

**NPIs, DESIGN
AND TECHNOLOGY NEWS**



23-ii Intelligent Lighting

www.FutureElectronics.com

Delighting our Customers Worldwide

www.FutureElectronics.com

Delighting our customers worldwide

Power controller provides precise regulation of LED driver outputs up to 200 W

The HVLED101 power controller IC from STMicroelectronics maintains high power factor while consuming very low power in standby mode, and provides for precise regulation across a wide range of topologies in LED drivers that produce a power output of up to 200 W.



The HVLED101 is an enhanced peak current-mode controller for flyback or buck-boost topologies that require a high power factor of at least 0.9 at full load. It also enables power-system designers to produce low total harmonic distortion of less than 5% at full load. Other topologies such as buck, boost and SEPIC can also be implemented with the HVLED101.

Both primary-side regulation of the output voltage and optocoupler control can be applied independently on the chip: both produce precise regulation. Standby power consumption in no-load conditions is very low.

The HVLED101 is built with innovative ST high-voltage technology which enables the IC to be connected directly to the input voltage in order to both start up the device, and to monitor the input voltage without the need for external components. A valley-locking feature guarantees noise-free operation in medium- and low-load conditions.

The maximum power can be controlled by limiting the input power to a level programmed by the engineer. The HVLED101 also controls abnormal conditions such as open circuit, output short-circuit, input over-voltage and under-voltage, as well as circuit failures such as open loop and over-currents at the main switch.



life.augmented

FEATURES

- 800 V fast high-voltage start-up
- Programmable frequency foldback with valley locking for noise-free operation
- Programmable brown-out and input over-voltage protection
- Smart automatic restart timer

APPLICATIONS

- Single-stage LED drivers up to 180 W
- Two-stage LED drivers up to 200 W

FREE DEV BOARD

50 W converter for LED drivers based on HVLED101 quasi-resonant flyback controller with primary-side regulation.

Orderable Part Number
EVLHV101PSR50W

[APPLY HERE NOW](#)

FREE DEV BOARD

50 W power converter for LED drivers based on HVLED101 quasi-resonant flyback controller with secondary-side regulation.

Orderable Part Number
EVLHV101SSR50W

[APPLY HERE NOW](#)

 [BUY NOW](#)

 [INFORMATION](#)

 [DATASHEET](#)

 [SAMPLES](#)



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



CONSUMER



TELECOMS

High-power 1,800 K LED provides mercury-free replacement for high-pressure sodium lamps

The introduction of NVSWE21A-V1 from NICHIA gives a new direct-mount option in LEDs producing the characteristic high-pressure sodium (HPS) amber glow, and adds a direct-mount chip-scale package version of its successful 1,800 K LEDs.



FEATURES

- Low glare
- Reduced blue light emissions
- Reduced light pollution
- 60,000 hours' lifetime

APPLICATIONS

- Streetlights
- Area lighting
- Municipal lighting

The 1,800 K LEDs provide a true LED alternative to HPS lamps in streetlights and other outdoor lighting applications.

The new NVSWE21A-V1 joins the 219F series of high-power LEDs in the NICHIA portfolio of HPS replacement LEDs. These LEDs produce a mercury-free alternative to HPS lamps while retaining the nostalgic amber glow of HPS lighting.

Until now, the absence of a viable and sustainable LED alternative to HPS has hampered efforts to phase out its use. HPS lamps have remained exempt from the list of banned products under the Minamata Convention on Mercury.

The 1,800 K NVSWE21A-V1 and NVSW219F LEDs enable lighting manufacturers to take advantage of a more efficient, longer-lasting alternative to HPS lamps while retaining the same nostalgic effect of HPS when used in municipal lighting.

The NVSWE21A-V1 and NVSW219F 1,800 K LEDs include less blue content than other cooler-white LEDs, supporting the industry's darker sky initiatives, and making less impact on the environment. In addition, these 1,800 K LEDs have a CRI of 70, compared to the typical HPS lamp CRI score of 5. This means that they provide better rendering of the natural colors of a cityscape than is possible with the monotone output of an HPS lamp.

This improved CRI helps the viewer to distinguish the colors of clothes, cars and buildings under street lighting, creating a safer environment. In addition, the use of the NVSWE21A-V1 or NVSW219F LEDs allows for instantaneous on/off switching, output modulation, and dimming controls, which are all impossible with HPS lamps.

 [BUY NOW](#)

 [DATASHEET](#)

 [SAMPLES](#)



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



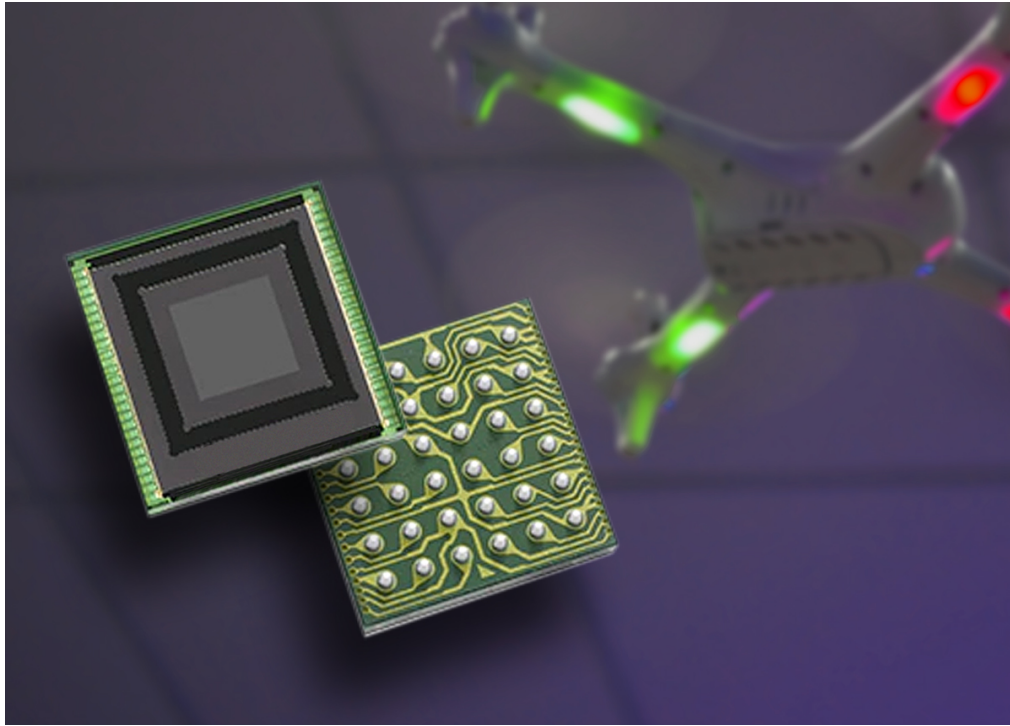
CONSUMER



TELECOMS

Global shutter image sensor accurately captures fast-moving scenes

The onsemi ARX383CS is an 1/8-inch CMOS digital VGA image sensor with an active-pixel array of 640 px x 480 px, giving resolution of 0.3 Mpixels, and operates at up to 120 frames/s in full resolution.



onsemi[™]

FEATURES

- Low operating power consumption
- Small form factor
- Built-in statistics engine
- Multiple sub-sampling modes

APPLICATIONS

- Barcode readers
- People counters
- Machine vision
- Augmented or virtual reality headsets
- Payment terminals
- Robotic vacuum cleaners
- Autonomous mobile robots

The onsemi ARX383CS sensor incorporates an innovative global-shutter pixel design that is optimized for the accurate and fast capture of moving scenes at 120 frames/s in full resolution.

The sensor produces clear, low-noise images in both dim and bright scenes, meaning that it can be used for various functions including:

- Barcode scanning
- People counting
- Machine vision
- Autonomous mobility
- Augmented and virtual reality
- Gesture recognition
- Biometrics

The ARX383CS includes sophisticated camera functions such as adjustable auto-exposure control, automatic black-level correction, windowing, skipping, pixel-binning, and both video and single-frame modes. The device is programmable through a simple two-wire serial interface.

FREE DEV BOARD

Evaluation board features 0.3 Mpixel global shutter CMOS image sensor.

Orderable Part Number
ARX383CSSM28SUKAH3-GEVB

[APPLY HERE NOW](#)

 **BUY NOW**

 **INFORMATION**

 **SAMPLES**



Surface-mount resistors in power ratings up to 7 W

TE Connectivity (TE) supplies the SM series of surface-mount power resistors which offer mechanical strength and reliability, feature a low-profile case design with flexible tinned copper terminations for reliable solder joints.



FEATURES

- Resistance-value range: 10 Ω to 2 M Ω
- Temperature coefficient of resistance:
 - Metal film versions: ± 100 ppm/ $^{\circ}\text{C}$
 - Wire versions: ± 200 ppm/ $^{\circ}\text{C}$
- UL94V0 flameproof coating
- Operating-temperature range: -55 $^{\circ}\text{C}$ to 200 $^{\circ}\text{C}$

APPLICATIONS

- Industrial equipment
- Consumer devices

The SM series resistors are available in versions with power/voltage ratings of 2 W/300 V, 3 W/500 V, 5 W/500 V, or 7 W/750 V. Tolerance of resistance is either $\pm 1\%$ or $\pm 5\%$.

All parts in the series use a fully welded construction technique, unlike other designs that rely solely on tinned termination connections. This construction enables the SM series resistors to withstand the higher temperatures associated with reflow, vapor phase or infrared manufacturing processes without degradation.

TE Connectivity, TE and TE connectivity (logo) are trademarks.

 **BUY NOW**

 **INFORMATION**

 **SAMPLES**



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



CONSUMER



TELECOMS

How application-specific MOSFETs provide enhanced SOA for hot-swap and soft-start applications

The Nexperia range of application-specific FETs (ASFETs) are MOSFETs that offer special characteristics for certain applications. By optimizing the features of a MOSFET for an individual application, Nexperia has been able to give users substantial improvements in performance and effectiveness.

nexperia

Hot-swap and soft-start applications benefit greatly from this application-specific approach. For example, telecoms and computing infrastructure runs 24/7, and much of it is based on 12 V or 48 V rack-based systems in which the backplanes are permanently live. To enable the system to be maintained and upgraded while live, its boards and components must support hot-swap operation without needing to power down other parts of the infrastructure.

Design considerations in hot-swap systems

When a board is plugged into a live system, the inrush current must be carefully controlled to protect the components on the board, and to ensure other parts of the system do not experience any power disruption. This is why a hot-swap controller with an ASFET, Q1, is used to limit the inrush current as the load capacitance charges, as shown in Figure 1.

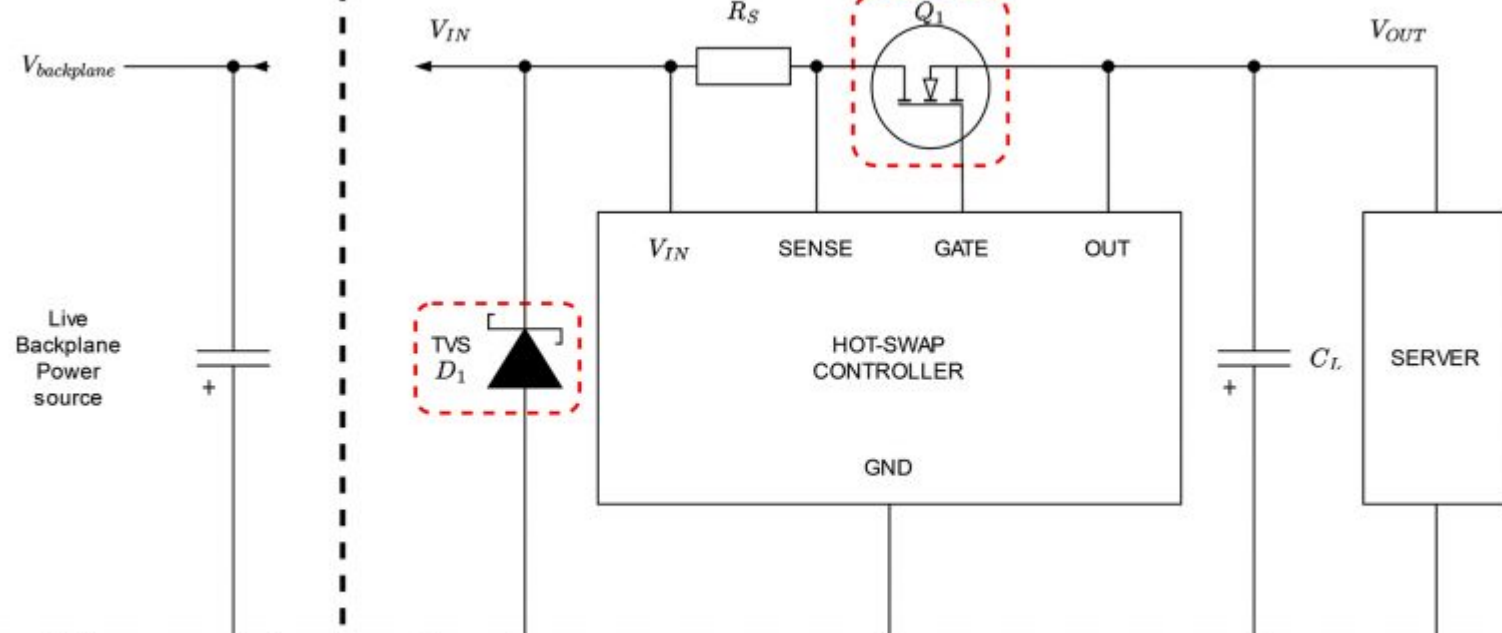


Fig. 1: Typical application circuit for hot-swap controller with ASFET

Immediately after insertion, the gate voltage is controlled by the controller, while the ASFET operates in linear mode: it behaves like a voltage-controlled resistor to limit the inrush current, allowing the load capacitance to charge safely and avoid disturbing the backplane voltage, which is common to other parts of the system.

Once the load capacitance has safely charged, the ASFET is then turned fully on. In this mode of operation, low on-resistance is important, because it minimizes conduction losses and increases system efficiency.

So the main design consideration when selecting an ASFET for inrush current limiting is to combine low on-resistance with an enhanced safe operating area (SOA) for strong linear-mode performance.

Zero temperature coefficient

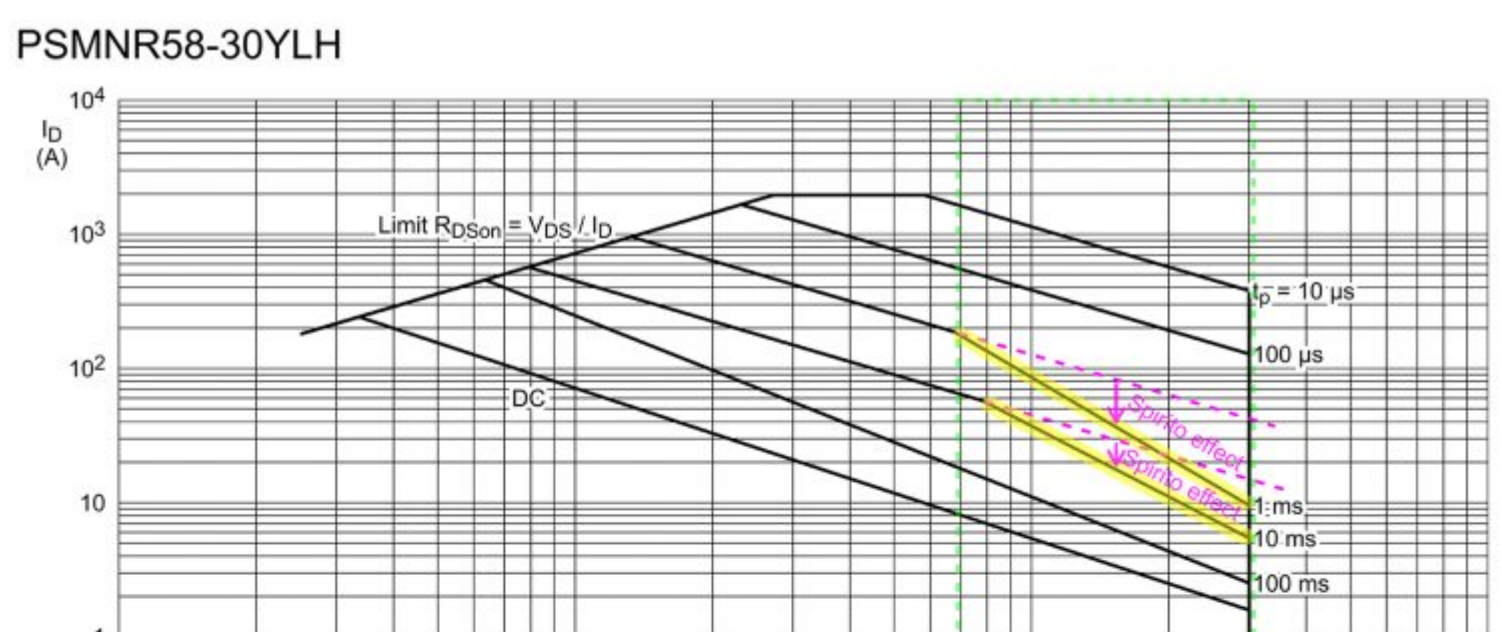
When an ASFET is turned on, two competing effects determine how its current behaves with increasing temperature. As the temperature rises, the threshold voltage falls, thereby increasing the current.

By contrast, the resistance of the silicon increases with increasing temperature, thereby reducing the current. The resulting effect is shown in the ASFET's transfer characteristics.

The effect of the resistance increase dominates at high currents, meaning that localized heating leads to lower currents. The threshold voltage drop dominates at low currents, meaning that localized heating lowers the threshold voltage. This condition effectively increases the current within hot cells, leading to thermal run-away.

Consequently, for a given drain-source voltage, there is a critical current below which there is positive feedback and a subsequent risk of thermal run-away. Above this critical current, there is negative feedback and thermal stability, as shown in Figure 2. This critical current is known as the zero temperature coefficient (ZTC) point.

PSMNR58-30YLH



PSMNR67-30YLE

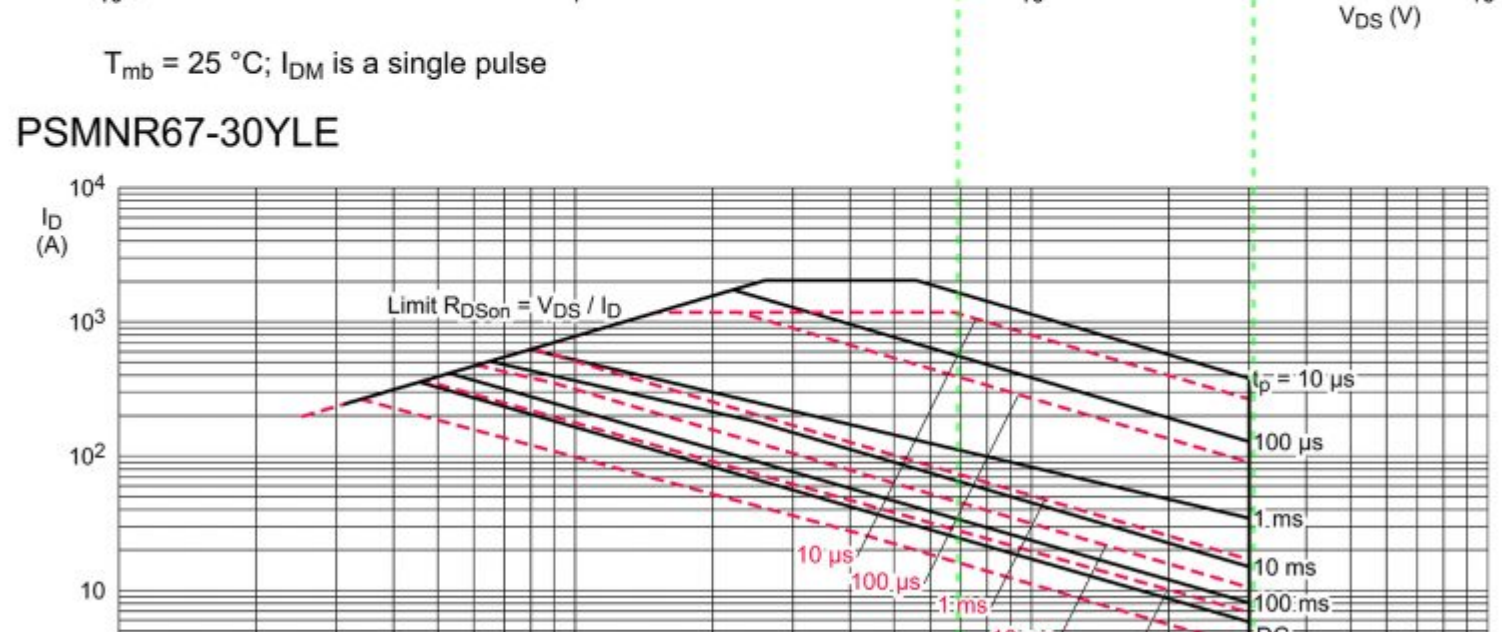


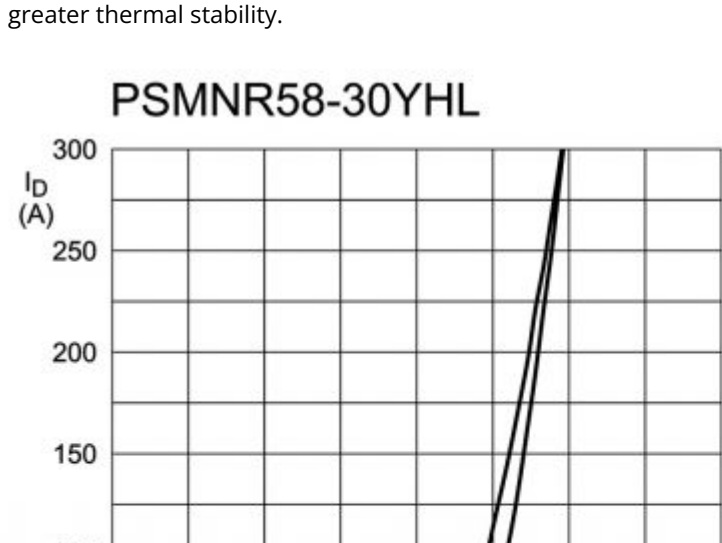
Fig. 2: Positive and negative feedback effects and the ZTC

Below the ZTC point, thermal run-away leads to linear-mode failure. Therefore, for optimum linear-mode performance, the ZTC point should be at a low drain current. ASFETs with a small or negative $(dI_D)/(dT_J)$ provide the best stability.

Figure 3 compares the transfer characteristics of two Nexperia MOSFETs, the PSMNR58-30YLH and PSMNR67-30YLE. As the junction temperature rises from 25°C to 150°C, the increase in drain current in the standard PSMNR58-30YLH MOSFET is 110%: from 40 A to 84 A.

By contrast, in the PSMNR67-30YLE ASFET, this drain current increase is just 28%: from 40 A to 51 A. This means that the ASFET gives greater thermal stability.

PSMNR58-30YHL



PSMNR67-30YLE

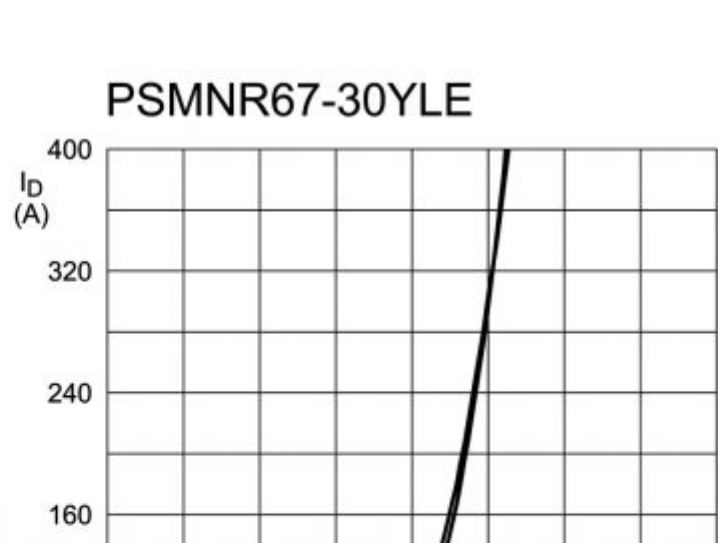


Fig. 3: Comparison of linear-mode performance of the PSMNR58-30YLH standard MOSFET and the PSMNR67-30YLE ASFET

Spirito effect

The Spirito effect describes the electro-thermal instability that arises from uneven die heating and the formation of hot spots. This happens because the gate-source threshold has a negative temperature coefficient at values for drain current that are below the ZTC current.

The consequence is to reduce the ASFET's ability to dissipate power when the drain-source voltage is close to its upper limit according to the device's SOA chart, shown Figure 4.

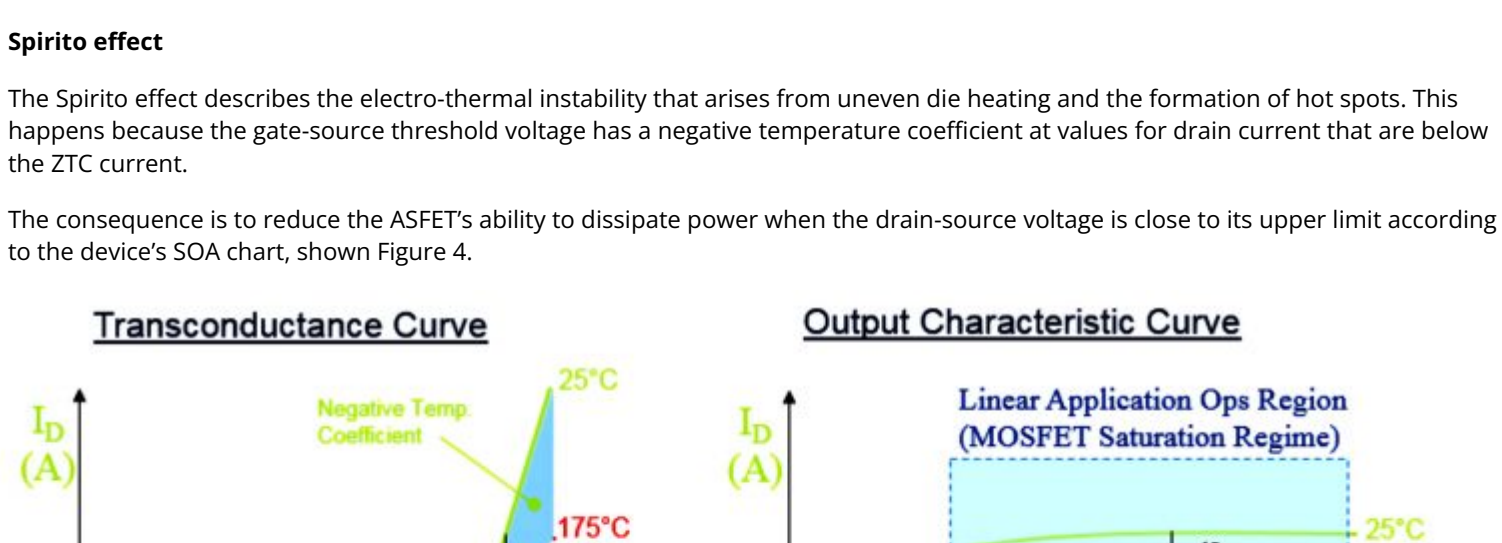


Fig. 4: The Spirito effect demonstrated in a comparison of a standard MOSFET, the PSMNR58-30YLH, with the PSMNR67-30YLH ASFET

SOA graph at high temperature

An SOA graph shows continuous and peak drain currents as a function of drain-source voltage when the mounting base temperature is 25°C and 125°C. Avoiding the need for thermal derating calculations, the graph also shows that performance greatly exceeds the theoretical values, as shown in Table 1.

Temperature	Source	Current Capability
25°C	SOA graph	40 A
125°C	Derating theory	12 A
125°C	SOA graph	31 A

Table 1: The PSMNR56-25YLE ASFET's SOA current capability at 12 V for a 10 ms pulse

Broad portfolio of ASFET products

Nexperia ASFETs for hot-swap applications are performed in a 100% clip-bonded LFPACK package. This package is robust, offers high board-level reliability, provides excellent thermal performance, and is compatible with other manufacturers' Power-SO8 package footprint, shown in Table 2.

Breakdown Voltage	Part Number	Maximum On-resistance at 10 V	Maximum Drain Current	SOA Current Capability at 12 V for 10 ms at 25°C
25 V	PSMNR56-25YLE	0.63 mΩ	320 A	40 A
25 V	PSMNR68-25YLE	0.77 mΩ	285 A	30 A
25 V	PSMNR89-25YLE	0.98 mΩ	270 A	27 A
25 V	PSMNR98-25YLE	1.11 mΩ	255 A	23 A
25 V	PSMN1R6-25YLE	1.88 mΩ	185 A	16 A
30 V	PSMNR67-30YLE	0.70 mΩ	365 A	40 A
30 V	PSMNR82-30YLE	0.87 mΩ	330 A	30 A
30 V	PSMN1R0-30YLE	1.11 mΩ	275 A	27 A
30 V	PSMN1R1-30YLE	1.26 mΩ	265 A	23 A
30 V	PSMN2R1-30YLE	2.17 mΩ	160 A	16 A

Table 2: Nexperia ASFETs in the LFPACK56 package

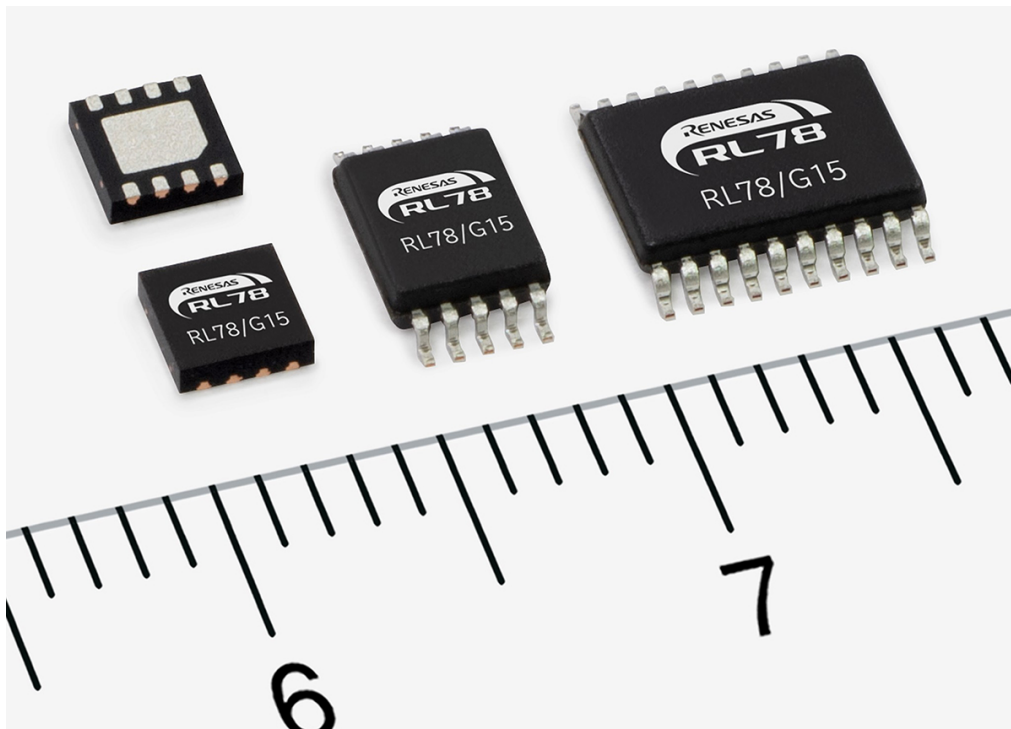
To help designers to quickly find a suitable ASFET, Nexperia has added parameters for SOA performance to its online parametric search tool for ASFETs for hot-swap and soft-start applications. Designers can specify a current capability for a 1 ms, 10 ms or 100 ms pulse period when searching for the most suitable ASFET.

[BUY NOW](#)

[SAMPLES](#)

Low-power 16-bit MCUs with tiny 8-pin package option provide feature-rich alternative to 8-bit MCUs

Versatile new RL78/G15 microcontrollers from Renesas are based on proven RL78 core running at 16 MHz. Renesas has extended the low-power RL78 family of general-purpose 16-bit microcontrollers with new parts in small package sizes suitable for use in applications that would previously have used an 8-bit MCU.



The versatile new RL78/G15 MCUs feature a wide range of peripheral functions, and are backed by up to 8 kbytes of code Flash memory. The MCUs' RL78 16-bit CPU core operates at 16 MHz.

The smallest RL78/G15 device is supplied in an 8-pin package measuring only 3 mm x 3 mm. The new MCUs are available in packages with up to 20 pins. All pins can be used for general-purpose I/O, except the Vdd and Vss power-supply pins.

The new RL78/G15 products enable designers to keep system size small and to reduce the cost of end systems. In addition, the maximum operating temperature of 125°C facilitates thermal design, and allows the MCU to be used near heat-generating components such as inverter motors.

Like other RL78 devices, the new RL78/G15 MCUs are supported by the Renesas GUI-based Smart Configurator, which enables developers to easily generate driver code for peripheral functions.

RENESAS

FEATURES

- Memory resources:
 - Up to 8 kbytes of code Flash
 - 1 kbyte of data Flash
 - 1 kbyte of SRAM
- Operating-voltage range: 2.4 V to 5.5 V
- Serial interfaces:
 - CSI
 - UART
 - Simple I2C
 - Multi-master I2C
- ±1.0% accurate oscillator
- 10-bit, 11-channel ADC
- Comparator
- Operating-temperature range: -40°C to 125°C

APPLICATIONS

- Sensor control
- Industrial equipment
- Lighting
- Inverters
- Consumer devices

FREE DEV BOARD

Fast prototyping board for RL78/G15 MCUs.

Orderable Part Number
RTK5RLG150C0000BJ

[APPLY HERE NOW](#)



DATASHEET



SAMPLES



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



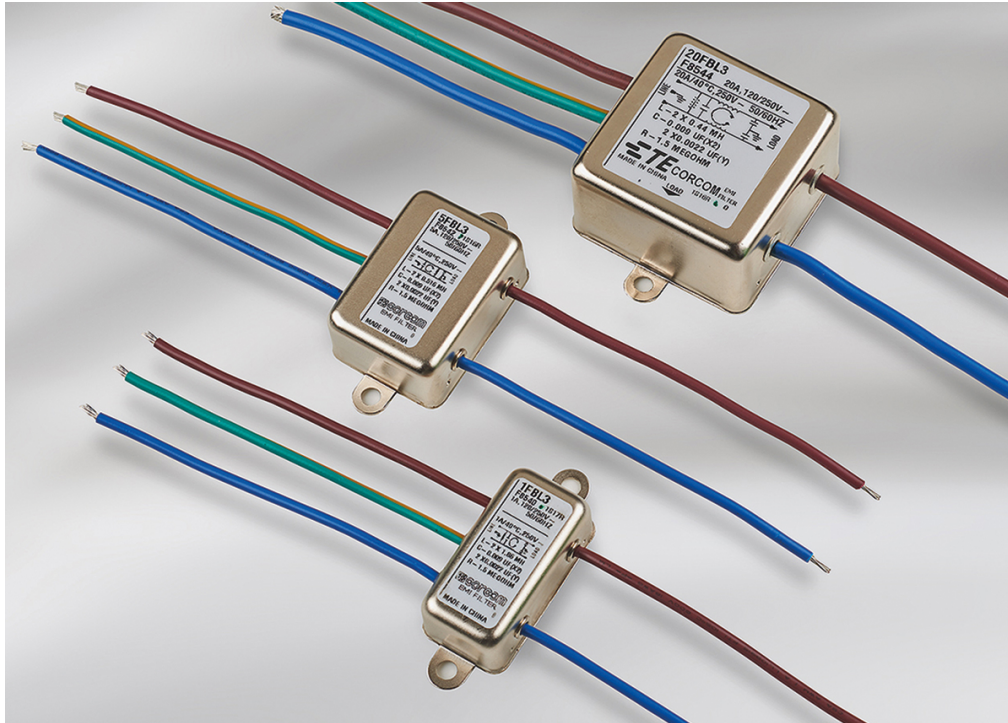
CONSUMER



TELECOMS

Power-line filters maintain high power quality in lighting applications

The compact FB, FBL and FBH series filters from TE Connectivity are a fit for space-constrained lighting equipment such as standard track lights, and help to ensure that lighting performance is not impaired by power-line noise.



FEATURES

- Certification:
 - UL 1283 recognized
 - UL 935 recognized (FB series only)
 - cURus recognized (FBL and FBH series)
 - CSA (FB series)
 - VDE approved (FB series only)
- Strong differential-mode performance
- Solid lead wires

APPLICATIONS

- General lighting:
 - LED lighting
 - LED drivers/controllers
 - Horticulture lighting
 - Office and hospital lighting
 - Architectural lighting
 - Fluorescent ballasts
- Instrumentation lighting
- Outdoor signage
- LED displays
- UV curing lights
- Industrial equipment

The Corcom FB series of filters from TE Connectivity (TE) helps to ensure that the performance of lighting devices, fluorescent lamps and related lighting ballasts is not impaired by power-line noise. The FB series is suitable for applications operating at 277 V ac/dc, and the FBL series at 300 V ac/dc. The FBH series has the added benefit of operating at up to 480 V ac and 90°C ambient temperature.

The compact size of the FB filters allows for installation in most standard lighting tracks. The filters offer good attenuation in a frequency range from 100 kHz up to 30 MHz.

The FB series offers high-performance filtering over a current-rating range of 0.5 A to 5 A. TE also supplies the FBL designated filters, which offer standard performance. Lighting applications can operate at high currents: the 10 A and 20 A versions of the FBL products satisfy this requirement.

TE Connectivity, TE and TE connectivity (logo) are trademarks.



DATASHEET



SAMPLES



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



CONSUMER



TELECOMS

Electronic load switch protects the power rail from over-current and over-voltage

The STELPD01 from STMicroelectronics is an integrated electronic load switch which protects the application's power rail and provides a versatile alternative to a traditional fuse.



life.augmented

FEATURES

- Input-voltage range: 4 V to 18 V
- 5 A maximum continuous current
- Adjustable current limit with circuit breaker functionality
- Thermal protection
- Gate control pin for reverse current-blocking FET
- Latch or auto-retry options

APPLICATIONS

- Protection circuits for hot-swap and hot-plug systems
- Industrial systems
- USB Type-C[®] and USB Power Delivery systems

The STELPD01 detects over-current and over-voltage conditions, and applies protection in response. When an overload condition occurs, the device goes into an open state, disconnecting the load from the power supply. The STELPD01 can also drive an external power MOSFET to provide protection against power loss in fault conditions.

In the event of an over-voltage on the input, the device regulates the output to a preset value of 17.5 V. In addition, an under-voltage lock-out feature prevents the load from malfunctioning, by keeping the device in the Off state if the rail voltage is too low.

The STELPD01 features an adjustable turn-on slew rate. This is a useful feature for keeping inrush current under control during start-up and hot-swap operations.



DATASHEET



SAMPLES



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



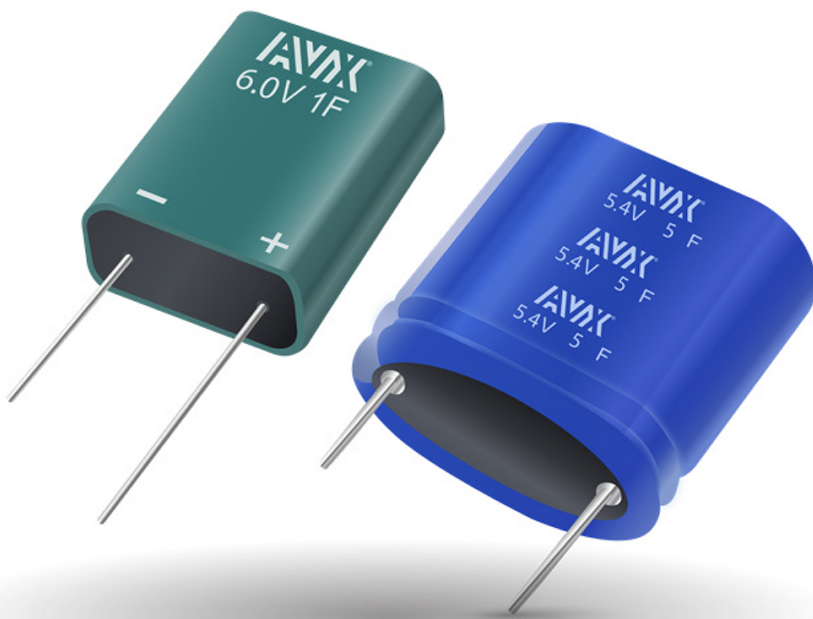
CONSUMER



TELECOMS

Supercapacitors excel in applications requiring pulse power output

Offering long lifetime and very low ESR, the SCM series of electrochemical double-layer capacitor (EDLC) from Kyocera are designed for applications which require a pulse power output.



FEATURES

- High pulse-power capability
- Low ESR
- Low leakage current
- Fast charging and discharging
- IATF 16949 certified manufacturing
- Molded case encapsulation option
- UL 801A recognized

APPLICATIONS

- Camera flash systems
- Energy harvesting
- Uninterruptible power supplies
- Wireless alarms
- Remote metering
- Scanners

The SCM series of supercapacitors from AVX combines high capacitance with very low equivalent series resistance (ESR) to give excellent performance in applications requiring a pulse power output.

These cylindrical electrochemical double-layer capacitor (EDLC) devices can perform more than 1 million charge/discharge cycles and offer a 4,000 hour lifetime rating, so they are also suitable for long-life applications in which a standard battery would wear out prematurely.

Used by themselves or in conjunction with primary or secondary batteries, the SCM series supercapacitors can perform various functions:

- Back-up power supply: providing energy to safely shut down an application on the failure of the main power supply
- Pulse power handling: assisting the primary power supply when the load requires a high current peak
- Energy harvesting: optimizing energy usage through power regeneration or capturing power from the environment

The SCM series consists of a broad range of products, including a cell with a 6.3 mm diameter, the industry's smallest EDLC. Voltage options are 5.0 V, 5.4 V, 5.5 V, 6.0 V, 7.5 V, 8.1 V, 9.0 V, 16 V and 48 V. The products are available with capacitance values up to 500 F.

 **BUY NOW**

 **INFORMATION**

 **DATASHEET**

 **SAMPLES**



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



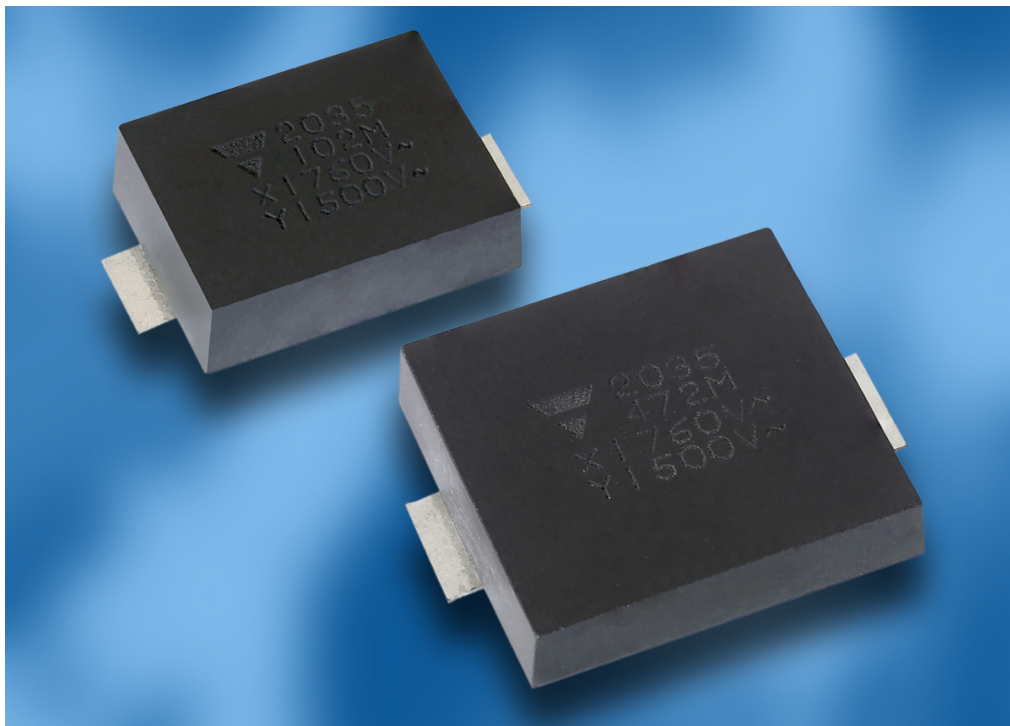
CONSUMER



TELECOMS

Surface-mount family of safety capacitors performs EMI suppression and filtering

The SMDY1 surface-mount ceramic-disc safety capacitors from Vishay perform EMI and RF interference suppression and filtering and are intended for use in industrial and consumer SMPS.



FEATURES

- IEC 60384-14 compliant
- Humidity Class IIB annex I compliant
- Certification
 - UL 60384-14
 - DIN EN 60384-14
 - CSA E60384-1:14
 - CSA E60384-14:14
 - CQC11-471112-2015

APPLICATIONS

- Power supplies
- Solar inverters
- Lighting equipment
- Smart meters

The SMDY1 series are ceramic-disc safety capacitors that perform EMI and RF interference suppression and filtering. The Class X1 capacitors are rated for 760 V ac, and the Class Y1 capacitors for 500 V ac. The Class X1 capacitors may be used for line-to-line filtering, and the Class Y1 capacitors for line-to-ground filtering.

The surface-mount capacitor consists of a ceramic disc which is copper-plated on both sides. The capacitor encapsulation is made of flame-retardant epoxy resin which conforms to the requirements of the UL 94 V-0 specification.

The SMDY1 capacitors are available in eight versions with capacitance values ranging from 470 pF to 4,700 pF. The footprint of the 470 pF, 680 pF, 1,000 pF and 1,500 pF capacitors is 8.6 mm x 14.8 mm. The footprint of the 2,200 pF, 3,300 pF, 3,900 pF and 4,700 pF capacitors is 14.6 mm x 19.2 mm.



INFORMATION



DATASHEET



SAMPLES



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



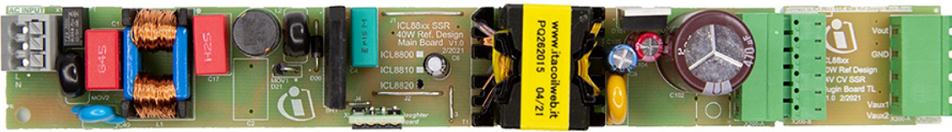
CONSUMER



TELECOMS

43 W flyback converter reference design board helps accelerate design of LED drivers

Infineon has released a reference design board which provides a ready-to-use blueprint for a 43 W flyback converter producing a constant-voltage output in two-stage LED drivers. The board is based on the Infineon ICL8820 single-stage flyback converter controller.



The REF_ICL8820_LED_43W_JT is a constant-voltage, secondary-side regulated system. It is intended for use with a constant-current converter in a two-stage LED driver circuit. Two-stage topologies are growing in popularity because of the scalability of the power output on the primary side, as well as the value of the features on the secondary side. The ICL8820 is suitable for luminaires rated for up to a 125 W power output.

Complementing the REF_ICL8820_LED_43W_JT, Infineon also supplies the REF_ILD8150_DC_1.5A board, based on the ILD8150, an 80 V buck LED driver IC offering hybrid dimming down to 0.5%. The ILD8150 is rated for average output current up to 1.5 A. Together, the two boards implement a complete constant voltage/constant current LED driver system. Another choice available from Infineon for constant current conversion is the DEMO_BCR601_60V_IVCTRL board, demonstrating the BCR601, a 60 V linear LED controller IC with voltage feedback to the primary side.

The REF_ICL8820_LED_43W_JT 43 W reference design is provided with two regulation circuits. Both circuits are designed as plug-and-play solutions; at least one has to be connected to the main board. Of the two boards, the TL431-based option has a lower cost and lower standby power consumption. The board based on an operational amplifier provides 30 mW better performance.

In this reference design, the ICL8820 produces a high power factor and low total harmonic distortion in both full- and low-load conditions. The ICL8820 also offers high conversion efficiency and low EMI without compromising quality of light. In particular, the device's built-in jitter function eases EMI certification, while eliminating the need for additional circuitry required by competing controllers.

In its default set-up, the reference design board is assembled with a start-up circuit based on a BSS126I depletion-mode MOSFET on a small adapter board. This set-up offers the lowest standby losses. If low standby consumption is not required, the start-up circuit can be changed to a resistive scheme.

The fully-featured variant of the ICL88xx family, the ICL8820 is ideal for use in on-off LED drivers, and to support dimming down to 0.1%, including dim-to-off. The device achieves very low standby power of less than 100 mW.

The ICL8800 is the lowest-cost member of the family. The ICL8810 offers low standby power, while the ICL8820 combines low standby power and the jitter function.

The ICL8800 and ICL8810 flyback converter controllers are also backed by reference design boards.



FEATURES

- Power factor higher than 0.9
- Total harmonic distortion less than 10% across a wide load range
- Input-voltage range: 90 V to 305 V ac
- Modes of operation:
 - Critical conduction mode
 - Quasi-resonant mode with smart valley hopping

APPLICATIONS

- LED lighting
- Smart lighting
- Emergency lighting
- Adapters or chargers for:
 - Flat TVs
 - All-in-one PCs
 - Monitors rated for up to 125 W

FREE DEV BOARD

Based on the ICL8820 power controller, the 43 W REF_ICL8820_LED_43W_JT produces the constant-voltage output in two-stage LED drivers.

Orderable Part Number
REF_ICL8820_LED_43W_JT

[APPLY HERE NOW](#)

 [BUY NOW](#)

 [INFORMATION](#)

 [DATASHEET](#)

 [SAMPLES](#)



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



CONSUMER



TELECOMS

White LEDs in standard 5050 footprint combine efficacy with high light output

Lumileds LUXEON 5050 family features a robust package that is resistant to atmospheric sulfur for use in outdoor lighting applications. Excellent color stability satisfies lighting designers' requirement for high quality of light.



The LUXEON 5050 family of LEDs from Lumileds provide a high-power white light output from a robust package, offering an ideal solution for cost-effective, single-optic and directional fixtures.

These LEDs have a standard 5050 surface-mount package footprint, with a small light-emitting surface (LES). The devices are supplied in versions with a CRI of 70, 80 or 90, and in CCT values ranging from 2,200 K to 6,500 K. The three forward-voltage configurations of 6 V, 24 V, and 30 V, are compatible with low-cost, high-eficacy drivers. The LUXEON 5050 parts are available with either a square or round LES.

Lumileds also supplies the LUXEON 5050 HE, a high-output white light source that offers higher efficacy. This product helps lighting OEMs to meet rising customer demand for more sustainable lighting options, a trend which goes hand-in-hand with the growing adoption of solar and other renewable power generation and off-grid supply technologies.

The LUXEON 5050 HE LED achieves efficacy of up to 181 lm/W at its rated drive current of 640 mA at 6 V, or 160 mA at 24 V. Luminous flux is as high as 700 lm in the 4,000 K and 5,000 K color-temperature models.

The high light output and increased efficacy of the new LEDs come at no cost to robustness and longevity, attributes for which LUXEON LEDs are well known. These LEDs, which are housed in a highly reliable package design, offer excellent flux maintenance and color stability in environments exposed to high levels of atmospheric sulfur. The LEDs' three- and five-step MacAdam ellipse binning structure ensures excellent color uniformity across a population of production units.

The 5050 LEDs from Lumileds are intended for use in both illumination and horticultural lighting applications. For horticultural use, the LUXEON SunPlus 5050 LEDs are specified in $\mu\text{mol/s}$ for photosynthetic photon flux (PPF), and in $\mu\text{mol/J}$ for PPF efficacy.



FEATURES

- Long lifetime in harsh environments
- Enhanced sulfur protection in LUXEON 5050 Square LES
- Low thermal resistance for good heat dissipation
- Hot-color targeting ensures color is within ANSI bin at 85°C

APPLICATIONS

- Bike lights
- Bollards
- Cobra heads
- Floodlights
- Head lamps
- High-bay fixtures
- High-mast fixtures
- Landscape lighting
- Linear fixtures
- Low-bay fixtures
- Post-top fixtures
- Sconces
- Torches
- Wall grazers
- Wall packs
- Wall-wash lighting

 **BUY NOW**

 **INFORMATION**

 **DATASHEET**

 **SAMPLES**



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



CONSUMER



TELECOMS

Integrated matching network and filter IC optimizes wireless performance of Bluetooth and Zigbee radios

The MLPF-WB-02D3 IC from STMicroelectronics integrates an impedance matching network and filter and provides a ready-made RF circuit optimized for the STM32WB5x and STM32WB1x wireless microcontroller modules.



life.augmented

FEATURES

- 50 Ω nominal impedance on antenna side
- Low insertion loss
- 630 μm height after reflow

APPLICATIONS

- Short-range RF systems
 - Bluetooth[®] 5.0
 - OpenThread
 - Zigbee
 - 802.15.4

The MLPF-WB-02D3 IC from STMicroelectronics provides a ready-made impedance matching network and filter that optimize the RF performance of the STM32WB5x and STM32WB1x wireless microcontroller modules.

The impedance network is matched to the STM32WB5x and STM32WB1x devices in wafer-level chip-scale or ball-grid array packages. The filter provides deep rejection of harmonics.

The MLPF-WB-02D3 uses ST integrated passive devices (IPD) technology on a non-conductive glass substrate to provide outstanding RF performance. The device is supplied in a 1.6 mm x 1.0 mm chip-scale package with six bumps.



INFORMATION



DATASHEET



SAMPLES



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



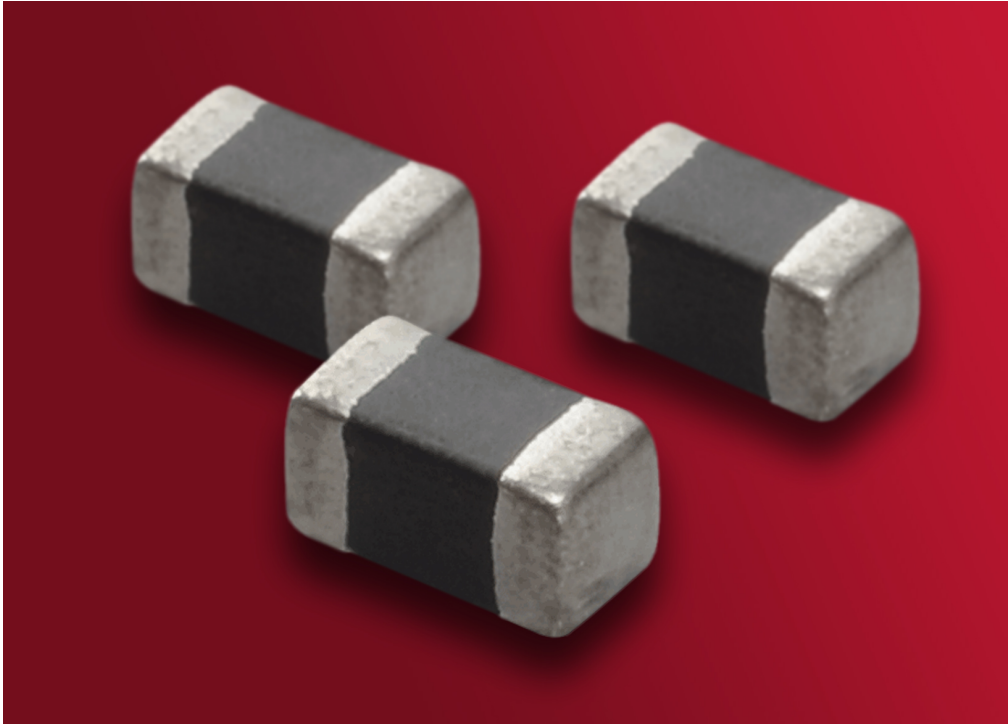
CONSUMER



TELECOMS

Space-saving chip ferrite beads ideal for automotive noise suppression

Murata has released the BLM15PX_SH1 and BLM15PX_BH1 series, the industry's first chip ferrite beads in the small 0402 case size to be suitable for the suppression of power-supply line noise.



muRata
INNOVATOR IN ELECTRONICS

FEATURES

- AEC-Q200 qualified
- Compact dimensions:
 - 1.0 mm x 0.5 mm footprint
 - 0.5 mm height
- Suitable for power lines carrying up to 3 A
- High resistance to solder heat

APPLICATIONS

- Automotive systems:
 - Infotainment
 - ADAS
 - Powertrain
 - Safety systems

These chip ferrite beads are available with current ratings from 900 mA to 3,000 mA, and with impedance at 100 MHz ranging from 33 Ω to 600 Ω . The BLM15PX_SH1 has an operating-temperature range of -55°C to 125°C, and the BLM15PX_BH1 range is -55°C to 150°C. The BLM15PX_SH1 and BLM15PX_BH1 are notable for the low DC resistance of as little as 0.022 Ω . This keeps power losses and heat generation to a minimum.

The BLM series ferrites are effective in circuits with no stable ground line because they do not need a connection to ground.

The introduction of these new chip ferrite beads enables automotive design engineers to ensure sensitive systems such as infotainment or driver assistance are not impaired by EMI noise emanating from power-supply lines. The integrity of the data captured by the sensors and cameras in these systems needs to be maintained when it is transferred to and from electronic control units. The use of Murata chip ferrite beads helps to protect signal integrity by attenuating EMI in power supply lines close to sensors and cameras.



DATASHEET



DATASHEET #2



SAMPLES



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



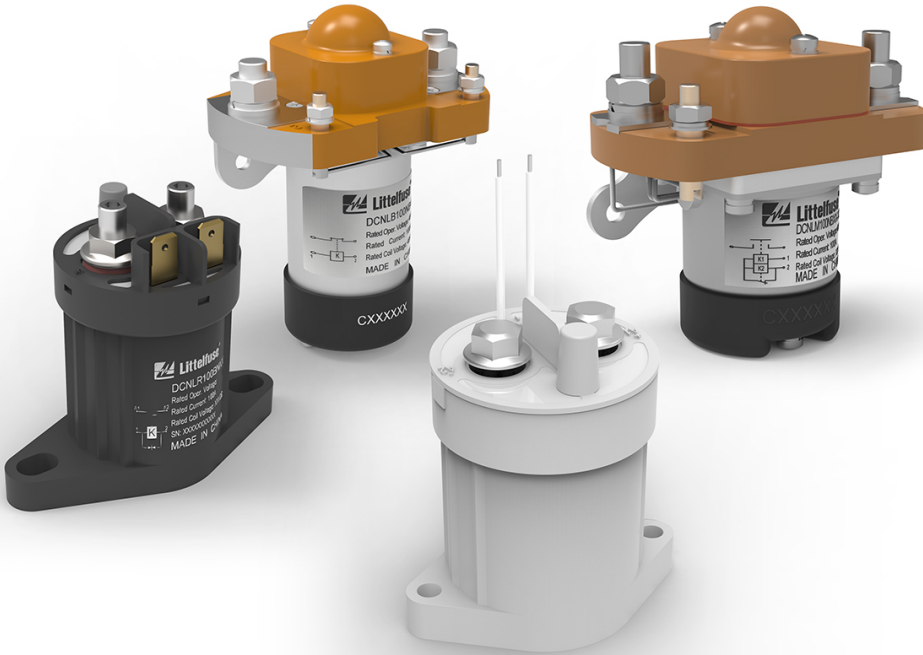
CONSUMER



TELECOMS

High voltage and current ratings allow dc contactor relays to operate reliably in electric vehicle applications

The Littelfuse range of high-voltage dc contactor relays provides the high voltage and current ratings, and the robust performance required in new electric and hybrid electric vehicle and system designs.



Expertise Applied | Answers Delivered

FEATURES

DCNHR

- Coil-voltage rating options: 12 V, 48 V, 9-36 V
- Available with mechanically linked auxiliary contacts
- Operating-temperature range: -40°C to 85°C

APPLICATIONS

- Battery electric vehicles
- Hybrid electric vehicles
- Electric maintenance vehicles
- Uninterruptible power supplies
- Industrial equipment

The Littelfuse family of dc contactor relays includes the 450 V DCNHR series of normally open relays. These contactor relays are available with voltage ratings spanning the range from 48 V to 1.8 kV, and with current ratings from 30 A to 500 A. In electric vehicle systems, the relays are suitable for use in charging stations, battery power supplies, dc power controls, circuit protection, and other switch controls. They also fit industrial applications, such as uninterruptible power supplies and electronic control systems.

The normally open, 450 V DCNHR relays have a resin body that gives high corrosion resistance in harsh automotive environments. Versions are available with a PWM coil to reduce the power used to keep the contacts closed.

Sealed contacts boost safety, ensuring that there is no electrical arcing. The high-current relay's permanent magnets diffuse the magnetic field horizontally to rapidly extinguish dc arcs.

The DCNHR series contactor relay is available for contact switching of currents from 20 A to 300 A. It may be supplied with or without polarized contacts to suit the polarity of the application.

Other high-voltage dc contactor relays from Littelfuse include the DCNLB, DCNLM, and DCNLR series.

[Watch a video here](#)



INFORMATION



DATASHEET



SAMPLES



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



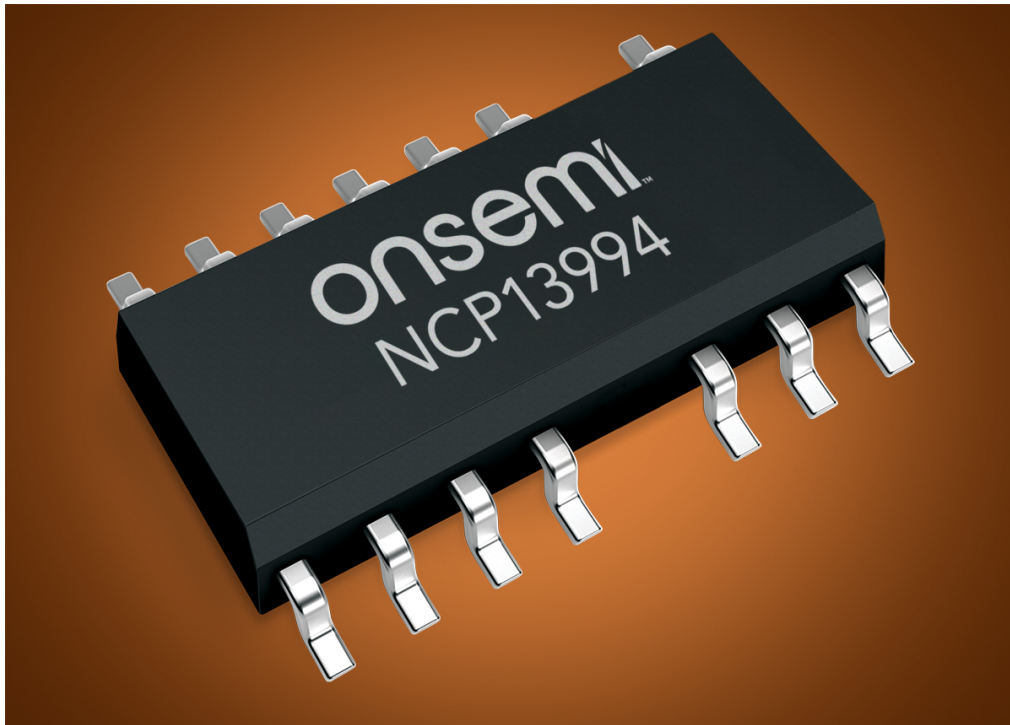
CONSUMER



TELECOMS

Power controller simplifies the circuit in half-bridge resonant converter designs

The NCP13994 from onsemi is a high-performance current-mode controller which integrates X2 capacitor discharge, start-up current source and gate drivers to reduce external component count in power supplies.



onsemi

FEATURES

- Switching frequency at full load up to 750 kHz
- Automatic dead time with maximum dead time clamp

APPLICATIONS

- Servers
- Telecoms equipment
- Industrial power supplies
- UHD TVs
- Lighting equipment

The NCP13994 is a high-performance current-mode controller for half-bridge resonant converters in offline power supplies.

The controller incorporates a 700 V-rated start-up current source and X2 capacitor discharge function as well as gate drivers for external MOSFETs. This simplifies the layout of power-supply circuits, and reduces the application component count.

The NCP13994 provides a dedicated output to interface with an external power factor correction (PFC) controller, a convenient feature for applications in which a PFC front end is needed. A quiet skip-mode technique also ensures excellent no-load and light-load efficiency.

The NCP13994 provides a suite of protection features that enable safe operation. These include:

- Overload protection
- Over-current protection
- Brown-out detection
- Open optocoupler detection
- Over-voltage protection
- Over-temperature protection

 **BUY NOW**



INFORMATION

10110



DATASHEET

10110

 **SAMPLES**



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



CONSUMER



TELECOMS

Complete connector system eases assembly of controls and sensors in streetlights

The LUMAWISE Endurance S connector system from TE Connectivity supports Zhaga Book 18 and Z10 applications and connects light sensors and networked lighting controls in streetlights and area lighting.



The TE Connectivity (TE) LUMAWISE Endurance S connector system is a complete set of products for connecting light sensors and networked lighting controls in streetlights and area lighting.

There are two main offerings in the Endurance S family:

- The original Endurance S Zhaga Book 18 connector system is for D4i-controlled Zhaga Book 18-compliant luminaires
- The Endurance S Keyed connector system enables non-Book 18 applications such as Z10

The LUMAWISE Endurance S system includes a receptacle, mounted to a street or area light fixture, as well as several bases and domes that together form a robust enclosure for connecting sensor modules and networked lighting controls.

The compact design is resistant to ultraviolet radiation and is IP66-rated. The connector can be mounted on the top, bottom or side of a luminaire.

TE has also extended the Endurance S portfolio with an S2 receptacle. Offered in both Zhaga Book 18- and Z10-enabled keyed varieties, the S2 receptacle provides two wires per contact. This makes for easier wiring and applied cost savings in luminaires that have a dual-node architecture.

TE Connectivity, LUMAWISE, TE and TE connectivity (logo) are trademarks.



FEATURES

- Secure, low-torque mating of base and receptacle
- IK09 assembly is resistant to strong impacts
- 10 kV dielectric withstand voltage
- CB certification

APPLICATIONS

- Street and area lighting
- Sensor-ready control applications
- Outdoor luminaires
 - Wall packs
 - Parking lots
 - Walkways
- Photo-control units
- Central management systems
- City management systems
- Occupancy sensor modules

 **BUY NOW**

 **INFORMATION**

 **DATASHEET**

 **DATASHEET #2**

 **SAMPLES**



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



CONSUMER



TELECOMS

Isolated 0.6 W dc-dc converter module features excellent load and line regulation

The MID06W0503A from Monolithic Power Systems provides isolation of 3 kV for point-of-load power supplies which need power up to 0.6 W, and operates from an input-voltage range between 4.5 V and 5.5 V.



The MID06W0503A from Monolithic Power Systems is a semi-regulated, isolated dc-dc converter module that provides excellent load and line regulation in point-of-load power supplies requiring up to 0.6 W of power.

The module, which provides an isolation voltage of 3 kV dc, operates from an input voltage of between 4.5 V and 5.5 V. Output regulation accuracy is $\pm 0.5\%$ at an input voltage of 5 V over the full load range of 0 A to 180 mA.

The module integrates a power MOSFET, transformer and feedback circuit, giving a compact solution requiring a minimal number of standard external components.

Supplied in a low-profile, wide-body 16-lead SOIC package, the MID06W0503A has a footprint of 10.25 mm x 10.00 mm.



FEATURES

- 38% maximum efficiency at full load
- $\pm 1\%$ line regulation
- Excellent transient performance
- Continuous short-circuit protection with hiccup mode
- Over-temperature protection
- Meets requirements of CISPR32 Class B emissions standard
- Operating-temperature range: -40°C to 125°C

APPLICATIONS

- Industrial equipment:
 - Automation systems
 - Digital isolators
 - RS-485/RS-422/CAN interfaces
 - Isolated sensor power supplies
 - Network gateways
- Mobile network infrastructure

FREE DEV BOARD

Evaluation board for isolated 0.6 W dc-dc converter.

Orderable Part Number

EV06W0503A-3-Y-00A

[APPLY HERE NOW](#)



DATASHEET



SAMPLES



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



CONSUMER



TELECOMS

New superjunction MOSFET technology gives improved efficiency and switching behavior

Part of a new MDmesh M6 family, the 600 V STD10N60M6 N-channel superjunction power MOSFET, from STMicroelectronics, gives higher efficiency and more effective switching behavior in switching power converters.



life.augmented

FEATURES

- Low switching losses
- Low gate-input resistance
- 100% avalanche tested
- Zener diode protection

APPLICATIONS

- Switching power converters
 - LLC converters
 - Resonant converters
 - Boost PFC converters

The new MDmesh™ M6 power semiconductor technology builds on the previous generation of MDmesh superjunction MOSFET products to give higher efficiency in switching power converters. The new M6 technology combines low gate charge and an optimized capacitance profile with improved on-resistance. MOSFETs based on the technology enable power-system designers to achieve higher levels of efficiency and power density when used in resonant topologies.

Offering breakdown voltage options of 600 V and 650 V, MDmesh M6 power MOSFETs are available in a wide range of package options. The MDmesh M6 technology has for instance been implemented in a new superjunction MOSFET, the STD10N60M6. This is a 600 V, N-channel power MOSFET which features on-resistance of 520 mΩ. Housed in a DPAK package, the STD10N60M6 is rated for a maximum continuous drain current of 6.4 A.



BUY NOW



INFORMATION



DATASHEET



SAMPLES



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



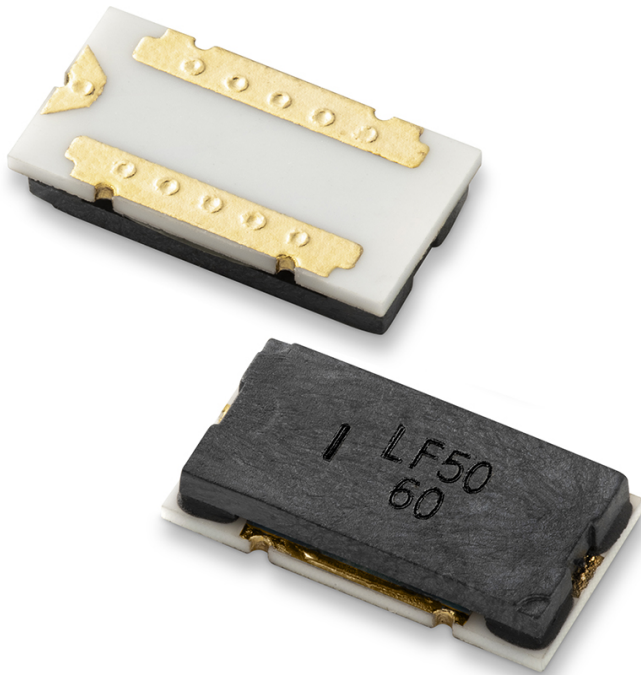
CONSUMER



TELECOMS

Family of battery protection fuses extended to include new 60 A-rated fuse

Littelfuse ITV9550 lithium-ion battery protection fuses protect against over-currents and overcharging to safeguard battery packs in power tools, robots, and other consumer electronics devices.



Expertise Applied | Answers Delivered

FEATURES

- Low internal resistance
- Protection for up to 14 cells in series
- UL and TUV certificates

APPLICATIONS

- Vacuum cleaners
- Power tools
- E-scooters
- E-bikes
- Uninterruptible power supplies
- Emergency radios

Littelfuse has extended its ITV9550 series of lithium-ion battery protection fuses with a new part that has a high 60 A current rating. The ITV9550 fuses, which are also available in versions with a 30 A or a 45 A rating, safeguard battery packs against over-currents. They also protect against over-voltage conditions, which show that the battery is being overcharged.

The new 60 A ITV9550 device is a surface-mount, three-terminal fuse with a 9.5 mm x 5.0 mm footprint. Its innovative design incorporates an embedded fuse and heater elements that provide a fast response and reliable performance, interrupting the battery pack's charging or discharging circuit before the pack is overcharged or overheated.

When an over-current condition occurs, the fuse cuts off the circuit. For protection against over-charging, the heater element, embedded directly under the fuse, generates enough heat to blow the fuse once an over-voltage is detected by an external transistor or sensor.

 **BUY NOW**

 **DATASHEET**

 **SAMPLES**



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



CONSUMER



TELECOMS

Boost PFC power controller offers low THD in medical and industrial power supplies

The STMicroelectronics L4986 boost PFC power controller is suitable for EN61000-3-2 and JEIDA-MITI-compliant applications which are rated for power output up to several kilowatts.



The L4986 from STMicroelectronics is a boost power factor correction (PFC) controller which offers high performance and a reduced component count in EN61000-3-2 and JEIDA-MITI-compliant applications. The controller, which is intended for operation in continuous current mode (CCM), supports systems with a power output ranging between 500 W and several kilowatts.

The L4986 features a proprietary multiplier emulator alongside total harmonic distortion (THD) optimizers. Together, they produce very low THD in all operating conditions. The device switches at a quasi-fixed frequency at one of two speeds, either 65 kHz or 130 kHz.

An 800 V high-voltage start-up block includes circuitry for discharging the X-capacitors of the EMI filter to a safe level. This allows the unit to meet safety regulations such as IEC 61010-1 or IEC 62368-1 without the need for a discharge resistor in parallel to the X-capacitors.

Integrated protection functions include brown-out protection to support the development of power supplies for medical equipment. This feature is compatible with the latest regulations imposed by the IEC 60601-1-2 standard, which requires output regulation in the event of mains power dips lasting up to 500 ms.

Low power-consumption and disable functions allow usage in applications that are required to comply with the latest energy-saving regulations and directives in the US or the European Union.



life.augmented

FEATURES

- Peak current-mode regulation
- Protection functions:
 - Feedback loop failure
 - Over-voltage protection
 - Over-current protection
 - Inductor saturation protection
- Brown-in and brown-out protection
- Inductor current sensing
- Inrush current monitoring
- Soft-start for smooth start-up

APPLICATIONS

- Medical equipment
- Industrial power supplies
- Desktop PCs
- Servers and web servers
- Games consoles
- High-power LED luminaires

FREE DEV BOARD

350 W PFC pre-regulator based on L4986 produces low THD.

Orderable Part Number
EVL4986-350W

[APPLY HERE NOW](#)

 **BUY NOW**

 **INFORMATION**

 **DATASHEET**

 **SAMPLES**



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



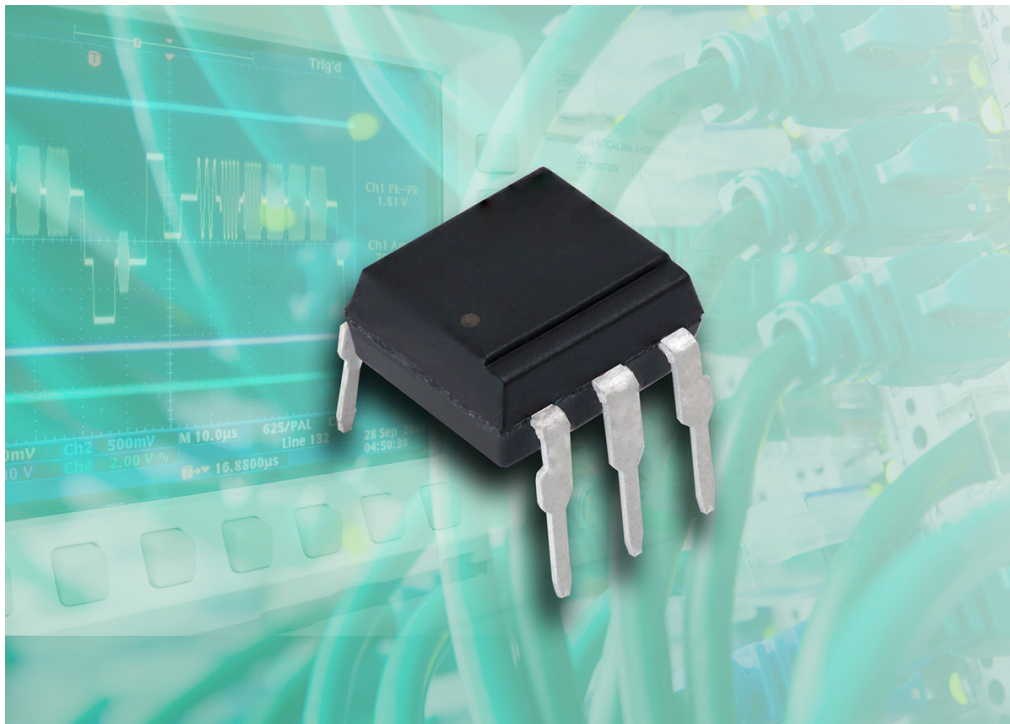
CONSUMER



TELECOMS

1 Mbaud optocoupler features built-in Schmitt trigger

The VOH1016A from Vishay is a 1 Mbaud high-speed optocoupler which includes an open-collector transistor output with Schmitt trigger functionality for easy integration into digital systems.



FEATURES

- Turn-on threshold current:
 - 0.65 mA
- Maximum supply current:
 - 1.0 mA
- 2 MHz data rate
- Latch-up and oscillation free
- Guaranteed on/off threshold hysteresis
- Maximum withstand isolation voltage:
 - 5 kVrms

APPLICATIONS

- Programmable logic controllers
- Serial data communication and bus systems
- Switch-mode power supplies

The low turn-on threshold current and supply current of the VOH1016A, combined with a minimum common-mode transient immunity of 10 kV/μs, make the optocoupler ideal for galvanic noise isolation, and for breaking up ground loops in digital applications. A wide supply-voltage range of 3 V to 15 V enables isolated level shifting in applications using multiple voltage domains.

The VOH1016A uses an efficient input LED coupled with an integrated photodiode detector IC. It is supplied in two package styles: a DIP-6 and a surface-mount SMD-6 package.

 **BUY NOW**

 **INFORMATION**

 **DATASHEET**

 **SAMPLES**



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



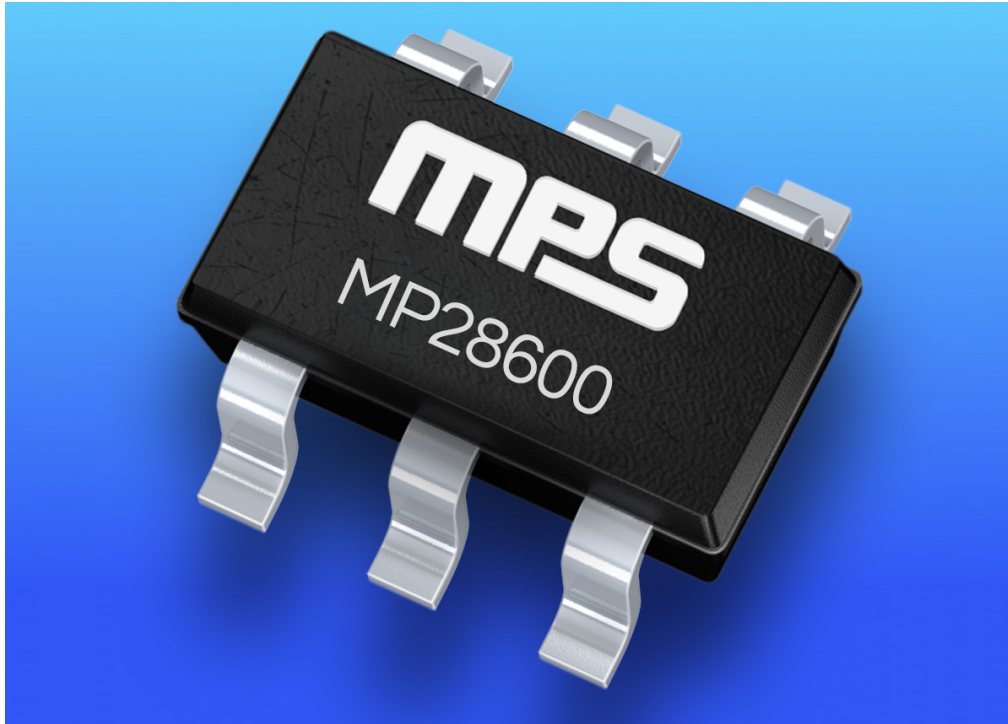
CONSUMER



TELECOMS

Compact boost converter helps extend battery run-time in wearable and portable devices

The Monolithic Power Systems MP28600's ultra-low quiescent current and constant off-time control technology keep power losses to a minimum and offer efficient conversion in light-load conditions.




FEATURES

- Input-voltage range: 0.1 V to 5.25 V
- 600 nA quiescent current
- 1 A fixed switching current limit
- Higher than 86% conversion efficiency at input voltages between 1.5 V and 5 V
- Automatic switching between boost mode and step-down mode
- True disconnect during shutdown
- 150°C thermal shutdown protection

APPLICATIONS

- Displays
- Wearable devices
- Portable products
- Low-power wireless devices
- Battery chargers

The Monolithic Power Systems MP28600 is a synchronous boost converter that draws an ultra-low quiescent current, ideal for battery-powered products in which low power consumption in light-load conditions is crucial to extend battery run-time. The MP28600 features a constant off-time control mode to achieve high efficiency in light-load conditions.

The MP28600's boost function enables battery-powered systems to continue operation even when the battery is deeply discharged, and its output voltage falls below the value required by the application. The converter can start from an input voltage as low as 0.7 V. After start-up, the device can continue working with input voltages down to just 0.1 V.

The output voltage of the MP28600GTF is adjustable in a range from 2.5 V to 5.25 V. The device is also available in versions with a fixed output voltage of 3.3 V or 5 V.

As well as operating in boost mode when the battery voltage falls below the application voltage, the MP28600 also provides a step-down mode: here, the output voltage can be regulated to its target value even when the input voltage exceeds the output voltage.

The MP28600 is supplied in a SOT563 package that has a footprint of just 1.6 mm x 1.6 mm.



SAMPLES



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



CONSUMER



TELECOMS

Automotive wire-to-board connector withstands temperatures up to 125°C

The miniature, low-profile ZE05 is a robust wire-to-board connector from Hirose which helps to save board space while maintaining a secure and reliable connection in automotive conditions.



FEATURES

- Current ratings:
 - 5 A for one contact
 - 2 A for all contacts
- 250 V ac rated voltage
- Number of contacts:
 - 2, 4, 5 in a single row
 - 8, 12, 16, 20, 24 in a double row
- 30 mating cycles

APPLICATIONS

- Automotive equipment:
 - Battery management systems
 - Monitoring sensors
 - Engine compartment devices
 - Heavy-duty vehicles
 - Electronic control units
 - On-board chargers
 - Inverters
 - Communications systems
 - Automated ground vehicles

The Hirose ZE05 series of wire-to-board connectors for automotive applications is robust enough to handle operation in harsh automotive environments at temperatures up to 125°C. The ZE05 is a miniature, low-profile connector that has a contact pitch of 2 mm, reducing the mounting area and saving space on the board.

The tin-plated ZE05 series is polarized to ensure correct insertion of the mating half. The ZE05 is available with right-angle or straight receptacles. Both receptacle types feature surface-mount contacts with metal fittings that ensure strong retention of the connector to the board. Retainers may be used to achieve a higher retention force. The plugs use crimp contacts sized from AWG 22 to AWG 20.

Additionally, the ZE05 housing incorporates an integral rib that reduces the clearance space between mated parts. This gives greater isolation from vibration, helping the system to maintain a continuous and reliable connection.

 **BUY NOW**

 **INFORMATION**

 **DATASHEET**

 **SAMPLES**



Waterproof circular power connectors ideal for marine and industrial applications

The Mini Buccaneer waterproof and dust-proof circular power connectors from Bulgin handle power loads up to 10 A at 250 V.



FEATURES

- Screw-thread locking terminations
- 250 V maximum voltage
- 10 A maximum current
- UL recognized
- UL94V-0 flammability rating
- Operating-temperature range: -20°C to 70°C

APPLICATIONS

- Marine equipment
- Industrial equipment
- Lighting

The Mini Buccaneer family of waterproof and dust-proof circular power connectors from Bulgin features the robust construction required for reliable operation in harsh industrial and marine applications.

The connectors have an IP68 rating when mated. Sealing caps are available to maintain the rating when unmated. The Mini Buccaneer products also comply with the specifications of the EN 60068-2-52 standard for withstanding salt mist to marine severity level 1.

The connectors are supplied in a choice of five body styles: flex, inline, panel (in two versions), and panel side-entry. The user also has the choice of screw-terminal inserts with 2, 3, 4 or 6 contacts, or solder/crimp inserts with 3 or 8 contacts. There is a plug and socket connector in each body style. The connectors handle cable with an outer diameter ranging from 3.5 mm to 9 mm.

Assembly of the screw-terminal versions requires no special tooling.

 [BUY NOW](#)

 [DATASHEET](#)

 [SAMPLES](#)



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



CONSUMER



TELECOMS

Advanced LEDs improve lighting quality without sacrificing efficiency

The new 30 W NFCWJ108B-V4H6 and 46 W NFDWJ130B-V4H6 CoB LEDs extend the NICHIA H6 series of LEDs, which combines high efficiency with high CRI.



FEATURES

- Forward-voltage range: 2.6 V to 3.1 V
- Minimum 85 R15 score
- Color temperature options:
 - 2,700 K
 - 3,000 K
 - 3,500 K
 - 4,000 K
 - 5,000 K
 - 5,700 K
 - 6,500 K

APPLICATIONS

- Office and retail lighting
- Residential lighting
- Indoor lighting:
 - Troffers
 - Tracklights
 - Downlights
 - Spotlights
 - Desk lights

NICHIA has extended the H6 series of LEDs with the addition of new chip-on-board (CoB) LEDs that produce a higher power output.

The H6 series provides luminaire manufacturers with a boost both in efficacy and color-rendering capability, while maintaining the long lifetime expected from NICHIA products. The existing COB-V4H6 series of CoB LEDs have 5 W, 9 W and 16 W ratings, and are mainly used for light bulbs, spotlights, and downlights. Now the new 30 W NFCWJ108B-V4H6 and 46 W NFDWJ130B-V4H6 CoB LEDs can be used for lighting in spaces where higher output is required, such as in shops and in facilities with high ceilings.

The H6 series of LEDs provides a CRI of 90+ while maintaining the efficacy normally found in similar 80 CRI LEDs. NICHIA offers the H6 technology in its 757 series with a standard 3030 footprint, as well as in CoB packages.

These products save lighting designers from having to choose between quality of light and efficiency in demanding professional environments such as shops, restaurants, hotels, galleries, and museums, in which they make the colors of merchandise, artworks, and furniture more vivid. The LEDs also help designers to evoke a mood, add accents or grab attention in retail and hospitality venues. The H6 technology can also be used in standard general lighting settings such as offices, schools and homes, in which lighting with a high 90 CRI is set to become the new norm.

The H6 series takes advantage of a unique narrowband red phosphor, called PFS phosphor, and other semiconductor processes and packaging techniques, including TriGain[®] Technology. Offering superior color quality to traditional 90 CRI LEDs, the H6 LEDs have an R9 score greater than 50.

TriGain[®] is a registered trademark of Current Lighting Solutions, LLC.



DATASHEET

10110



DATASHEET #2

10110



SAMPLES



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



CONSUMER



TELECOMS

Bluetooth Low Energy modules new firmware eases implementation of mesh networking

The Wirepas Mesh 2.4 GHz multi-hop mesh networking firmware is now featured in the PAN1770 and PAN1780 from Panasonic, which enables scalable extension of network range.



Panasonic Industry has announced that the PAN1770 and PAN1780 Bluetooth® Low Energy wireless modules now support the Wirepas Mesh 2.4 GHz multi-hop mesh networking firmware.

Wirepas Mesh 2.4 GHz offers easy-to-implement mesh connectivity for large-scale networks of up to 4 billion devices. Thanks to the firmware's dynamic role-granting feature, a device can be a node and router at the same time. This enables the creation of a decentralized network that organizes and optimizes itself automatically, thus lowering installation and maintenance costs.

Panasonic is to certify the Wirepas Mesh 2.4 GHz firmware running on the PAN1770 and PAN1780, which substantially reduces the burden of certification in final product designs.

The PAN1770 wireless module, a variant of the flagship PAN1780, enables the connection of an external antenna via a u.FL connector. The PAN1770 is particularly valuable for applications in which the product enclosure or operating conditions are hostile to RF transmissions, and in which an external antenna will provide superior connectivity.

The PAN1780, which features an on-board antenna, offers a complete, application-ready implementation of wireless connectivity.

Featuring an Arm® Cortex®-M4F processor core, the PAN1770 and PAN1780 provide 256 kbytes of RAM and 1 Mbyte of Flash memory. This means that they can easily be used in stand-alone mode, without an external processor, reducing the complexity of the board design, saving space and minimizing system costs. The modules provide up to 48 programmable GPIOs along with a rich set of interfaces: SPI, I2C, UART, PWM, ADC, NFC, and USB 2.0.

Panasonic INDUSTRY

FEATURES

- Optimized chip antenna in PAN1780
- Certification:
 - CE RED
 - FCC
 - ISED
 - MIC
 - KCC
 - RSM
 - SRRC
- 4.8 mA Transmit current at 0 dBm output power
- 4.8 mA Receive current at 1 Mbit/s
- 0.4 µA current in System Off mode
- USB 2.0 Full-Speed interface
- Supply-voltage range: 1.7 V to 5.5 V
- Operating-temperature range: -40°C to 85°C

APPLICATIONS

- Smart homes and buildings
 - Lighting controls
 - Building automation
 - Emergency exit lights
- Asset tracking
- Smart city equipment
 - Streetlights
- Smart agriculture
 - Livestock monitoring
- Solar trackers
- Industrial IoT
- Industrial networks

FREE DEV BOARD

Evaluation board for PAN1770 Bluetooth Low Energy wireless module.

Orderable Part Number
ENW89854CXKF

[APPLY HERE NOW](#)

 [BUY NOW](#)

 [INFORMATION](#)

 [DATASHEET](#)

 [DATASHEET #2](#)

 [SAMPLES](#)



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



CONSUMER



TELECOMS

Accurate LDO voltage regulator ideal for battery-powered products

The LD56020 from STMicroelectronics is a high-accuracy voltage regulator which provides low-noise output of up to 0.2 A and low quiescent current.



life.augmented

FEATURES

- 120 mV dropout voltage at 200 mA load
- 18 μ A ground current at no load
- 8.8 μ Vrms output noise at 10 Hz to 100 kHz
- Logic-controlled electronic shutdown
- Output active discharge function
- Junction-temperature range: -40°C to 125°C

APPLICATIONS

- Image sensors
- Voltage-controlled oscillator modules
- RF communications modules

As a high-accuracy voltage regulator, the LD56020 is suitable for use in low-power and battery-powered applications thanks to its ultra-low dropout voltage and low quiescent current.

Operating from an input voltage ranging between a very low 1.1 V and 5.5 V, the LD56020 regulates the output voltage with very high accuracy. The voltage regulator supplies a fixed output voltage in a range between 0.6 V and 4.0 V, selectable in 50 mV steps. Output voltage tolerance is $\pm 2\%$ over the entire operating-temperature range, and just $\pm 1\%$ at 25°C.

The LD56020, which is stabilized with a small ceramic capacitor on the input and output, supplies an output current of up to 0.2 A. An enable logic control function puts the LD56020 in shutdown mode, in which it draws less than 0.1 μ A. The device features thermal shutdown protection and a short-circuit current fold-back function.

The LD56020 LDO is supplied in a choice of two packages:

- Four-lead flip-chip package with a footprint of 0.65 mm x 0.65 mm
- Five-lead SOT23

 **BUY NOW**

 **INFORMATION**

 **DATASHEET**

 **SAMPLES**



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



CONSUMER



TELECOMS

Circular connectors with lightweight, all-plastic shells ideal for rugged designs

The TE Connectivity (TE) Circular Plastic Connectors (CPC) offer excellent resistance to UV radiation and are rugged, cost-effective and reliable connectors that can carry both signals and power.



The circular configuration of the plastic connectors uses space efficiently, supporting the development of enhanced design configurations with various mounting options.

The CPC products are available with housings that use UL F1-rated material, making them an excellent choice for applications that require high resistance to ultraviolet radiation. These connectors also withstand harsh environments thanks to their UL94V-0-stabilized, heat-resistant plastic housings.

Versions with IP65 or IP67 sealing may be used where moisture and debris are prevalent.

Removable contacts and a replaceable coupling ring make for efficient repair in the field.

TE Connectivity, TE and TE connectivity (logo) are trademarks.



FEATURES

- Current-rating range: 7.5 A to 60 A
- Power, signal or hybrid configurations
- Quick connect/disconnect capability with thread assist and positive detent coupling
- Built-in pin and socket protection
- Polarized for proper mating of connector halves
- Certification:
 - UL recognized
 - CSA certified
 - VDE approved

APPLICATIONS

- Industrial machinery
- Factory automation
- Material handling equipment
- Rail/transit vehicles and systems
- Medical instrumentation and equipment
- Communications equipment
- Networking equipment
- Data storage
- Computers
- HVAC equipment
- Commercial and building equipment
- Lighting and signage
- Heavy-duty vehicles
- Recreational vehicles
- Agricultural machinery
- Construction equipment



INFORMATION



SAMPLES

16 MHz to 96 MHz crystal offers tight stability over time and temperature

The ECX-1637B, from ECS Inc., is a very compact, surface-mount crystal which is ideal for wireless and IoT applications.



FEATURES

- Maximum 3 pF shunt capacitance
- Load capacitance options:
 - 8 pF or 10 pF
- 100 μ W drive power
- Minimum ± 7 ppm frequency tolerance option
- Available in 1,000- and 3,000-piece reels

APPLICATIONS

- IoT devices
- Wireless communications
- Wi-Fi networking
- Bluetooth networking

Compact ECX-1637B from ECS Inc. fits in small wireless applications.

Housed in a 2.0 mm x 1.6 mm x 0.45 mm ceramic package, the ECX-1637B supports frequencies in a range from 16 MHz to 96 MHz with a standard frequency tolerance of ± 10 ppm. Multiple frequency stability options over the operating-temperature range of -30°C to 85°C include devices with stability as tight as ± 10 ppm. Aging in the first year is just ± 1 ppm at 25°C .

ECS also supplies versions with an extended temperature range operating at a maximum of 125°C .



[BUY NOW](#)



[INFORMATION](#)



[DATASHEET](#)



[SAMPLES](#)



ENERGY



INDUSTRIAL



LIGHTING



MEDICAL



TRANSPORT



SECURITY



CONSUMER



TELECOMS