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OUR PRODUCT OF THE MONTH:

SMI INC. – NEW, TINY TUNING FORK LOW ESR

FEATURES

- Low ESR achieves low power consumption
- Smallest package size 1.6 x 1.0 x 0.5 mm
- A surface-mount
- Lead-free / RoHS compliant
- Different load capacitance options

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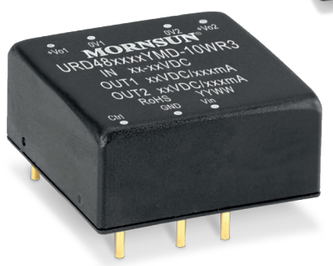
MORNSUN®

3-30W DUAL ISOLATED REGULATED OUTPUTS DC/DC CONVERTERS R3 SERIES

Mornsun recently added four new series with dual isolated regulated outputs to its wide input R3 DC/DC converters family, URD-S-3WR3, URD-YMD-10WR3, URD-LD-20WR3 and URD480524D-30WR3 series. These four new series adopt international standard pins, have strong EMI ability and good compatibility. Besides, the series provide a 4:1 ultra wide input voltage range, and deliver efficiencies up to 84 %. In addition to meeting EN62368 standards, protections for input under-voltage, output short circuit, over-current are also included. Applications include data transmission device, Tele-communication device, distributed power supply system, hybrid A/D system, remote control system, etc.



FEATURES

- Ultra wide input voltage range (4:1): 18 ~ 75 VDC
- Efficiency up to 84 %
- Isolation voltage: 1500 VDC / 3000 VDC / 3000 VAC
- Protections including input under-voltage, output short circuit, over-current
- Operating temperature range: URD-LD-20WR3 is -40 °C to +105 °C, other series are -40 °C to +85 °C

APPLICATIONS

- Data transmission device
- Tele-communication device
- Distributed power supply system
- Hybrid A/D system
- Remote control system

PART NUMBER	POWER	V_{IN}	V_{OUT}	NO. OF OUT-PUTS	ISOLATION	PACK-AGE	DIMENSION	CERTIFI-CATION
URD-S-3WR3	3 W	48 VDC (18 ~ 75)	5,5; 5,12; 5,24 VDC	2	3000 VCD	SIP	27.4 x 9.5 x 12.0 mm	Meets CE standards
URD-YMD-10WR3	30 W	48 VDC (18 ~ 75)	5,5; 5,12; 5,24 VDC	2	1500 VDC	DIP	25.4 x 25.4 x 11.7 mm	CE pending
URD-LD-20WR3	20 W	48 VDC (18 ~ 75)	5,5; 5,12; 5,24 VDC	2	3000 VDC	DIP	50.8 x 25.4 x 11.8 mm	CE pending
URD480524D-30WR3	30 W	48 VDC (18 ~ 75)	5,24 VDC	2	3000 (VAC)	DIP	70.0 x 48.0 x 26.0 mm	CE pending

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MPS

18 V, 6 A, HIGH-EFFICIENCY, SYNCHRONOUS STEP-DOWN CONVERTER

HAVE A LOOK

The MP2236 is a high-frequency, synchronous, rectified, step-down, switch-mode converter. The MP2236 offers a fully integrated solution that achieves 6A of continuous output current with excellent load and line regulation over a wide input supply range.

Constant-On-Time (COT) control operation provides fast transient response. Full protection features include hiccup Over-Current Protection (OCP) and thermal shutdown.

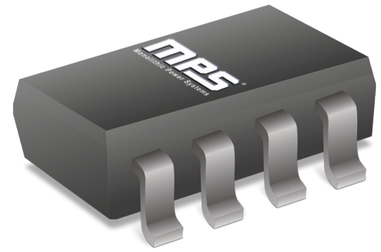
The MP2236 requires a minimal number of readilyavailable, standard, external components and is available in a space saving 8-pin TSOT23 package.

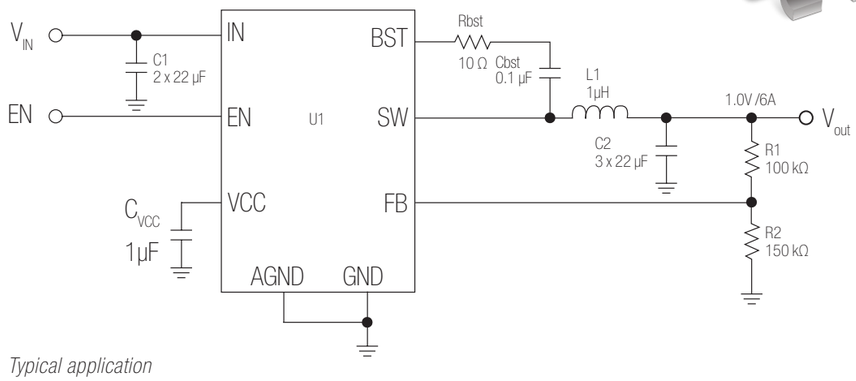
FEATURES

- Wide 3 V to 18V operating input range
- 6 A continuous output current
- 25 mΩ / 12 mΩ low $R_{DS(ON)}$ internal power MOSFETs
- Default 600 mV reference voltage
- Adjustable output voltage
- 600 kHz switching frequency
- T_{ON} extension
- Hiccup Over-Current Protection (OCP)
- Thermal shutdown protection
- Available in TSOT23-8 package

APPLICATIONS

- Flat-panel television and monitors
- Digital TV power supply
- Digital set-top boxes
- Distributed power systems





Typical application

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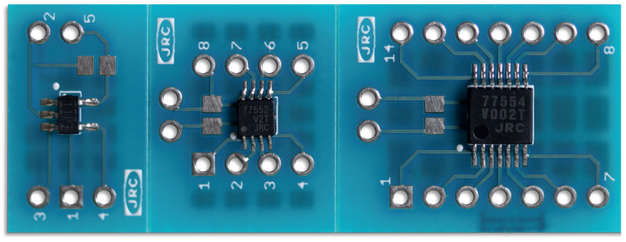
1.7 MHz, 50 µA/CH, EXCELLENT EMI IMMUNITY, RAIL-TO-RAIL INPUT / OUTPUT, OPERATIONAL AMPLIFIER

The NJU77550 / NJU77551 / NJU77552 / NJU77554 are single, dual and quad rail-to-rail input and output single supply OpAmp, featuring low supply current of 50 µA typical per amplifier, wide gain bandwidth product of 1.7 MHz and a slew rate of 0.8 V / µs. Furthermore, operating voltage from 1.8 V single supply can contribute to energy saving design, it is most suitable for battery equipment required low power.

Low input bias current makes NJU7755x series suitable for photodiode amplifiers, piezoelectric sensors, smoke detector and other applications with high-impedance applications. A rail-to-rail input and output allows the device to be used in wide variety of applications, such as audio amplifier, high-side current sensing, active filter, buffering and others. And also, High EMI immunity that can reduced malfunctions caused by RF-noises from mobile phones and other electronic devices,



and overvoltage input protection that allows the input voltage (Recommended: V- +5.5 V) that exceed positive supply voltage is ideal for robust industrial applications.

The NJU7755x series guarantees the specifications from 1.8 V to 5.5 V single supply, making it ideal for low voltage applications. In addition, the operating temperature range is expanded to -55 °C to 125 °C, which can be used in harsh environments with large temperature changes.

The NJU77550 / NJU77551 is available in 5-pin SC-88A and SOT-23-5 package. The NJU77552 is available in 8-pin SOP8, MSOP (TVSP): meet JEDEC MO-187-DA / thin type package and DFN that is thin and 2 mm square small package. The NJU77554 is available in SSOP14 package.

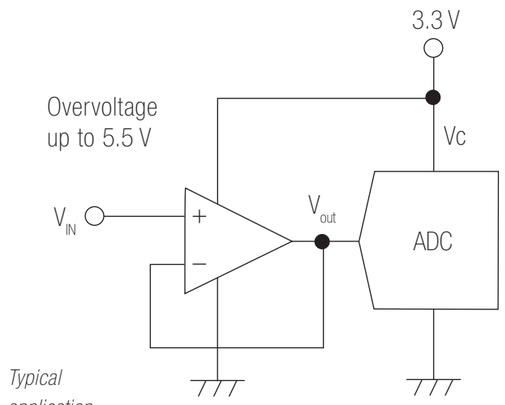
FEATURES

- High efficiency
  (GBW 1.7 MHz, Supply current 50 µA / ch)
- Rail-to-rail input and output
- Supply voltage 1.8 V to 5.5 V
- Integrated EMI filter EMIRR = 75 dB @f = 900 MHz
- Overvoltage input protection (input tolerant)
- Unity-gain stable
- Input offset voltage 5 mV max.
- Slew rate 0.8 V / µs
- Operating temperature range -55 °C to 125 °C
- Package
  NJU77550/NJU77551SOT-23-5, SC-88A
  NJU77552SOP8, MSOP8(TVSP8)*, NJU77554

**meet JEDEC MO-187-DA / thin type DFN8-U1 ESON8-U1) SSOP14*

APPLICATIONS

- Battery-powered equipment (audio, healthcare, security, etc)
- Gas / smoke sensorst
- Smart meter
- Sensor interface
- Active filters
- Photodiode amplifier



Typical application

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SMI INC. – NEW, TINY TUNING FORK LOW ESR

HAVE A LOOK

Continuous miniaturization of electronic devices are a target of most designer's. Of course the R&D teams of the component manufacturer's successively improve the form factor of their products too. An external 32.768 kHz clock is an essential part of a lot of systems. Besides driving the real-time clock, the 32.768 kHz clock is widely used by various processor and peripheral subsystems. These can be found in application as household, metering, mobile phones and many more, products which provide date and time information.

Application-specific requirements in the kHz oscillator design can be optimized by using the using the perfect quartz crystals. These refer to the accuracy, frequency tolerance over the temperature range. Likewise as well ESR (Equivalent Series Resistance), over improve the safety factor in start up of oscillation and can save current consumption battery driven device.

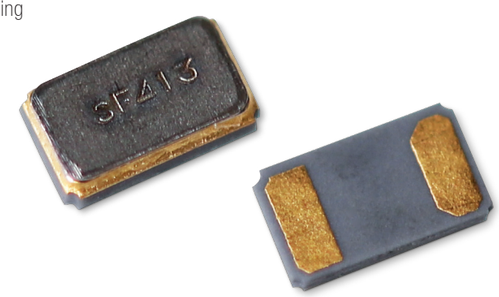
With the product family 110SMX SMI INC. announce a new LOW ESR kHz tuning fork crystals down to 1.6 x 1.0 mm package size. The engineers succeeded despite concomitant miniaturization to guarantee an ESR value of 60 kΩ. An improvement of approximately 30 % compared to the usual ESR of 90 kOhm a 1.6 x 1.0 mm tuning fork design. This tuning fork is therefore perfectly suited in application using battery power supply as "low power micro computer" applications.

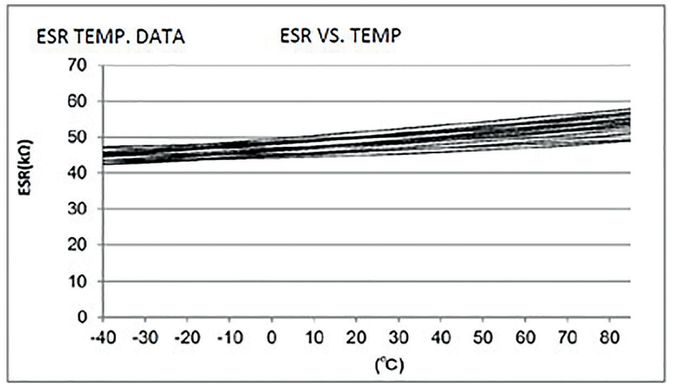
FEATURES

- Low ESR achieves low power consumption
- Smallest package size 1.6 x 1.0 x 0.5 mm
- A surface-mount
- Lead-free / RoHS compliant
- Different load capacitance options

APPLICATIONS

- Metering of gas / water / current consumption
- Weak up clock for radio systems
- White goods
- Real time clock for GNSS devices
- Blood glucose meters
- Fire detectors
- Data logger
- IoT Timing





The crystals are manufactured with most common load capacitance of 12.5 pF. 9.0 pF and 6.0 pF are also feasible.

ESR (Equivalent Series Resistance) over Temperature

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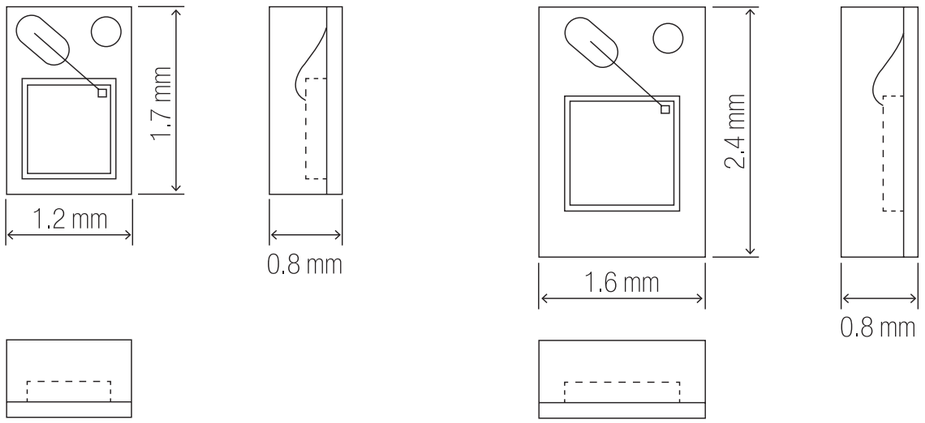
BLUE TO INFRARED WAVE LENGTH PHOTO DIODE NJL6401R-3 / 6402R-2

The NJL6401R-3 / 6402R-2 are the high speed Si PIN photo diode sensor that is capable of detecting at a wide wavelength range from blue-violet light up to infrared light.

HAVE A LOOK



HAVE A LOOK

SPECIFICATIONS OF NJL6401R-3*	
Corresponding to three wavelength	λ = 405 nm / 650 nm / 780 nm
Short rise-time, fall-time	2ns typ. (λ = 405 nm / 650 nm / 780 nm, VR = 2.5 V, 10 – 90 %)
High speed	250 MHz (λ = 780 nm), 300 MHz (λ = 650 nm) 350 MHz (λ = 405 nm)
Package	1.2 x 1.7 x 0.8 mm
Active area	0.7 x 0.7 mm

SPECIFICATIONS OF NJL6402R-2*	
Corresponding to three wavelength	λ = 405 nm / 650 nm / 780 nm
Short rise-time, fall-time	2ns typ. (λ = 405 nm / 650 nm / 780 nm, VR = 2.5 V, 10 – 90 %)
High speed	200 MHz (λ = 780 nm), 220 MHz (λ = 650 nm) 250 MHz (λ = 405 nm)
Package	1.6 x 2.4 x 0.8 mm
Active area	1.0 x 1.0 mm

* Pb free solder reflowing permitted ▪ Pb free, halogen free, conformity to RoHs directive ▪ Low wavelength dependence and fast fall-time

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BLUE TO INFRARED WAVE LENGTH PHOTO DIODE NJL6401R-3 / 6402R-2

Example: smoke detector

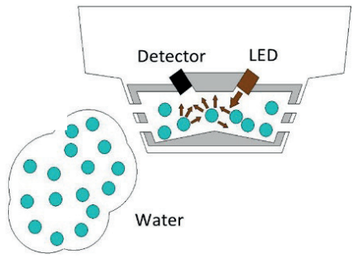
Optical smoke detectors are changing from std. single wavelength (near IR) to dual wavelength (Blue & near IR) type.

Key requirements for PDs used for dual wavelength smoke detectors are:
- High sensitivity characteristic at 470 nm (blue wavelength)
- No deterioration of the resin at high temperature and blue light

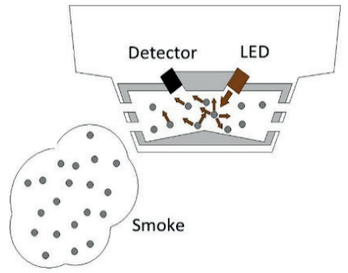
Challenge: How to distinguish between real smoke and steam to avoid false alarms?

Solution: Usage of two LEDs with IR and Blue wavelengths
- In case of large size particles
  - Difference in optical scattering intensity of two wavelength is very small. ($I_{BL} / I_{IR} = 1$)
- In case of small size particles
  - Difference in optical scattering intensity of two wavelength is large blue scattering is bigger than IR. ($I_{BL} / I_{IR} > 1.4$)

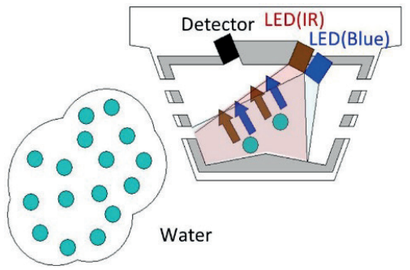
Particles are large

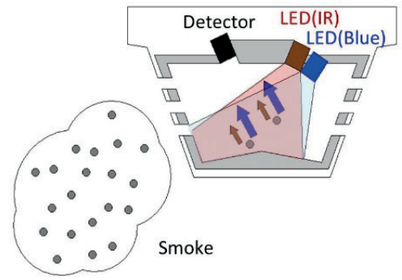


Particles are small



Single wavelength detection method (940 nm)





Dual wavelength detection method (470 nm & 940 nm)

MORE APPLICATIONS

- Front monitor for Blu-ray, DVD and CD
- Monitor for RGB wavelength
- Optical smoke detector
- Photoelectric switch, space light transmitting, etc.

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NEW AGE OF 16 AMPS RELAY

HAVE A LOOK

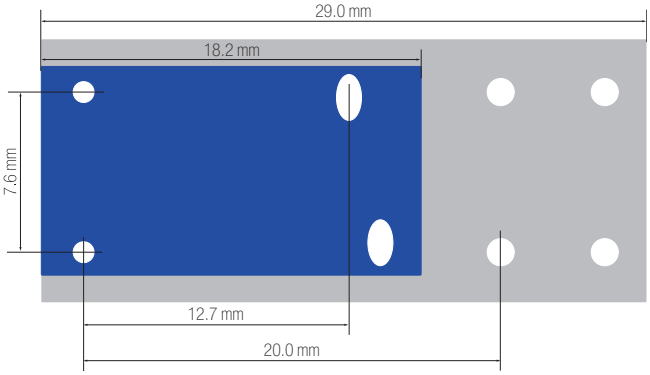
In recent years, the trend has been towards ever smaller, flatter and more compact components, so that in modern applications, more and more functions can be realized – in ever smaller space.

Hardware developers have been using popular RT / RZ type models from various manufacturers for their 16 A relay applications for decades. This relay type offers the advantages of a low profile and a high rated power with compact dimensions. ECE now enriches the relay market with a revolutionary technology, and thus meets today's PCB standard and the modern requirements of new control options in a more compact design.

With the new ETR-GQ 16 A relay, the manufacturer focuses primarily on the reduction of PCB size. Using the "multiple-fitting-layout" method, the developer can easily replace the previously used RT / RZ type at an early stage, and at a later stage (e.g. as part of a re-design), in order to reduce the size of a new PCB layout design size.

With its 5-star profile and the available optional 3-in-1 Combo features (THR reflow solderable, GWT accord. IEC 60335, halogen free), ECE intensify its standard features, surpassing the current market requirements for 16A variants, bringing your products to a higher level.

The premium quality of this relay is particularly suitable for use in HVAC control (heating, ventilation and air conditioning), intelligent home and building automation, lighting control, motor control, industrial control, measurement and instrumentation circuits.



Blue: ETR-GQ 16A / grey: RT / RZ / EZ 16A

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