

Component

by ozdisan

JOURNAL OF ELECTRICITY ELECTRONICS AND AUTOMATION

YOUR COMPLIMENTARY COPY

DECEMBER 2019

**ISABELLENHÜTTE
LEADS THE SECTOR**

**LIFUD'S
TECHNOLOGICAL
INNOVATION DRIVES
THE DEVELOPMENT
OF THE INDUSTRY**

**RECOM
STRENGTHENED
OUR POSITION IN
TURKISH MARKET**

**SEARCHING THE
PRODUCT IN
OZDISAN.COM**

**NEW
GENERATION
BLUETOOTH
MODULES
FROM RAYTAC**

**NEW ERA
AT THE VOICE IC**

MUSTAFA YURTTAŞ

**"THE ELECTRONICS INDUSTRY IS
AT THE HEART OF ALL SECTORS TODAY"**





Not Only a Supplier But Also a Business Partner



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Component

Dear Friends of Electronics Sector

At last quarter of 2019, many other sectors are relying on developments and advancements in electronics.

From this perspective, it seems like electric cars, IoT (Internet of Things), medical electronics, IOS and Android telephone usages and LED lighting technologies will represent a big volume of business in world economies.

Initially 5G technology was planned for end of 2018 but it looks like it was delayed by more than one year. Therefore convenience which 5G will bring to our lives will be available later than it was planned earlier.

As a result of trade wars declared by USA, world economy started to slow down and consequence of this is a shrink in world trade. This situation not only hit developing countries like Turkey, also effecting European countries, former eastern block countries and far-east (China-Japan).

Özdisan Elektronik continue to take serious steps on the way to be a global player. With more than 150.000 products and 100 manufacturer brands in product range, we are experiencing new customer enquiries from different parts of the world every day. Daily hits exceeding 40.000 trying to benefit from goods and information provided in our web pages.

In this issue of our magazine, we bring you some information about new technologies, also some information related to functionality of services Özdisan provide.

Please keep following us.

Best Regards
MUSTAFA YURTTAŞ



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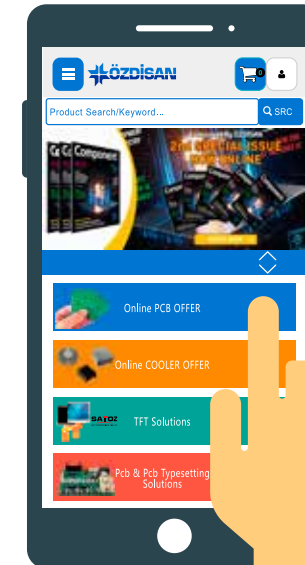
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ÖZDİSAN ELEKTRONİK A.Ş.

DES Sanayi Sitesi 104 Sokak A07
Blok No : 54 - 56 Yukarı
Dudullu / Ümraniye / İstanbul
T: +90 216 420 18 82
www.ozdisan.com

Publisher

Mustafa Yurttaş

Responsible Manager

Fatih Duran

Chief Editor

Okan Abdi

Managing Editor

Gülçin Abdi

Coordinator

Merve Erdoğan

Editors

Şafak Bakşı
Yalçın Çuhadar

Visual Arts Director

Büşra Tamdoğan

Print

Promat Basım Yayın
San. ve Tic. A.Ş.
Orhangazi Mah. 1673 Sok. No: 34
Esenyurt / İstanbul
T: 0 212 622 63 63
info@promat.com.tr

Prepared By

brand&more
İLETİŞİM DANIŞMANLIĞI

Rumeli Cad. Bayrak Apt.
No:33 D:3 Nişantaşı
Şişli/İstanbul
T: 0 212 219 08 12
info@brand-more.com
www.brand-more.com

www.componentdergi.com
Info@componentdergi.com

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ÖZDİSAN NEWS

NORDIC SEMICONDUCTOR OFFICIALS VISIT ÖZDİSAN ELEKTRONİK

Patrick Noordhoek who is European Sales Manager of Nordic Semiconductor visited Özdisan Elektronik. Noordhoek, came to Istanbul for training and customer visits after recently signed distributorship agreement. The next generation of Bluetooth chips and the NB-IoT family trainings were very successful.

Patrick, visited high end technology customers with Özdisan's sales team and stated that he is very happy and excited to cooperate with Özdisan and he is confident that Özdisan will develop new projects for Nordic products with its strong technical team and sales network.



ÖZDİSAN ELEKTRONİK TARGETED FAST PCB AND MAKER SECTOR BY SIGNING WITH SEEEDSTUDIO

Özdisan Elektronik has signed a distributorship agreement with SeedStudio, one of the most well-known and largest of the popular hobby electronics sites used by most engineers, targeting two different sectors. One of them is the community that wants to learn the electronics we call maker and has turned it into a hobby, and the other is the fast and high-quality sample PCB supply industry. The company produces sensors and modules to model any scenario. Not only that, but by following the technology, it creates a document by making it a module where it is an innovative product and making it easier to use. Özdisan Elektronik brings SeedStudio products to Özdisan's stock to cover all hobby electronics, saving users from fast supply and high shipping costs. This agreement, which will delight users who pay both long terms and high shipping charges by using overseas resources on sample PCB procurement, has come with many advantages. With the integration of the PCB tool on the SeedStudio website with the Özdisan Elektronik website, it will now be possible to make a quick selection for sample supply when ordering PCBs.



STRATEGIC COOPERATION MEETING WAS HELD BETWEEN ÖZDİSAN ELEKTRONİK AND LIFUD

The negotiations between Lifud and Özdisan Elektronik took place at Lifud's headquarters in Shenzhen. At the meeting discussed how the cooperation between the two companies will expand where Europe, Turkey and surround countries. It was discussed which started to produce outdoor LED drivers of Lifud. At the same time, ideas were exchanged about the marketing activities and the status of the market.



ÖZDİSAN ELEKTRONİK PARTICIPATED IN NUVOTON'S EUROPEAN DISTRIBUTORS MEETING

Özdisan Elektronik recently participated in the European distributors meeting of Nuvoton, one of the largest semiconductor manufacturers in the Far East. This year 100% sales growth was achieved in Turkey, thanks to successful operations of Ozdisan team. The meeting was aimed at both introducing new technologies and increasing communication between distributors. Özdisan Elektronik is expanding its relations with Nuvoton, which it distributes, with each passing day, bringing its customer portfolio to the products of the brand. In addition, Özdisan cooperates with many local companies and enables them to choose Nuvoton products in their projects. You may easily access all product range of Nuvoton through Özdisan Elektronik and get support from the technical team of the company.



TURKISH BRANDS STAND OUT IN INTERLIFT ELEVATOR FAIR

Held every 2 years in the city of Augsburg, Germany, the Interlift Elevator Fair brought together the leading actors of the sector. In this international trade fair where participants from all over the world participated, elevator cabin manufacturers, electronic components manufacturers, mechanical components manufacturers and elevator installation companies exhibited their products. Turkey has an important place in the elevator industry in global markets and foreign elevator installation company prefers to supply many products from Turkey. 60 different Turkish companies took part in the fair. Özdisan Elektronik officials visited the fair and met with domestic and foreign elevator manufacturers and exchange information. In the fair where technological developments in the sector were introduced, the authorities also examined new products. With the decrease in TFT screen costs, we are in a period when TFT screen usage is widespread in elevator button and display applications. Özdisan Elektronik's investment in China SATOZ's TFT LCD panel product line attracted the attention of domestic and foreign manufacturers.



ÖZDİSAN ELEKTRONİK SIGNED AN AUTHORIZED DISTRIBUTORSHIP AGREEMENT WITH THE LEADING POWER SUPPLY MANUFACTURER RECOM POWER

Authorized distributorship agreement was signed between Turkey's largest electronic component distributor with the largest stock and diversity Özdisan Elektronik and the world's leading power supply manufacturer Austria-based Recom Power

Company. Recom Power products are used successfully in all electronic fields where from industrial automation and energy technology to e-mobility, from measurement and rail technology to medical electronics and IoT. The most important factors of Recom Power's

success in the industry include advanced products, reliable customer support and above all a comprehensive distribution network. Recom Power products in the field of AC/DC and DC/DC converters, switching regulators and LED Drivers to be supplied with Özdisan Elektronik assurance; available at www.ozdisan.com



and it can purchase online. Also, customers can supply Recom Power modules in less than 48 hours.

HOPERF

Özdisan Elektronik signed a distributorship agreement with HopeRF

Turkey's largest distributor of components Özdisan Elektronik signed a distributorship agreement with HopeRF company. HopeRF, China's leading IoT product manufacturer, produces RF chips as well as Zigbee, NbloT, Bluetooth, LoraWAN, RF Datalink and 2.4GHz RF modules. HopeRF offers altimetric pressure sensor, waterproof altimetric MEMS pressure sensor, high precision temperature and humidity sensor modules for sensor needs. The customers can now supply RF chip, module and sensor needs from Özdisan Elektronik stocks.

STÄUBLI

Özdisan, Authorized Dealer of Stäubli Products

Stäubli, a leading company in fast and easy assembly connector systems, offers hydraulic, gas and electrical power connectors to users. Standard and special products with single-pole or multi-pole options and high-performance quality and secure connector solutions are available from Özdisan Elektronik stocks.

Raytac Cooperation with Özdisan Elektronik

Özdisan Elektronik signed a distributorship agreement with the Taiwanese manufacturer Raytac, which provides RF solutions. Producing Bluetooth modules using chips from Nordic, the largest Bluetooth chip manufacturer, Raytac has been approved to users by not only 4.1, BT 4.2 and the latest BT5, but also by security standards such as FCC (USA), CE (EU), IC (Canada), TELEC, FC and SRRC. Raytac offers customers cost-effective, reliable and faster products. Raytac's products can be found under Özdisan Elektronik's assurance at www.ozdisan.com.



Özdisan Elektronik and Lextar Shaking Hands for Distributorship



Özdisan Elektronik signed a distributorship agreement with Lextar, the only LED manufacturer in Taiwan to produce its own chip. In addition to general lighting LEDs, Lextar has more than 2000 patents around the world, including UV (UVA and UVC), infrared, LCD backlights, automotive, plant growing LEDs and 3D depth sensors. With the agreement covering neighboring countries such as Egypt, UAE, Tunisia and Saudi Arabia, Özdisan has increased its product range and expanded its field of influence on LED.

Attend Products are now available with Özdisan Elektronik Assurance

Özdisan Elektronik has added the products of Attend, one of the major connector manufacturers in Taiwan, to its electromechanical product family. A distributorship agreement was signed with Attend company officials who came to Özdisan Elektronik's stand after the meeting at Embedded World 2019 Fair. The Attend users; MXM, FPC, HDMI, RF, cylindrical sensor connectors, micro and nano sim card, mini PCI, flash memory sockets with high quality. You can now meet Attend's network product needs with Özdisan Elektronik assurance.



Özdisan Elektronik, signed distributorship agreement with famous antenna manufacturer Linx

Özdisan Elektronik has signed a distributorship agreement with Linx, which is one of the best-selling components in the world-renowned component sales sites such as Digikey and Mouser. Linx Company, which was met during the discoveries made by Özdisan technical team at Embedded World 2019, is an American manufacturer. Linx, whose main product group consists of antennas, also has products on the RF side. Linx completely eliminates the after-sales problem by applying special processes to the entire product group they produce, and has a wide product range from PCB type antennas to

helix antennas, cellular antennas to cable antennas. Linx firm, as a strong partner in operations in Turkey in the coming period with Özdisan Elektronik, will move forward together. One of the most important parameters, as known by every designer who makes wireless communication, is choosing the right and high quality antenna. Here, Linx supports the designer and offers a wide range of products that are fully tested and ready to use. All Linx products are gradually included in Özdisan Elektronik's stocks.



Years of Experience in PCB, The Right Choice

We are at your service with high quality production in new automatic production line investments.

- 24 years production experience and expert staff
- Automated production line with monthly production capacity of 160,000 m²
- 4mil / 4mil Track – Space production capacity.
- IATF-16949, UL, ISO140001, OHSAS18001
- FR4 & Metal Core PCB Production
- In China's Top 100 PCB manufacturer list.
- Steel stencil production and support



MOSCLEAN violeds

SEOUL VIOSYS - EXPANSION FROM VISIBLE AND UV CHIP MAKER TO **TOTAL UV SOLUTIONS PROVIDER**



“Mosclean will be at Turkish market soon with Özdisan Electronic assured.”



Seoul Viosys and its affiliated company, Sensor Electronic Technology Inc. (SETi), are planning to introduce Mosclean mosquito traps to Turkish market in the last quarter of 2019. Mosclean mosquito traps, which carry Violeds™ technology, catches 5 times more mosquitoes than traditional traps as Seoul reported.

The Mosclean attracts mosquitoes by using UV LEDs from SETi called Violeds™ that emit ultraviolet light in a targeted range and traps them into the mechanism by a fan. Independent research studies proved that Mosclean performs 13 times more effectively than mercury lamp insect traps in capturing Aedes aegypti and Aedes albopictus mosquitoes, both of which have been recently linked to transferring the Zika virus. Thus, it provides you a mosquito-free environment without using any chemical or pesticides with lower operating and maintenance costs by 8 years longer lifetime and much lower energy consumption.

MOSCLEAN ISI Insect trap standard model for indoor and semi-outdoor

5x more effective than mercury lamp traps
Catch over 5x times more Aedes aegypti mosquitoes that are known to be a vector in transmitting ZIKA virus and cause microcephaly than standard Mercury lamp traps.

Dr. Philip G. Koehler, University of Florida, USA, Confirmed through experiment data



Non-Hazardous
No pesticides and no chemicals means that Mosclean is safe for baby and pregnant women.



Indoor & Semi-Outdoor

It can also be used outdoor with net container, portable battery and DC booster.

Low Maintenance

Violeds technology uses long life and energy efficient LEDs, for lower running costs with no consumable parts. Running 24/7 all year long will alleviate your mosquito problem for just \$4 per year*.

* Based on typical USA electricity tariff of \$0.12/KWh

MOSCLEAN IHI Insect trap home model for indoor & air purification

5x more effective than mercury lamp traps
Catch over 5x times more Aedes aegypti mosquitoes that are known to be a vector in transmitting ZIKA virus and cause microcephaly than standard Mercury lamp traps.

Dr. Philip G. Koehler, University of Florida, USA, Confirmed through experiment data



Removing odor and VOCs

Provides a pleasant and healthy environment by eliminating unpleasant smell of pets, kitchen, and toilet and VOCs causing sick house syndrome.



Non-Hazardous

No pesticides and no chemicals means that Mosclean is safe for baby and pregnant women.

Low Maintenance Cost

Violeds technology uses long life and energy efficient LEDs, for lower running costs with no consumable parts. Running 24/7 all year long will alleviate your mosquito problem for just \$4 per year*.

* Based on typical USA electricity tariff of \$0.12/KWh

MOSCLEAN IPI
Insect trap
portable model
for travel &
indoor

5x more effective
than mercury
lamp traps

Catch over 5x times more Aedesa egypti mosquitoes that are known to be a vector in transmitting ZIKA virus and cause microcephaly than standard Mercury lamp traps.



Non-Hazardous
No pesticides and no chemicals means that Mosclean is safe for baby and pregnant women.

Compact & Portable

Compact design makes it easy to use when traveling or on a business trips.

Low Maintenance Cost

Violeds technology uses long life and energy efficient LEDs, for lower running costs with no consumable parts. Running 24/7 all year long will alleviate your mosquito problem for just \$4 per year*.



Dr. Philip G. Koehler, University of Florida, USA, Confirmed through experiment data

* Based on typical USA electricity tariff of \$0.12/KWh

MOSCLEAN IW1
Insect trap water
resistant
standard
model for
outdoor

5x more effective
than mercury
lamp traps

Catch over 5x times more Aedesa egypti mosquitoes that are known to be a vector in transmitting ZIKA virus and cause microcephaly than standard Mercury lamp traps.



Non-Hazardous

No pesticides and no chemicals means that Mosclean is safe for baby and pregnant women.

Water Resistant

Water resistant function can be used with confidence even in the rain.



0.5 Acre Coverage

With a 0.5-acre coverage, you can enjoy a backyard family gathering without mosquitoes.

Dr. Philip G. Koehler, University of Florida, USA, Confirmed through experiment data



MOSCLEAN IGI
Insect trap garden
model for outdoor

5x more effective
than mercury
lamp traps

Catch over 5x times more Aedesa egypti mosquitoes that are known to be a vector in transmitting ZIKA virus and cause microcephaly than standard Mercury lamp traps.



Non-Hazardous

No pesticides and no chemicals means that Mosclean is safe for baby and pregnant women.

Water Resistant

Waterproof function is applied for outdoor use where there are many mosquitoes such as camping places.

Wide Coverage Area

With a 1 acre coverage, you can enjoy a backyard family gathering without mosquitoes.



Dr. Philip G. Koehler, University of Florida, USA, Confirmed through experiment data.

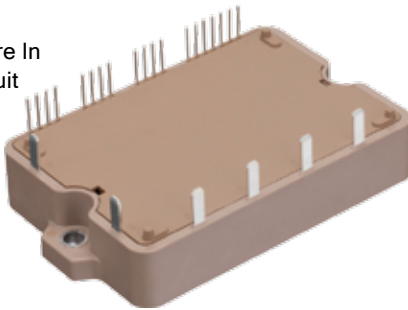
SHOWROOM



VFN Series Specification:

Protection functions in IPM

- Error Status Output
- Self-Closing Feature In Case of Over Voltage
- Self-Closing Feature In Case of Short-Circuit
- Self-Closing Feature In case of Over Heating
- Heat Protection Sensor Output



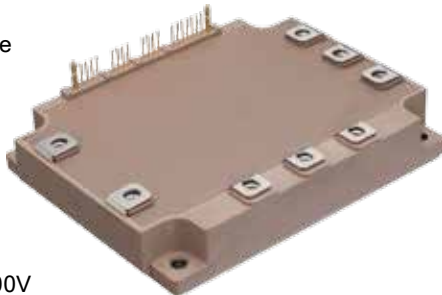
Product types in the same case;
6 pieces of 25A - 1200V
6 pieces of 35A - 1200V
6 pieces of 50A - 1200V

7 pieces of 25A - 1200V + (braking chopper)
7 pieces of 35A - 1200V + (braking chopper)
7 pieces of 50A - 1200V + (braking chopper)

VEA Series Specification:

Protection Functions in IPM

- Error Status Output
- Self-Closing Feature In Case of Over Voltage
- Self-Closing Feature In Case of Short-Circuit
- Self-Closing Feature In case of Over Heating
- Heat Protection Sensor Output



Product types in the same case;
6 pieces of 100A - 1200V
6 pieces of 150A - 1200V
6 pieces of 200A - 1200V

7 pieces of 100A - 1200V + (braking chopper)
7 pieces of 150A - 1200V + (braking chopper)
7 pieces of 200A - 1200V + (braking chopper)

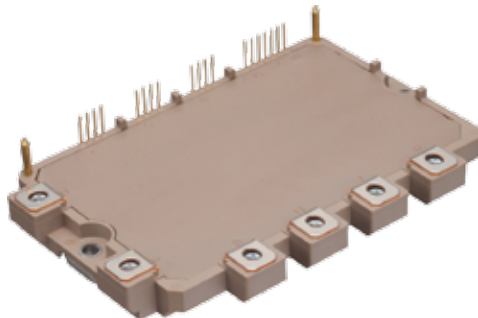
VDA Series Specifications:

Protection Functions in IPM

- Error Status Output
- Self-Closing Feature In Case of Over Voltage
- Self-Closing Feature In Case of Short-Circuit
- Self-Closing Feature In case of Over Heating
- Heat Protection Sensor Output

Product types in the same case;
6 pieces of 25A - 1200V
6 pieces of 35A - 1200V
6 pieces of 50A - 1200V
6 pieces of 75A - 1200V
6 pieces of 5-100A - 1200V

7 pieces of 25A - 1200V + (braking chopper)
7 pieces of 35A - 1200V + (braking chopper)
7 pieces of 50A - 1200V + (braking chopper)
7 pieces of 75A - 1200V + (braking chopper)
7 pieces of 100A - 1200V + (braking chopper)



SATOZ IPS SCREENS FOR EXCELLENT VIEWING ANGLE

7" IPS Panel, SAT070B050I21R2-26097T047TIN

- 50 PIN TTL (RGB) Interface
- Very wide viewing angle, 85° from all directions (via 90°)
- 1024x600 Resolution
- 21 LED, 140mA, 9.6V Backlight
- Brightness 300 cd/m²
- Thickness 2.6 mm

HOPERF

HOPERF RFM6501W LORAWAN

Özdisan Elektronik company has signed a distributorship agreement with HepoRF which is proven in SuB-GHz field. HopeRF manufactures products that support various distances and communication protocols that can communicate in the ISM band. The RFM6501W LoRaWAN module is one of them.

Specifications:

- Cypress ARM Cortex M0 Processor
- Semtech SX1262 LoRa Chip
- Ultra Low Power Consumption
- High Sensitivity
- Long Distance Communication
- High Accuary RSSI
- -137dm Receiving Sensitivity
- 470MHz / 868MHz / 915MHz Frequency
- 2.4V - 3.7V Operating Voltage
- 107mA / +22dBm Output Power
- 9mA Current Consumption (At the time of receiving)



NUMICRO® M2351

Safety features:

- Arm® Cortex®-M23 TrustZone® Technology
- 8 Sector MPU_NS (Non-Security Sector)
- 8 Sector MPU_S (Security Sector)
- 8 Sector Security Attribution Units (SAU)
- Implementation Defined Attribution Unit (IDAU)
- 2 Kb OTP ROM with Extra 1Kb Lock Bit
- Hardware Crypto Accelerator
- CRC Calculation Unit
- Up to 6 tamper detection pins
- 96-bit Unique ID (UID), 128-bit Unique Customer ID (UCID)
- Arm® Platform Security Architecture (PSA) and Trusted Base System Architecture-M (TBSA)

Applications:

- Secure IoT Products
- Environment Security Software
- Development Business Model
- Finger-print systems
- Smart Home Applications
- Smart City Applications
- Wireless Sensor Devices
- Automatic Meter Measurement
- Portable Data Saver
- Digital Currency Authentication
- Reliable applications with security application environment



SHOWROOM

ASSAN
SOURCE OF LIGHT

The Assan Electronic, which combines LED technology with unique designs and its superior production experience, sets the standards in furniture lighting technology again.

CINDY

Hanger Pipe with Motion Sensor

Specifications:

- 4 Pcs. AAA Battery,
- Easy way to battery change,
- Stylish Flange,
- PVC anti-slip surface,
- Compatible with 15x24 mm standard hanging pipe flanges,
- High quality Motion Detection,
- Cuttable.



SELINA

Half Moon Showcase Spotlight

Specifications:

- High Indoor Lighting,
- Aesthetic Innovative Appearance,
- Easy Assembling,
- AWG Cable,
- 12V DC Supply.



DOUBLE PORT

Double Port USB Charger

Specifications:

- Aesthetic design with Blue Light,
- Ø30mm Montage,
- Round and Square design options,
- 12V DC supply,
- 2.1 A Standard Output Current.



ASSAN
SOURCE OF LIGHT

WIRELESS CHARGER

Internal USB Port: With, Qi Standard

Specifications:

- Elegant Design,
- Ø60 mm montage,
- Internal USB Output.



KIT SET

Bed With Trolley Control Unit

Specifications:

- The smallest lighted kit,
- Minimized Electronic Component,
- Compatible With Different Remote Controller,
- High Audio Output Support,
- Elegant design with less cable and no box.



NELL

Thin Recessed Spot Light

Specifications:

- Thin Elegant Design,
- High Indoor Lighting,
- Ø35mm Montage,
- Compatible With Hinge Hole,
- DC 12V Supply,
- Easy Assembling.



12V LED DRIVERS

6-port distribution box

Specifications:

- Unput Voltage Range,
- Certificates: CE/ EMC/ LVD/ RoHS,
- Driver Type: C.V.,
- Output Parameters: 12V @4W/9W/30W,
- Socket Type:12V @1A / 2A.



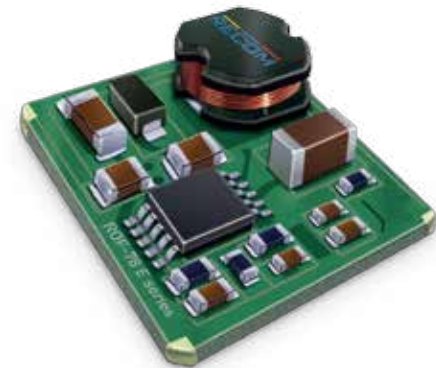
SHOWROOM



R-78E-0.5

- Low Cost Switching Regulator
- High Starting Current Capacity
- Up to 95% efficiency.
- Short-circuit protection
- Compatible with 78 series Regulator's Pins
- Non-isolated DC-DC Converter
- IEC/EN60950-1+ AM2 Certificate

PREFERENCE GUIDE						
Product Code	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [A]	Efficiency ⁽¹⁾		Maximum Capacitive Load ⁽²⁾ [uf]
				@min. Vin [%]	@max. Vin [%]	
R-78E3.3-0.5	6-28	3.3	0.5	75	88	220
R-78E5.0-0.5	7-28	5	0.5	82	92	220
R-78E9.0-0.5	12-28	9	0.5	89	94	220
R-78E12.0-0.5	15-28	12	0.5	92	95	220
R-78E15.0-0.5	18-28	15	0.5	93	95	220



ROF-78E

- 4 mm Low Profile
- Low Cost
- Very wide Input Voltage Range (5V-36V)
- Short-Circuit Protection

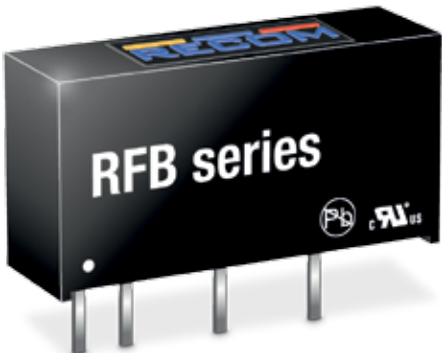
PREFERENCE GUIDE				
Product Code	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency [%]
ROF-78E3.3-0.5SMD-R	5 - 36	3.3	500	73 - 84
ROF-78E5.0-0.5SMD-R	9 - 36	5.0	500	79 - 87

REC5A

- 2:1 Input Voltage Range
- Up to 81% Efficiency
- Class A EMI without Extra Components
- Uninterrupted Short-Circuit Protection
- No Minimum Load Required



PREFERENCE GUIDE					
Product Code	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency ⁽¹⁾ [%]	Maximum Capacitive Load ⁽²⁾ [uf]
REC5A-0505SW/H2 ⁽³⁾	4.5-9	5	1000	73.5	6800
REC5A-2405SW/H2 ⁽³⁾	18-36	5	1000	81	6800



RFB

- Low cost 1W Converter
- Standard Industrial Pin Structure
- SIP7 Package
- 1 kVDC ISOLATION
- Up to 80% Efficiency
- UL60950-1, CAN/CSA C22.2 No. 6950-1 Certificate

PREFERENCE GUIDE					
Product Code	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency ⁽¹⁾ [%]	Maximum Capacitive Load ⁽²⁾ [uf]
RFB-0505S	5	5	200	80	1000

R1SX

- 1W Power with SMD Package
- Compatible Pins with R1S Series Products
- -40 ° C to + 100 ° C Operating Temperature at Full Load
- 1kVDC or 3 kVDC Isolation in 1 second.
- IEC/EN/UL62368-1 Certified, with CB Report.
- Working at an altitude of 5000 m

PREFERENCE GUIDE					
Product Code	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency ⁽¹⁾ [%]	Maximum Capacitive Load ⁽²⁾ [uf]
R1SX-3.33.3	3.3	3.3	303	74	2200
R1SX-3.305	3.3	5	200	78	2200
R1SX-0505	5	5	200	78	2200



SHOWROOM



SEEDUINO V4.2

Specifications:

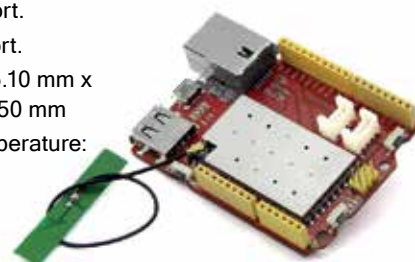
- ATmega328P Microprocessor
- Arduino UNO Bootloader.
- 14 Digital I/O Pins (6 PWM Output)
- 6 Analog Input
- ISP Input
- Compatible with Arduino UNO-R3 Shield.
- Micro USB Programming and Power Supply.
- 3 Internal Grove Sensor Connector
- 3.3/5V Operating Voltage.
- Equivalent with Arduino UNO



SEEDUINO CLOUD

Specifications:

- Equivalent with Arduino YUN.
- Dragino Wi-Fi module based IoT product
- Open-source OpenWRT Support.
- 2.4GHz Wi-Fi, 802.11 b/g/n Support.
- Ethernet Support.
- USB 2.0 Support.
- Dimensions: 75.10 mm x 53.39 mm x 11.50 mm
- Operating Temperature: -20 ~ 60°C
- Color: Red.



SEEDUINO LINKIT SMART 7688

Specifications:

- Wi-Fi 802.11 b/g/n Support.
- Pin-out for GPIO, I2C, I2S, SPI, UART, PWM and Ethernet Port.
- Pin-out for Ethernet, PWM, GPIO, I2C, SPI, UART and I2C.
- 580 MHz MIPS CPU
- 32 MB Flash and 128MB DDR2 RAM
- USB Host Support
- Micro SD Slot.



SEEDSTUDIO BEAGLEBONE GREEN

Specifications:

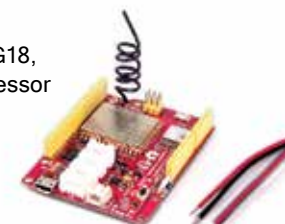
- AM3358 1GHz ARM® Cortex-A8.
- 512MB DDR3 RAM
- 4GB 8-bit eMMC Internal Storage
- 3D Graphic Accelerator
- NEON Dot Number Accelerator
- 2x Programmable Real-Time Unit (32-bit Microprocessor)
- USB, can be used as Communication and Power Supply
- 1x USB Host Support
- Ethernet Support
- 2x 46 Links Connector
- 2x Grove Sensor Connector



SEEDUINO LORAWAN W/GPS

Specifications:

- Microprocessor: ATSAM21G18, 32-Bit ARM Cortex M0+ Processor
- Operational Voltage: 3.3V
- Digital I/O Units: 20
- PWM Units: 2
- UART: 2
- Analog Input Unit: 6 Channel 12-Bit ADC
- Analog Output Unit: 1 Channel 10-Bit DAC
- External Interrupt: All pins without Pin 4
- Current Per Pin: 7mA
- Flash Storage: 256Kb
- SRAM: 32Kb
- EEPROM: None
- Clock Speed: 48MHz, LoRaWAN Class A/C GPS Communication
- Used Band: Dual Band 434/470MHz and 869/915MHz



SEEDUINO ETHERNET

- Compatible with Arduino's products
- RJ45 Ethernet Connector
- Indicator LEDs for Internet Connection
- 4 Simultaneous TCP / UDP support
- Compatible with UNO-R3 Shield
- MicroSD Card Support
- 7V - 13V Input Voltage



SEEDUINO STALKER V3

Specifications:

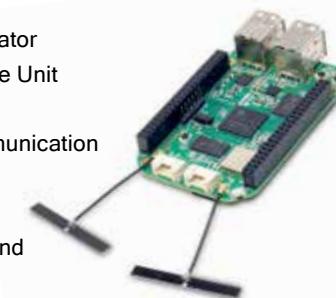
- ATmega328P Microprocessor
- Arduino UNO Bootloader
- Internal RTC and Supply Battery
- MicroSD Card Socket
- Compatible with Arduino UNO-R3 Shield
- Micro USB Programming and Power Supply
- I2C Connector (3.3V - 5.0V can choose)
- Bee Series Connection Connector (Xbee, BluetoothBee, GPSBee, RFBee)
- Equivalent with Arduino UNO



SEEDSTUDIO BEAGLEBONE GREEN WIRELESS (WI-FI + BLUETOOTH)

Specifications:

- AM3358 1GHz ARM® Cortex-A8
- 512MB DDR3 RAM
- 4GB 8-bit eMMC Internal Storage
- 3D Graphic Accelerator
- NEON Dot Number Accelerator
- 2x Programmable Real-Time Unit (32-Bit Microprocessor)
- USB, can be used as Communication and Power Supply.
- 4x USB2.0 Host Support
- Wi-Fi 802.11b/g/n 2.4GHz and Bluetooth 4.1LE Support
- 2x 46 Links Connector
- 2x Grove Sensor Connector



SHOWROOM



LSIC2SD065DXXA/LSIC2SD065EXXCCA SERIES SiC SCHOTTKY DIODES

Littelfuse has added a new product to the expanding second generation 650V, AEC-Q101 certified Silicon Carbide Schottky Diode family. Both series offer power electronics system designers the advantages of negligible leakage current, high overvoltage capability, and the ability to operate at a junction temperature of 175 ° C, unlike the traditional silicone-based family. This makes them the ideal product for projects with high efficiency, thermal and reliability.

The KSIC2SD065DxxA series SiC Schottky Diodes are available in 6A, 10A or 16A packaging TO263-2L, while the LSIC2SD065xxCCA series SiC Schottky Diodes are available in 12A, 16A, 20A or 40A from the TO-247-3L sheath. These SiC Schottky diodes emit less energy and can operate at higher temperatures than silicon power diodes. At the same time, it can be used with smaller refrigerant and more compact systems can be provided.

These new 650V SiC Schottky Diodes are used in:

- Electric Vehicle Charging Stations
- DC-DC Buck Converter / Boost Circuits
- In Inverter Circuits With Free Wheeling Diodes
- Power Factor Correction Applications (PFC)

Key advantages of the new 650V SiC Schottky Diodes:

- TO263-2L and TO-247-3L Packaging and Flexible Design
- AEC-Q101 Quality Certificate



ME3616

Our NB-IoT module is competitive in price.

- LCC Package
- Max Uplink 66 Kbps / Downlink 34 Kbps
- Dimensions: 16 mm x 18 mm x 2.3 mm
- Frequency Bands: NB-IoT B1, B3, B5, B8, B20, B28

- Internal GNSS (GPS/GLONASS/Galileo); Optionally
- Embedded HTTP/ PPP/ CoAP/ TCP/ FTP/ UDP/ OMA/ LWM2M/ MQTT Protocols
- Industrial Working Temperatura (-40 °C ~+85°C)
- e-SIM Support; Optionally



THE CALIPILE: PRESENCE SENSOR

There is a subtle nuance between the presence sensor and the motion sensor. Since the motion sensor detects the transition between the windows in the sensor, there must be a continuous movement in the environment. The main reason for the lights in the bathrooms



or corridors, which turn off when we are stationary and turn on when motion is detected again; Due to the insufficient presence detection technology, solutions are always focused on motion detection technology. Excelitas offers a completely innovative and technological solution to this event, which they call the CaliPile sensor. CaliPile consists of a high-precision Thermopile detector and a built-in electronic circuit inside the infrared detection sensor. Thanks to this built-in circuit, it can be set in 3 different operating modes and can be used for application.

Operating Modes

- Asset Detection
- Motion Detection
- Temperature / Heat Detection

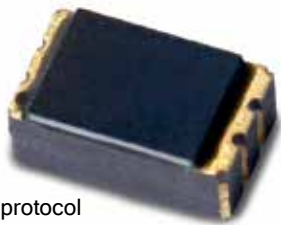
Parameter can be set and saved thanks to the circuit inside. Calibration can be performed and digital filters can be applied

at the same time. These filters provide a more stable performance.

CaliPile sensors have made 3 different packaging. The SMD packaging is one of them, while the TO metal sheath with aperture window or IR focus lens is another option. Communication with the CaliPile sensor is carried out via the commonly used I2C communication protocol. Various parameters are written to the internal registers to ensure that the sensor operates in the desired mode and criteria. With selected frequency filters and levels, CaliPile allows users to set the product to one of three main operating modes for maximum flexibility. CaliPile receives calibration data to support temperature-related process and output. The CaliPile range includes short-range asset detection without additional lens requirements, non-contact temperature measurement and overheating protection. IoT and smart home products can be used for lighting and printer detection and general industry thermal IR detection.

General Specialities of CaliPile Sensors:

- 4.4 x 2.6 x 1.75M Ceramic SMD Packaging
- High Resolution at 120° Width
- Internal 50uW low-power signal processing
- I2C general communication protocol
- Object and Ambient Temperature Calibration
- Available with generate interrupt when asset / motion is detected



nuvoTon

NUVOTON M031 FAMILY

Nuvoton, a Taiwan-based microprocessor company that Özdisan Elektronik is a distributor of, is making new leaps every day and adding new families to the sector. They recently launched the ARM Cortex M0-based M031 family, providing solutions to low voltage requirements of 1.8V. They also maximize the performance of their peripheral units. M031 family, which seems to appeal to the whole sector with its wide range of varieties, is in Özdisan Elektronik's stocks.

M031LD2AE

- ARM Cortex M0 48Mhz (PLL : 96MHz)
- 64Kb Flash / Kb SRAM
- 1.8V - 3.6V Operating Voltage
- -40°C + 105°C Operating Temperature
- 4.4KV EFT / 6KV ESD HBM
- 4x 32bit Timer / 1x 24bit SysTick
- 12x 16-bit 96MHz PWM
- 12x 12-bit 2MSPS ADC
- 5x PDMA
- 3x Uart / 2x I2C / 1x SPI / 1x USCI
- 96 bit UID / 128 bit UCID
- LQFP48 Packaging



THE ELECTRONICS INDUSTRY IS AT THE HEART OF ALL SECTORS TODAY

Technological advances in recent years have led to fundamental reforms in the electronics sector as in all other sectors. Electric vehicles, IoT (Internet of Things), medical electronics, the spread of IOS and Android-enabled phones, LED lighting technologies and 5G technology have triggered significant developments in the electronics sector. Özdisan Elektronik is one of the most important players in the global market with more than 150.000 products and more than 100 distributors. We talked with Mustafa Yurttaş, General Manager of Özdisan Elektronik, about the future of the electronic industry and the activities of Özdisan Elektronik.

Can you evaluate 2019 in terms of the electronics sector and Özdisan Elektronik?

Trade wars that spread from America to the World in August 2018 fell like a bomb on the agenda of electronic world. The base effect continues to be effective throughout 2019.

Which direction is the sector heading? What are the trends and developments in the sector?

Naturally, the electronics sector is taking its share from American trade wars. There have been shifts to 2020 or even 2021-22 in the projects. In particular, electric vehicle projects have been considerably slowed down.

What other sectors will be triggered by developments in the electronics sector? Or developments in which sectors will influence the electronics sector?

The electronics industry is at the heart

of all sectors today. Functionality is not much if the body is unhealthy. When the body is damaged, the electronic world of course gets its share.

"Our expansion projects in these areas continue with our initiatives in Middle East, Africa and Europe and even South American countries."

What kind of works do you do in order to adapt to future technological developments as Özdisan Elektronik (exhibitions - R & D studies)?

Our company is monitoring the technological developments in

electronics sector continuously. Özdisan is the leading company in electronics component market. We continue to participate in international fairs. Electronica is the world's # 1 fair where Özdisan regularly participates. Our field engineers and R & D support personnel who can provide R & D support continue to contribute to their technological development with the support they provide to many companies.

Could you tell us about the short and long term plans of Özdisan Elektronik?

Our "global player" dream continues. Despite the bad economic conditions we are in, the successes we have achieved especially in abroad and e-commerce are taking us away from the crisis environment. Our expansion projects in these areas continue with our initiatives in Middle East, Africa and Europe and even South American countries.



ÖZDİSAN ELEKTRONİK
GENERAL MANAGER
MUSTAFA YURTTAŞ

How do you assess the situation both in Turkish and European market of electronic components?

There is a serious decline compared to the previous years in Europe and Turkey. The impact of the crisis is still continuing in Turkey. I can say that we expect some improvement in 2020.

Automation and electronics industry are among the most important sectors in Turkey. On the radar of which global markets are Turkish electronics and automation sector?

Turkish machinery industry is making serious exports to EU, African countries and the Middle East, at 75-80% level. Therefore automation sector feels the crisis at a minimum level. Electronic industry should be divided into two.

"Our e-commerce, which is growing like a snowball, continues to improve its quality with the wealth of data."



White Goods-TV sets sell to foreign markets up to 85%. Other electronic equipments predominantly sold in domestic market. Between export and domestic market rates, the domestic market weighs over 65%. Contract manufacturing is unfortunately common. Profitability is generally very low in exports.

How do you assess our country's compliance with Industry 4.0?

I don't think this process is fully understood yet. Unfortunately, sometimes our companies can be a little distant from latest technological developments. Therefore, the digital world is a must in the future. It must be included in every field. Institutions



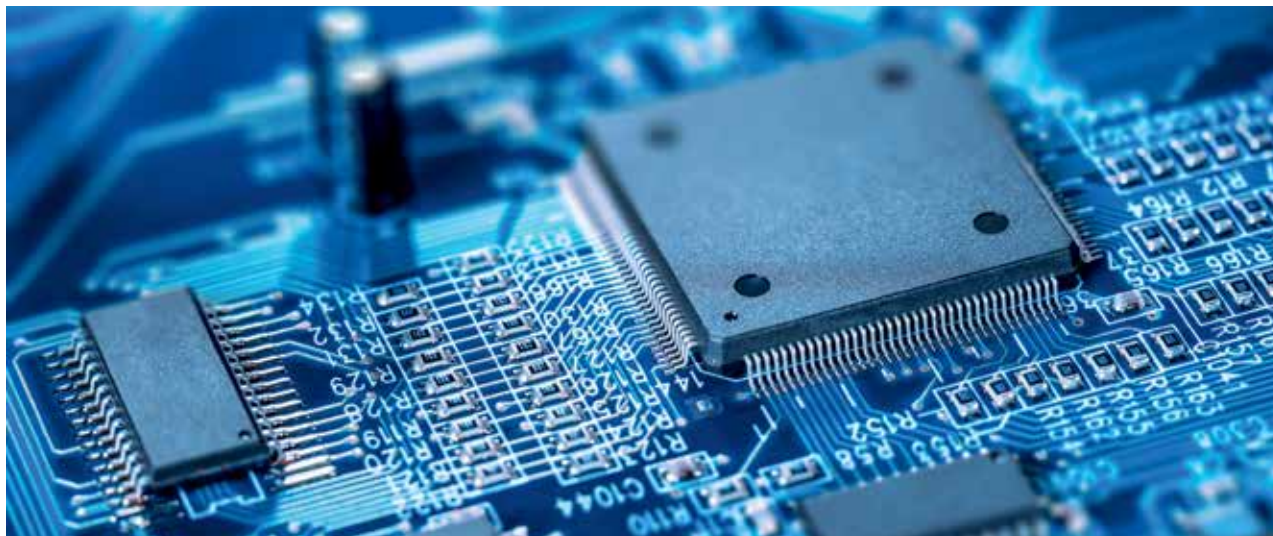
and organizations that cannot keep up with this process will be out of circuit after a while.

You have made major investments for your e-commerce portal. How has ozdisan.com developed since its inception? How are your customers interested in ozdisan.com?

The interest in our electronic portal, which also includes the e-commerce environment, is increasing day by day.

This shows that Özdisan Elektronik, a Turkish company, makes all kinds of information sharing in the internet environment to all companies in the sector with very easy use without waiting for any return. This situation is increasing the trust in our company. Our e-commerce, which is growing like a snowball, continues to improve its quality with the wealth of data. We don't say "we made enough investment". Our investments continue to thrive day by day. We compete with ourselves.

"We don't say "we made enough investment". Our investments continue to thrive day by day. We compete with ourselves."



DEVELOPMENT AND VARIATION WITH 5G

In recent years, communication Technologies developments, economic and social provides important contributions to the development.

Rapid dissemination of mobile technologies; Demand for quality parameters in communication technologies such as voice quality, bandwidth and coverage are increasing day by day. 1G, known as first generation cellular technologies, allows analogue system; 2G came to the fore with voice and data transmission. With the development of techniques in communication technology, features such as video talking, watching videos and listening to music started to be used in 3G technology. With the new developments, mobile communication technologies eliminate the problem of space and time, which is the biggest obstacle in communication.

In addition to the 4G technology used today, the 5G technology, called the fifth generation mobile communication technology, speeds up communication between people, and offers a big difference in connecting objects to the previous generation. 5G's high data rate, low latency, greater data capacity, energy and cost efficiency benefits are likely to lead to significant changes in sectors such as energy, automotive, health, energy, urbanization, agriculture and entertainment.

With the new developments, mobile communication technologies eliminate the problem of space and time, which is the biggest obstacle in communication.

AUTOMOTIVE INDUSTRY

Today, many automobile companies begin to work on autonomous vehicles. Since the technology required by autonomous vehicles is not possible with current systems, the transition to 5G technology will improve many infrastructures. The main purpose of smart transportation systems is to connect vehicles, city infrastructure, transportation infrastructure, roads, bridges and traffic lights to work together on common ground. Today's vehicles and autonomous vehicles in the traffic at the same time will lead to the emergence of new technological developments. The 5G mobile communications technology's biggest commitments to the automobile industry are low latency, high reliability and higher performance. With the 5G technology, the concept of "Communication from Vehicle to Everything" was created; vehicles will be able to exchange information with other vehicles with roadside infrastructure, a back-end server, the internet and pedestrians.

ENERGY SECTOR

With the rapid growth of the world's population and industrialization, demand for energy is increasing day by day. The energy sector will be one of the leading sectors that will use



The main purpose of smart transportation systems is to connect vehicles, city infrastructure, transportation infrastructure, roads, bridges and traffic lights to work together on common ground.

the capabilities of 5G technology. Power plants will work more efficiently when equipped with 5G technology. Thanks to smart meters, significant savings will be achieved in energy sources used in homes and production sites. Physical infrastructures in power plants will not change to a great extent, but there will be new developments in using the infrastructure. It is aimed to work in coordination of smart home systems and control systems with the IoT. 5G will provide new opportunities to improve the distribution and use of energy, increase efficiency and minimize gaps between supply and demand.

HEALTH SECTOR

5G technology, which will sign important developments and changes in the health sector, aims to increase our quality of life thanks to new health practices. With 5G networks, all patients and doctors in the world can be connected together. With more devices connected to the IoT, doctors will be able to monitor their patients.

5G networks will support sensors that require very low energy consumption by charging once every 15 years. Medical devices such as body-worn sensors that measure blood pressure or insulin will last longer. Thanks to the high security of 5G infrastructures, there will be



no external interference to users' health data. The innovations that 5G will bring in the health sector include continuous monitoring, analytical forecasting, remote diagnosis, remote health care, assisted surgery and remote surgery.

SMART CITIES

The 5G has the technology to prevent connection difficulties due to multiple devices being connected

at the same time. In the near future, 5G will make cities and homes more intelligent and interactive, delivering more data more efficiently with higher bandwidth and less waiting time. Sensors that detect air pollution and fires, safety of bridges, detecting traffic congestion and re-routing sensors, 5G technology can be made safer and faster, such as whether the street lights are on or off according to the pedestrian intensity.





WE STRENGTHENED OUR POSITION IN TURKISH MARKET

The Recom Power who producer all power classes, various current regulator and LED drivers; with its advanced products, reliable customer support and above all extensive distribution network, it has become one of the most important brands in its sector. Recom develops products for industry, transportation, medical, energy, lighting, telecom, automotive, test and measurement sectors, The Özdisan Electronics has signed a distributorship agreement with throwing a strategic step to strengthen their presence in Turkey. Özdisan Electronic's strong sales team and expert staff thanks to underline the leading position in Turkey market Recom Southern Europe Regional Sales Manager Marco Peretta and talked about the recommend activities and vision.

Could you please give us information about Recom-Power?

RECOM is a manufacturer of electronic power supply converters with over 30,000 compact modules for use in a wide variety of applications. RECOM specialized in AC/DC converters from 1W to 1kW, DC/DC converters from 0.25W to 240W,

switching regulators and LED drivers and provides worldwide customer service.

What kinds of industries your products and solutions being manufacture for?

We develop products for a wide variety of applications in sectors such as:

Industrial, Transportation, Medical, Energy, Test and Measurement, Lighting, Telecom and Automotive.

You have 3.000 sqm facility located in Austria, Gmunden. What kinds of business are doing in there?

To continue the growing expansion of the company, we have located our

headquarters in the heart of Europe. Modern laboratories with state-of-the-art equipment are installed in the 3000m² building. Our headquarters features core departments such as Research and Development Department, Quality Lab, Application Engineering, Marketing, Test and EMC Lab, Logistics and Finance Centre.

Do you have close business relationships with universities and academic institutions?

We open our doors for students to test their designs in our EMC chamber and also support their projects with our converters free of charge.

"We open our doors for students to test their designs in our EMC chamber and also support their projects with our converters free of charge."



RECOM
SOUTHERN EUROPE REGIONAL SALES MANAGER
MARCO PERETTA



We are present at information events at local universities and high schools, where our AC/DC and DC/DC book of knowledge became a great educational resource for teaching staff.

How can you describe modular and non-central power supply architecture?

The concept of distributed power architecture: the combination of a centralised switching power supply with many local "on board" converter modules enables developers to come up with much more flexible and efficient designs. Today, "off-the-shelf" modules are available for virtually any application in the industrial controls, power generation, medical, aerospace and transportation markets.

What can you tell us about cooperation with Özdisan Elektronik?

Özdisan Elektronik is now authorized to market and distribute the extensive range of RECOM converter modules. This appointment is a strategic move for RECOM to strengthen its position in the Turkish market. Özdisan has a strong sales team, and we are confident that this appointment will improve our customer service and expand our presence in Turkey.

Could you please share with us some informations about your annual production capacity?

We produced 15.000.000 of converters in 2018 and added 43 new product series.

How many employees do you have?

430 employees including all of our global locations.

What makes you different from your competitors?

- Quick and reliable distribution supported by highly experienced RECOM staff



"We produced 15.000.000 of converters in 2018 and added 43 new product series."

- Most advanced online portal (project-registration, quoting, stock-checks)
- Dynamic team constantly delivers new ideas and products
- Strongest growth line for almost all of our distributors
- Best in industry MARCOM and brand recognition

Do you have any new investment plans?

In 2018 we opened a new R&D department in Austria, where 14 engineers are involved, specialized for high power standard and customized AC/DC and DC/DC solutions. In 2020 a further acquisition is planned.

Could you please tell us about you RD works?

Our R&D departments are working according to the market needs and the request of customized solution.



RAYTAC MDBT50Q-1MV2 Bluetooth Module

Low power consumption, unusual shooting area, BT5 / BLE / Thread / ANT + / 802.15.4 protocol support.

Specifications

- Based solution with Nordic nRF52840 SoC.
- Internal 32-bit ARM® Cortex™ M4F Microcontroller
- Free usage with 1Mb Flash / 256Kb RAM
- BT5 Bluetooth Certificate
- BT5 With Long Distance Shooting
- SPI, UART, I2C, I2S, PWM, ADC, NDC and USB Support.
- Ultra small sizes with 10.5 x 15.5 x 2.2mm.
- BLE, ANT+, Zigbee, Thread and 802.15.4 Wireless Communication Protocol Supported
- FCC, IC, CE, Telec(MIC), KC, SRRC, NCC, RCM, WPC Certificates.
- Smart Houses / Remote Control
- Counter Applications.
- Applications Requiring Low Power Consumption.





ISABELLENHÜTTE

“WE LEAD THE SECTOR”

Isabellenhütte, one of the world's leading shunt resistors manufacturers, has a long history of 500 years. Isabellenhütte recently signed a distributorship agreement with Özdisan Elektronik it is bringing products to the customer in Turkey's market with Özdisan assurance. We talked to Isabellenhütte Distribution Sales Manager Deniz Vartan, who stated that they are one of the leading brands in the sector with their modern production facilities and technological infrastructure, about their activities and R&D activities.

We know that you have a long history of 500 years. What would you like to say about Isabellenhütte?

Isabellenhütte is one of the oldest companies in German with a history of more than 500 years (First documentary of the copper smelter in 1482). This huge and long tradition makes all ISA employees very proud of being a part of this outstanding history. This long market presence leveraged Isabellenhütte to one of the world's leading suppliers of alloy material and high-quality precision and power resistors. We are also very well known as the market leading company for shunt resistors and our passive components are achieving the best possible measurement results in a very

compact space. This performance is still outstanding in the shunt component world.

How many main sections does Isabellenhütte perform? Could you talk about these?

Isabellenhütte is subdivided into three main business units: Precision Measurement, Precision and Power Resistors and Precision Alloys. Our colleagues from the R&D and Quality department are very focused on high quality in standard, material and product. If we don't meet the high level specifications in our products, they will not pass our very high quality control standards. Our shunts will be produced in many individual production steps (50-70 steps possible). We believe, that this high-level production standard is only possible in our headquarter in Dillenburg (Hessen),

Germany. Therefore, Isabellenhütte decided to keep the whole production... “Made in Germany”.

Which sectors do you produce products and solutions for? In particular, what are the application areas of your products (such as gauges, resistors)?

Isabellenhütte shunt resistors will be used in every electronic board, where precise measurement signals are needed. The main applications are Automotive, E-Mobility (Battery Management & Charging Systems, ABS, ACC, Injection, etc.), Drive-, Industrial- (e.g. Power Modules) and Medical-Technology, Aviation and Aerospace, Measurement & Electronic Energy Meters and White Goods.

What makes your company a technology leader?

Isabellenhütte invests a lot of time and money in R&D research activities for brand new resistor materials & technologies. Our powerful and efficient R&D department(s) is developing new resistor materials to cover and meet the ambitious customer requirements in a better-cost efficient and economic way. Isabellenhütte is also the founder and patent owner of the resistor material MANGANIN® (1889), ZERANIN® (1967) and NOVENTIN® (2014).

Furthermore, Isabellenhütte engaged individual R&D responsible people, which are involved and part of different standard leading association, where the technology of tomorrow will be discussed and decided to pass.

"Isabellenhütte invests a lot of time and money in R&D research activities for brand new resistor materials & technologies."

What does innovation mean to you?

Isabellenhütte biggest advantage is the investigation of market needs for tomorrow. To keep this understanding truth,



ISABELLENHÜTTE
DISTRIBUTION SALES MANAGER
DENİZ VARTAN



we have to be very innovative with our product solutions. Therefore, we invest a lot of energy, time and effort to combine innovative solutions with new materials and compact component solutions. This is very important for us to keep the market leader position for our shunt components.

What would you like to say about your cooperation with Özdisan Elektronik?

Özdisan Elektronik and Isabellenhütte are business partners since November 2018. We are very proud to have Özdisan as a new very well known distribution partner in Turkey. Özdisan has an excellent reputation in Turkey, which represents our high quality products in the best way. Özdisan's staff (engineers, sales staff, marketing, etc.) and logistic concept is very professional and exemplary for a successful future.

What percentage of your products do you export? In which countries are you mainly located?

Isabellenhütte develops and produces his products to 100% in the headquarter in Dillenburg and Niedersched & Obersched in Germany (federal state: Hessen).



“Our shunts will be produced in many individual production steps. (50-70 steps possible)”

Our main markets are Germany and other European countries, followed by China, Japan and USA.

Do you have new investment plans? Could you tell us about your R&D activities?

Isabellenhütte is constantly making a lot of invests in the own infrastructure (new building, new machine, new engineers and transport & logistics) over the last 6-7 years. This was necessary to cover the market needs and our customer's expectations. The Isabellenhütte management fully supports the market trends and makes everything possible to fulfil these exemplary and outstanding

investments every year. Our customer's success makes our success possible.

Furthermore, we constantly improve our product material and quality for our shunt resistors. Our very experienced R&D and QM colleagues and production teams improves our processes and product measurement requirements on a daily basis. Isabellenhütte will announce new resistor materials and new shunt resistor families very soon.

How is the year 2019 going to Isabellenhütte, could you achieve your goals? What are your 2020 goals?

This business year 2019 is a challenging year for the whole electronic market. Nearly every day we read new “surprises” coming out especially from the automotive market. Isabellenhütte is the very well known “shunt resistor manufacturer” in this very ambitious and challenging market. Our technology leadership forces us to meet this very high standard quality requirements (e.g. IATF 16949) from and for this Automotive, Hybrid & Electronic Vehicles industries, which is also our

main market. Due to the fact, that this branch has currently some worldwide crisis, of course Isabellenhütte is also partly affected of these crises. Nevertheless, we are very optimistic and believe that the existing projects will perform in the usual way like in the past. It's only a question of time. Furthermore, Isabellenhütte has a strong market presence in the Industrial Automation, Medical, Aerospace and White Goods industries, which compensates such a kind of crises in an acceptable way.

Isabellenhütte's plan for 2020 is a constant growing based on our technology success. We will growth in our ISA-Plan series and ISA-Weld series. Furthermore, the company will growth in the infrastructure (new building, new machine, new engineers and transport & logistics), which was described in the previous Qs.

What are your predictions about the future of your sector? What awaits the electronics and automation industries in the future?

Isabellenhütte is constantly working on new product ideas for our ISA-PLAN®

(pad sizes e.g. 2817, 2512, 2010 and 1206) and ISA-WELD® (pad sizes e.g. 8420, 5930, 4026, 3920, 3812, 3512, 2720, 2512, 2010 and 1216 and customized versions) series. ISA-PLAN® resistors are manufactured from etched, homogenous precision resistor alloys such as MANGANIN® or ZERANIN®. Additional to our current SMx and VMx component series we introduced the CMx and brand-new the FMx series. ISA-WELD® resistors made of composite material, copper and one of our resistor alloys, e.g. MANGANIN®, ZERANIN® or ISAOHM® and ALUCHROM. Additional to our current BVE, BVS, BVT, BVR, BVB and BRS component series we introduced the GMP (2010 flip-chip power resistor), BVZ (4026 high power resistor), BVN (1216 space-saving power resistor) and BVF (smallest ISA-WELD high power resistor, 3,1 mm x 3,3 mm).



- | | | | | |
|-----------------------|--|--------------------------------|---------------------|------------------------|
| Industrial | Solar | Electric Power Steering | Batteries | Electrical Engineering |
| Drive Technology | Wind | Vehicle Lighting Systems | Fuel Cells | Domestic Appliances |
| Frequency Converters | Power Modules | Climate Control | Electric Vehicles | Measurement Systems |
| Digital Energy Meters | Automotive (Aec-q200 Qualified) | Electric Parking Brake Systems | Computers | Laboratory |
| UPS USV | Diesel And Petrol Direct Injection Systems | Hybrid And Electric Vehicles | Medical Engineering | Aerospace |

NEW GENERATION BLUETOOTH MODULES FROM RAYTAC

Even in 1994 when Ericsson introduced Bluetooth which is a short-range communication technology, it didn't think it could reach that level. When we talk about Bluetooth, we could think of an inefficient technology that could always communicate over short distances and connect to only one device. But recently we see that many terms such as Bluetooth 4.0 / 5.0 / 5.1 / BLE / Mesh have emerged. Contrary to what is known at the last point, Bluetooth technology can be connected to multiple devices and the shooting distance has been increased considerably. On the other hand, the power it has spent has been reduced to a minimum. As such, we now see Bluetooth technology in places that require low power consumption, such as the Internet of Things, wearable technology. Therefore, the number



of companies working in the field of Bluetooth and producing Bluetooth modules has increased.

At the embedded world, a different theme is dominated every year. Whatever the trend is, the products offered and introduced are always in that direction. As a result of the field research and the direction of the technology we conducted before going to the embedded world fair this year, we saw that the technology and systems at the fair were moving in exactly the direction we anticipated. All the fair concept was based on connecting objects or systems to the internet. We signed a distributorship agreement with Raytac Company from Taiwan.

Raytac is a company that produces Bluetooth modules. The IC on which



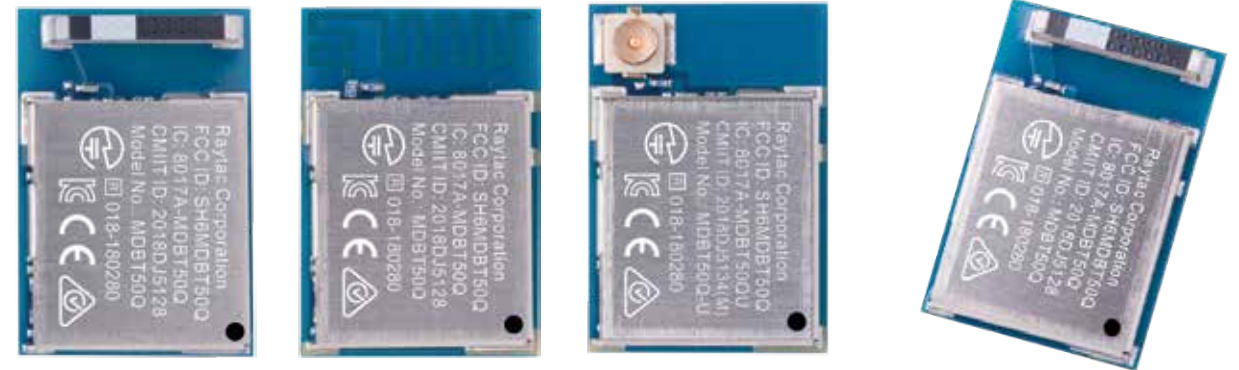
ÖZDİSAN ELEKTRONİK
FIELD APPLICATION ENGINEER
İBRAHİM EKMEKÇİ

it is based belongs to the world-renowned Nordic Semiconductor. In this period when everything getting modular, we often see chip manufacturers as well as companies producing modules with these chips. Raytac is an approved partner of nordic semiconductor company and has obtained FCC, IC, CE, Telec (MIC), KC, SRRC, NCC, RCM, WPC certificates for all the modules designed. In addition, it performs all RF tests and provides a smooth service to its customers.

Raytac is able to adapt to all kinds of projects by producing products in all combinations that customers may need. Products with PCB antenna are communicated at lower distances, while products with chip antenna antennas can communicate at medium distances. In addition,

distance can be maximized by connection by external antenna at the products with a uFL connector. The distance of Raytac modules used with chip antenna is 400 meters, while tests with uFL connector show that Raytac modules can do data communicates from a distance of 2 kilometres. This is quite a sufficient distance in areas such as communication and data collection.

"Raytac is able to adapt to all kinds of projects by producing products in all combinations that customers may need."



MDBT50Q-1MV2 product which on nRF52840 IC;

- BT4.2 & BT5 & BT Mesh support
- 512Kb flash & 64Kb Ram
- nRF52840 QFN IC
- +8dBm output power
- 2.4Ghz transceiver
- NFC support
- USB support
- Bluetooth Long Range support

Raytac product group consists of 3 different groups. These groups depend to the structure of Bluetooth chips produced by Nordic.

MDBT42Q-192K product which on nRF52810 IC;

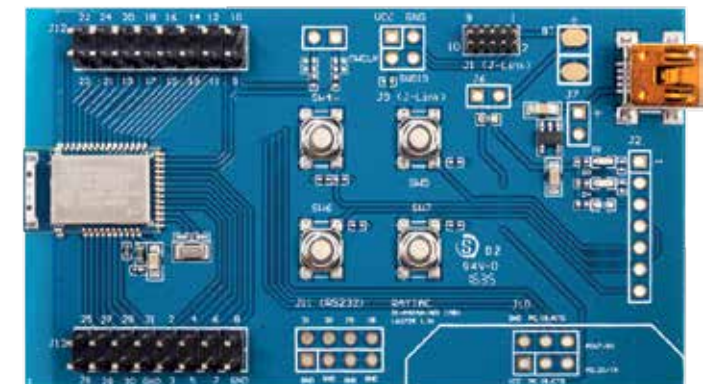
- BT4.2 & BT5 support
- 192Kb flash & 24Kb Ram
- nRF52810 QFN IC
- +4 dBm output power
- 2.4 Ghz transceiver

MDBT42Q-512KV2 product which on nRF52832 IC;

- BT4.2 & BT5 & BT Mesh support
- 512Kb flash & 64Kb Ram
- nRF52832 QFN IC
- +4 dBm output power
- 2.4 Ghz transceiver
- NFC support

Raytac has designed a development kit for each product group to facilitate testing and development of all products. So customers who want to work with Bluetooth technology can develop code with the help of development kits before designing their PCBs.

Özdisan Elektronik brought all development kits and products into the stocks after started to distributing agreement. So, all our customers interested in this products can easily buy these development kits from Özdisan's stock.



NEW ERA AT THE VOICE IC

Which of us did not chat with Siri or which of us did not try Cortana? Or which of us did not ask something to Google Duplex? Easy to guess, almost all of us have met interactive systems like this one. We are not going to talk about the sound analysis part; we will talk about hardware that allows the sound come to our ears.

Nuvoton, is one of the important brand that Özdisan Elektronik has recently added to its catalogue. In our previous article, we talked about the advantages of the Nuvoton brand on the microprocessor side. In this article, we are going to talk about advantages of the Nuvoton brand on the Voice IC side. Nuvoton is a

Taiwan company that has proven itself on the microprocessor and voice IC side after split up from Winbond Electronics in 2008. They have AECQ100 automotive certificate in Voice IC side. Many products which give sound have Nuvoton voice IC. It is possible to see Nuvoton voice IC in the over 1billion products all over the World. Fortune 500 companies provide quality service to their customers by choosing Nuvoton voice ICs in their products. Nuvoton provide products for fit automotive, computer, and industry also consumer electronic. Nuvoton brand have good references about

voice IC. The most well-known of these are companies such as Dell, Google, Intel, Microsoft. It's mean, probably you are using Nuvoton products in your personal computers.



Nuvoton has developed a system which is out of traditional solutions. They have integrated strong ARM Cortex based MCU with Voice IC. This solution make it possible to

download customer's code into Voice IC. In this way, it can be developing code via Voice IC, like traditional MCU.

Nuvoton is a company that has proven itself in voice recognizing as well as play current sound in voice IC. Both Speaker Independent (SI) voice recognition and Speaker Dependent (SD) voice recognition solutions are available. These two solutions can be use for both projects. Nuvoton have very large Flash/ Ram and peripheral scale. Thus, the product can be selected according to the need.

Nuvoton brings the elegance of its processors to the fore in its programmers.

Sound control systems that slowly enter our lives seem to inevitably exist in our lives in the future. When we go home we will be able to turn the lights on and off without using a physical switch. We can tell the washing machine which mode it can work with. At the end we will be able to stretch our feet and tell our coffee machine to make the coffee we wish. All of them will be realized with Nuvoton's voice recognition IC. IoT and smart homes are now fully accepted such products.



Nuvoton ISD9160 IC series are one of the proven IC in this field. This IC series designed ARM Cortex M0 based. It can reach up to 50Mhz running speed. It has 145Kb flash / 12Kb Ram. It also supports 1W powered integrated Audio PWM driver. As well as it has many peripherals such as Uart, SPI, I2C, I2S. Customer can do Voice Recognition project with same MCU.

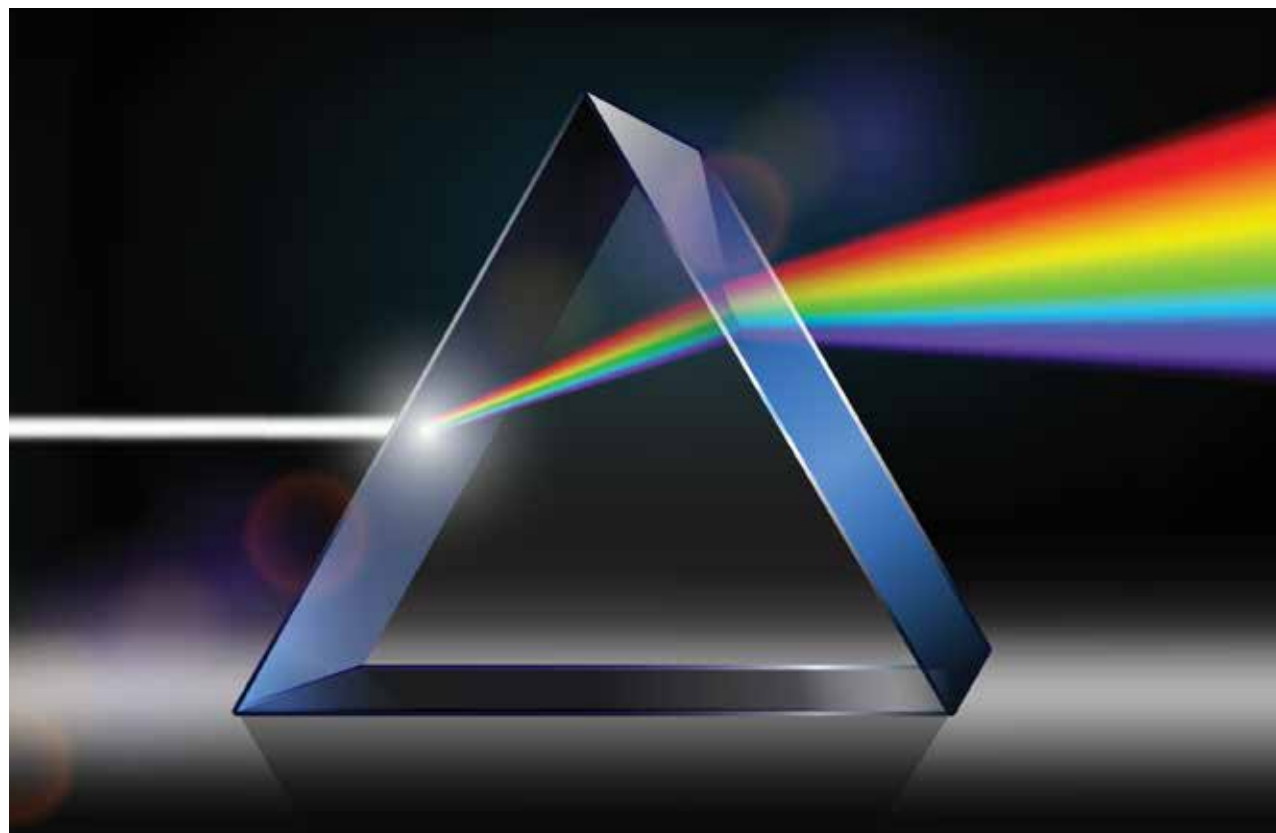
Nuvoton Voice ICs are also very easy to use. With the computer software provided by the manufacturer, the desired voices are loaded into the flash, after developed algorithms are written, they can burn into IC via Nuvoton programmer.



Nuvoton brings the elegance of its processors to the fore in its programmers.

You can download desired .hex code into programmer. Also you can program your MCU in the field.





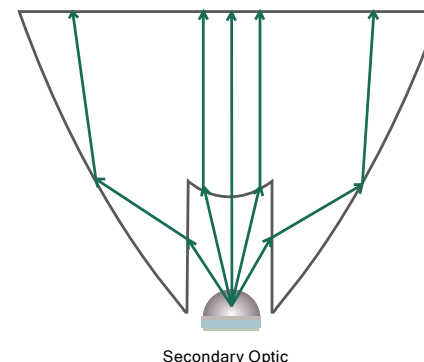
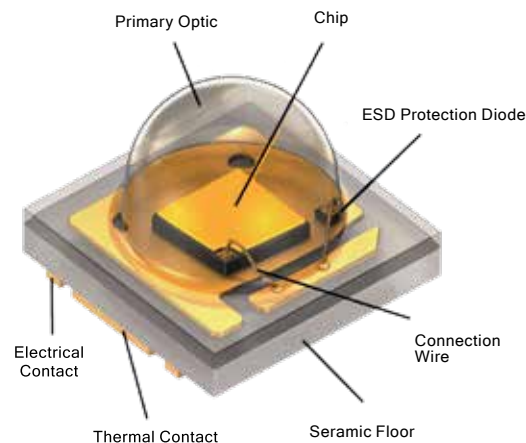
SECONDARY OPTIC MATERIALS FOR LED LIGHTING

Optical design is one of the most challenging steps for LED lighting developers. A bad choice at this stage seriously distorts the overall system structure and quality impression.

In most applications, a secondary optic such as lens, reflector or TIR optic is needed in addition to the primary optic on LED itself to diffuse or focus the angle of light emitted from the LED, thereby increasing the intensity of light in the area to be illuminated. This secondary optic can be made from a variety of optically transparent raw materials such as

glass, polymethylmethacrylate (PMMA), polycarbonate (PC) and silicon. Requirement of the application largely determine which one is the best, because each has some advantages and disadvantages over. Let's take a closer look at these materials:

PC (Polycarbonate): PC is a natural choice for applications that require transparency and high tensile strength. Since it is thermoplastic, it can be reshaped in various shapes and sizes without deterioration. The PC is flexible, resistant to chemicals,



robust and also has high impact resistance. It also has a higher softening temperature (130°C) than PMMA. Because of these properties, it is often used in applications such as automotive parts, protective equipment, digital discs and outdoor lighting fixtures. On the other hand, the PC slowly turns yellow when exposed to UV light, so it must be coated with a UV resistant surface. Other disadvantages include the lack of environmental friendliness and high cost.

PMMA (Polymethyl Methacrylate): PMMA, also known as acrylic, is a transparent thermoplastic like PC. Despite its basic properties of high transparency (PMMA: 92%, PC: 89%) and high scratch resistance, its lower cost makes it a highly desired and useful material for many optical applications. PMMA can be reshaped and recycled without any degradation, is naturally stable to UV light and does not turn yellow over time. It's suitable for laser cutting. However, more water retention, lower softening temperature (<80°C) and more fragile structure than the PC can be considered as significant disadvantages.

Silicon: It is a new type of optical material which has some advantages over PC and PMMA, such as high



ÖZDİSAN ELEKTRONİK
LED TECHNOLOGIES DEPARTMENT MANAGER
ÖNER GÜNEŞDOĞDU

resistance to ozone and UV light, high softening temperatures up to 150°C, high flexibility and impact resistance. It is resistant to acids, bases, solvents, chemicals, oils and water. The low viscosity makes micro-structural design possible. Other outstanding features are its flexibility, due to the fact that detailed shapes and features such as optical surfaces, sharp edges and small radiuses can be applied very accurately. Because of all these advantages, there is increasing interest in the use of silicone instead of PMMA and PC of optical materials in outdoor products.

Consequently, although silicone stands out as a suitable solution for all lighting applications, the high cost of production seems to be the most important obstacle to widespread use. While, choosing a PC lens, that meets UV and water resistance requirements (UL746C), is seen as the best choice for outdoor and industrial applications in terms of resistance to impact and chemicals, and higher temperature operations, a PMMA lens is the most suitable one for indoor applications with regards to lower cost and recyclability.





REFLECTION OF 40 YEARS EXPERIENCE AND INDUSTRY LEADERSHIP TO THE DIGITAL **OZDISAN.COM**

With 40 years of experience and industry leadership Özdisan Elektronik has decided to turn its website into a shopping site in 2014. Its reason is to meet the needs in this digital transformation age and present the customers a better network for trade. The actual reason surely is that conventional business models cannot meet “productivity” and

“sustainability” concepts in this digital world. Özdisan has pioneered in the market from that point and became an inspiration in the market for other companies’ digitalization in Turkey. This situation will help the companies which can turn to “digital” and for our country in the future.

There is no doubt about that the companies and countries which

proceed with digital transformation will have a voice in the future. Online shopping platform ozdisan.com has attracted intensive attention since its coming into operation in 2015. One of its reasons is that ozdisan.com is not only a shopping site. It is designed by Özdisan Elektronik’s innovative background. It detects the needs of the market and contains a great deal of modules, services and contents in its platform.



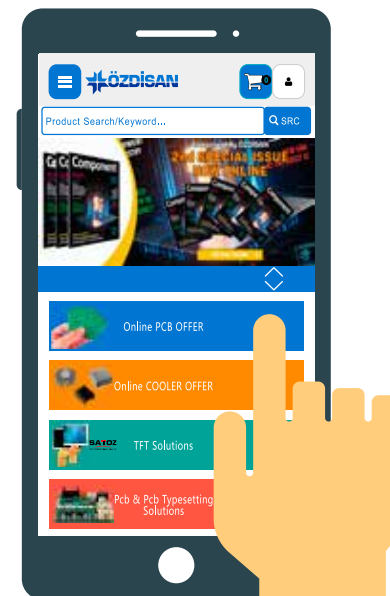
Besides the information which identifies the product like Smart Filtering screens, search engine, product details pages, product visuals and datasheets there are equivalent or similar products and estimated deliver dates for the products in the website. Therefore users can reach the product they want with the fastest and cheapest way which provides saving the time and funds.

Ozdisan.com has been increased its number of users 10 times between the years of 2015-2019 and 20% of its members are from abroad. Currently ozdisan.com have had

orders from 81 cities of Turkey which means all around our country and have delivered the orders successfully. Also it has been sessioned by users from 165 countries all around the world and it delivered the orders to 85 different countries of the world without any problem. With the various stock, it offers “ship in the same day” and “instant discount at the basket” advantages to all customers around the world 7 days and 24 hours. Finally we are in a digital age that forces us

ÖZDISAN ELEKTRONİK
BUSINESS DEVELOPMENT AND
E-COMMERCE MANAGER
ALPER ERTORUN

to change radically our conventional production models and consumption habits. So Özdisan Elektronik will constantly present its innovative projects to the customers in this digital transformation age and accompanied by its 40 years of experience and its special and valuable staff.



SEARCHING THE PRODUCT IN WEBSITE

“www.ozdisan.com”

By becoming widespread of using Internet since 1995, e-commerce systems which can response rapidly to the customers needs has been appeared as one of the biggest facilities of this digital world. Starting from this point, Özdisan Elektronik company has been going on presenting all the brands and kinds of products in its stocks on its website www.ozdisan.com. In the website, there are a smart and practical filters and searching clues in order to find all the products in website and make it easier and comfortable.

Searching products by categories

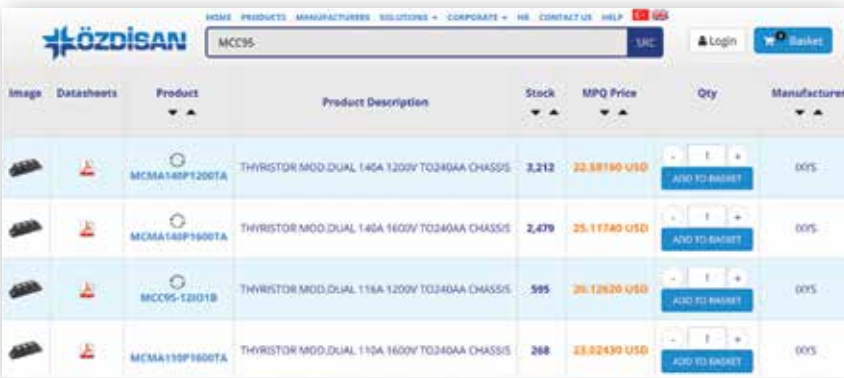
When the users visit main page, they will see product categories and the search bar. The website has got three-step categorization system. Users can choose either manuel searching by using categories on the left side or write a keyword or code to the searching button and find the product.



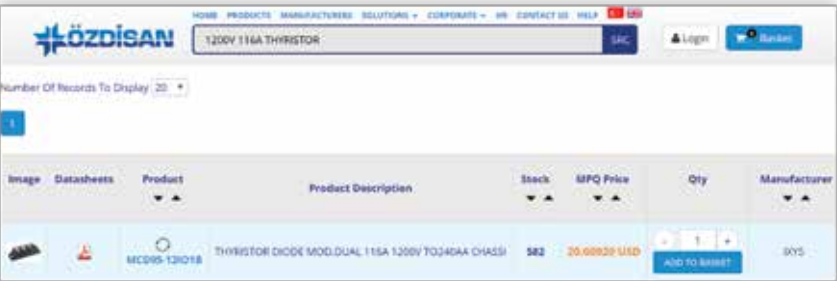
Apart from that users can reach the product they want even though they don't know the manufacturer code thanks to the “Smart filter” feature.

Using The Search Bar

In our website you can find the product by searching it from “the manufacturer code” or “the product descriptions”. For example the product with code “MCC95-12IO1B” and description “THYRISTOR MOD.DUAL 116A 1200V TO240AA CHASSIS”.



Searching for “MCC95”

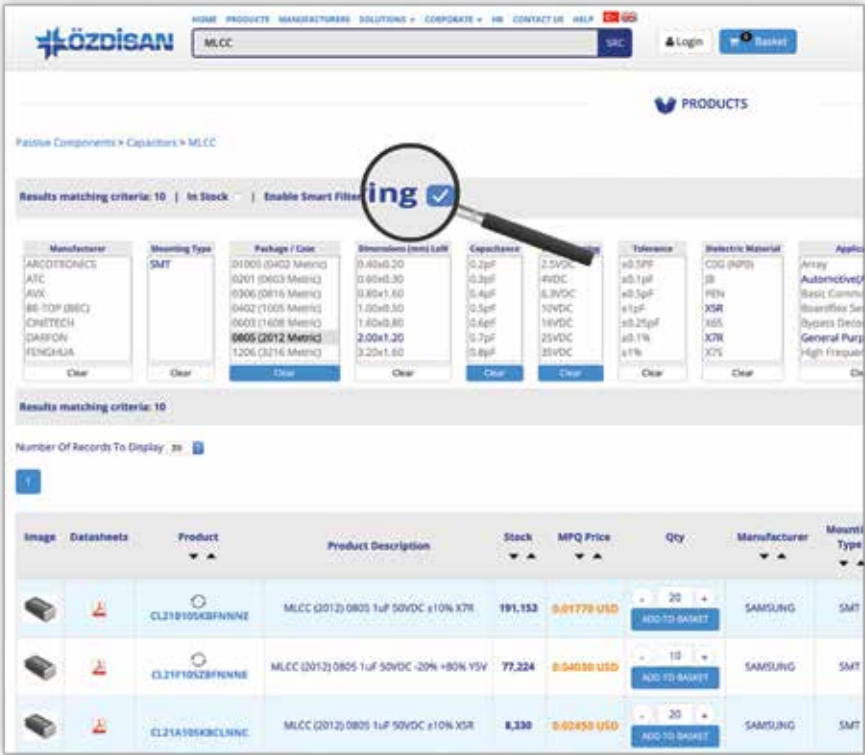


Searching for “116A 1200V THYRISTOR”

You can find this product by writing its code “MCC-95” or “MCC95-12IO1B” or you can write its description “116A 1200V THYRISTOR” as keywords and you can reach the product directly.

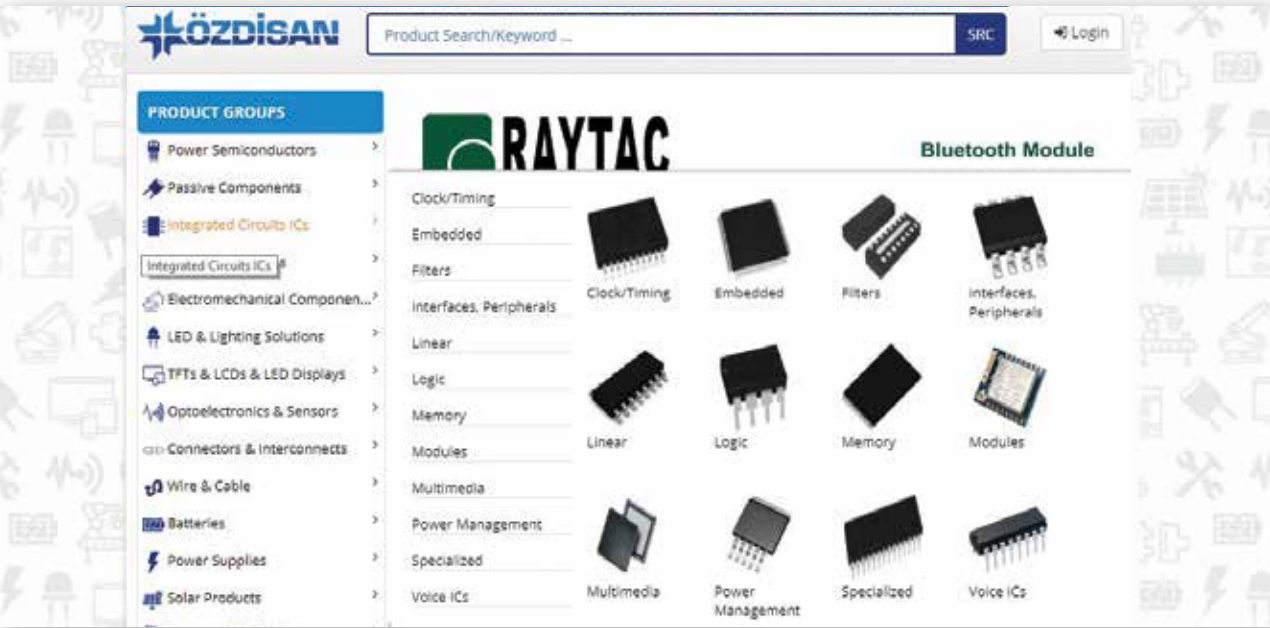
Smart Filters

With all those advantages there is “Smart Filter” feature in ozdisan.com. Users can only filter the technical features for the product when they open a category page and don't know the manufacturer code. You can use this feature and find your best product easily by putting it into your basket and complete your online shopping. Also, when you are on the page of a product you can click on the box next to the technical features and tick the option “Filter”. So you can find out all the products with wanted features in that category. In ozdisan.com there are “equivalent” “similar” and “you can use with it...” options for some products. These options present users to look over different alternatives at the same time.



Filtering on category pages and display of equivalent products

“Users can reach the product they want even though they don't know the manufacturer code thanks to the “Smart filter” feature in www.ozdisan.com”



Integrated Circuits-Embedded Circuits-micro processors searching



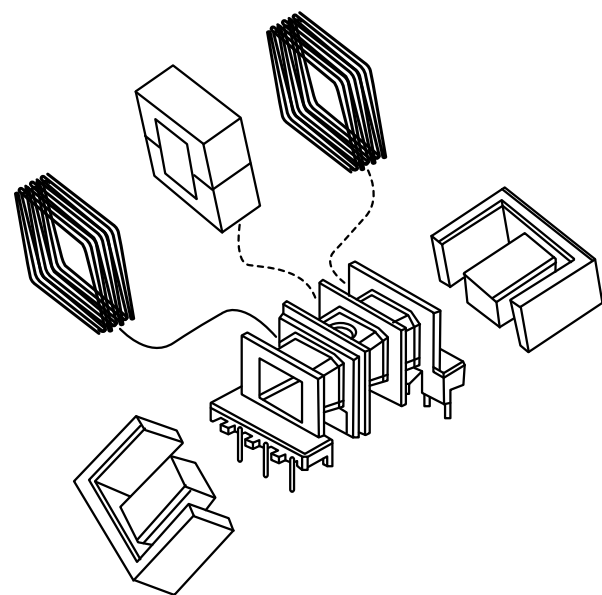
Lifud Headquarters

R&D DIRECTOR
MR. JUNGAO ZHU

LIFUD'S TECHNOLOGICAL INNOVATION

DRIVES THE DEVELOPMENT OF THE INDUSTRY

The world's record is a symbol of strength, and also the limit of strength. However, in the long river of time, records can often be broken. The breaking of every record requires hard work and extraordinary innovation. Lifud's patented invention, a high-frequency transformer, helps Lifud to once again take the first place in the low-power LED driver field, the most widely used part, in the LED industry around the world with its extraordinary efficiency index.



Structure of Lifud's patented invention, the high-frequency transformer

The high-frequency transformer overcomes the technical bottleneck of the existing transformer by applying the magnetic integration technology and realizing efficient conversion of electromagnetic energy, breaking the efficiency limit of 88% of the isolated led power supply of around 40W in the industry.

Owing to this technology innovation, Lifud has improved the efficiency of power supplies around 40W to 90%. Two percent, is one small change for component, one giant leap for LED industry. This technology not only increases the efficiency of a power supply, but also increases the energy density of a power supply. Meanwhile, the power supply generates less heat and therefore, performance stability



Pictures of Lifud's patented invention, the high-frequency transformer



LF-GIF040YA, one of the products that adopt Lifud's patented invention, the high-frequency transformer

of the product improves to another level. As one of products that adopts this technology, Lifud driver LF-GIFxxxYA series achieves excellent flicker-free effect (percent flicker $\leq 0.5\%$) and its output efficiency reaches 91%, which greatly improves light efficiency.

Lifud, a leading provider of LED power supply and intelligent system solution, a brand with technology, quality and service as its core, regards innovation as the driving force for enterprise development and constantly challenges the technical difficulties of the industry. Lifud has obtained 12 invention technologies and 46 utility models and appearance patented technologies, each of which proves Lifud's efforts and strength in innovation. Let's wait and see what surprise Lifud will bring to the industry and the world in the future.

THE SEVENTH CONTINENT

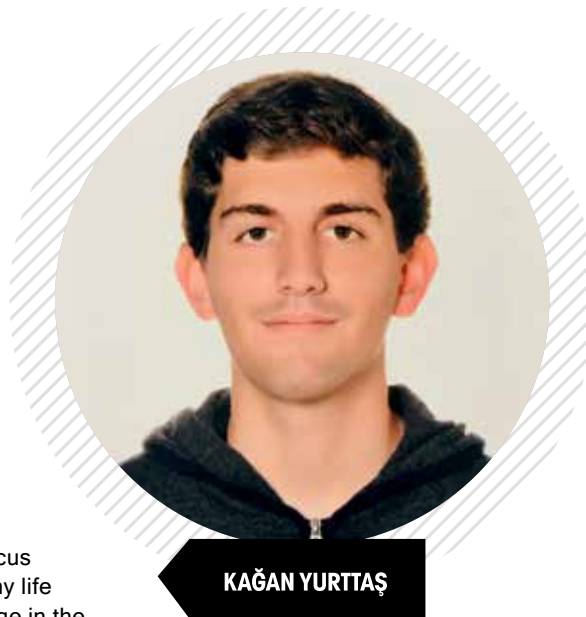
Where are the human beings now in the modern world? What is the meaning of being an individual in a society? In other words, what are the reasons for people to live in an endless cycle? What makes them happy in an out of balanced routine, and what gives them hope for the future? How strong are they against the dominant social ideologies, and what can happen if their feelings fundamentally shake-up in a negative manner?

Michael Haneke's first feature-length film, *The Seventh Continent* (1989) is an examination of the modern

world. The film tries to disturb the audience's feelings by obliging them to ask these questions and to understand the reasons for Haneke's focus on the details of everyday life via the destructive change in the psychological mood of an upper-middle-class family.

A. The Details of Everyday Life

The film's fundamental idea is simple: To show a family one day in a year, in three chapters (1987, 1988, and 1989). Haneke reflects social ideologies by focusing



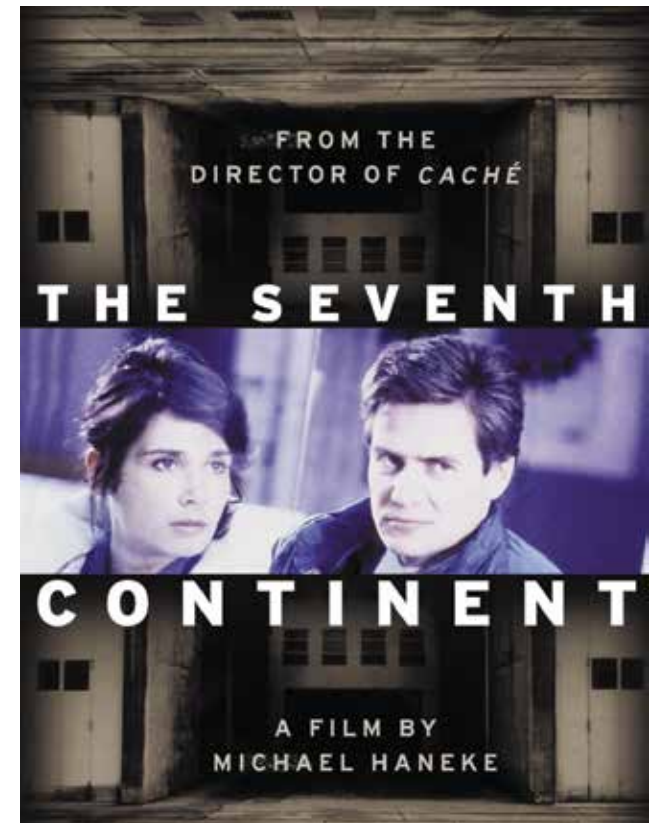
KAĞAN YURTTAŞ

on the smallest but most prime representation of the social structure, which is a family. The audience faces the routine of the three family members' - named Georg (the dad), Anna (the mom), and Evi (the child) - day for the first thirty-five minutes in three parts. In the first part, they wake up, get up from their bed, wear their slippers, brush their teeth, get dressed to be prepared for the day, give the fishing worm to the fishes in the aquarium, prepare breakfast, have breakfast, and go out from the garage by car. In the second part, the time they spend on their job is shown. In the third part, they go to the supermarket, get some gas from the gas station and come back to their house. Then, Evi does her homework. Georg takes a shower. Anna puts the stuff they bought from the supermarket in the fridge. Later, they have dinner, watch TV and go to sleep.

What grabs our attention is the significance of Anton Peschke's cinematography. He shows the characters faces minimally. On the other hand, he captures material goods in detail to underline their importance in the family's life and

the modern world. In her analysis, the film critic Büşra Savlı suggests "The alarm clock, the gas meter, the calculator, the radio, and the TV are just some of the simple and efficient examples of the daily rituals of people. These materials are shown to define the position of an individual in a throw-away society in Western culture."

When the family members smile at each other at the dinner table, they cannot create a conversation. Haneke defines their melancholy by showing how they need to give themselves up to the social order. He expresses these communicational issues by attracting our attention to the family's loveless and careless attitudes towards each other. The family's economic position and the materialism of the bourgeoisie are introduced and defined by Haneke's point of view. He manipulates reality and creates an interpretation of the modern world by using wide lenses, and he creates continuity in editing and contiguity between sound and space with the measured value of noise.



"Michael Haneke's first feature-length film, *The Seventh Continent* (1989) is an examination of the modern world."

B. From a Dream to a Nightmare

The film's story is also as simple as its fundamental idea: A European family who plan on escaping to Australia. In the first two chapters of the film, Haneke gives the audience an endless zone of hope for the future. What is more, the beginning of the third chapter also gives the audience the idea that the family members are going to immigrate from Austria to Australia. However, it is seen that they have just returned from Georg's parents' house to their house. Haneke misleads the audience on purpose. Afterward, in a letter by Georg to his parents, the audience faces the shocking truth:

The family is going to commit suicide. They withdraw all their savings from the bank and sell their car. Then, before the self-destruction, they have an upper-class breakfast. It reminds Leonardo da Vinci's painting "The Last Supper," which represents the scene of the last supper of Jesus. After breakfast, they start the self-destruction by demolishing their clothes and continue by devastating their goods. They express their long-time depression and feelings of emptiness by destroying everything they own.

The breaking point of the film is seen in the middle of the self-destruction. When Georg tries to break the glass of the aquarium, Anna says, "No!", which signifies that she is not yet ready to commit suicide. On the other hand, Georg is determined. He closes the door of hope for life by breaking the glass of the aquarium and by killing the fish in it. Additionally, Haneke also tries to explain the endless cycle of the dominant ideology. The destruction of the aquarium is a symbol of the individualistic society of so-called "free" individuals.



"The audience faces the truth that all the family members are no longer alive at the end of the film."



The family members can give themselves up for a better society, but the unbearable weight of death would still defeat them.

Afterward, the audience encounters the most significant criticism against the culture of industry in the film. Haneke manipulates the reality once again, with a long shot of the family members throwing their money into a closet to indicate that death becomes more real via negative material values. So, it is not surprising for the audience to see them watching TV even when they try to take their own lives.

C. Conclusion

The audience faces the truth that all the family members are no longer alive at the end of the film. The snowy TV screen - which is the last shot of the film - is used as a symbol to define the absurdity of people's lives in the modern world. What makes this film unique is Haneke's approach to interrogate how a society or the modern world might take shape after postmodernism because modernism disappeared a long time ago. What remains still are the lies of modernism, or in other words, manipulated truths. These manipulated truths lead to the destructive preoccupation with materialism, as evident in the film.



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- Working Temperature Rate: $-20 +70^{\circ}\text{C}$
- It has wide range for applications.
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