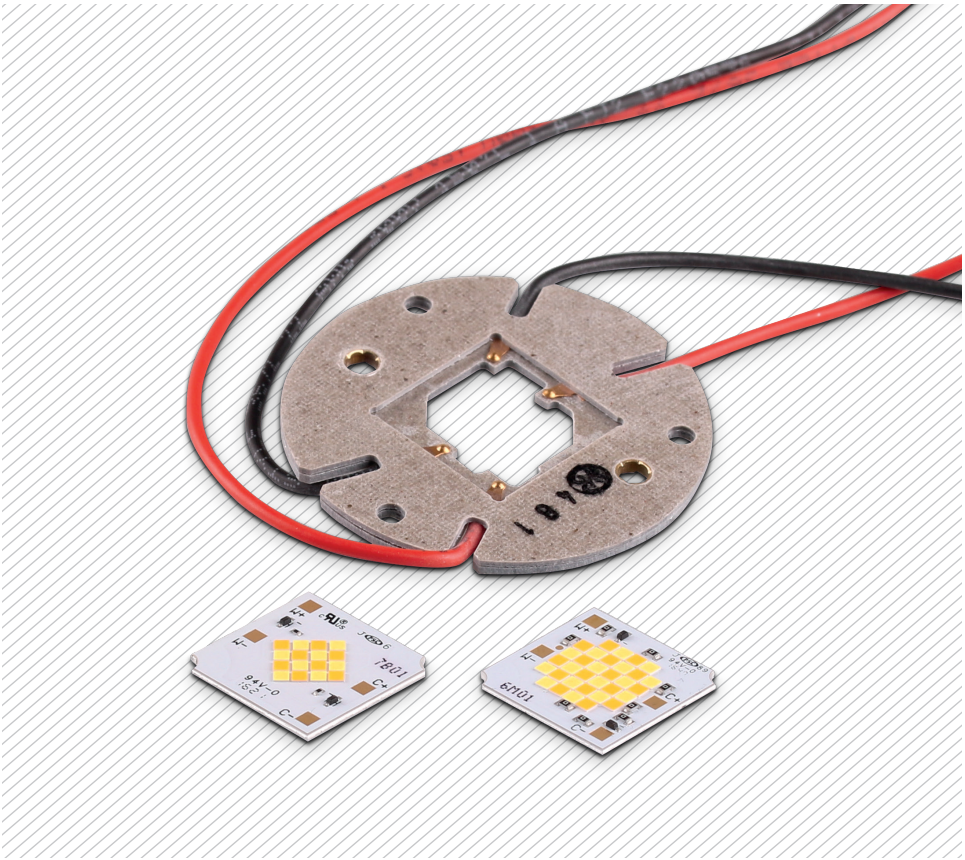
05
18

endrichnews

www.endrich.com

OUR PRODUCT OF THE MONTH:
CITIZEN TUNABLE WHITE LEDS RA90



FEATURES

- The smallest CSP package is used
- Available lumen packages: 1000 lm, 2000 lm, 3000 lm
- CCT-range: Warm: 2700 K / Cool: 6500 K
- Applications: residential lighting / hospitality
- Solderfree holder from Bender+Wirth for B-versions available
- Full color change with two color LED color change freely
- 4-terminals
- Two channel driver is needed

Contact for information: Mrs. Glauner · Phone: +49(0)7452-6007-65 · e-mail: c.glauner@endrich.com

MORNSUN®

COST-EFFECTIVE COMPACT SIZE AC/DC CONVERTERS LDE/LHE SERIES WITH HIGH ISOLATION

MORNSUN launched new AC/DC converters, LDExx-20Bxx and LHExx-20Bxx series. The two series are upgraded with technology and process innovation and achieve improvement in performance, size and etc. Product design complies with IEC62368, UL62368 and EN62368 standards (pending). Product advantages are as follows:

1.) Performance

a) Wide operating temperature range. LDE series provide -40 °C to 70 °C and LHE series -40 °C to 85 °C.
b) High isolation: 4000 VAC. It effectively improves product reliability and protects the system safety.
c) EMC: EMI performance meets CISPR32/EN55032 CLASS B.

2.) Compact size and cost-effective

a) LDE / LHE series integrate internal components, the volume decreases by 20 %.
b) Product consistency, reliability and performance are further improved and the price is more competitive thanks to upgraded automation technology.

3.) High reliability and complete protections

The series have a MTBF over 300,000 h and provide protections of output short circuit (OSC), output over-current (OCP), output over-voltage (OVP), which not only significantly reduce the failure rate of the converter itself but also enhance the safety performance of back-end power modules and the load in abnormal working conditions.

LDExx-20Bxx series provide powers of 3 W, 5 W, 6 W, 10 W, 15 W and 20 W, yet LHExx-20Bxx series of 5 W, 10 W, 15 W, 20 W and 25 W. For more details, please refer to the datasheet or consult our sales.

SERIES	POWER	VIN	VOUT	NO OF OUTPUT	ISOLATION	PACKAGE	DIMENSION
LDE/LHE SERIES							
LDE15-20Bxx	8.9 - 15 Watts	85 - 264 VAC	3.3 - 24 VDC	1	4000 VAC	DIP	53.80 x 28.80 x 23.50 mm
LDE03-20BxxW	2.3 - 3 Watts	85 - 264 VAC	3.3 - 24 VDC	1	4000 VAC	DIP	37.00 x 24.50 x 18.00 mm
LDE05-20BxxW	3.3 - 5 Watts	85 - 264 VAC	3.3 - 24 VDC	1	4000 VAC	DIP	37.00 x 24.50 x 18.00 mm
LDE06-20Bxx	4.1 - 6 Watts	85 - 264 VAC	3.3 - 24 VDC	1	4000 VAC	DIP	50.80 x 25.40 x 15.36 mm
LDE20-20Bxx	11.8 - 20 Watts	85 - 264 VAC	3.3 - 24 VDC	1	4000 VAC	DIP	53.80 x 28.80 x 23.50 mm
LDE03-20Bxx	2.3 - 3 Watts	85 - 264 VAC	3.3 - 24 VDC	1	4000 VAC	DIP	37.00 x 24.50 x 18.00 mm
LDE05-20Bxx	3.3 - 5 Watts	85 - 264 VAC	3.3 - 24 VDC	1	4000 VAC	DIP	37.00 x 24.50 x 18.00 mm
LD20-26Bxx	11.88 - 20 Watts	85 - 264 VAC	3.3 - 24 VDC	1	4000 VAC	DIP	70.00 x 48.00 x 30.00 mm
LDE10-20Bxx	6.6 - 10 Watts	85 - 264 VAC	3.3 - 24 VDC	1	4000 VAC	DIP	53.80 x 28.80 x 19.00 mm
LHE15-20Bxx	9.9 - 15 Watts	85 - 264 VAC	3.3 - 24 VDC	1	4000 VAC	DIP	62.00 x 45.00 x 22.50 mm
LHE10-20Bxx	6.6 - 10 Watts	85 - 264 VAC	3.3 - 24 VDC	1	4000 VAC	DIP	55.00 x 45.00 x 21.00 mm
LHE20-20Bxx	11.55 - 20 Watts	85 - 264 VAC	3.3 - 48 VDC	1	4000 VAC	DIP	62.00 x 45.00 x 22.50 mm
LHE25-20Bxx	13.53 - 25 Watts	85 - 264 VAC	3.3 - 24 VDC	1	4000 VAC	DIP	70.00 x 48.00 x 23.50 mm
LHE05-20Bxx	4 Watts	85 - 264 VAC	3.3 - 24 VDC	1	4000 VAC	DIP	48.50 x 36.00 x 20.50 mm

Contact for information: Mr. Hörauf · Phone: +49(0)7452-6007-58 · e-mail: m.hoerauf@endrich.com

MORNSUN®

COST-EFFECTIVE COMPACT SIZE AC/DC CONVERTERS LDE/LHE SERIES WITH HIGH ISOLATION

LHExx-20Bxx

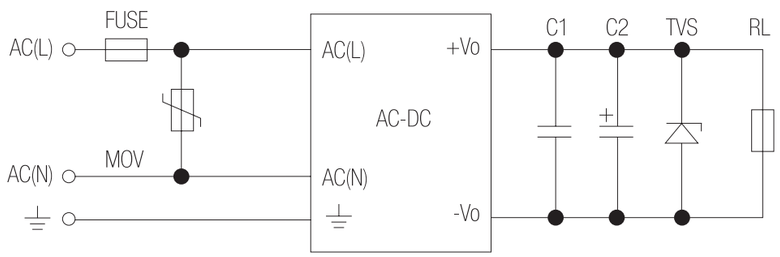
LDExx-20Bxx

FEATURES

- Universal input: 85 - 264 VAC / 100 - 370 VDC
- Operating temperature range: -40 °C to +70 °C (LDE series), -40 °C to 85 °C (LHE series)
- High isolation voltage: 4000 VAC
- Low ripple & noise: 50 mV TYP
- Output short circuit, over-current, over-voltage protection
- Plastic case, meets UL94V-0
- EMI performance meets CISPR32/EN55032 CLASS B
- Meets IEC62368, UL62368, EN62368 standards (pending)

APPLICATION

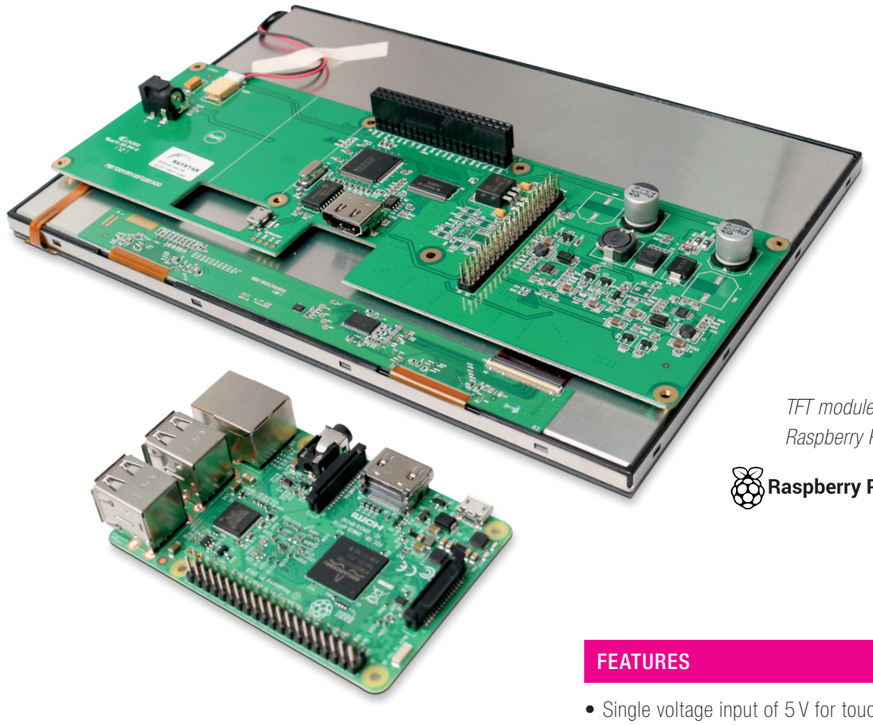
Widely used in LED, street lighting control, grid power, instrumentation, industrial control, communication and civil applications.



Design Reference: typical application circuit

Contact for information: Mr. Hörauf · Phone: +49(0)7452-6007-58 · e-mail: m.hoerauf@endrich.com

TFT DISPLAYS WITH HDMI AND STANDARD RASPBERRY PI 40-PIN HEADER



TFT module compatible to Raspberry Pi 3

Raspberry Pi®

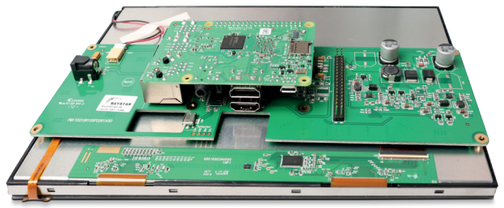
Raspberry Pi computer modules gain bigger shares on the industrial market. To simplify the integration in human machine interfaces, Raystar Optronics Ltd. introduced a special series of TFT displays. The Raspberry Pi single board computer can be easily attached to the 40-pin GPIO header.

This TFT display series is available in the sizes 5.7", 7.0" (with two different resolutions) and 10.1". You can simply use this TFT display with your Raspberry Pi, or also you can use it as computer display with any device which has an HDMI output. Additional to the HDMI plug the TFTs are equipped with the standard 40 pin Raspberry Pi GPIOs for easy plug and play. There is a single 5 V power input required only, to drive the backlight, touch panel, TFT-display and the Raspberry Pi. With high brightness backlights the readability is extraordinary good.

For enhanced embedded computing applications the capacitive touch modules are the perfectly fitting solution. They are designed to make Raspberry Pi usage become easy. You only have to integrate it into your application.

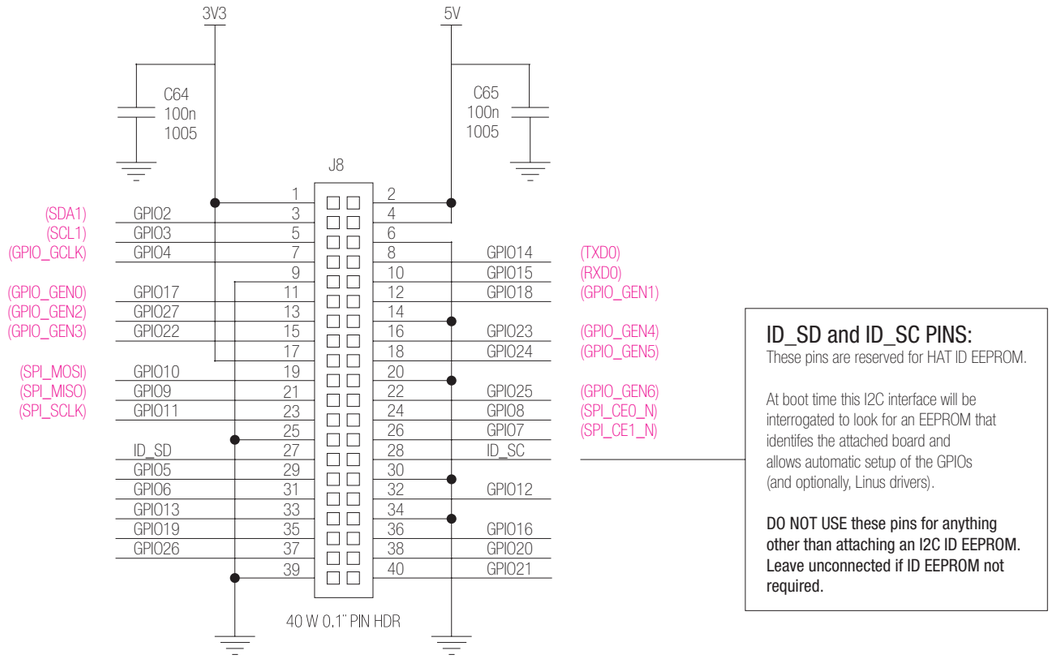
FEATURES

- Single voltage input of 5 V for touch panel, backlight, TFT-display and Raspberry Pi
- Raspberry Pi 40 pin header to support GPIOs
- Standard HDMI connector to use with any device
- Supports resistive / capacitive touch panels over USB interface
- LED lifetime up to 50 k hours
- Operating temperature up to -20 °C to +70 °C



Compact and secure assembly of TFT-module and Raspberry Pi 3

TFT DISPLAYS WITH HDMI AND STANDARD RASPBERRY PI 40-PIN HEADER



ID_SD and ID_SC PINS:

These pins are reserved for HAT ID EEPROM.

At boot time this I2C interface will be interrogated to look for an EEPROM that identifes the attached board and allows automatic setup of the GPIOs (and optionally, Linus drivers).

DO NOT USE these pins for anything other than attaching an I2C ID EEPROM. Leave unconnected if ID EEPROM not required.

Pin-Out 40-pin GPIO header

SIZE	PART-NR.	RESOLUTION	BRIGHTNESS	TECHNOLOGY	HDMI INTERFACE	40-PIN RASPBERRY PI	OPERATING TEMPERATURE	PCAP	RTP
AVAILABLE MODULES									
5.0"	RFF50XB-1IW-DHG	800 x 480	400 cd / m²	TN	■	■	-20 °C to +70 °C	■	
5.0"	RFF50XB-1IW-DHS	800 x 480	350 cd / m²	TN	■	■	0 °C to +70 °C		■
7.0"	RFF70XG-1IW-DHN	800 x 480	460 cd / m²	TN	■	■	0 °C to +70 °C		
7.0"	RFF70XG-1IW-DHS	800 x 480	320 cd / m²	TN	■	■	-20 °C to +70 °C		■
7.0"	RFH70XB-1IW-LHS	1024 x 600	400 cd / m²	TN	■	■	-20 °C to +70 °C		■
7.0"	RFH70XB-1IW-LHG	1024 x 600	450 cd / m²	TN	■	■	-20 °C to +70 °C	■	
10.1"	RFK101XF-1AH-LHN	1280 x 800	950 cd / m²	IPS	■	■	0 °C to +50 °C		
10.1"	RFK101XG-1YW-LHG	1280 x 800	300 cd / m²	IPS	■	■	-20 °C to +70 °C	■	
10.1"	RFK101XF-1YH-LHG	1280 x 800	900 cd / m²	IPS	■	■	-20 °C to +70 °C	■	
10.1"	RFK101XF-1AH-LHS	1280 x 800	800 cd / m²	IPS	■	■	0 °C to +50 °C		■

Contact for information: Mr. Zigan · Phone: +49(0)7452-6007-943 · e-mail: g.zigan@endrich.com

TIMING'S CRITICAL ROLE IN THE AI REVOLUTION / BENEFITS OF MEMS OSC.

Small timing devices run a big part of our lives, and many times, we fail to realize it. Aaron Partridge, the chief scientist at SiTime, to discuss his prognostications for the future of the electronics industry and the role that timing will play.

As you look ahead, what trends in electronics do you see?
One giant trend that I see is the development of AI systems. Artificial intelligence will usher in the next wave of the industrial revolution. The first wave used steam power to mechanize production and travel in the 1780s and extended this with fossil fuel in the 1920s. The second used electronics and software to automate communications in the 1980s. Today, we need to process the data from our increasingly digitized world. AI organizes this data to augment our mental limits.

One can think of technology as extending our human limits. The first wave amplified our muscles, in that we can fly, drive, and move heavy objects. The second wave amplified our senses, in that we could hear people thousands of miles away or see minute objects. And the third wave is now amplifying our ability to think.

You use the present tense to talk about the next wave of the industrial revolution. Why is that?
That's the thing with technological revolutions. When we are in the midst of them, many of us don't notice that change is happening. The technology slowly creeps into our lives. We won't wake up one day and suddenly live in the world of the Jetsons. Right now, the personal assistants in our mobile devices, the self-driving car I just bought, they both use artificial intelligence.

What is timing's role in AI?
Timing will play a critical role in the communications infrastructure that AI leverages. When many people think about artificial intelligence, they think of robots, but it is about more than that. It's also about processing massive amounts of data. So, AI relies on data centers to store information and on high-speed radio and fiber to transport the information – all of which relies on timing. Without high-performance oscillators, artificial intelligence systems wouldn't be able to process the data reliably and without latency.

How do you see AI fitting into the evolution of timing?
That's a pretty big question. What did timing mean to the Romans? The Romans could precisely measure sunrise, midday, and sunset. Their sundials divided the day into 12 hours of daylight and 12 hours of nighttime, and the length of the hours depended on the length of the day. So, if Romans agreed to meet at 1:00, they were probably accurate to maybe 20 minutes.

Skip ahead a couple millennia to today. Our phones know what time it is to a microsecond. Our GPS receivers know the accurate time to within thirty billionths of a second. So, we've gone from 1,000 seconds to a millionth-of-a-second accuracy. That is a billion time more accurate.

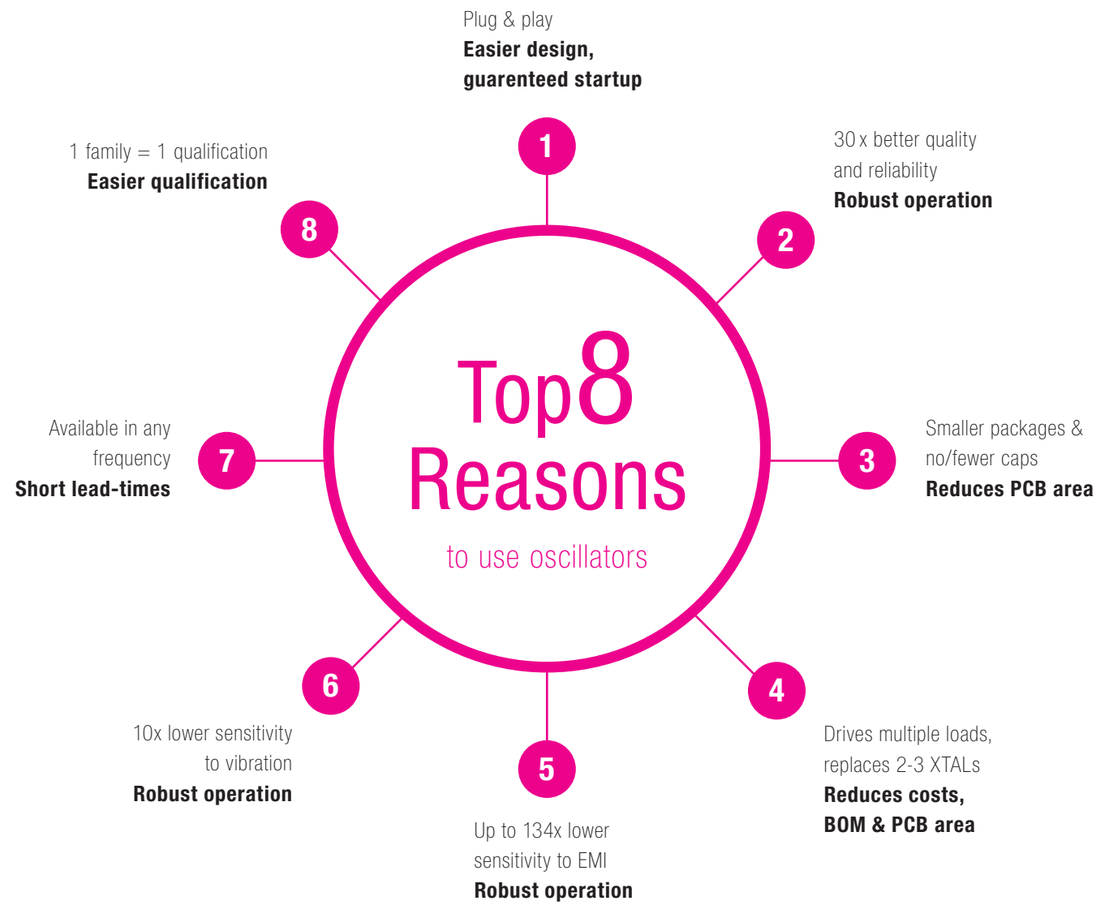
And we are not done. The upcoming 5G phones will hold time at least 10x more accurately than 4G, and soon GPS receivers will keep track of time down to one billionth of a second. So, that is a trillion times more accurate than the Romans.

In addition to accuracy, what else will be needed for AI systems?
People are now talking about "the internet of things." All of those "things" will be networked, and networking requires timing. So, in that sense, we are dealing with the "internet of time-synchronized things."

In a world of artificial intelligence and time-synchronized things, there will be a massive number of sensors everywhere, and they will need to be smaller, consume less power, and continue to perform reliably as they age. MEMS-based timing solutions, like the ones from SiTime, fit perfectly into that world.

Contact for information: Mr. Gensler · Tel. +49(0)7452-6007-31 · e-mail: a.gensler@endrich.com

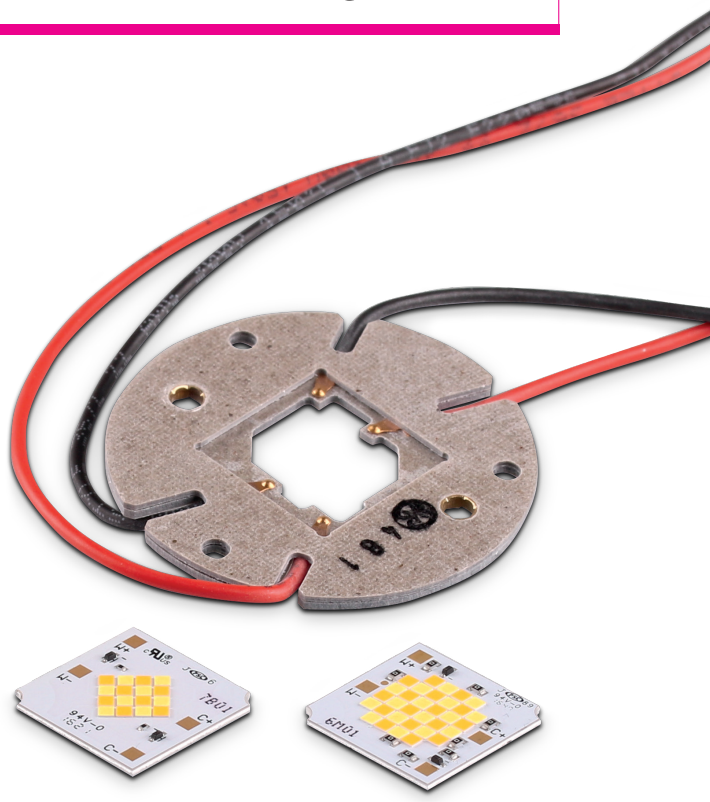
THE TOP 8 REASONS TO USE AN OSCILLATOR INSTEAD OF A CRYSTAL RESONATOR IN ARTIFICIAL INTELLIGENCE SYSTEMS



Every electronic system needs a timing device. And crystal (XTAL) resonators are often the go-to solution. However, oscillators, which pair a resonator with an oscillator IC into one complete integrated timing device, offer several benefits compared to XTALs. These benefits are further extended with MEMS timing technology. System designers no longer need to work around the limitations of XTALs and accept the headaches and risks of designing with crystals.

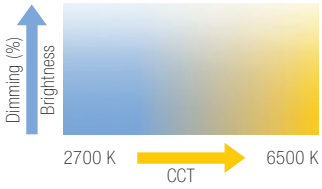
Contact for information: Mr. Gensler · Tel. +49(0)7452-6007-31 · e-mail: a.gensler@endrich.com

CITIZEN TUNABLE WHITE LEDS RA90



NEW!

Citizen Electroincs added RA90 versions to their tunable white LED portfolio. Those RA90 versions have the same CCT-range from 2700 K to 6500 K as the RA80 versions. By using the smallest CSP package Citizen could realize the lumen package in a tiny size. A smooth colour change from cold white to warm white is possible by dimming. As the LED has 4 terminals it is needed to use one 2-channel driver or two separate drivers. B-Versions can be used with solderfree Bender+Wirth holders.



Dimming behaviour

LCN-C04 A,B (1000 lm)

LCN-C05 A,B (2000 lm)

LCN-C06A (3000 lm)

PRODUCT LINE UP

Outline	–	A-Type: 15 x 15 mm B-Type: 20 x 20 mm		A-Type: 19 x 19 mm B-Type: 20 x 20 mm		Size: 23,5 x 23,5 mm	
CCT range	–	2700 - 6500 K		2700 - 6500K		2700 - 6500K	
CCT	K	2700	6500	2700	6500	2700	6500
Luminous flux	lm	786	950	1570	1900	2360	2850
Efficacy	lm / W	94	113	94	113	94	113
LES	Ø mm	11 (11 lm / mm²)		16 (12 lm / mm²)		18 (13 lm / mm²)	
Drive Current	mA	350	350	700	700	700	700
Vf	V	24	24	24	24	36	36
Ra	–	≥ 90	≥ 90	≥ 90	≥ 90	≥ 90	≥ 90

Contact for information: Mrs. Glauner · Phone: +49(0)7452-6007-65 · e-mail: c.glauner@endrich.com

HEADQUARTERS

ENDRICH Bauelemente Vertriebs GmbH
P.O.Box 1251 · 72192 Nagold, Germany
T +49 (0) 7452 6007-0
F +49 (0) 7452 6007-70
endrich@endrich.com
www.endrich.com

SALES OFFICES IN EUROPE

France
Paris:
T +33/186653215
france@endrich.com

Lyon:
T +33/186653215
france2@endrich.com

Spain
Barcelona:
T +34/93 217 31 44
spain@endrich.com

Bulgaria
Sofia:
bulgaria@endrich.com

Austria & Slovenia
Brunn am Gebirge:
T +43/1 665 25 25
austria@endrich.com

Romania
Timisoara:
romania@endrich.com

Hungary
Budapest:
T +361/2 97 41 91
hungary@endrich.com

Switzerland – Novitronic
Zurich:
T +41/44 306 91 91
info@novitronic.ch

Certified acc. to ISO 9001:2015 / 14001:2015