



**ECOMAL<sup>®</sup>**

**Electronic Components and Logistics**

**ECOMAL Europe GmbH**

Extract from our Lines



## Pulse Proof, High Power Thick Film Chip Resistors

- Excellent pulse load capability
- Improved rated power, two-sided printed resistor element
- Perfect choice for most areas of power measurement

## Precision Resistor (Film & Wirewound)

- Resistance tolerances down to  $\pm 0.005\%$
- Temperature coefficients down to  $\pm 2 \text{ ppm}/^\circ\text{C}$

## Thermistors

- Smallest designs
- Large portfolio of B-value configurations
- Customer-specific adaptations

## Current Sense Resistor

- Power Metal Strip®
  - 4-terminal design allows for 1 % tolerance down to  $0.0002 \Omega$
  - High power-to-footprint print size ratio

## Power Iron Powder Inductors & Ferrite Inductors

- Highest currents in a small space through iron powder core
- Very high saturation values, therefore very suitable as filters and storage chokes
- High frequency suitability, e.g. for DC/DC converters
- Electrically shielded in addition to magnetic shielding
- Up to 5MHz

## Ceramic caps, High voltage & RFI

- Low losses
- Up to 15kV
- High stability
- Custom solutions possible

## Aluminium Electrolyte, Polymer & Film Caps

- Highest ripple currents
- Small case size
- SnapIn, SMD & THT
- Highest useful lifetimes
- Film Caps up to THB 1000h

## MLCC

- Open Mode Design (OMD)
- C0G (NP0) and X7R dielectrics offered
- Polymer termination available
- Wet build process
- Safety caps

## Tantalum & Polymer Tantalum

- Ultra Low ESR
- High ripple currents
- Stable capacitance over operating temperature, voltage, and frequency range

## Wet Tantalum

- High energy, very high capacitance design
- All tantalum, hermetically sealed case
- Utilizes Vishay proven SuperTan® technology



## Analog Switches and Multiplexers

- Low and flat switch On-Resistance
- Low power consumption
- Low leakage and charge injection
- Wide operating voltage range
- High bandwidth
- Low capacitance

## Opto MOSFET and IGBT drivers

- Optically isolated
- 2,5A Output current

## Optocouplers

- Standard Configurations
- High voltage
- Linear optocouplers for analog signal transmission

## Sensors

- Proximity sensors
- Ambient light sensors
- Color sensors

## Infrared Components

- Infrared emitters
- Infrared detectors

## MOSFETS

- **LV,MV and HV**
  - Wide range of enclosures
  - Optimized for charge or optimized for OnResistance and wipe in excellent solutions
  - Neuse Trenchfet Technology
  - Latest Superjunction technology up to 800V

## DC/DC Konverter

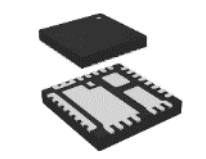
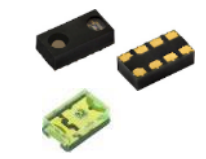
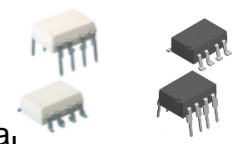
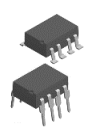
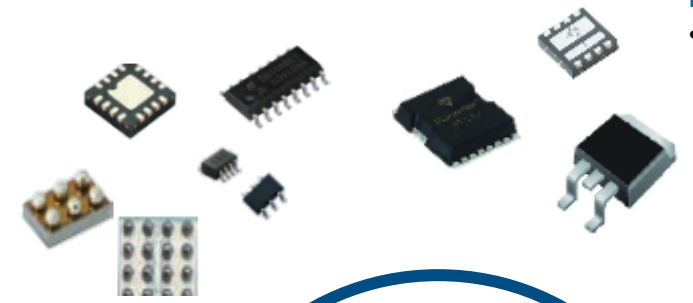
- **microBuck & microBrick**
  - Highest efficiency
  - Input voltages up to 60V
  - Minimal external components
  - microBrick -> integrated inductor

## VRPower

- Vishay's Gen IV MOSFET technology and a low-side MOSFET with integrated Schottky diode
- High frequency operation up to 1.5 MHz
- 95 % peak efficiency
- Delivers up to 50 A continuous current

## Diodes & Rectifier

- Small Signal
- Ultrafast SMD & THT
- TVS & ESD



## Power Diode Modules

- Up to 600A
- Up to 2000V
- Up to module size Super MAGN-A-Pak

## Power IGBT Modules

- Ultrafast Trench IGBTs
- High efficiency FRED Pt® clamping diodes
- Integrated thermistors provide easy thermal management
- Complete integral solutions for 3-level inverter stages
- Low internal inductance and switching losses

## POWER - HEAVY CURRENT Film

- Compact construction
- Each product designed to customer specifications
- Can operate in extreme environmental conditions
- Easy to integrate into overall system concepts
- Low inductivity



## Ceramic power caps

- Low dissipation factor
- Negligible piezoelectric / electrostrictive effect
- Low inductance
- High insulation resistance
- Wide range of capacitance values

## Power Aluminium Capacitors

- Polarized aluminum electrolytic capacitors, non-solid electrolyte
- Large types, cylindrical aluminum case, insulated with a blue sleeve
- Pressure relief in the sealing disc
- Up to 600V
- Highest useful lifetime
- > 25 years 24/7 application life at 60 °C at special types
- Highest ripple currents

## Power Resistors

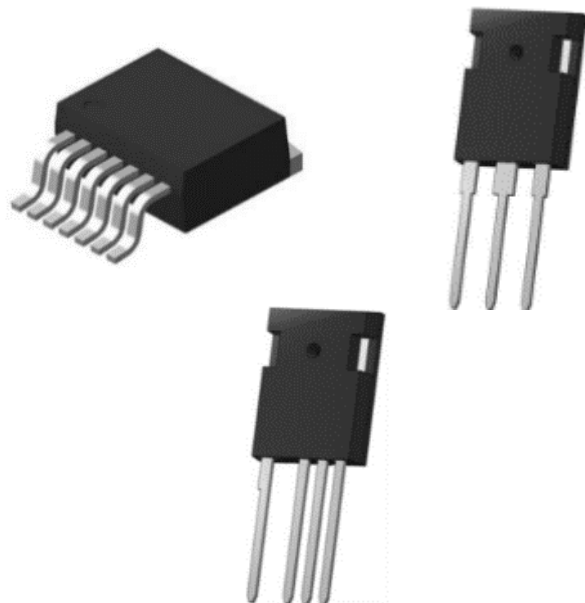
- UL 508 and CSA C22.2 recognized available
- Maximum Voltage to ground
- High power rating up to 1000 W
- Excellent pulse load capability
- Low ohmic values
- Adjustable types available
- Corrugated ribbon construction aids rapid cooling





## Product Range

- SIC FETS
- SIC JFETS
- SIC SCHOTTKY DIODES



## SIC FETS

- 650V/750V/1200V/1700V
- Industry's lowest RDS(on) options from 6mΩ to 410mΩ
- New Gen 4 750V and 1200V SiC FETs
- High-performance cascode configuration
- Excellent body diode performance ( $V_f < 2V$ )
- Drive with any Si and/or SiC gate drive voltage
- TO-220-3L; TO-247-3L & 4L; D2PAK-3L & 7L packages
- Majority are AEC-Q101 qualified



## SIC JFETS

- 650/900/1200/1700 V device options
- Low on-resistance: RDS(on) maximum of 25mΩ
- Current limiting: rapid current decrease due to self-heating, limiting I2t
- Normally-on JFETs: VG(th) invariant with temperature
- RoHS compliant



## SIC Diodes

- Best in class IFSM (surge) rating of any supplier
- Excellent thermal resistance - Ag sintered bonding
- Best in class VF\*Qc figure of merit
- High current ratings: 25A/1700V, 100A/1200V, 200A/650V
- No reverse or forward recovery
- AEC-Q101 qualified



## Product Range

- Low to high power modules
- SiC Modules
- Discrete Parts
- Automotive IGBT modules
- Automotive SiC modules

## Focus Packages



L1, L2, L3 and L4



C1, C2, and C8



C5 and C6



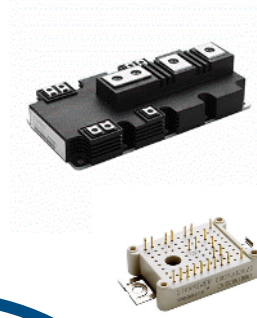
C6.1



C3 and C4

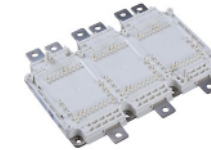


P1 and P2



## Power Range IGBT's up to 1700V

- Low Power from 10A
- Medium Power up to 600A
- High Power Modules up to 3600A



## Power Range SiC Modules up to 1700V

- Up to 1000A



## Range Discretes

- Up to 1200V
- Up to 200A





# PARTIAL OVERVIEW OF THE DYNEX COMPONENTS

## Product Range

- Thyristor Disc
- Gate turn off Thyristors
- IGBT
- FRD
- Diode Disc
- Power assemblies



### IGBT Modules

- Up to 6500V



### FRD Modules

- Up to 6500V



### Gate Turn Off Thyristors

- Up to 4500V



### Thyristor Discs

- Up to 8500V



### Diode Discs

- Up to 9000V



#### INDUSTRIAL

IGBT, Trench Gate IGBT, Diode Modules, Bipolar range of devices in a variety of devices in a variety of package outlines and custom power assemblies.



#### TRACTION

IGBT modules ranging from Trench Gate to mature and extremely robust DMOS+ and SPT products, Bipolar range of GTO's and Fast Recovery Diodes.



#### RENEWABLES

IGBT modules and Bipolar devices designed and manufactured for renewable and power grid applications, increasing the energy mass and affordability value for the end user.



#### ELECTRIC VEHICLE

IGBT packaging types S0.S1.S2.S3 and M1 covering 750V to 1200V. IGBT modules with flat baseplate for higher power applications modules having pin fin geometry.



#### FUSION

Fusion Energy has the potential to revolutionise the way we create power, using the collision of heavy isotopes to release energy.



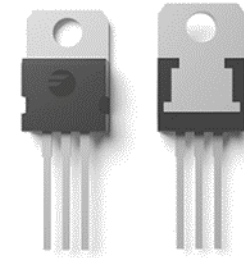
#### HYDROGEN

Power supplies for all types of electrolysis technologies, high power converters, power assemblies with tailored semiconductors.



## Diodes

- General Schottky
- General purpose rectifiers
- Very soft ultrafast
- High avalanche ultrafast
- Fast recovery rectifier
- Ultrafast
- Zener
- TVS
- Bridges



## Thyristors

- Triacs
- SCR
- Diacs



## Aluminum Electrolytic Capacitors

- 0,1 $\mu$ F up to 1F
- 4V up to 650V
- 1000h up to 10000h Endurance
- Temperature Range up to 130°C
- Highest ripple currents
- Custom Types
- High vibration resistant types



## Hybrid Polymer Capacitors

- 1,2  $\mu$ F up to 1500 $\mu$ F
- 16V up to 400V
- 1000h up to 10000h Endurance
- Temperature Range up to 150°C
- Ripple current up to 5000mA@100kHz

## Solid Conductive Polymer Capacitors

- 4,7  $\mu$ F up to 3900 $\mu$ F
- 2V up to 100V
- 2000h up to 5000h Endurance
- Temperature Range up to 125°C
- Highest ripple currents





# PARTIAL OVERVIEW OF THE PILKOR COMPONENTS

## PEC / Power Electronic Capacitors

QUICK REFERENCE DATA	
Dielectric	Metallized polypropylene
Capacitance range	Up to 150µF
Capacitance tolerance	5% / 10%
Lead spacing	27.5mm / 37.5mm / 52.5mm
Rated voltage range	450Vdc / 700Vdc / 900Vdc / 1100Vdc
Temperature range	-40°C ~ +105°C
Life time expectancy	100,000 hours at VR, 70°C
Reference	IEC 61071
Potting & Encapsulation material	Qualified in accordance with UL94V-0

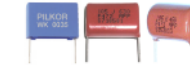
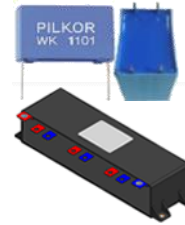


## EMI Suppression Capacitors

QUICK REFERENCE DATA	
Dielectric	Metallized polypropylene
Capacitance range	0.001µF to 10µF
Capacitance tolerance	10%, 20%
Lead spacing	10.0mm / 15.0mm / 22.5mm / 27.5mm / 37.5mm
Rated voltage range	305 Vac
Temperature range	-55°C ~ +110°C
Reference	IEC 60384-14
Potting & Encapsulation material	Qualified in accordance with UL94V-0
Safety approvals	UL 60384-14 & CSA E60384-14.09(cUL) ENEC, CQC EK (0.1µF ~ 3.0µF)

## Automotive Capacitors

Reference data						
Part	Role	Product	Quick reference data			
			Die.	Climatic category	Voltage [V]	Cap. Range [µF]
①	Filter cap. - EMI protection X&Y	P347	PET	55/110/56	310V~	0.1~2.2
		P130	PP	55/105/21	300V~	0.001~0.47
②	DC-link cap - Energy storage Input cap. - To withstand over-voltage - High dc filtering	P225	PP	40/105/56	250~850	1~10
③	Out put cap. - To withstand over-voltage - Low dc filtering ( 14V )	PCPW 223	PET	40/105/21	35	4.7~22
etc.	Snubber cap.	P384	PP	55/105/56	250~2500	0.00022~1

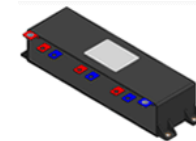


## PFC Capacitors

QUICK REFERENCE DATA	PCMP 372/472 series	PCMT 352/392 series
Dielectric	Metallized polypropylene	Metallized polypropylene
Capacitance range	0.022 to 2.2µF	0.22 to 1.0µF
Capacitance tolerance	5% / 10%	5% / 10%
Lead spacing	10.0 / 15.0 / 22.5 / 27.5mm	10.0 / 15.0mm
Rated voltage range	450 / 500 / 550 / 630Vdc	450Vdc
Temperature range	-40°C ~ +105°C	-40°C ~ +105°C
Pulse Rise Time (dV/dt)	55 to 270 V/µs	47.5 V/µs
Dimension of 450Vdc, 1µF (b x h x l)	8.5 x 15.0 x 18.0 [mm]	7.0 x 13.5 x 18.0 [mm]
Reference	IEC 60384-16	IEC 60384-16
Potting & Encapsulation material	Qualified in accordance with UL94V-0	

## PV Inverter Capacitors & DC Link

QUICK REFERENCE DATA		
Product series	PCPW 245	PCPW 255
Use	C1_DC-link capacitor	C2_Motor run & AC filter capacitor
Dielectric	Metallized polypropylene	Metallized polypropylene
Capacitance range	1.5µF to 100µF	1µF to 55µF
Capacitance tolerance	±5%, ±10%	±5%, ±10%
Rated voltage range	450Vdc, 700Vdc, 900Vdc, 1100Vdc	250Vac, 300Vac, 350Vac, 400Vac
Temperature range	-40°C ~ +105°C	-40 ~ +85°C
Life time expectancy	100,000 hours at VR, 70°C	Class B
Reference	IEC 61071	IEC 60252-1
Potting & Encapsulation material	Qualified in accordance with UL94V-0	



## IGBT Snubber Capacitors

QUICK REFERENCE DATA	
Dielectric	Metallized polypropylene
Capacitance range	0.47µF to 10µF
Capacitance tolerance	5% / 10%
Terminals	Tinned coated copper
Rated voltage range	850Vdc / 1000Vdc / 1250Vdc
Temperature range	-40°C ~ +105°C
Life time expectancy	100,000 hours at VR, 70°C
Reference	IEC 61071
Potting & Encapsulation material	Qualified in accordance with UL94V-0

# ECOMAL<sup>®</sup>

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Bringing Power into engineered power component solutions

*The major component  
in your success!*