x3)
SX8651	I²C	✓	–	–	WLCSP (1.5x2.0), QFN (3x3)
SX8652	SPI	–	–	–	WLCSP (1.5x2.0), DFN (4x3)
SX8653	SPI	✓	–	–	WLCSP (1.5x2.0), DFN (4x3)
SX8674	I²C	✓	✓	Generic	WLCSP (2x2), QFN (4x4)
SX8675	I²C	✓	–	Generic	WLCSP (2x2), QFN (4x4)
SX8676	I²C	✓	✓	–	WLCSP (2x2), QFN (4x4)
SX8677	I²C	✓	✓	Immersion	WLCSP (2x2), QFN (4x4)
SX8678	I²C	✓	–	Immersion	WLCSP (2x2), QFN (4x4)

General Purpose Parallel Input/Output (GPIO)

General Purpose Parallel Input/Output (GPIO) expanders are ideal for low power handheld battery powered equipment. Our IO expanders come in 4-, 8-, and 16-channels of IOs operating with a VDD range of 1.2V to 5.5V connecting easily to today's low core voltage chipsets in battery powered handheld applications without the need for level translating circuits.

Key Features

- 4/8/16 channel of I/Os
- True bi-directional style I/O
- Programmable Pull-up/Pull-down Push/Pull outputs
- 1.2V to 5.5V independent operating voltage for all supply rails (VDDM, VCC1, VCC2)
- 5.5V compatible I/Os, up to 24mA output sink (no total sink current limit)
- Fully programmable logic functions (PLD)
- 400kHz two wire I²C compatible slave interface

Applications

- Smartphones, PDAs, MP3 players
- Digital cameras
- Portable multimedia players
- Notebooks
- GPS devices

GPIO IC Products

Part Number	I/O Chan.	I/O Volt. Range (V)	Interface	Max Current (mA)	Dual I/O Supplies	PLD Function	Lin./Log. Intensity	Blink	Breath	Keypad Scan. Engine	Polarity Inversion	Current (µA)	I²C Add.	Package (mm)
SX1501	4	1.2–5.5	I²C	12/24	–	✓	–	–	–	–	–	1	2	3x3
SX1502	8	1.2–5.5	I²C	12/24	✓	✓	–	–	–	–	–	1	2	3x3
SX1503	16	1.2–5.5	I²C	12/24	✓	✓	–	–	–	–	–	1	1	4x4
SX1508B	8	1.2–3.6	I²C	15	✓	–	✓	✓	✓	✓	✓	1	4	3x3
SX1509B	16	1.2–3.6	I²C	15	✓	–	✓	✓	✓	✓	✓	1	4	4x4
SX1511B	8	1.2–3.6	SPI	15	✓	–	✓	✓	✓	✓	✓	1	–	3x3
SX1512B	16	1.2–3.6	SPI	15	✓	–	✓	✓	✓	✓	✓	1	–	4x4

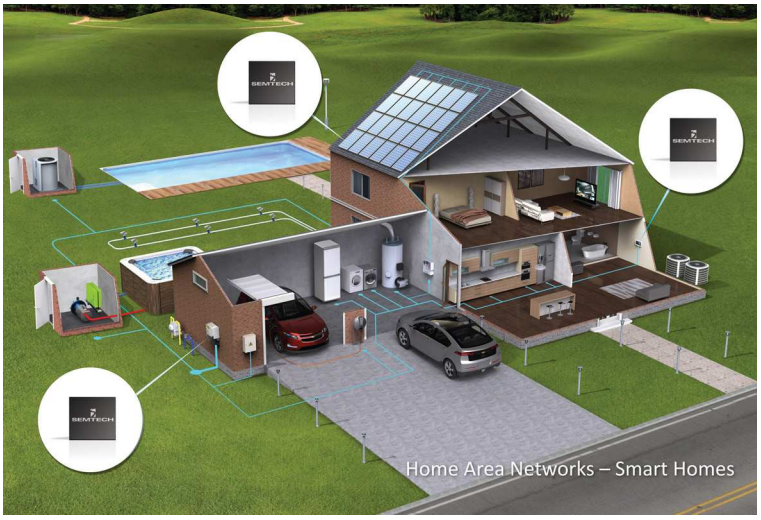
Power Line Communications

Semtech Power Line Communications (PLC) and Hybrid (PLC+RF) series of products enable communication via low-voltage, medium-voltage power lines and through the air. PLC has long been a favorite application for utility companies because it allows them to reliably move data over infrastructure that they own and control. One of the main benefits of PLC to utilities is that it efficiently addresses their communications needs across a vast array of applications (metering, substation monitoring, load control and load shedding, home energy management, etc.) all focused on collectively addressing energy management tasks. Our PLC and Hybrid products platforms work on medium voltage (MV), low voltage (LV) and over the air networks, and our SoC offers both end-device and DCU/Service Node functionalities throughout the PHY, MAC and Convergence layers with IPV6 addressing.

The EV8600 Series comprises a hybrid sub-GHz RF + narrowband PLC single-chip transceiver SoC with both modems capable of simultaneous or independent operation. The EV8600 Series is a fully programmable single-chip soft PLC solution that not only comprises flexible analog front-end and digital (PHY + MAC) sections, but also supports upper networks layers up to and including IPV6. It also comprises integrated RAM/Flash memory and is designed specifically for the harsh power line and RF environments.

KEY FEATURES

- EV8000 Series – PLC modem SoC: Multi-standard (G3, IEEE P1901.2, PRIME), Multiband (CA, ARIB, FCC)
  - EV8000, EV8010 – Multi-standard
  - EV8100 – Multi- Multi-standard plus application processor and LCD driver
  - EV8020 – PRIME
- EV8600 Series – PLC + RF modem SoC: Multi-standard (G3, IEEE P1901.2, PRIME, LoRa®, 802.15.4g (WiSUN), Wireless MBUS), Multiband (CA, ARIB, FCC, 137MHz-1020MHz)
  - EV8600
  - EV8610



Home Area Network (HAN)

Substation Communications

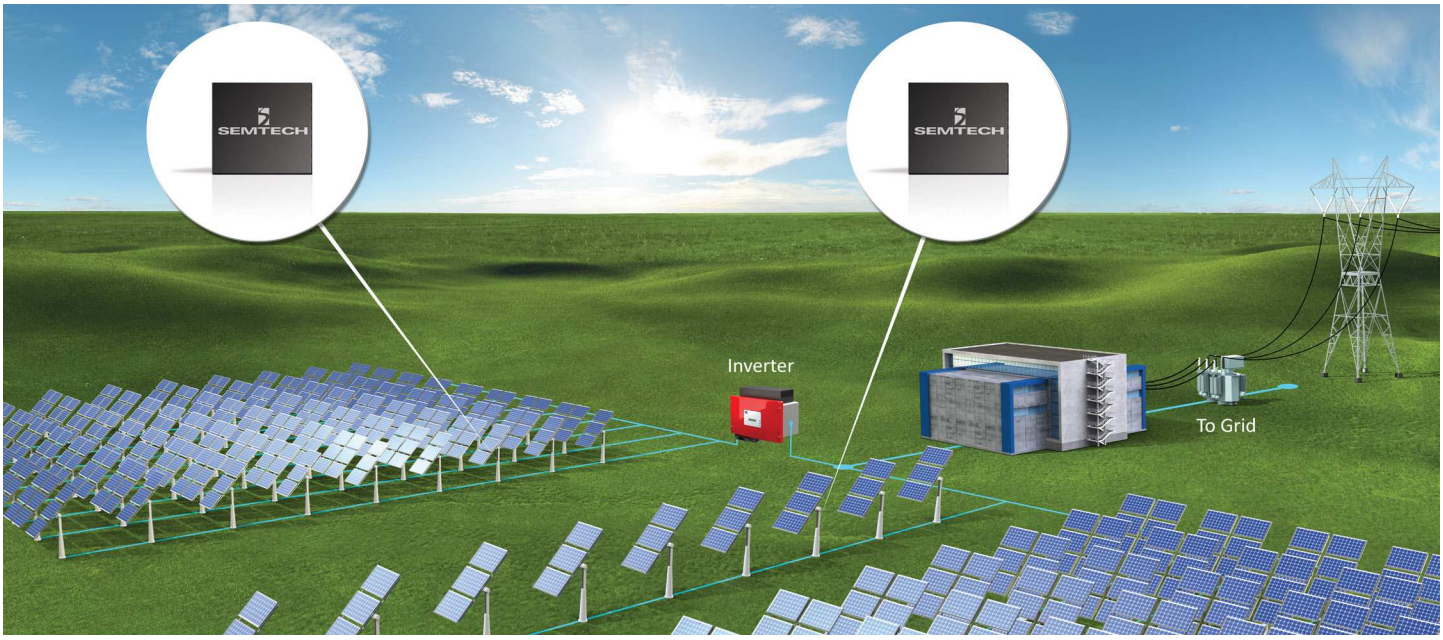
Power Line Communications

On a broad level, most, if not all, of our PLC SoC applications are tied to Active Energy Management. One of the applications for PLC technology is Advanced Metering Infrastructure (AMI), which allows utility companies to send and retrieve information from residential and industrial meters using power lines that connect directly to their servers. AMI also includes In Home Displays (IHD) and Gateways with which consumers and utility companies can use to control and manage residential energy usage. PLC usage also extends to other applications that use electricity as a source of power and require some (or substantial) intelligence for control and monitoring.

APPLICATIONS

- Advanced Metering Infrastructure (AMI)
- Airport runway lighting
- Internet of Things (IoT)
- Home Area Networks (HAN)
- Smart appliances
- Solar plant control & monitoring
- Street lighting networks
- Substation communications
- Traffic signal control & monitoring

Street Lighting Networks



Solar Plant Control & Monitoring

NEW PRODUCT

Wireless Charging Solutions

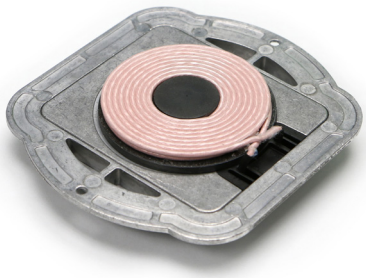
Semtech offers scalable wireless power transmitter and receiver platforms for both battery charging and power delivery in standard compliant and non-compliant systems. Semtech is a member of the Wireless Power Consortium (WPC) and AirFuel Alliance, and is active in helping shape the future standards for wireless power.

FEATURES

- Firmware-based and programmable
  - Customizable to meet specific application requirements
  - Firmware is upgradable to support evolving standards
- Supports multiple system configurations
  - Multiple supply voltages and coil configurations with the same architecture
  - Supports custom receiver and transmitter coil sizes and inductance values
- Support for medium and high power Tx and Rx solutions
  - Up to15W for smart phones and tablets
  - >15W for next-generation consumer products and industrial applications
  - 40W and beyond for high power applications such as notebook computers, power tools, and other industrial applications
- Support for low power (0.1W–2W) Tx and Rx solutions
  - Both standard and proprietary solutions
  - Support for very small coils and form-factors
  - Direct charging of batteries at <50mAh
- Multi-standard solutions based on single Tx hardware
  - WPC Qi® + AirFuel Inductive in a single hardware solution
  - WPC Qi® + AirFuel Inductive + Resonant in a single hardware solution

EVALUATION MODULE SERIES

- Low Power Wearables <5W
  - LinkCharge™ LP Series
- Medium Power 5W-15W
  - **LinkCharge™ CT Series** NEW
  - LinkCharge™ 10 Series
  - LinkCharge™ 15 Series
- High Power >15W
  - LinkCharge™ 20 Series



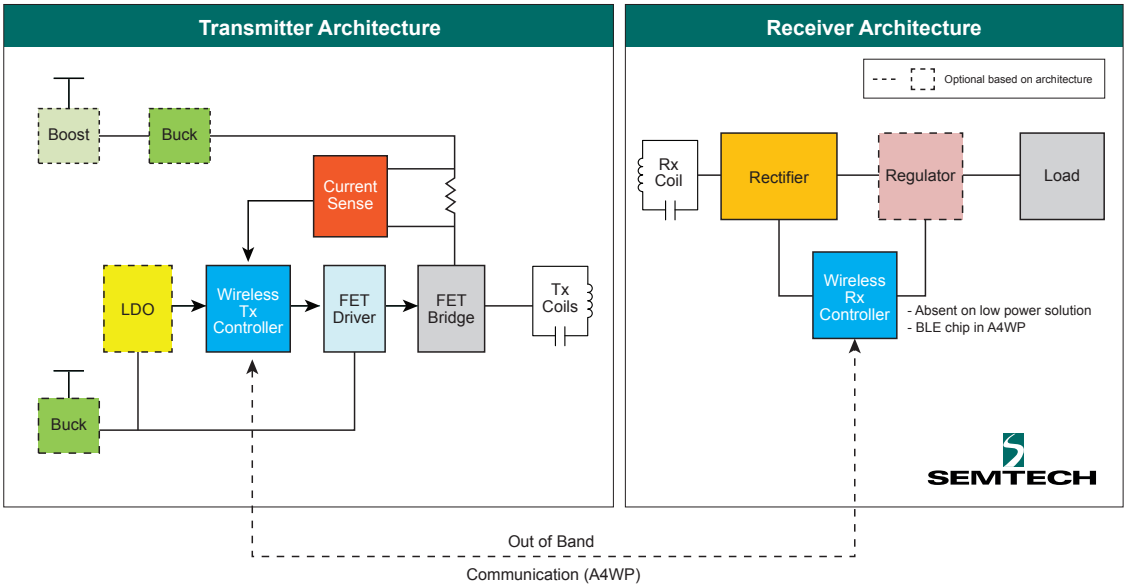
LinkCharge™ CT product photo

Wireless Charging Standard			
Standard	**Qi®** Wireless Power Consortium	**AirFuel Inductive** AirFuel Alliance	**AirFuel Resonant** AirFuel Alliance
Technology	Magnetic induction	Magnetic induction	Magnetic resonance
Coupling Range	10mm (today)	10mm (today)	20-50mm (Today)
Frequency	110-205kHz (RF)	110-300kHz (RF)	6.78MHz (Microwave)
Cost	Lower	Lower	Higher
Power Today	15W at Rx	15W at Rx	10W at Tx
Power Next-Gen	15W at Rx	15W at Rx	22-36W at Tx
Communication	Load Modulation	Load Modulation	Via Bluetooth™
Efficiency	75%-77%	65%-75%	20%-70%
Transmitter	Single or multi-coil	Single or multi-coil	Single, multi-element

Wireless Charging Solutions

NEW PRODUCT

WIRELESS CHARGING ARCHITECTURE



			Function																	
			Controller				Buck				Boost	LDO	Rectifier	FET Driver				Battery Charge	Vreg	Current Sense
			Semtech Orderable Part Numbers																	
	EVK Part Number	Description	TS80000-QFNR	TS80002-QFNR	TS81000-QFNR	TS81001-QFNR	TS30011-M000QFNR	TS30012-M000QFNR	TS30041-M000QFNR	TS30042-M000QFNR	TS32105-QFNR	TS31023-QFNR	TS31223-QFNR	TS51111-M22WCSR	TS51223-M000WCSR	TS51231-QFNR	TS61005-QFNR	TS61002-QFNR	TS61001-QFNR	SC810ULTRT	TS51221-M000QFNR	TS94033SKTRC
	TSDMRX-5V/10W-EVM	Dual mode 5V/10W RX			1									1								
	TSDMRX-5W-EVM	Dual mode 5V/5W RX				1								1	1							
NEW	TSDMTX-19V2-EVM	Dual mode 19V/15W TX	1				1											1				1
	TSDMTX-5V2-EVM	Dual mode 5V/5W with quick charge TX	1									2						1				1
	TSDMTX-5V-EVM	Dual mode 5V/5W TX	1									1							1			
NEW	TSWIRX-5V2-EVM	Wearable 5V/<2W Inductive RX													1							
	TSWIRX-5V-EVM	Wearable 5V/<2W Inductive RX																			1	
	TSWIRX-LI-EVM	Wearable 5V/<2W Inductive RX with charger													1					1		
	TSWITX-12V-EVM	Wearable 12V/<2W Half Bridge		1												1						
	TSWITX-EVM	Wearable 5V/1W Inductive TX		1												1						
NEW	TSWITX-G4-EVM	Wearable 5V/1W Inductive TX		1												1						
	TSDMTX-19V2-EVM	High Power 20W Transmitter	1				1										1	1				1
	TSDMRX-19V/20W-EVM	High power 20W Receiver	1							1												1

Ultra-low Power Solutions

ULTRA-LOW POWER MANAGEMENT SOLUTIONS

Semtech nanoSmart® ultra-low power technology enables energy savings in everyday products. nanoSmart® products support multiple energy harvesting technologies including indoor and outdoor solar. Off-active™ switching and ultra-low power design result in dissipation in the nano-ampere range, ensuring more energy delivered to the application or storage element. Implementing advanced system power management and scheduled system wake-up is possible with optional microcontroller and real-time clock based solutions making it ideal for remote sensing and control applications.

FEATURES

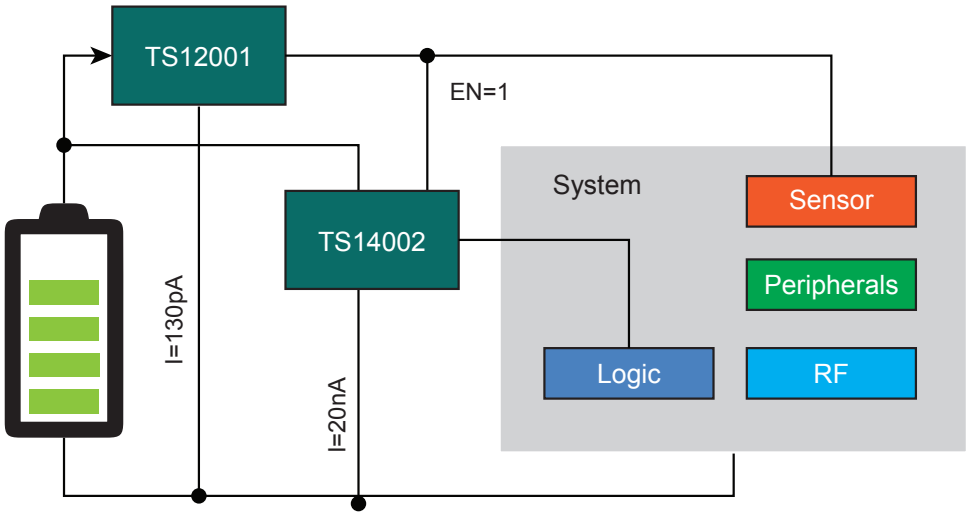
- Lowest standby power in the industry
  - Eliminates standby power losses
  - Quiescent current below battery self-discharge current
- Extends battery life on portable products

APPLICATIONS

- Enables portable standalone low-power
- Background energy scavenging
- Off-grid indoor solar energy harvesting
- Autonomous systems that run forever (i.e. wireless sensors)
- Medical and Industrial

nanoSmart® Solutions

Part Number	Description	Features	Application
TS12001	Battery management under voltage load switch	Trigger voltage options of 1.2V–4.2V (factory set), 70nA quiescent current	Protects batteries from excessive discharge in portable devices
TS14002	Ultra-low power LDO	V_{IN} = 2.5V to 5.5V, V_{OUT} = 1.2V–4.2V @250mA (factory set), 20nA quiescent current	Portable battery-operated electronics



TS12001 and TS14002 Block Diagram

Neo-Iso™ Isolated Power Solutions

Neo-Iso™ ISOLATED LOAD SWITCH

Neo-Iso technology from Semtech enhances Internet of Things applications by adding higher levels of intelligence and control. Neo-Iso switches make it possible for low power microcontrollers to control high voltage loads in the system. Reporting of fault conditions from the switch to the controller enables system responses resulting in safer, more efficient operation. Low current draw allows each switch to operate on power harvested from the load eliminating the need for additional supplies. Implemented in proven, volume manufacturing processes, consistently high levels of reliability are achieved throughout the entire operating life. Semiconductor based design allows future scalability and integration options not possible with legacy technologies such as mechanical relays and opto-couplers.

Ordering Info

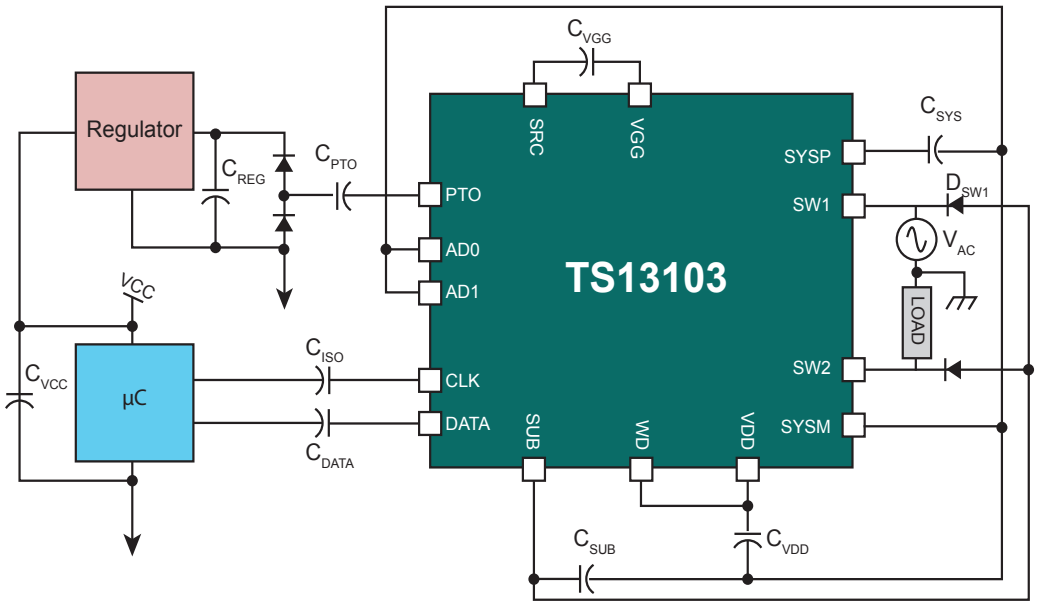
Part Number	Package (mm)	Standard Reel Quantity
TS13101-QFNR	QFN-20 (4x4)	3,300
TS13102-QFNR	QFN-16 (3x3)	3,300
TS13103-QFNR	QFN-16 (3x3)	3,300

FEATURES

- Overcurrent protection
- Diagnostic information feedback
- Integrated protection devices
- Energy harvesting
- Energy transfer to primary side control
- Scalable galvanic from primary to secondary sides of the device
- Switch Turn-On / Turn-Off Times ~25µS
- Single control signal for on/off input (CLK) Operation Switch
- 60V switch with bi-directional blocking in OFF state
- Low profile allows thin and compact end products
- Silent operation improves user experience

APPLICATIONS

- Internet of Things (IoT)
- HVAC / Thermostats
- Home Automation / Smart Home
- Security
- Smart Metering
- Industrial Control



TS13103 single channel with energy harvesting and Power Take Out (PTO)

Power Management Solutions

Semtech supplies a wide range of power management ICs used in telecommunications and industrial equipment, portable devices, computers, and networks. Our products include feature rich, highly-integrated products for the telecom industry, and low power, small-package, high-efficiency products for smartphones, handsets, notebook PCs and other portable devices. An established leader in power management ICs across networking and industrial power, handheld power and LED lighting applications, Semtech is pushing performance to higher levels in our quest to enable a totally new class of greener, smarter and smaller end products.

BUCK REGULATORS

With a broad selection of buck converters, Semtech offers some of the world's smallest, high-performance point-of-load (POL) regulators. These include our family of EcoSpeed® converters that set a new standard for efficiency, speed, size and simplicity in emerging green energy applications.

BOOST REGULATORS

Semtech's expanded line of boost converters now includes the world's smallest low-voltage regulators, as well as a growing line of single- and multi-string boost LED drivers for demanding, rugged backlighting applications.

LDOS

A wide range of ultra-low dropout regulators offers ideal solutions for systems where V_{OUT} is very close to V_{IN}.

LED DRIVERS

Semtech manufactures an extensive line of LED driver ICs for LCD display, automotive, backlight, and LED camera flash applications. They include inductor-based boost LED drivers for series-connected LEDs and charge pump LED drivers, and low-dropout current sinks for parallel-connected LEDs. Each LED driver topology is designed for optimal high efficiency in the smallest footprint with accurate current regulation, low noise and a wide dimming range.

CHARGE PUMPS

Semtech's high-performance, charge pump-based converters and LED backlight drivers build on a strong history of charge pump experience providing very high efficiency in the smallest footprint with accurate current regulation, low noise and a wide dimming range.

FEMTOBUCK™ LOAD SWITCHES

Semtech's new load switch products focus on lowest RDS(ON) in class for highest system efficiency and extremely robust protection to withstand the harshest circuit conditions.

Wide Input Voltage Regulators & Controllers

NEW PRODUCT

EcoSpeed® Wide Input Synchronous Buck Regulators / Controllers

Part Number	Input Voltage	Output Current (A)	Package (mm)	Features
SC3303	5.5V–28V	3	MLPD-10 (3x3)	0.75V–7.5V, Int. LDO, Ultrasonic PSAVE
SC401B	3V–17V	15	MLPQ-32 (5x5)	0.6V–85%V_{IN}, Programmable Soft Start, Prog. LDO, Selectable PSAVE
SC402B	3V–28V	10	MLPQ-32 (5x5)	0.6V–85%V_{IN}, Programmable Soft Start, Prog. LDO, Selectable PSAVE
SC403B	3V–28V	6	MLPQ-32 (5x5)	0.6V–85%V_{IN}, Programmable Soft Start, Prog. LDO, Selectable PSAVE
SC414/424	3V–28V	6	MLPQ-28 (4x4)	0.75V–85%V_{IN}, 5V LDO, Ultrasonic/Regular PSAVE
SC417/427	3V–28V	10	MLPQ-32 (5x5)	0.5V–85%V_{IN}, Prog. LDO, Ultrasonic/Regular PSAVE
SC418/9	3V–28V	30	MLPQ-20 (3x3)	Ext. FETs, 0.5V–85%V_{IN}, Prog. LDO, Ultrasonic/Regular PSAVE
SC461	3V–28V	30	MLPQ-20 (3x3)	Ext. FETs, Hiccup, 0.6V–85%V_{IN}, 5V LDO, Selectable PSAVE
SC508(A)	4.5V–46V	30	MLPQ-20 (3x3)	Ext. FETs, Hiccup, 0.6V–85%V_{IN}, 5V LDO, Ultrasonic/Regular PSAVE
SC9301	3V–28V	10	MLPQ-32 (5x5)	Hiccup, 0.6V–5.5V, 5V LDO

EcoSpeed® is a registered trademark of Semtech Corporation.

Automotive AEC-Q100 Qualified

High Efficiency Wide Input Synchronous Buck Regulators

Part Number	Input Voltage	Output Current (A)	Package (mm)	Features
NEW TS30011	4.5V–24V	1	QFN-16 (3x3)	1 MHz Converters, Fixed V_{OUT} options (1.5V, 1.8V, 2.5V, 3.3V, 5.0V) or adjustable V_{OUT} (0.9V to VCC-1V)
NEW TS30012	4.5V–24V	2	QFN-16 (3x3)	
NEW TS30013	4.5V–18V	3	QFN-16 (3x3)	
NEW TS30041	4.5V–40V	1	QFN-16 (3x3)	
NEW TS30042	4.5V–40V	2	QFN-16 (3x3)	

Wide Input Asynchronous Buck Regulators

Part Number	V_{IN} (V)		V_{OUT} (V)		I_{OUT} Max (A)	Isw Limit (A)	Shutdown Current (µA)	Fsw (kHz)	Package (mm)	Features
	Min	Max	Min	Max (% V_{IN})						
SC4530	3	30	1.23	90	0.3	0.39	0.1	–	MLPD-8 (3x2)	Light load idle mode
SC4518H	4.4	24	0.8	85	1.4	2.0	100	600	SO-8 EDP	External synch
SC4519	3	16	1.2	85	2.7	3.0 typ.	5	600	SO-8 EDP	External synch
SC4519H	4.4	24	0.8	85	3.0	3.5	100	600	SO-8 EDP	External synch
SC4520	4.4	24	0.8	85	2.7	3.0	250	100-600	SO-8 EDP	Programmable frequency
SC4521	4.4	24	0.8	85	3.0	3.5	250	600	SO-8 EDP	Programmable Soft Start
SC4524E	3	28	1	96	2.0	2.6	40	200-2000	SO-8 EDP	Programmable Soft Start, hiccup overload protection with frequency foldback
SC4524F	3	18	1	96	2.0	2.6	40	200-2000	SO-8 EDP	Programmable Soft Start, hiccup overload protection with frequency foldback
SC4525E	3	28	1	96	3.0	3.9	40	200-2000	SO-8 EDP	Programmable Soft Start, hiccup overload protection with frequency foldback
SC4525F	3	18	1	96	3.0	3.9	40	200-2000	SO-8 EDP	Programmable Soft Start, hiccup overload protection with frequency foldback

NEW PRODUCT

Point of Load (POL) Solutions

Low Dropout Regulators

Part Number	V_{IN} (V) Min	V_{IN} (V) Max	V_{OUT} (V) Min	I_{OUT} (A) Max	$V_{DROPOUT}$ (V) Max O.T.	$V_{DROPOUT}$ @ Full Load (V) Typ	Package (mm) *Exposed die pad
NEW TS31023	5	16	1.25	0.06	0.55	0.45	MLPD-8 (2x2)
TS31223	5	36	1.25	0.06	0.55	0.45	MLPD-8 (2x2)
SC4213H	1.4	6	0.5	0.5	0.15	0.075	SOIC-8
SC4211	1.4	6	0.5	1	0.5	0.2	SOIC-8 EDP
SC4212B	1.6	6	0.5	1	0.175	0.09	MLPD-8 (3x3)
SC4215J*	1.4	6	0.5	2	0.6	0.3	SOIC-8 EDP
SC4216H	1.45	5.5	0.5	3	0.7	0.45	SOIC-8 EDP
SC4217	1.8	5.5	1.24	3	0.6	0.3	TO-263-5

* *SC4215J has 1ms internal soft start*

Low Current, Low Voltage LDO Regulators

Part Number	V_{IN} (V) Min	V_{IN} (V) Max	V_{OUT} (V) Min	I_{OUT} (A) Max	$V_{DROPOUT}$ (V) Max O.T.	Output options	Package (mm)
SC560	2.5	5.5	1.2	0.3	0.215	Many dual fixed outputs available	MLPQ-UT8 (1.5x1.5)
SC563	2.3	5.5	1.0	0.3	0.540	Dual fixed outputs	MLPD-UT8 (1.6x1.2)
NEW TS14002	2.5	5.5	1.2	0.25	0.160	Ultra-Low Iq, Fixed output	VDFN (2x2)

Buck Regulators

Part Number	Output Current (A)	Package (mm)	Features
SC195/B	0.5	MLPQ-8 (1.5x1.5) CSP-8 (0.8x0.8)	Low BOM 4 bit VID
SC197	2x0.5	MLPQ-18 (2x3)	Low BOM 4 bit VID
SC202A	0.5	MLPQ-13 (2.5x3)	Integrated inductor
SC220	0.65	SOIC 8	PCB trace inductor
SC4626	1	SOT23-5	Fixed V_{OUT} Low BOM
SC189	1.5	MLPD-6 (2x2)	Small size fixed V_{OUT} Low BOM
SC283 SC284 SC284P	2x1.8 2x1.8 2x2	MLPQ-18 (2x3) MLPQ-20 (3x3) MLPQ-20 (3x3)	Low BOM 4 bit VID Low BOM 4 bit VID 3 bit VID, PSAVE, PGOOD
SC183C/Q	2	MLPQ-16 (3x3)	Low BOM 4 bit VID
SC3102	2	MLPQ-16 (3x3)	Fixed V_{OUT} selectable forced PSAVE
SC185	4	MLPQ-16 (3x3)	Fixed V_{OUT} Low BOM
SC186	4	MLPQ-16 (3x3)	Low BOM 4 bit VID
SC286	2x4	MLPQ-28 (4x4)	Low BOM 4 bit VID

DDR1 to DDR4 Memory Termination LDO Regulators

Part Number	V_{CC} (V) Min	V_{CC} (V) Max	V_{DDQ} (V)	V_{TT} (V)	IV_{TT} (A) Max	DDR Type	Package	Features
SC2598	2.35	3.6	1–3.6	0.5–1.8	±3	1,2,3,4	SOIC-8 EDP	Integrated DDR VTT LDO with on-board buffered reference, remote sense
SC2599	2.35	3.6	1–3.6	0.5–1.8	±3	1,2,3,4	SOIC-8 EDP MLPD-UT8 (2x2)	Integrated DDR VTT LDO with on-board buffered reference, remote sense

Boost Regulators

Part Number	V_{IN} (V) Min	V_{IN} (V) Max	V_{OUT} (V) Min	V_{OUT} (V) Max	I_{OUT} / I_{SW} (A) Max	Shutdown Current (µA)	Iq (mA)	Switching Freq (MHz)	Package (mm)	Features
NEW TS32101	1.8	5.5	1.8	5.5	/1.5	5	0.05	2	MLPQ-16 (3x3)	Synchronous, Power Save mode, bypass mode
SC120	0.7	4.5	1.8	5	/1.2	0.1	0.05	1.2	MLPD, SOT-23 (1.5x2)	Power Save mode for light load efficiency
SC121	0.7	4.5	1.8	5	/1.2	0.1	3.5	1.2	MLPD-UT-6 (1.5x2)	No Power Save
SC4501Q	1.4	16	1.4	30	/2	<18	<1.6	Up to 2	MSOP-8 EDP, MLPD-10 (3x3)	Programmable Soft Start, SEPIC configurable
SC4502(H)	1.4	16	1.4	32(40)	/1.4	<18	<1.6	Up to 2	MLPD-10 (3x3)	Programmable Soft Start, SEPIC configurable
SC4503	2.5	20	3	27	/1.4	<1	<1.1	1.3	TSOT-23, MLPD-8 (2x2)	Programmable Soft Start, SEPIC configurable
SC630A	2.95	5.5	–	3.3	0.3/	0.1	2.5	1	MLPD-8 (2x2)	Buck-Boost 33mV ripple, Soft Start small caps
SC632	2.9	5.5	–	5	0.275/	0.1	1.5	0.2	MLPD-8 (2x2)	Buck-Boost <30mV ripple, Soft Start
SC632A	2.95	5.5	–	5	0.275/	0.1	2.5	1	MLPD-8 (2x2)	Buck-Boost 50mV ripple, Soft Start, small caps
SC633	2.9	5.5	–	5.3	0.4/	0.1	1.5	0.2	MLPD-8 (2x2)	Buck-Boost <30mV ripple, Soft Start

Automotive AEC-Q100 Qualified

LED Drivers and Load Switches

NEW PRODUCT

LED Inductor Based

Part Number	V_{IN} (V) Min	V_{IN} (V) Max	V_{OUT} (V) Max	F_{SW} (MHz)	# LEDs per string* V_f=(3.5V)	# of Strings	String Current (mA)	Dimming Max Freq.	Package (mm)	Features
SC441A	4.5	21	36	0.7	10	4	150	up to 50kHz	TSSOP-20 EDP	Open/Short LED string disable, OCP, OTP, OVP, and FFLAG
SC442	4.5	21	42	0.2–1.0	12	10	30	up to 50kHz	MLPQ-UT-28 (4x4x0.6)	Adj freq, adj SCP level, Open/Short LED string disable, OCP, OTP, and OVP
SC443	4.5	27	42	0.2–.2	12	3	30	up to 50kHz	MLPQ-UT-16 (3x3x0.6)	Adj freq, Open LED string disable, OCP, OTP, and OVP
SC445Q	4.5	27	42	0.7	12	4	150	up to 50kHz	TSSOP-20 EDP	Adj SCP level, Open/Short LED string disable, OCP, OTP, OVP and FFLAG
SC446	4.5	27	42	0.7	12	3	100	up to 50kHz	TSSOP-16 EDP	Open/Short LED string disable, OCP, OTP, and OVP
SC4541	2.9	22	25	2	7 (Boost) 5 (Buck)	1	100 (max) Boost 200 (max) Buck	up to 1kHz	SOT23-6, MLPD-UT-6	High-side sensing integrated Schottky rectifier, no external compensation
SC5010/H	4.5	27	50	0.2–2.2	14	8	30 50(H)	up to 30kHz	MLPQ-UT-28 (4x4)	Phase shifted, PWM/I²C dimming, extensive protection
SC5012/Q	4.5	45	65	0.2–2.2	18	4	150	up to 30kHz	MLPQ-24 (4x4)	I²C, FSYNC, 5000:1 phase shifted PWM Dimming
SC5014	4.5	27	50	0.2–2.2	14	4	120	up to 30kHz	MLPQ-20 (4x4)	Phase shifted, PWM/I²C dimming, extensive protection
SC5014A	4.5	27	50	0.2–2.2	14	2	240	up to 30kHz	MLPQ-20 (4x4)	Advanced high efficiency

*Maximum number of LEDs depends on LED forward voltage

Automotive AEC-Q100 qualified

FemtoSwitch™ Load Switches

Part Number	V_{IN} (V) Min	V_{IN} (V) Max	IO_{UT} Max (A)	RDS ON (mΩ)	Shutdown Current (µA)	Quiescent Current (µA)	Reverse Current Blocking	Auto Discharge	ESD (kV HBM)	Package (mm)
SC704	1.1	3.6	0.5	90	0.1	2	–	–	5	CSP-4 (0.76x0.76)
SC705	1.1	3.6	0.5	90	0.1	2	–	✓	5	CSP-4 (0.76x0.76)
NEW TS12001	1.2	5.5	1.0	175	0.0001	0.07	–	✓	2	DFN 8-L (2x2)
SC724	1.1	3.6	2.0	36	0.2	0.81	–	–	3	CSP-4 (0.76x0.76)
SC725	1.1	3.6	2.0	36	0.2	0.81	–	✓	3	CSP-4 (0.76x0.76)
NEW SC33020H	1.6	5.5	2.0	32	0.3	1	✓	–	4	CSP-4 (0.9x0.9)
NEW SC33021	1.6	5.5	2	32	0.3	0.8	✓	✓	5	CSP-4 (0.9x0.9)
NEW SC33001A	1.7	5.5	3	9	0.04	150	–	✓	Class 1C	CSP-6 (0.9x1.4)
SC700	0.75	5.25	4.0	17	0.5	150	–	✓	Class 1C	MLPD-6 (2x2)
SC700H	0.75	5.25	4.0	17	0.5	150	–	–	Class 1C	MLPD-6 (2x2)
SC701	1.7	5.5	4.0	8	3.5	125	–	✓	Class 1C	CSP-6 (0.9x1.4)
SC701H	1.7	5.5	4.0	8	3.5	125	–	–	Class 1C	CSP-6 (0.9x1.4)

Current Sense Amplifier

Part Number	V_{IN} (V) Min	V_{IN} (V) Max	Gain Temp Coefficient (ppm/°C)	Signal Input Voltage (V) Min	Signal Input Voltage (V) Max	Quiescent Current (µA)	Input Bias Current (µA)	ESD (kV HBM)	Package (mm)
NEW TS94033	4.0	42	-20	V_{dd} -5.5	V_{dd} +0.04	140	2.1	2	SOT23-8