



Vishay Intertechnology, Inc.

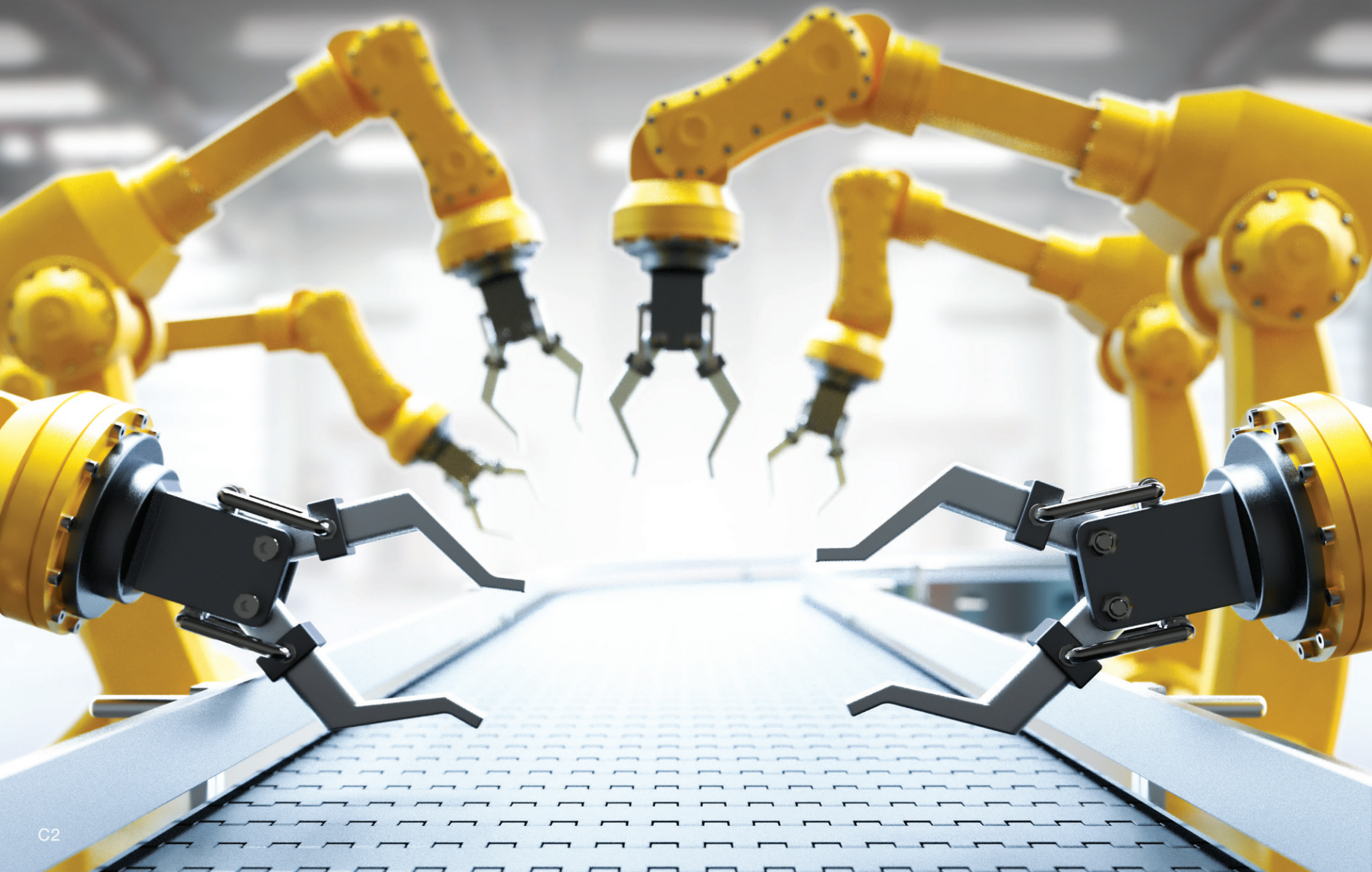


# Industrial



**Engineer's**  
Toolbox

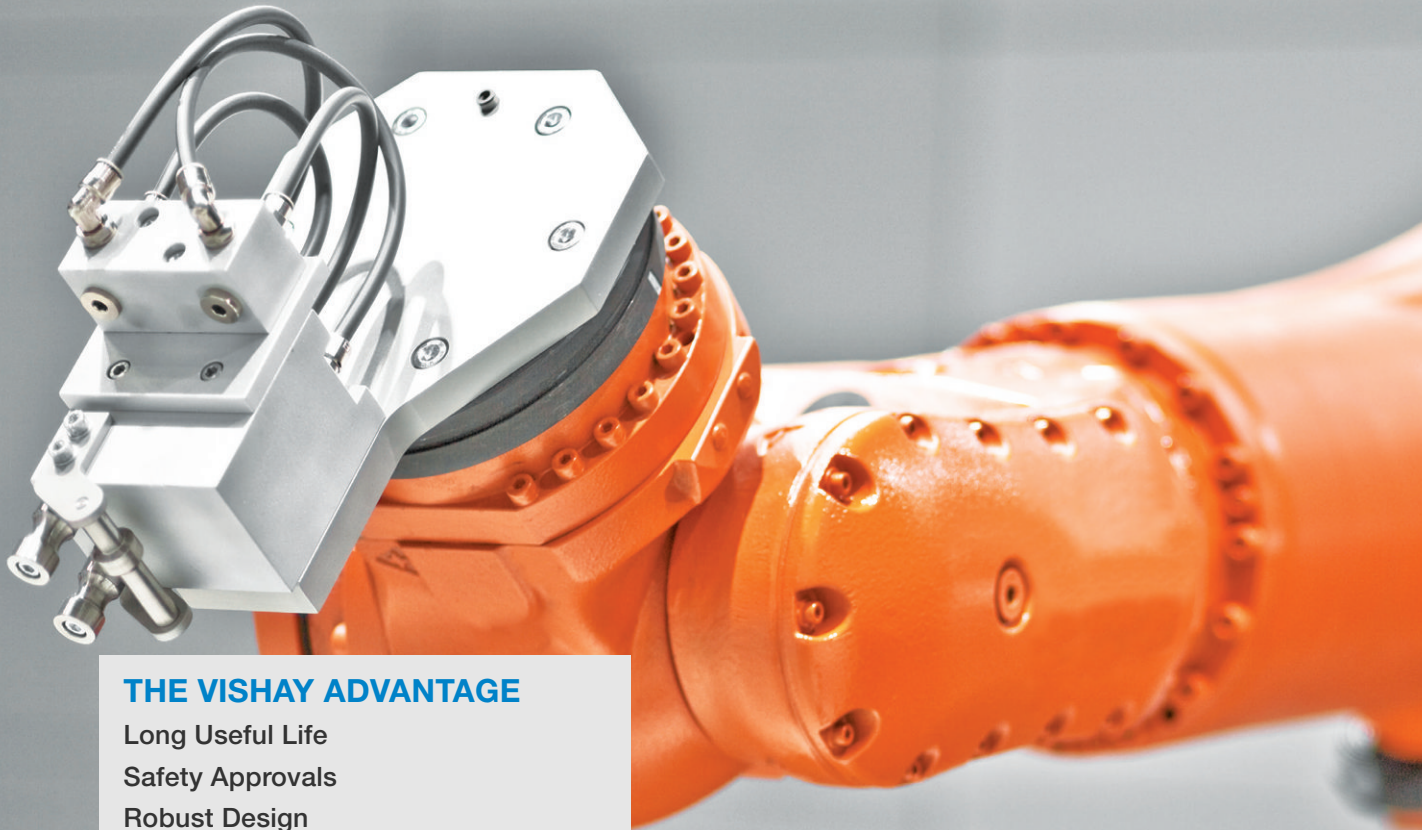
# EFFICIENCY IN PRODUCTION





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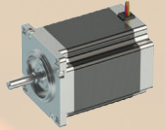
# Key components for FACTORY AUTOMATION



## THE VISHAY ADVANTAGE

- Long Useful Life
- Safety Approvals
- Robust Design
- High Peak Pulse Power
- High Precision and Stability
- High Surge Current Capabilities and more....

### Motor Drives



### Testers



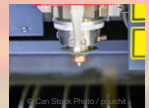
### Control Units



### Air Conditioning Systems



### Laser Marking and Coding



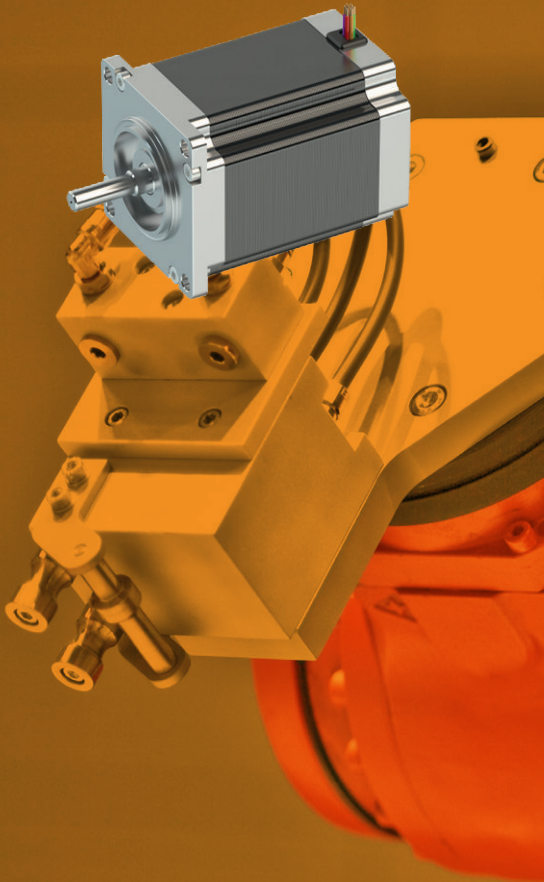
### Collaborative Robots (COBOTS)



### Low Voltage UPS



## Motor Drives


**ICs**
**5 V, 1 A H-Bridge Motor Driver**
**SiP2100**

- High efficiency with an extremely low operating current
- Brush / stepper motor driver


**CERAMIC CAPACITORS**
**IEC 60384-14, CAN/CSA/ cCSAus, and ANSI/UL CB Certificates**
**VJ Safety Capacitors**

- Surface-mount design for simpler assembly and reduced board space requirements
- Available in NP0 (C0G) or X7R dielectrics


**RECTIFIERS**
**Single-Phase Single In-Line Bridge Rectifiers**
**GSIB2560**

- UL recognition file number E54214
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- General purpose use in AC/DC bridge full wave rectification


**RESISTORS**
**Power Resistor for Mounting onto Heatsink, Thick Film Technology**
**LPS 800**

- High power, 57 mm x 57 mm, 800 W at 25 °C on heatsink, low weight 83 g
- Non-inductive down to 1  $\mu$ H, high pulse capability up to 1000 J short pulse


**MOSFETs**
**N-Channel 60 V (D-S) 175 °C MOSFET in D<sup>2</sup>PAK**
**SUM50020EL**

- Maximum  $R_{DS(on)}$  of 2.1 m $\Omega$  in rugged D<sup>2</sup>PAK package
- Improves switching characteristics with  $Q_{gd} / Q_{gs}$  less than 1


**NON-LINEAR RESISTORS**
**NTC Thermistors, High Temperature Lug Sensors, 150 °C**
**NTCALUG01T**

- 150 °C long term stability
- High insulation voltage up to 2700  $V_{AC}$
- UL recognized, AEC-Q200 compliant


**ALUMINUM CAPACITORS**
**High Ripple Current, Compact 105 °C Aluminum Capacitor**
**259 PHM-SI**

- 105 °C maximum temperature allows for high peak ripple current
- 3000 h lifetime translates to > 15 years of 24/7 operation at 60 °C
- Small size allows for use in compact designs


**TANTALUM CAPACITORS**
**Solid Tantalum Surface-Mount Chip Capacitors, TANTAMOUNT<sup>®</sup>, Molded Case**
**293D**

- Molded tantalum capacitor, standard industrial grade
- General purpose capacitor


**MOSFETs**
**EF Series 600 V Fast Recovery Power MOSFET**
**SiHG47N60AEF**

- 3rd generation EF Series superjunction MOSFET with  $R_{DS(on)}$  max = 70 m $\Omega$
- In standard TO-247 package with 40 A continuous current rating


**ESTA POWER CAPACITORS**
**Capacitors for Power Electronic (PEC) - Cylindrical**
**DCMKP Tubular**

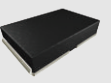
- High impulse current rating
- Low inductance


**INDUCTORS**
**IHLP<sup>®</sup> Commercial Inductors, High Saturation Series**
**IHLP-2525CZ-01**

- Compact composite inductor for high efficiency DC/DC conversion
- High frequency operation out to 5 MHz, excellent saturation

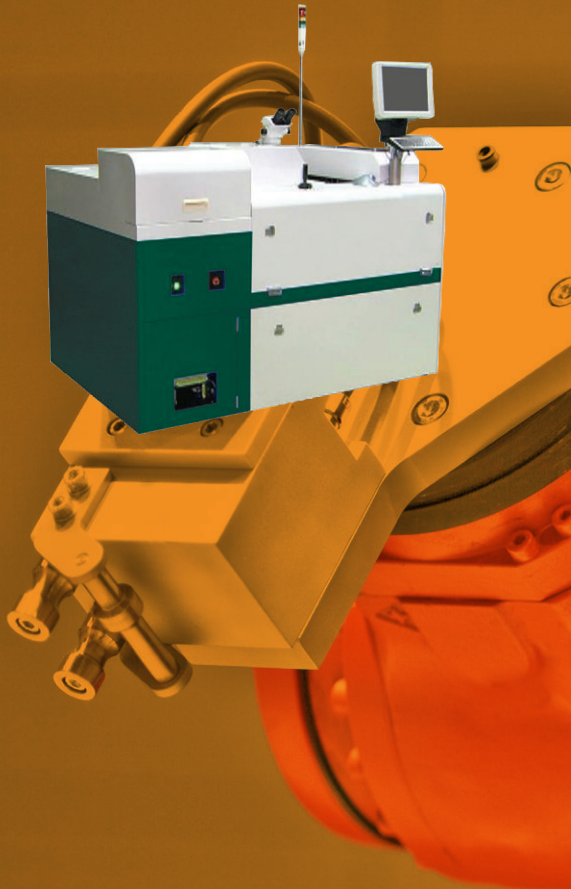

**RESISTORS**
**Power Metal Strip<sup>®</sup> Resistors, High Power Density, Very High Power (10 W) Surface-Mount**
**WSHP2818**


- Optimized thermal design provides superior power density
- All metal welded construction provides high reliability and pulse withstanding






# Testers




MOSFETs  
**P-Channel 40 V (D-S) MOSFET**  
  
**Si2319DDS**  

- Industry leading TrenchFET® P-channel technology, maximum  $R_{DS(on)}$  of 75 m $\Omega$
- Popular SOT-23 package

OPTOELECTRONICS  
**SPST Normally Open (1 Form A) Solid-State Relay in DIP-6 Package**  
  
**VO14642AT**  


- Isolation voltage of 5300 V<sub>RMS</sub>, load voltage of 60 V, DC load current of 2 A
- Can be configured for AC/DC or DC only operation with clean, bounce-free switching

ICs  
**Precision 8-Channel / Dual 4-Channel CMOS Analog Multiplexers**  
  
**DG508B**  


- High precision, low noise signal switching, 2 pC low charge injection
- Low parasitic capacitance of 18 pF  $C_{D(ON)}$ , low leakage typically of 3 pA
- Reduced switching errors, glitching and power consumption

TANTALUM CAPACITORS  
**Solid Tantalum Surface-Mount Chip Capacitors, TANTAMOUNT®, Molded Case, Low ESR**  
  
**TR3**  


- Molded tantalum capacitor, low ESR
- Automation and control, SMPS, motion and drives, telecom infrastructure, networking and multiplexers, general purpose

DIODES  
**Surface-Mount TRANZORB® Transient Voltage Suppressors**  
  
**SMCJxx**  

- Available in unidirectional and bidirectional
- AEC-Q101 qualified

CERAMIC CAPACITORS  
**AC Line Rated Ceramic Disc Capacitors, Class X1: 760 V<sub>AC</sub> Class Y1: 500 V<sub>AC</sub>**  
  
**VY1 Series**  

- X1 / Y1 safety rating according to IEC 60384-14, 4th edition
- Highest reliability and lifetime, operating temperature -40 °C to +125 °C

RECTIFIERS  
**Hyperfast Rectifier, 15 A FRED Pt®**  
  
**VS-15ETH06FP-N3**  


- 175 °C operating junction temperature
- Hyperfast recovery time

RESISTORS  
**Molded, 25 mil Pitch 8 pin QSOP, Dual-In-Line Thin Film Resistor, Surface-Mount Network**  
  
**MORN**  


- Multiple divider ratios with resistance values from 100  $\Omega$  to 100 k $\Omega$  per resistor
- Available in 0.01 % ratio tolerance and 1 ppm/°C TCR tracking
- Excellent long-term ratio stability,  $\pm 0.015$  % over 2000 h at 70 °C

RESISTORS  
**Precision Thin Film Chip Resistors**  
  
**MC Precision**  


- Excellent overall stability, sulfur resistant
- CECC approved according to EN 140401-801

INDUCTORS  
**Wirewound, Surface-Mount Molded Inductors**  
  
**IMC-1210**  

- RF inductor for high density filter applications
- Vertical-bobbin construction eliminates cross-talk with nearby components

ICs  
**6 V to 28 V, 58 m $\Omega$  Programmable Overcurrent Protection Switches**  
  
**SiP32419, SiP32429**  

- Programmable turn on time with fast (<1  $\mu$ s) short circuit response
- Undervoltage lockout, thermal shutdown, power good, fault flag
- Control features simplify the design and increase the reliability

OPTOELECTRONICS  
**AC and DC Linear Optocoupler with VDE, UL, BSI, FIMKO Certifications**  
  
**IL300**  

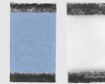
- Feedback photodiode compensates for LED's time and temperature characteristics
- Isolation test voltage, 5300 V<sub>RMS</sub> in DIP or SMD package

## Control Units


**MOSFETs**
**P-Channel 20-V (D-S) MOSFET**

**Si7615ADN**

- Industry leading p-channel Gen III technology, maximum  $R_{DS(on)}$  of 4.4 m $\Omega$
- Thermally enhanced PowerPAK<sup>®</sup> 1212-8 package is 1/3 the size of SO-8 package

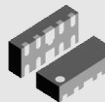
**RESISTORS**
**High Precision Wraparound, Thin Film Chip Resistors, Sizes 0302 to 2512**

**P Series**

- Low TCR down to 5 ppm/°C (-55 °C to +155 °C), tight tolerance down to 0.01 %
- Sulfur resistant, failure rate E7 level, from 10R up to 200M

**MOSFETs**
**N-Channel 1000 V Power MOSFET**

**IRFBG20**

- Rugged Planar technology, maximum  $R_{DS(on)}$  of 11  $\Omega$
- Popular TO-220 package, maximum continuous current 1.4 A

**DIODES**
**4-Line Bus-Port ESD Protection, Flow-Through Design**

**VBUS54GD-FBL**

- Low leakage current  $I_R$ : < 0.1  $\mu$ A, low load capacitance  $C_D$  = 0.8 pF
- Compact LLP2510-10M package

**INDUCTORS**
**IHLP<sup>®</sup> Commercial Inductors, High Saturation Series**

**IHLP-2525CZ-01**

- Compact size, high current DC/DC conversion and filtering
- High frequency operation out to 5 MHz, excellent saturation

**ICs**
**4- / 8-Channel, Triple SPDT,  $\pm$  5 V / 12 V / 5 V / 3 V Analog Multiplexers**

**DG4051E**

- High precision, low noise signal switching, < 0.3 pC low charge injection
- Guaranteed 2 V logic high limit when operating from 5 V or  $\pm$  5 V supplies

**FILM CAPACITORS**
**Interference Suppression Film Capacitor, Class Y2, Radial MKP 300 V<sub>AC</sub>**

**MKP338 6**

- RFI Y2 capacitor for bypass applications

**OPTOELECTRONICS**
**Optically-Isolated 1 Form A Solid-State Relay in Surface-Mount 4-Pin SOP Package**

**VO1400AEFTR**

- Clean, bounce-free switching with maximum  $R_{ON}$  of 5  $\Omega$ , and load voltage of 60 V
- Load current, AC peak of 100 mA, isolation test voltage 3750 V<sub>RMS</sub>

**NON-LINEAR RESISTORS**
**TFPT Thermistors, Nickel Thin Film Linear Temperature Sensors**

**TFPT**

- Temperature compensation RTD, excellent overall stability
- AEC-Q200 compliant
- Wide operating temperature range: -55 °C to +150 °C

**TANTALUM CAPACITORS**
**Solid Tantalum Surface-Mount Chip Capacitors, TANTAMOUNT<sup>®</sup>, Molded Case, HI-TMP<sup>®</sup>**

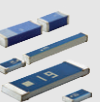
**TH4**

- Temperature molded tantalum capacitors, HI-TMP<sup>®</sup> (to 175 °C)
- Harsh environments, high temperature sensors, decoupling, filtering

**RESISTORS**
**Metal Film Resistors, High Precision, High Stability**

**PTF**

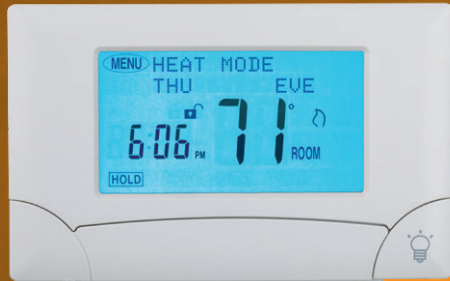
- Tolerances to  $\pm$  0.01 %
- TCR down to 5 ppm/°C, operating temperature range -20 °C to +85 °C

**CERAMIC CAPACITORS**
**Standard Reflow, Process Assembly, High Reliability Ceramic-Oxide Body Construction**

**Ceramic Chip Antenna**

- Frequency range from 400 MHz to 5 GHz
- Wide operating temperature range -40 °C to +85 °C



# Air Conditioning Systems



### RECTIFIERS

#### PFC Diode

**VS-E4TU2006FP-N3**

- Low EMI
- Optimizes PFC efficiency
- $T_j$  max = 175 °C



### RESISTORS

#### Professional Thin Film MELF Resistors

**MM / SMM**

- Best-in-class pulse load capability, excellent overall stability
- CECC approved acc. EN 140401-803, sulfur resistant



### RECTIFIERS

#### PFC Diode

**VS-C4ZU6006FP-E3**

- Low EMI
- Optimize PFC efficiency
- $T_j$  max = 175 °C

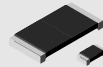


### RESISTORS

#### Power Metal Strip® Resistors, Low Value (down to 0.0005 Ω), Surface-Mount

**WSLP**

- Extremely low resistance values from 0.0005 Ω to 0.1 Ω and tolerance of 1 % and 0.5 %
- Power Metal Strip® all-welded construction offers high pulse capacity



### NON-LINEAR RESISTORS

#### PTC Thermistors, Inrush Current Limiter and Energy Load-Dump

**PTCEL**

- High energy absorption levels up to 240 J, rugged construction
- High direct voltage up to 1000 V<sub>DC</sub> at increased ambient temperature up to 105 °C



### MOSFETs

#### E Series 650 V Power MOSFET

**SiHP24N65E**

- High performance E Series high voltage technology, maximum R<sub>DS(on)</sub> of 145 mΩ
- Popular TO-220 package, maximum continuous current 24 A



### RESISTORS

#### Power Resistor for Mounting onto Heatsink, Thick Film Technology

**RCH**

- High power from 5 W to 50 W on heatsink
- Non-inductive fasten type or screw terminations



### FILM CAPACITORS

#### Metallized Polypropylene Film Capacitors DC-Link Capacitor

**MKP1848**

- High performance DC filter, low ESR, high peak current capabilities
- High RMS current capabilities, radial mounting



### OPTOELECTRONICS

#### High Power Infrared Emitting Diode, 940 nm, GaAlAs, MQW

**TSAL6400**

- 940 nm emitting diode in GaAlAs with high radiant power and high speed
- Angle of half intensity:  $\varphi = \pm 25^\circ$ , low forward voltage
- Suitable for high pulse current operation



### NON-LINEAR RESISTORS

#### NTC Thermistor Assembly for Temperature Sensing

**NTCACAPE3C90807**

- Accurate Vishay NTC chips, enabling class A to class A+++ refrigerator grades
- Design following class II insulation (principal + supplementary insulation)
- Designed for robust water, moisture and ice resistance: 6000 h in water immersion under voltage



### OPTOELECTRONICS

#### Optocoupler, Phototransistor Output, High Reliability, 5300 V<sub>RMS</sub>

**VO617A**

- Good CTR linearity depending on forward current 5300 V<sub>RMS</sub> isolation test voltage
- High collector emitter voltage, V<sub>CEO</sub> = 80 V, low saturation voltage, fast switching
- Temperature-stable, low coupling capacitance

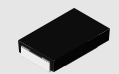


### RESISTORS

#### Power Metal Strip® Resistors, Low Value (down to 0.001 Ω), Surface-Mount

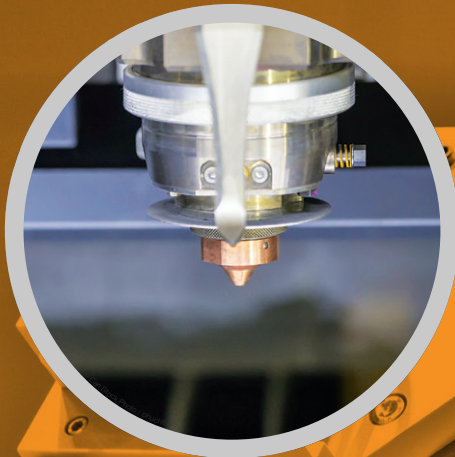
**WSR**

- Current sense resistor, molded high temperature encapsulation
- Low thermal EMF (< 3 μV/°C)
- Extremely low resistance values (down to 0.001 Ω)





# Laser Marking and Coding



OPTOELECTRONICS

**Silicon PIN Photodiode**



**T1110P6-SD-F**

- High speed and high sensitivity PIN photodiode chip with 7.5 mm<sup>2</sup> sensitive area
- Detects visible and near infrared radiation
- High photo sensitivity, high radiant sensitivity

MOSFETs

**N-Channel 30-V (D-S) MOSFET**



**Si2304DDS**

- TrenchFET<sup>®</sup> power MOSFET in SOT-23 package
- 100 % Rg tested
- For small DC/DC converter applications

DIODES

**Small Signal Fast Switching Diode**



**BAS16**

- Silicon epitaxial planar diode, ultra fast switching speed
- High conductance

RESISTORS

**Pulse Proof, High Power Thick Film Chip Resistors**



**CRCW-HP e3**

- Excellent pulse load capability
- Enhanced power rating, double-sided printed resistor element
- Perfect choice for most fields of power measurement

RESISTORS

**High Stability Thin Film Flat Chip Resistors**

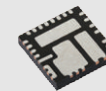


**TNPW e3**

- Excellent overall stability at different environmental conditions
- Sulfur resistant, halogen-free

ICs

**4.5 V to 60 V Input, 2 A, 4 A, 6 A, 10 A Synchronous Buck Regulators**

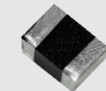


**SIC461, SIC462, SIC463, SIC464**

- High efficiency (up to 98 %), integrated high side and low side power MOSFETs
- Scalable solution, 2 A to 10 A, adjustable output voltage down to 0.8 V
- Adjustable switching frequency from 100 kHz to 2 MHz

NON-LINEAR RESISTORS

**SMD 0603, Glass Protected NTC Thermistors**



**NTCS0603**

- Standard series, AEC-Q200 qualified
- Glass protected with soft terminations

RECTIFIERS

**High-Voltage Surface-Mount Schottky Rectifier**



**SS1H10-E3\61T**

- High barrier technology for improved high temperature performance
- Guardring for overvoltage protection, low power losses, high efficiency
- High surge capability

MOSFETs

**N-Channel 20-V (D-S) MOSFET**



**Si4186DY**

- N-channel TrenchFET<sup>®</sup> power MOSFET in SO-8 package
- 100 % Rg tested, 100 % UIS tested
- DC/DC low side switch, OR-ing

DIODES

**Small Signal Zener Diode**



**MMBZ**

- Silicon planar power Zener diodes
- Enhanced Zener voltage tolerance of  $\pm 2\%$  with a "C" suffix (e.g.: MMBZ5225C)




# Collaborative Robots (COBOTS)



POSITION SENSOR, NON-CONTACTING

**Magnetic Encoders, High Accuracy, High Resolution, 33 mm Diameter**




**RAMK033...**

- 13 bit accuracy, 16.5 bit resolution
- Output SSI RS422 by connector, operating temperature range -40 °C to +105 °C
- Outer diameter 33 mm, inner diameter 4.77 mm, thickness < 6 mm

OPTOELECTRONICS

**Triple Channel Transmissive Optical Sensor for "Turn and Push" Encoding**




**TCUT1630X01**

- Phototransistor outputs, SMD package,  $I_c = 1.3$  mA typical
- IR emitter and 3 phototransistor detectors, located face-to-face
- Tall dome supports an additional transistor and room for vertical signal encoding

RECTIFIERS

**Surface-Mount ESD Capability Rectifier**




**MSE1PJHM3**

- Very low profile - typical height of 0.65 mm
- Low forward voltage drop, low leakage current, ESD capability
- General purpose, polarity protection, and rail-to-rail protection

MOSFETs

**P-Channel 30 V (D-S) MOSFET, SOT-23**




**SI2369DS**

- TrenchFET® power MOSFET, 100 %  $R_{\theta}$  tested
- Low  $R_{DS(on)}$  of 0.029  $\Omega$  at  $I_D$  of -7.6 A
- For load switch and DC/DC converter applications

RESISTORS

**Power Metal Strip® Resistors, Low Value (down to 0.001  $\Omega$ ), Surface-Mount**




**WSR**

- Current sense resistor, molded high temperature encapsulation
- Low thermal EMF (< 3  $\mu$ V/°C)
- Extremely low resistance values (down to 0.001  $\Omega$ )

ICs

**4.5 V to 60 V Input, 2 A, 4 A, 6 A, 10 A Synchronous Buck Regulators**




**SIC461, SIC462, SIC463, SIC464**

- High efficiency (up to 98 %), integrated high side and low side power MOSFETs
- Scalable solution, 2 A to 10 A; adjustable output voltage down to 0.8 V
- Adjustable switching frequency from 100 kHz to 2 MHz

OPTOELECTRONICS

**High Power Infrared Emitting Diode, 940 nm, GaAlAs, MQW**




**TSAL6400**

- 940 nm emitting diode in GaAlAs with high radiant power and high speed
- Angle of half intensity:  $\varphi = \pm 25^\circ$ , low forward voltage
- Suitable for high pulse current operation

RESISTORS

**Pulse Proof, High Power Thick Film Chip Resistors**




**CRCW-HP e3**

- Excellent pulse load capability
- Enhanced power rating, double-sided printed resistor element
- The perfect choice for power measurement

POSITION SENSOR, NON-CONTACTING

**Magnetic Encoders, High Accuracy, High Resolution, 90 mm Diameter**



**RAMK090...**

- 16 bit accuracy, 20 bit resolution
- Output SSI RS422, operating temperature range -40 °C to +85 °C
- Outer diameter 90 mm, inner diameter 50 mm, thickness < 10.1 mm

OPTOELECTRONICS

**Optocoupler, Phototransistor Output, High Reliability, 5300 V<sub>RMS</sub>**

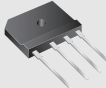


**SFH6156**

- Excellent CTR linearity dep. on forward current, 5300 V<sub>RMS</sub> isolation test voltage
- Fast switching times, low CTR degradation, low coupling capacitance
- UL1577, file no. E52744 system code H or J, double protection

RECTIFIERS

**Single-Phase Single In-Line Bridge Rectifiers**



**GSIB2580**

- Thin single in-line package; glass passivated chip junction
- High surge current capability; high case dielectric strength of 2500 V<sub>RMS</sub>
- For AC/DC bridge full wave rectification

ENERGY STORAGE CAPACITORS

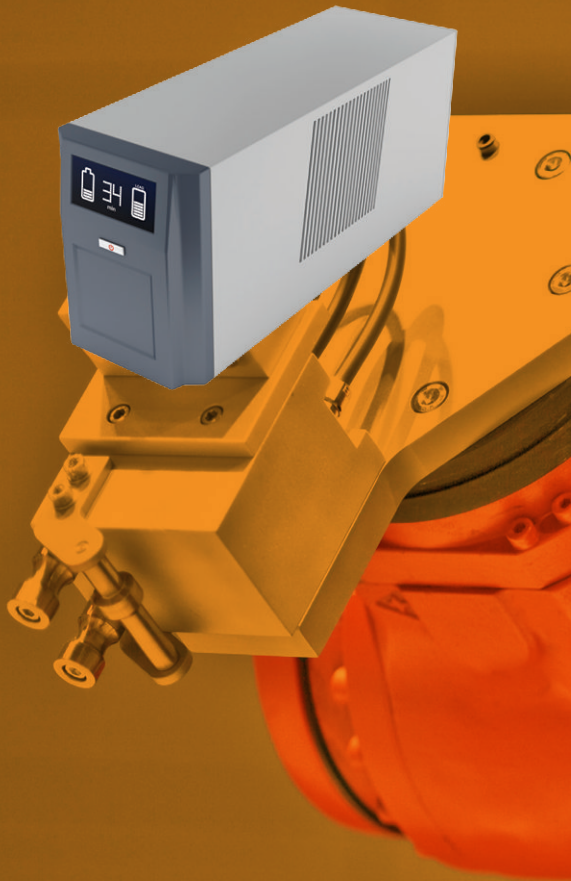
**Ruggedized Electrical Double Layer Energy Storage Capacitors**



**225EDLC-R**

- Polarized energy storage capacitor with high capacity and energy density

## Low Voltage UPS


**RECTIFIERS**
**Surface-Mount Schottky Barrier Rectifiers**

**MSS1P3L**

- Very low profile - typical height of 0.65 mm
- Low forward voltage drop, low power losses, high efficiency

**RECTIFIERS**
**High Current Density Surface-Mount Schottky Barrier Rectifiers**

**SS1P3**

- Very low profile - typical height of 1.0 mm
- Low forward voltage drop, low power losses, high efficiency
- Low thermal resistance

**RESISTORS**
**Power Metal Strip® Resistors, High Power (2 x Standard WSL)**

**WSL1206-18**

- Low value (down to 0.0005  $\Omega$ ), high stability, surface-mount
- Power Metal Strip® all-welded construction offers high pulse capacity
- Very low inductance 0.5 nH to 5 nH

**INDUCTORS**
**IHLP® Commercial Inductors, Low DCR Series**

**IHLP-1616AB-11**

- Compact composite inductor for high efficiency DC/DC conversion
- High frequency operation out to 5 MHz, excellent saturation
- Suitable for input/output filter

**INDUCTORS**
**IHLP® Commercial Inductors, Low DCR Series**

**IHLP2020BZER-11**

- Compact composite inductor for high efficiency DC/DC conversion
- High frequency operation up to 5 MHz, excellent saturation

**INDUCTORS**
**IHLP® Commercial Inductors, High Saturation Series**

**IHLP-3232CZ-01**

- Compact composite inductor for high efficiency DC/DC conversion
- High frequency operation up to 5 MHz, excellent saturation
- Lowest DCR/ $\mu$ H in this package size

**ENERGY STORAGE CAPACITORS**
**Ruggedized Electrical Double Layer Energy Storage Capacitors**

**225EDLC-R**

- Polarized energy storage capacitor with high capacity and energy density
- Rated voltage: 2.7 V, useful life: 2000 h at 85 °C, rapid charge and discharge
- Ruggedized for high humidity operation, maintenance free

**MOSFETs**
**N-Channel 30 V (D-S) MOSFET in PowerPAK® 1212-8 Single**

**SiS472BDN**

- N-channel TrenchFET® Gen IV power MOSFET, low  $R_{DS(on)}$  of 7.5 m $\Omega$
- Low  $Q_g$ , 100%  $R_g$  and UIS tested
- Thermally enhanced PowerPAK® 1212-8 package is 1/3 the size of SO-8 package

**ENERGY STORAGE CAPACITORS**
**Double-Layer Aluminum Capacitors**

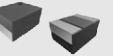
**220 EDLC ENYCAP™**

- Energy storage for backup of CMOS in all fields of electronics
- Unlimited charge and discharge cycle numbers

**TANTALUM CAPACITORS**
**vPolyTan™ Polymer SMD Chip Capacitors, Low Profile, Leadframeless Molded Type**

**T52**

- Ultra low ESR, 100 % surge current tested
- Low profile and DCL
- Bulk energy storage capacitor in DC/DC converters

**INDUCTORS**
**Low Profile, High Current Inductors**

**IHHP-0806AZ-01**

- Magnetic alloy power choke coil, miniature size (2.0 x 1.6), and low profile
- Low acoustic noise and high efficiency
- Magnetic shielded

**ENERGY STORAGE CAPACITORS**
**Hybrid Storage Capacitors**

**196 HVC ENYCAP™**

- Power back up for memory controllers, industrial PCs, and real-time clocks
- Storage device for energy harvesting, emergency lights, and micro power supplies

Key components for  
**FABRICATION**



**Welding**



**Cutting**



**3D Printers**



**Melting / Forging /  
Hardening**



**THE VISHAY ADVANTAGE**

- Long Useful Life
- Safety Approvals
- High Peak Pulse Power
- High Operating Temperature
- High Surge Current Capability
- Long-Term Transient Strength  
and more....

# Welding


**RESISTORS**

**Power Resistor for Mounting onto Heatsink, Thick Film Technology**


**RCEE 850**

- High power, high voltage 850 W at 85 °C bottom case temperature
- Single element or two and three resistive elements in the same case

**MOSFETs**

**N-Channel 200-V (D-S) MOSFET in TO-247**


**SUG90090E**

- Class-leading 200 V TrenchFET® technology, maximum  $R_{DS(on)}$  of 9.5 mΩ
- Rugged TO-247 package with maximum junction temperature of 175 °C
- Very low  $R_{DS-Q_g}$  FOM enables high efficiency in switching applications

**CERAMIC CAPACITORS**

**AC Line Rated Ceramic Disc Capacitors, Class X1: 760 V<sub>AC</sub>, Class Y1: 500 V<sub>AC</sub>**


**VY1 Series**

- X1 / Y1 safety rating according to IEC 60384-14, 4th edition
- Highest reliability and lifetime, operating temperature range -40 °C to +125 °C

**RECTIFIERS**

**High Voltage Input Rectifier Diode, 60 A**


**VS-60CPH03**

- 175 °C operating junction temperature
- Hyperfast recovery time

**INDUCTORS**

**Filter Inductors, High Current, Axial-Leaded**


**IHD3**

- Conventional high current, radial-leaded filter inductor

**MODULES**

**Dual IAP Low Profile, Half-Bridge, 400 A**


**GA400TD60S**

- Optimized for hard-switching speed DC to 1 kHz
- Very low  $V_{CE(ON)}$

**RESISTORS**

**Wirewound / Metal Film Resistors, Commercial Power, Axial Leads**


**CP**

- High power-to-size ratio, meets / exceeds EIA RS-344 requirements, fireproof
- High thermal conductivity ceramic case, circuit board standoff option

**DIODES**

**Small Signal Zener Diodes**


**PLZ Series**

- 500 mW Zener diodes in low profile MicroSMF (DO-219AC) package provide voltage stabilization
- Very tight Zener voltage tolerances of  $\pm 2.5\%$
- ESD and surge rated

**OPTOELECTRONICS**

**Widebody IGBT and MOSFET Driver with High Creepage and Clearance of 10 mm**


**VOW3120**

- 10 mm minimum external creepage distance, 8000 V maximum transient isolation voltage
- 2.5 A peak output current, 45 kV/μs common mode rejection

**MOSFETs**

**E Series 650 V Power MOSFET**


**SiHP24N65E**

- High performance E Series high-voltage technology, maximum  $R_{DS(on)}$  of 145 mΩ
- Popular TO-220 package, maximum continuous current 24 A

**ESTA POWER CAPACITORS**

**Capacitors for Power Electronics (PEC) - Rectangular**


**DCMKP Rectangular**

- Heavy duty
- Low self-inductance

**RESISTORS**

**Wirewound Resistors, Industrial, Circuit Board Mount**


**FS Series**

- Circuit board mount, high power (to 20 W)
- Built-in stand offs helps resist unit contamination during board mounting and cleaning operations

# Cutting


**RESISTORS**
**Cemented Wirewound Resistors**

**AC**

- Non-flammable cement coating, high power dissipation in small design
- Rated dissipation up to 10 W, various lead termination bending forms

**DIODES**
**Ultrafast Avalanche Sinterglass Diode**

**SF1600**

- Hermetically sealed axial-leaded glass
- High reverse voltage

**RESISTORS**
**Miniature, Industrial, High-Temperature, Precision Wirewound Resistors**

**G,GN**

- High power (to 10 W), high precision (as low as 0.05 %), non-inductive design
- Small size, high precision, and high temperature capability for use in high ambient temperature environments

**OPTOELECTRONICS**
**2.5 A Output Current IGBT and MOSFET Driver**

**VO3120**

- 2.5 A peak output current in DIP or SMD package
- 35 kV/μs common mode rejection and UL, cUL, VDE certified

**MODULES**
**Ultrafast Diode, 300 A, 600 V in IAP Package, H/B Configuration**

**VS-VSKDU300/06PbF**

- UL approved file E78996
- High surge capability

**CERAMIC CAPACITORS**
**RF Power Plate Capacitors with Contoured Rim, Class 1 Ceramic**

**PS55**

- Class 1 ceramic dielectric featuring extremely low dissipation factors
- High power ratings, wide range of capacitance values available

**MODULES**
**FRED Pt<sup>®</sup>, Ultrafast Soft Recovery Diode Module, 400 A**

**VS-VSUD400CW60**

- UL approved file E222165
- Specifically designed for HF welding and plasma cutting

**RESISTORS**
**Wirewound Resistors, Industrial Power, Aluminum Housed, Chassis Mount**

**RH**

- High pulse energy capability, high power ratings to 250 W, heatsink mount
- All-welded construction ideal for harsh environments

**MODULES**
**Buck PFC Stage with Hyperfast IGBT and FRED Pt<sup>®</sup> Diode**

**VS-100MT060WDF**

- Speed 30 kHz to 150 kHz
- Very low stray inductance design for high speed operations

**OPTOELECTRONICS**
**Optocoupler with Phototransistor Output and Forward Current of I<sub>F</sub> = 1 mA**

**VOL618A**

- High current transfer ratio and high isolation voltage of 5000 V<sub>RMS</sub>
- Operating temperature range -55 °C to +110 °C in 4-pin LSOP, mini-flat package

**RESISTORS**
**Power Resistor for Mounting onto Heatsink, Thick Film Technology**

**LPS 800**

- High power, 57 mm x 57 mm, 800 W at 25 °C on heatsink, low weight 83 g
- Non-inductive down to 1 μH, high pulse capability up to 1000 J short pulse

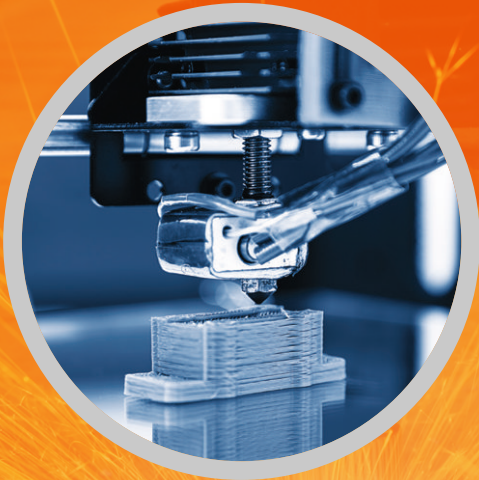
**OPTOELECTRONICS**
**Widebody 1 MBd High Speed Optocoupler with High Creepage and Clearance of 10 mm**

**VOW136**

- 8000 V maximum transient isolation voltage
- Integrated Faraday shield provides very high input-to-output noise isolation of 1000 V/μs

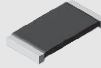


# 3D Printers



### RESISTORS

**Power Metal Strip® Resistors, Low Value (down to 0.0005 Ω), Surface-Mount**



#### WSLP

- Extremely low resistance values from 0.0005 Ω to 0.1 Ω and tolerance of 1 % and 0.5 %
- Power Metal Strip® all-welded construction offers high pulse capacity

### MOSFETs

**P-Channel -30 V (D-S) MOSFET in PowerPAK® 1212-8**

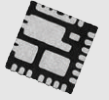


#### SiSH617DN

- P-channel TrenchFET® Gen III technology, maximum  $R_{DS(on)}$  of 12.3 mΩ
- Thermally enhanced PowerPAK® 1212-8 package is 1/3 the size of SO-8 package
- ± 25 V rated  $V_{GS}$  enables operation with various gate drive voltage levels

### ICs

**3 V to 28 V Input, 8 A and 12 A Synchronous Buck Regulators**



#### SIC437, SIC438

- Internal compensation; small solution; high efficiency (up to 97 %)
- Scalable solution 8 A and 12 A; adjustable output voltage down to 0.6 V
- Cycle-by-cycle current limit, OVP, UV, power good flag, over temperature protection

### INDUCTORS

**Low Profile, High Current IHLP® Inductors**



#### IHLP-2525

- High frequency operation out to 5 MHz, excellent saturation

### CERAMIC CAPACITORS

**IEC 60384-14, CAN/CSA/cCSAus, and ANSI/UL CB Certificates**



#### VJ Safety Capacitors

- Surface-mount design for simpler assembly and reduced board space requirements
- Available in NP0 (COG) or X7R dielectrics

### NON-LINEAR RESISTORS

**NTC Thermistors, Low Thermal Gradient Lug Sensors**



#### NTCALUG02...

- Low thermal gradient surface temperature sensor
- High insulation voltage

### OPTOELECTRONICS

**Subminiature Dual-Channel Transmissive Optical Sensor with Phototransistor Outputs**



#### TCUT1350X01

- Emitter wavelength: 950 nm, released for high operating temperatures up to 125 °C
- Gap: 3 mm; aperture: 0.3 mm
- Channel distance (center-to-center): 0.8 mm

### DISPLAYS

**High Quality Displays Offer Excellent Human-to-Machine Interface Solutions**



#### LCD, Color TFT, OLED

- Standard or customized glass / modules for specific applications and monitoring
- Low cost options for LCD / OLED / TFT for industrial applications

### OPTOELECTRONICS

**AC and DC Linear Optocoupler with VDE, UL, BSI, FIMKO Certifications**



#### IL300

- Feedback photodiode compensates for LED's time and temperature characteristics
- Isolation test voltage, 5300 V<sub>RMS</sub> in DIP or SMD package

### TANTALUM CAPACITORS

**vPolyTan™, Polymer Surface-Mount Chip Capacitors, Molded Case, High Performance Type**



#### T55 Series

- Ultra low ESR
- Moisture sensitivity level 3

### ICs

**3.2 Ω, 8-Channel, ± 15 V, +12 V, ± 5 V Precision Multiplexers**



#### DG1408E

- Low, flat, and highly-matched channel resistance over a wide voltage range
- Low parasitics: 121 pF  $C_{D(ON)}$ , 20 pC charge injection, and fast signal switching

### ALUMINUM CAPACITORS

**Power, Miniaturized, General Purpose, Snap-In**



#### 256 PMG-SI

- Useful life: 2000 h at +105 °C, > 5000 h at +85 °C
- General purpose

# Melting / Forging / Hardening


**RESISTORS**
**Indirect Water Cooled Resistors**

**DCRF**

- Up to 2500 W indirect water cooling, multi-resistive elements option
- Up to eight resistive elements on the same support

**DISPLAYS**
**High Quality Displays Offer Excellent Human-to-Machine Interface Solutions**

**LCD, Color TFT, OLED**

- Standard or customized glass / modules for specific applications and monitoring
- LCD / OLED / TFT displays can withstand extreme industrial conditions

**RESISTORS**
**Wirewound, 300 W Liquid-Cooled Load Resistor**

**SPR2232**

- Element wire precisely wound on insulated copper tubing and welded to terminals
- High temperature silicone coating, non-inductive winding available

**OPTOELECTRONICS**
**Photovoltaic MOSFET Driver with Integrated Fast Turn-Off, Solid-State Relay**

**VOM1271**

- Drive current from primary side LED; one less external power supply needed
- Isolation test voltage 4500 V<sub>RMS</sub> and integrated turn-off circuitry for high speed switching

**ALUMINUM CAPACITORS**
**Power, High Ripple Current, Screw Terminals**

**101/102 PHR-ST**

- Long life, screw-terminal, high ripple current
- Custom made - the perfect aluminum capacitors for your application

**OPTOELECTRONICS**
**Optocouplers with Phototransistor Output with Reinforced, CAT IV Isolation**

**CNY6x**

- Isolation test voltage up to 13.9 kV, rated recurring peak voltage V<sub>IORM</sub> of 1450 V<sub>peak</sub>
- Class I - IV with mains voltage up to 600 V; Class I - III with mains voltage up to 1000 V

**OPTOELECTRONICS**
**Optocoupler, Power Phototriac**

**VO2223A**

- Optically-coupled phototriac driving a power triac in DIP-8 package
- Load current of 1 A<sub>RMS</sub> and 5300 V of input to output isolation

**TANTALUM CAPACITORS**
**Wet Tantalum Capacitors, Tantalum Case with Glass-to-Tantalum Hermetic Seal**

**135D**

- High capacitance, voltage range 6 V to 125 V, operating temperature -55 °C to +200 °C
- Axial leaded, industry standard case sizes (T1, T2, T3, T4)

**ESTA POWER CAPACITORS**
**Medium Frequency Capacitors, Water Cooled**

**Phawo**

- Frequency range up to 100 KHz
- Maximum of 6 partial outputs

**RESISTORS**
**High Stability, High Temperature (230 °C) Thin Film Wraparound Chip Resistors**

**PHT**

- Operating temperature up to 215 °C, low TCR down to 15 ppm/°C (-55 °C to +215 °C)
- Sulfur resistant, from 10R up to 7.5M, tight tolerance down to 0.05 %
- Case sizes 0402 to 2010

**CERAMIC CAPACITORS**
**Internal Design Reduces Risk of Shorts Caused by Board Flex, High Breakdown Voltage**

**VJ OMD Series**

- Polymer terminations available for intensive board flex requirements
- 100 % voltage conditioning available up to 630 V<sub>DC</sub> rating (process code "5H")

**RESISTORS**
**Direct Water Cooled Resistors**

**WCR**

- Up to 9000 W direct water cooling, modular concept
- Low ohmic values: 4.7 Ω to 56 kΩ, low inductance

# Spotlight on NTC Thermistor Curve Calculator

Vishay's new NTC Thermistor Curve Calculator is a free program. In order to compute a resistance temperature curve for a Vishay NTC thermistor, you will need to download our program "My Vishay NTC Curve." When the user inputs a Vishay NTC thermistor part number, this program will supply the full nominal resistance temperature curve, together with the tolerances. All the specific corresponding Steinhart and Hart equations are supplied as well. Every NTC thermistor part number on the Vishay website is covered by this program.

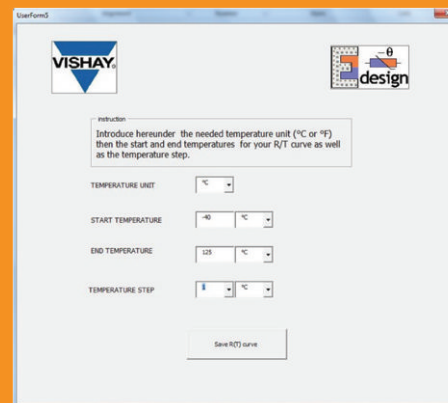
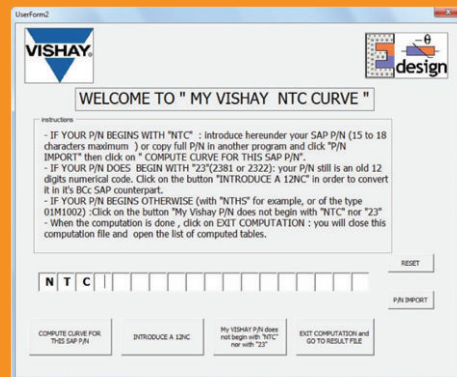
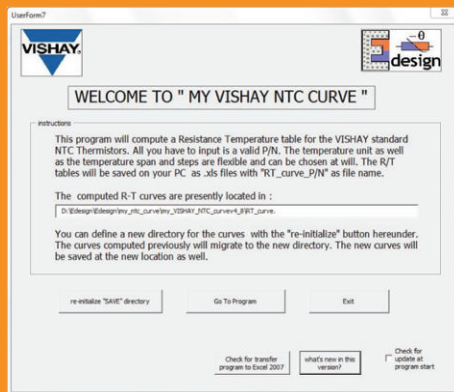
Data output is directly available in Excel. Each computed resistance temperature is saved in a directory chosen by the user and determined at the time of program installation. At any further opening, the curves can be moved to another directory. Update verification is provided each time that the program is opened. If an update is available, a link leads the user to the relevant web page. This enables the user to be updated on new RT curves on the Vishay website.

In the "My Vishay NTC Curve" program, you can type in a valid Vishay NTC part number or copy/paste the part number from another application. The different part numbers included in this application begin with the three characters NTC (like NTCLE100E3103JB0), with the four characters NTHS (like NTHS0805N01N1002J), or with a sequence consisting of a two-digit number followed by a letter (like 01M). Old 12-digit part numbers from the BCcomponents era (like 2381 640 55103) are also accepted.

The curves are computed between the limits of the temperature range defined in the datasheet, but the user can limit the table by choosing the minimum and maximal temperature of his own application. A temperature step of 5 °C is common, but it can be reduced down to 0.1 °C. The user can select either the degree Fahrenheit (°F) or degree Celsius (°C) temperature scale.

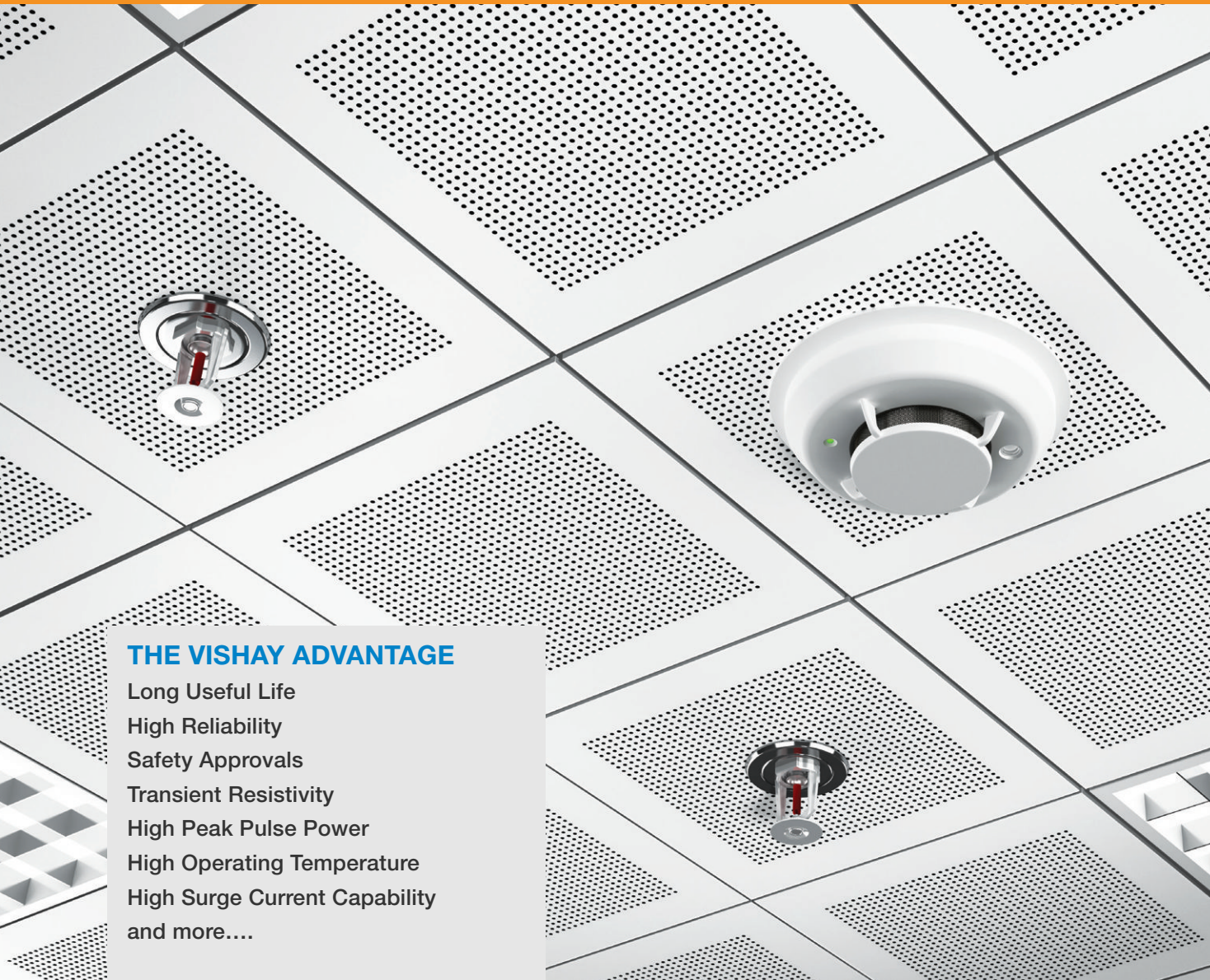
To access the NTC Thermistor Curve Calculator, go to this page: [www.vishay.com/resistors-non-linear/curve-computation-list/](http://www.vishay.com/resistors-non-linear/curve-computation-list/)

"My Vishay NTC curve" can be downloaded at: [www.vishay.com/resistors-non-linear/ntc-curve-list/](http://www.vishay.com/resistors-non-linear/ntc-curve-list/)



Temperature (°C)	Resistance var. R/R23 (±%)	max/R (%)	alpha (ppm/°C)	βT (K)	Rmin (ohms)	Rmax (ohms)	
40	93209.4	53.206	7.93	-6.42	1.20	105761.4	136823.9
50	32280.1	21.905	7.87	-6.37	1.20	28641.2	35374.5
60	29136.2	29.139	7.81	-6.30	1.20	26841.2	33951.0
70	27280.9	27.280	7.76	-6.48	1.20	23801.7	29623.0
80	25791.7	25.791	7.70	-6.44	1.20	23002.4	27544.8
90	24689.4	24.689	7.65	-6.38	1.20	22302.5	26242.5
100	23831.2	23.831	7.59	-6.30	1.20	21803.4	24219.3
110	23138.4	23.138	7.54	-6.33	1.20	21404.2	22723.9
120	18645.1	18.645	7.48	-6.28	1.18	18199.2	21249.8
130	14867.9	14.868	7.42	-6.23	1.18	17199.3	20254.6
140	11709.4	11.709	7.36	-6.18	1.18	16279.8	18822.3
150	8971.8	8.971	7.30	-6.14	1.18	15469.1	17679.4
160	6687.3	6.687	7.24	-6.10	1.18	14689.1	16624.8

# Key components for DETECTION AND INITIAL SAFETY DEVICES



## THE VISHAY ADVANTAGE

- Long Useful Life
- High Reliability
- Safety Approvals
- Transient Resistivity
- High Peak Pulse Power
- High Operating Temperature
- High Surge Current Capability and more....

**Gas**



**Flame /  
Fire**



**Smoke**



**Heat**



**Water**



**Radiation**



# Gas


**RECTIFIERS**

**Surface-Mount Glass Passivated Ultrafast Rectifier**



[EGF1T](#)

- Avalanche surge energy capability
- Low switching losses, high efficiency

**MOSFETs**

**N-Channel 600 V Power MOSFET**



[IRFR1N60APBE](#)

- Rugged Planar technology, maximum  $R_{DS(on)}$  of 7  $\Omega$
- Popular DPAK package, maximum continuous current of 1.4 A

**RESISTORS**

**Professional Thin Film MELF Resistors**



[MM / SMM](#)

- Excellent overall stability, intrinsic sulfur resistance
- CECC approved acc. EN 140401-803

**CERAMIC CAPACITORS**

**Axial Leaded Multilayer Ceramic Capacitors**

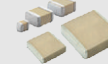


[A Series](#)

- High capacitance value in small size
- Rated voltages of 50 V, 100 V, 200 V, and 500 V

**CERAMIC CAPACITORS**

**Capacitors with Excellent Power Handling Capabilities**



[MLCC RF Capacitors](#)

- Non-magnetic available with copper or epoxy bondable terminations
- Lead-bearing terminations available for high reliability applications
- Case sizes: 0402 to 3838

**MOSFETs**

**Dual P-Channel -30V (D-S) MOSFETs in PowerPAK® SC-70 Dual**



[SiA929DJ](#)

- Low  $R_{DS(on)}$  reduces power loss from conduction and increases battery life
- Thermally enhanced and compact package footprint increase power density
- Dual-configured device reduces component count

**ICs**

**Enhanced Versions of Vishay's Quad SPST CMOS Analog Switches**

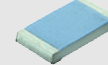


[DG444B, DG445B](#)

- Supports single and dual power operations, rail-to-rail signal switching capable
- 10 pA typical low leakage and 1 pC charge injection

**RESISTORS**

**High Precision Wraparound, Thin Film Chip Resistors**



[P0805](#)

- Low TCR down to 5 ppm/ $^{\circ}\text{C}$  (-55  $^{\circ}\text{C}$  to +155  $^{\circ}\text{C}$ ), tight tolerance down to 0.01 %
- Sulfur resistant, failure rate E7 level, from 10R up to 200M for P Series

**ALUMINUM CAPACITORS**

**Double-Layer Aluminum Capacitors**



[220 EDLC ENYCAP™](#)

- Energy storage for backup of CMOS in all fields of electronics
- Unlimited charge and discharge cycle numbers

**OPTOELECTRONICS**

**Optocoupler with Phototransistor Output and Trigger Current of  $I_F = 1$  mA**



[VOL618A](#)

- High current transfer ratio, high isolation voltage of 5000  $V_{RMS}$
- Operating temperature range -55  $^{\circ}\text{C}$  to +110  $^{\circ}\text{C}$  in 4-pin LSOP, mini-flat package

**FILM CAPACITORS**

**Interference Suppression Film Capacitor, Class X2, Axial, MKT 253  $V_{AC}$**



[F1773](#)

- RFI X2 film capacitors for continuous across-the-line and series impedance applications
- Withstands 85  $^{\circ}\text{C}$  / 85 % relative humidity for 1000 h at 240  $V_{AC}$

**FILM CAPACITORS**

**Metallized Polypropylene Film Capacitor, Related Document: IEC 60384-16**



[MKP1841](#)

- High voltage, high current, and high pulse operations

# Flame / Fire


**CERAMIC CAPACITORS**

**Radial Leaded Multilayer Ceramic Capacitors for General Purpose**


**K Series**

- High capacitance value in small size
- Rated voltages of 50 V, 100 V, 200 V, and 500 V

**DISPLAYS**

**High Quality Displays Offer Excellent Human-to-Machine Interface Solutions**


**LCD, Color TFT, OLED**

- Standard or customized glass / modules for specific applications and monitoring
- Low cost options for LCD / OLED / TFT for industrial applications

**FILM CAPACITORS**

**Interference Suppression Film Capacitor, Class X2, MKT 310 V<sub>AC</sub>, High Stability Grade**


**F1772S**

- RFI X2 film capacitors for continuous across-the-line and series impedance applications
- Withstands 85 °C / 85 % relative humidity for 1000 h at 240 V<sub>AC</sub>

**OPTOELECTRONICS**

**High Power SurfLight™ Emitter with 850 nm Peak Wavelength**


**VSMY2850G**

- SMD gullwing and reverse gullwing package with dimensions of 2.3 mm x 2.3 mm x 2.8 mm
- Radiant intensity of 100 mW/sr with angle of half intensity:  $\varphi = \pm 10^\circ$

**RESISTORS**

**Professional Thin Film Chip Resistors**


**MC Professional**

- Excellent overall stability, sulfur resistant
- CECC approved acc. EN 140401-801

**ICs**

**1.0 Slew Rate Controlled Load Switch with Reverse Blocking in SC70-6, and TDFN4 1.2 mm x 1.6 mm**


**SiP32431**

- 1.5 V to 5.5 V input voltage range, very low  $R_{DS(on)}$ , 105 m $\Omega$  at 5 V
- Slew rate controlled turn-on time: 100  $\mu$ s, low quiescent current < 1  $\mu$ A

**CERAMIC CAPACITORS**

**Capacitors with Excellent Power Handling Capabilities**


**MLCC RF Capacitors**

- Non-magnetic available with copper or epoxy bondable terminations
- Lead-bearing terminations available for high reliability applications
- Case sizes: 0402 to 3838

**NON-LINEAR RESISTORS**

**2-Point Micro-Chip Sensor, Insulated Flexible Leads**


**NTCLE305E4**

- Miniature sensor head (1.6 mm) with AWG32 ETFE insulated leads
- AEC-Q200 qualified, fast response time for exposed mounting
- Exceptional withstanding in thermal shocks

**TANTALUM CAPACITORS**

**vPolyTan™ Solid Tantalum Surface-Mount Chip Capacitors, Molded Case, High Performance Polymer Type**


**T55 Series**

- Ultra low ESR
- Available in case sizes from 1608 to 7343

**OPTOELECTRONICS**

**PIN Photodiode with High Speed and High Radiant Sensitivity**


**BPV22NF**

- Daylight blocking filter matched with IR emitters operating at wavelength 870 nm to 950 nm
- Large radiant sensitive area of 7.5 mm<sup>2</sup>, angle of half sensitivity:  $\varphi = \pm 60^\circ$

**MOSFETs**

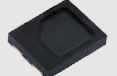
**N-Channel 60 V (D-S) MOSFET in PowerPAK® SO-8**


**SiR184DP**

- TrenchFET® Gen IV technology, maximum  $R_{DS(on)}$  of 5.8 m $\Omega$
- Thermally enhanced compact package with high current handling capability
- Leadership  $R_{DS-Q_g}$  FOM increases efficiency of switching applications

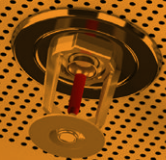
**OPTOELECTRONICS**

**High Speed PIN Photodiode with Infrared Light Blocking Filter**


**VEMD5510CF**

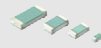
- Profile height of 0.9 mm, SMD photodiode featuring chip with 7.5 mm<sup>2</sup> sensitive area
- Peak sensitivity at 540 nm with an excellent infrared light filter, blocking signals > 700 nm

# Smoke



<p>MOSFETs</p> <p><b>N-Channel 60 V (D-S) MOSFET in PowerPAK® SC-70-6L</b></p>  <p><a href="#">SiA106DJ</a></p> <ul style="list-style-type: none"> <li>TrenchFET® Gen IV technology, maximum <math>R_{DS(on)}</math> of 18.5 m<math>\Omega</math></li> <li>Thermally enhanced package in a footprint less than 4.6 mm<sup>2</sup></li> <li>Leadership RDS-Qg FOM increases efficiency of switching applications</li> </ul>	<p>OPTOELECTRONICS</p> <p><b>High Speed and High Sensitivity PIN Photodiode</b></p>  <p><a href="#">BPV22NF</a></p> <ul style="list-style-type: none"> <li>Daylight blocking filter matched with IR emitters operating at wavelength 870 nm to 950 nm</li> <li>Large radiant sensitive area of 7.5 mm<sup>2</sup>, angle of half sensitivity: <math>\varphi = \pm 60^\circ</math></li> </ul>	<p>TANTALUM CAPACITORS</p> <p><b>vPolyTan™ Polymer Surface-Mount Chip Capacitors, Molded Case, High Performance Type</b></p>  <p><a href="#">T55 Series</a></p> <ul style="list-style-type: none"> <li>Ultra low ESR</li> <li>Available in case sizes from 1608 to 7343</li> </ul>
<p>OPTOELECTRONICS</p> <p><b>High Power Infrared Emitting Diode with Peak Wavelength of 940 nm in T-1¾ Package</b></p>  <p><a href="#">TSAL6100</a></p> <ul style="list-style-type: none"> <li>Typical radiant intensity of 170 mW/sr at <math>I_f = 100</math> mA, 1450 mW/sr at <math>I_f = 1</math> mA</li> <li>Angle of half intensity: <math>\varphi = \pm 10^\circ</math></li> </ul>	<p>NON-LINEAR RESISTORS</p> <p><b>SMD 0603, Glass Protected NTC Thermistors</b></p>  <p><a href="#">NTCS0603</a></p> <ul style="list-style-type: none"> <li>Standard series, AEC-Q200 qualified</li> <li>Glass protected with soft terminations</li> </ul>	<p>RESISTORS</p> <p><b>Thick Film Surface-Mount Chip Resistors, Wraparound, Extremely Low Value</b></p>  <p><a href="#">RCWE</a></p> <ul style="list-style-type: none"> <li>Low resistance values from 0.01 <math>\Omega</math> to 0.976 <math>\Omega</math> and tolerance of 1 %</li> <li>Thick film construction with 2x power capacity</li> </ul>
<p>DIODES</p> <p><b>Small Signal Zener Diodes</b></p>  <p><a href="#">MMSZ5258</a></p> <ul style="list-style-type: none"> <li>AEC-Q101 qualified</li> <li>ESD capability according to AEC-Q101</li> </ul>	<p>INDUCTORS</p> <p><b>High Current, Surface-Mount Inductors - Non-Shielded</b></p>  <p><a href="#">IDCP2218</a></p> <ul style="list-style-type: none"> <li>Low cost filtering and DC/DC conversion inductor</li> </ul>	<p>OPTOELECTRONICS</p> <p><b>High Power SurfLight™ Emitter with 940 nm Peak Wavelength</b></p>  <p><a href="#">VSMY2940GX01</a></p> <ul style="list-style-type: none"> <li>SMD gullwing and reverse gullwing package with dimensions of 2.3 mm x 2.3 mm x 2.8 mm</li> <li>Radiant intensity of 145 mW/sr with angle of half intensity: <math>\varphi = \pm 10^\circ</math></li> </ul>
<p>FUSES</p> <p><b>Thin Film Chip Fuses</b></p>  <p><a href="#">MFU</a></p> <ul style="list-style-type: none"> <li>Very quick-acting fuse characteristics</li> <li>Outstanding stability of fusing characteristics</li> </ul>	<p>RESISTORS</p> <p><b>Professional Thin Film Chip Resistors</b></p>  <p><a href="#">MC Professional</a></p> <ul style="list-style-type: none"> <li>Excellent overall stability, sulfur resistant</li> <li>CECC approved acc. EN 140401-801</li> </ul>	<p>NON-LINEAR RESISTORS</p> <p><b>VDR Metal Oxide Varistors, Standard</b></p>  <p><a href="#">VDRS..</a></p> <ul style="list-style-type: none"> <li>Standard overvoltage surge protector</li> <li>UL recognized</li> </ul>

# Heat


**RESISTORS**
**Professional Thin Film Chip Resistors**

**MC Professional**

- Excellent overall stability, sulfur resistant
- CECC approved acc. EN 140401-801

**CERAMIC CAPACITORS**
**IEC 60384-14, CAN/CSA/cCSAus, and ANSI/UL CB Certificates**

**VJ Safety Capacitors**

- Surface-mount design: simpler assembly and reduced board space requirements

Available in NP0 (COG) or X7R dielectrics

**OPTOELECTRONICS**
**Optocoupler with Phototransistor Output, ATEX Certified for Explosive Environments**

**CNY65Exi**

- ATEX certificate: PTB 03 ATEX 2033 U, Gas: II (1) G (EX ia) IIC, Dust: II (1) D (EX ia) IIIC
- $V_{ISO}$  of 11,600  $V_{peak}$  for 1 minute

**ICs**
**1.0 A Slew Rate Controlled Load Switch with Reverse Blocking in SC70-6, and TDFN4 1.2 mm x 1.6 mm**

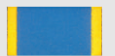
**SIP32431**

- Industry's lowest operating current (only 50 pA)
- Ideal for battery-operated equipment

**FILM CAPACITORS**
**Interference Suppression Film Capacitor, Class X2, MKT 310  $V_{AC}$ , High Stability Grade**

**F1772S**


- RFI X2 film capacitors for continuous across-the-line and series impedance applications
- Withstands 85 °C / 85 % relative humidity for 1000 h at 240  $V_{AC}$

**RESISTORS**
**High Stability, High Temperature (230 °C), Thin Film Wraparound Chip Resistors**

**PHT**

- Operating temperature up to 215 °C, low TCR down to 15 ppm/°C (-55 °C to +215 °C)
- Sulfur resistant, from 10R up to 7.5M, tight tolerance down to 0.05 %
- Cases sizes: 0402 to 2010


# Water



ICs  
**1 pC Charge Injection, 100 pA Leakage, +5 V / +3 V, Dual SPST Analog Switches** 


**DG9232E**

- High precision, low noise signal switching
- Low leakage, charge injection, and parasitic capacitance

CERAMIC CAPACITORS  
**Standard Reflow Process Assembly, High Reliability Ceramic-Oxide Body Construction** 


**Ceramic Chip Antenna**

- Frequency range from 400 MHz to 5 GHz
- Wide operating temperature range -40 °C to +85 °C

RESISTORS  
**Professional Thin Film MELF Resistors** 


**MM / SMM**

- Excellent overall stability, intrinsic sulfur resistance
- CECC approved acc. EN 140401-803

ALUMINUM CAPACITORS  
**Hybrid Storage Capacitors** 


**196 HVC ENYCAP™**

- Power back up for memory controllers, industrial PCs, real-time clocks
- Storage device for energy harvesting, emergency lights, and micro-power supplies

DISPLAYS  
**High Quality Displays Offer Excellent Human-to-Machine Interface Solutions** 

**LCD, Color TFT, OLED**

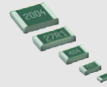
- Standard or customized glass / modules for specific applications and monitoring
- Can withstand excessive temperatures and extreme conditions

FILM CAPACITORS  
**Interference Suppression Film Capacitor, Class X2, Axial, MKT 253 V<sub>AC</sub>** 

**F1773**

- RFI X2 film capacitors for continuous across-the-line and series impedance applications
- Withstands 85 °C / 85 % relative humidity for 1000 h at 240 V<sub>AC</sub>

# Radiation


**RESISTORS**
**High Stability Thin Film Flat Chip Resistors**

**TNPW e3**

- Excellent overall stability at different environmental conditions
- Sulfur resistant, halogen-free

**DISPLAYS**
**High Quality Displays Offer Excellent Human-to-Machine Interface Solutions**

**LCD, Color TFT, OLED**

- Standard or customized glass / modules for specific applications and monitoring
- Can withstand excessive temperatures and extreme conditions

**FILM CAPACITORS**
**Interference Suppression Film Capacitor, Class X2, MKT 310 V<sub>AC</sub>, High Stability Grade**

**F1772S**

- RFI X2 film capacitors for continuous across-the-line and series impedance applications
- Withstands 85 °C / 85 % relative humidity for 1000 h at 240 V<sub>AC</sub>

**MOSFETs**
**Dual P-Channel 30-V (D-S) MOSFET**

**Si4925DDY**

- TrenchFET® technology providing two p-channel devices with maximum R<sub>DS(on)</sub> of 29 mΩ
- Proven dual SO-8 package

**RESISTORS**
**Molded, 25 mil Pitch 8 Pin QSOP, Dual-In-Line Thin Film Resistor, Surface-Mount Network**

**MORN**

- Multiple divider ratios with resistance values from 100 Ω to 100 kΩ per resistor
- Available in 0.01 % ratio tolerance and 1 ppm/°C TCR tracking
- Excellent long-term ratio stability, ± 0-015 % over 2000 h at 70 °C

**DIODES**
**Small Signal Zener Diodes**

**PLZ Series**

- 500 mW Zener diodes in low profile MicroSMF (DO-219AC) package provide voltage stabilization
- Very tight Zener voltage tolerances of ± 2.5 %
- ESD and surge rated

**TANTALUM CAPACITORS**
**Solid-Electrolyte TANTALEX® Capacitors, Axial Leaded, Molded Case**

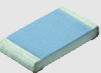
**173D**

- Miniature axial-leaded solid tantalum capacitor in five case sizes
- Laser-marked molded flame retardant case

**OPTOELECTRONICS**
**Infrared Transceiver with Data Rate Up to 115.2 kbit/s**

**TFBS4711**

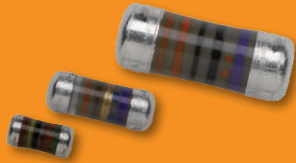
- Small package size (1.9 mm x 3 mm x 6 mm), transmit range of 1 m
- Idle current: 70 µA; shutdown current: 10 nA; operates from 2.4 V to 5.5 V

**RESISTORS**
**High Precision Wraparound, Thin Film Chip Resistors**

**P0805**

- Low TCR down to 5 ppm/°C (-55 °C to +155 °C), tight tolerance down to 0.01 %
- Sulfur resistant, failure rate E7 level, from 10R up to 200M for P Series

# Spotlight on MELF Resistors

## The World's Most Reliable and Predictable High-Performance Film Resistors



For more than 25 years, Vishay's MELF resistors have successfully met the demanding requirements of the automotive industry. They offer superior SMD resistor performance in terms of accuracy, stability, reliability, and pulse load capability. The cylindrical construction of MELF devices provides an optimal power rating and pulse load capability related to the mounting space. Continuous development has led to improved long-term stability and moisture resistance, and allows high-temperature operation to +175 °C.

### KEY PERFORMANCE BENEFITS:

- Predictable behavior of components
- Zero-defect philosophy
- Harsh operating environments
- Long-term stability
- Moisture resistance
- Reliability
- Temperature cycling in lead (Pb)-free assembly processes
- Insulation voltage up to 500 V

### APPROVALS

- EN140401-803
- AEC-Q200

All products are completely lead (Pb)-free and comply with the Global Automotive Declarable Substances List (GADSL), which includes full compliance with the RoHS directive.

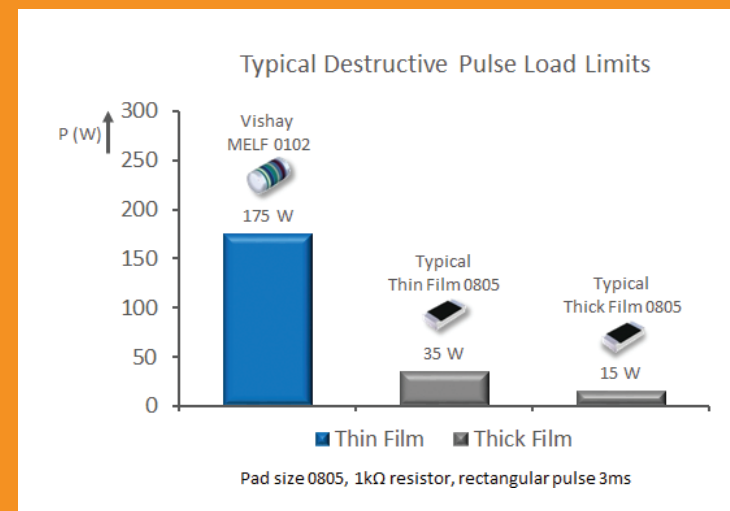
### TEMPERATURE COEFFICIENT, TOLERANCE, AND STABILITY

Resistor temperature coefficients down to  $\pm 5$  ppm/K are available, as well as tolerances down  $\pm 0.02$  %. Long-term stability results in a superior maximum resistance change ( $\Delta R/R$ ) of  $< \pm 0.05$  % after 8000 h operation for high-precision MELF resistors.

### PULSE LOAD CAPABILITY

Another aspect of MELF resistors is their reliability when exposed to various overload conditions. The metal film technology, together with the cylindrical construction of the MELF devices, provides an advantage compared to standard thick and thin film chip resistors in regard to pulse load capability. MELF resistors are also available in advanced carbon film technology, offering up to 6 kV ESD capability on the 1206 pad size, or 10 kV surge handling on the 2512 pad size. As shown in the diagram below, thick film flat chip resistors fail at much lower pulse loads than thin film flat chips, and both types are outperformed by thin film MELF resistors.

For technical questions, contact: [melf@vishay.com](mailto:melf@vishay.com)



# Key components for SURVEILLANCE SYSTEMS



**Cameras /  
CCTV**



**Access Control  
Systems /  
Door and Gate  
Openers**



**RFID**



## **THE VISHAY ADVANTAGE**

- Long Life
- High Reliability
- Safety Approvals
- High Power Density
- Ruggedized Construction
- Good Sensitivity
- Good Humidity and Aging Resistance  
and more....

# Cameras / CCTV


**NON-LINEAR RESISTORS**
**SMD 0402, Glass Protected  
NTC Thermistors**

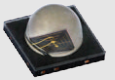
**NTCS0402**

- Standard series, AEC-Q200 qualified
- Glass protected with soft terminations

**DIODES**
**Small Signal Zener Diodes**

**BZX84C18-E3-08**

- AEC-Q101 qualified
- Silicon planar Zener diodes

**OPTOELECTRONICS**
**High Power SurfLight™  
Emitter with 850 nm Peak  
Wavelength**

**VSMY98545**

- Radiant intensity of 380 mW/sr at 1 A and 1600 mW/sr at 5 A pulsed
- Radiant power of 660 mW in 3.85 mm x 3.85 mm x 2.24 mm package

**OPTOELECTRONICS**
**High Power SurfLight™  
Emitter with 850 nm Peak  
Wavelength**

**TSHG6400**

- Uniform illumination for CMOS-based camera systems for vision systems
- Ø5 mm LED with 850 nm wavelength and ± 22° angle of half intensity

**NON-LINEAR RESISTORS**
**SMD 0603, Glass Protected  
NTC Thermistors**

**NTCS0603**

- Standard series, AEC-Q200 qualified
- Glass protected with soft terminations

**RECTIFIERS**
**Surface-Mount Schottky  
Barrier Rectifiers**

**MSS1P4**

- AEC-Q101 qualified
- Very low profile with typical height of 0.65 mm

**FILM CAPACITORS**
**DC Film Capacitors,  
MKT Axial Type**

**MKT1813**

- General purpose MKT film capacitor
- Axial construction for low building height applications

**MOSFETs**
**N-Channel 200 V (D-S)  
MOSFET in PowerPAK® SO-8**

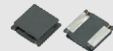
**SiR616DP**

- Provides a maximum  $R_{DS(on)}$  of 50.5 mΩ with the latest 200 V technology
- Excellent  $R_{DS-Q_g}$  FOM increases efficiency of switching applications
- Thermally enhanced PowerPAK® SO-8 package

**OPTOELECTRONICS**
**Optocoupler with  
Phototransistor Output and  
Trigger Current of  $I_F = 1$  mA**

**VOS618A**

- High current transfer ratio, high isolation voltage 3050  $V_{RMS}$
- Operating temperature range -55 °C to +110 °C in SSOP-4, half-pitch, mini-flat package

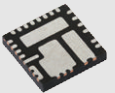
**INDUCTORS**
**Low Profile,  
High Current Inductors**

**IFSC111AZER3R3M01**

- Very small power inductor for low current DC/DC conversion and filtering

**TANTALUM CAPACITORS**
**vPolyTan™ Polymer  
Surface Mount Chip  
Capacitors, Molded Case,  
High Performance Type**

**T55 Series**

- Ultra low ESR
- Available in case sizes from 1608 to 7343

**ICs**
**4.5 V to 60 V Input, 2 A, 4 A,  
6 A, 10 A Synchronous Buck  
Regulators**

**SIC461, SIC462, SIC463, SIC464**

- High efficiency (up to 98 %), integrated high side and low side power MOSFETs
- Scalable solution, 2 A to 10 A; adjustable output voltage down to 0.8 V
- Adjustable switching frequency from 100 kHz to 2 MHz



# Access Control Systems / Door and Gate Openers



### OPTOELECTRONICS

**High Power SurfLight™ Emitter with 810 nm Peak Wavelength**



#### VSMY3850

- 810 nm wavelength delivers best performance for iris scanning covering all eye colors
- Radiant power of 1 W in 3.85 mm x 3.85 mm power QFN package

### MOSFETs

**N-Channel 100 V (D-S) MOSFET in PowerPAK® SO-8**



#### SiR106DP

- Provides a maximum  $R_{DS(on)}$  of 8 mΩ with the latest 100 V technology
- $R_{DS,Q_g}$  and  $R_{DS,Q_{oss}}$  FOMs tuned to increase switching efficiency
- $Q_{gd} / Q_{gs}$  ratio is less than 1 and optimizes switching characteristics

### TANTALUM CAPACITORS

**vPolyTan™ Solid Tantalum Surface-Mount Chip Capacitors, Molded Case, High Performance Polymer Type**



#### T55 Series

- Ultra low ESR, molded case available in five case sizes
- Available in case sizes from 1608 to 7343

### CERAMIC CAPACITORS

**Excellent Power Handling Capabilities**



#### MLCC RF Capacitors

- Non-magnetic available with copper or epoxy bondable terminations
- Lead-bearing terminations available for high reliability applications
- Case sizes: 0402 to 3838

### ALUMINUM CAPACITORS

**Hybrid Storage Capacitor**



#### 196 HVC ENYCAP™

- Polarized electrochemical storage capacitor with high capacity and energy density
- No cell balancing necessary, soft and low transient voltage controlled charging

### DISPLAYS

**High Quality Displays Offer Excellent Human-to-Machine Interface Solutions**



#### LCD, Color TFT, OLED

- Standard or customized glass / modules for specific applications and monitoring
- Can withstand excessive temperatures and extreme conditions



RFID




MOSFETs  
**P-Channel 20 V (D-S) MOSFET**  
**SiS407ADN**




- Industry leading p-channel Gen III technology, maximum  $R_{DS(on)}$  of 9 m $\Omega$
- Thermally enhanced PowerPAK® 1212-8 is 1/3 the size of SO-8 package

MOSFETs  
**N- and P-Channel 12 V (D-S) MOSFETs in PowerPAK® SC-70 Dual**  
**SiA517DJ**




- Less than 4.6 mm<sup>2</sup> compact footprint reduces PCB real estate requirement
- Dual-configured device reduces component count
- Thermally enhanced package with low  $R_{DS(on)}$

ALUMINUM CAPACITORS  
**Hybrid Storage Capacitors**  
**196 HVC ENYCAP™**



- Power back up for memory controllers, industrial PCs, real-time clocks
- Storage device for energy harvesting, emergency lights, and micro power supplies

INDUCTORS  
**Low Profile, High Current IHLP® Inductors**  
**IHLP2020ABER2R2M01**



- Compact composite inductor for high efficiency DC/DC conversion
- High frequency operation out to 5 MHz, excellent saturation

OPTOELECTRONICS  
**High Radiant Power and High Speed 850 nm Infrared Emitter**  
**VSMY3850**



- Radiant intensity up to 150 mW/sr with  $I_F$  up to 1 A, 10 ns rise and fall time
- Angle of half intensity:  $\varphi = \pm 60^\circ$  in PLCC-2 package

NON-LINEAR RESISTORS  
**NTC Thermistors, 2-Point Micro Chip Sensor, Insulated Leads**  
**NTCLE305E4**



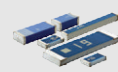
- Miniature sensor head (1.6 mm) with AWG32 ETFE insulated leads
- AEC-Q200 qualified, fast response time for exposed mounting
- Excellent withstanding thermal shock

OPTOELECTRONICS  
**High Radiant Power and High Speed 890 nm Infrared Emitter**  
**VSMF2890RGX01**



- Radiant intensity up to 350 mW/sr with  $I_F$  up to 1 A, 30 ns rise and fall time
- Angle of half intensity:  $\varphi = \pm 12^\circ$  in gullwing or reverse gullwing package

CERAMIC CAPACITORS  
**Standard Reflow, Process Assembly, High Reliability Ceramic-Oxide Body Construction**  
**Ceramic Chip Antenna**



- Frequency range from 400 MHz to 5 GHz
- Wide operating temperature range -40 °C to +85 °C

# Spotlight on the IHLP® Inductor Loss Calculator Tool

Vishay’s “IHLP Core Loss Calculator” is a free tool that assists designers in selecting the proper IHLP inductor based on the operating conditions of their circuit. This tool will simulate the losses in the inductor, including core and both AC and DC copper losses. The temperature rise and final component temperature will also be predicted based on the estimated losses. This tool will allow designers to compare several different inductors, both in size and value, to assist in the selection process. The calculator can be used for buck, boost and buck/boost style converters.

The calculator requires eight inputs: input voltage, output voltage, switch (FET) voltage drop, diode (or sync FET) voltage drop, output current, frequency, ambient temperature and inductance. The calculator will do the rest based on these inputs. Inductance can be selected by using the “radio” buttons on the left hand side.

Please note: all designs should be verified in circuit as this tool is for simulation only.

Access the loss calculator tool at: [www.vishay.com/inductors/calculator/calculator/](http://www.vishay.com/inductors/calculator/calculator/)

Access the user guide at: [www.vishay.com/doc?49421](http://www.vishay.com/doc?49421)

## Important Design Criteria

IHLP inductors have a recommended maximum component temperature based on materials (see spec sheet). Subtracting the ambient temperature will give us the maximum allowed temperature rise for the part. If this number should exceed 40 °C it is recommended that 40 °C be used for the allowed temperature rise. It is recommended that core losses be limited to  $\leq 1/3$  of the total losses to mitigate any aging effects associated with the powdered iron in the core at temperatures exceeding the maximum temperature of the part. The recommended range for the ripple current is 30% to 50% of inductor current. This is based on a trade off of inductor size and cost versus output capacitor size and cost. The maximum peak current should be kept below the  $I_{sat}$  value of the selected inductor, although it can be exceeded with caution due to the soft saturation characteristics of the powdered iron core material. The calculators are based on operation in the continuous conduction mode only, information determined in the discontinuous conduction mode should be considered suspect and in need of verification by the user.

**IHLP® INDUCTOR LOSS CALCULATOR TOOL**

<p>Choose Calculator Type Boost</p> <p>Applications Automotive</p> <p>Family/Case Size IHLP-4040</p> <p>Series DZ-A1</p> <p>Select Inductance:</p> <p>0.19 µH <input type="radio"/></p> <p>0.36 µH <input type="radio"/></p> <p>0.66 µH <input type="radio"/></p> <p>1.0 µH <input checked="" type="radio"/></p> <p>1.5 µH <input type="radio"/></p> <p>2.2 µH <input type="radio"/></p> <p>3.3 µH <input type="radio"/></p> <p>4.7 µH <input type="radio"/></p> <p>5.6 µH <input type="radio"/></p> <p>6.8 µH <input type="radio"/></p> <p>10 µH <input type="radio"/></p>	<p>IHLP-4040DZ-A1 - 1 Boost µH Ind. Loss Calculator</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3">Inputs:</th> <th colspan="3">Outputs:</th> </tr> <tr> <th colspan="6">Enter data into yellow fields</th> </tr> </thead> <tbody> <tr> <td>Frequency =</td><td>300000</td><td>Hz</td> <td>ET<sub>ext</sub></td><td>4.02</td><td>V-usec</td> </tr> <tr> <td>Output Current =</td><td>4</td><td>Amps</td> <td>F<sub>(eff)</sub></td><td>198138.7</td><td>Hertz</td> </tr> <tr> <td>Ambient Temp =</td><td>25</td><td>°C</td> <td>Res</td><td>0.004270</td><td>Ohms</td> </tr> <tr> <td>Volts In =</td><td>3</td><td>Volts</td> <td>I<sub>max</sub></td><td>8.73</td><td>Amps</td> </tr> <tr> <td>Volts Out =</td><td>5</td><td>Volts</td> <td>I<sub>min</sub></td><td>4.71</td><td>Amps</td> </tr> <tr> <td>V<sub>SW</sub> =</td><td>0.025</td><td>Volts</td> <td>I<sub>ripple</sub></td><td>4.02</td><td>Amps</td> </tr> <tr> <td>V<sub>D</sub> =</td><td>0.025</td><td>Volts</td> <td>Duty</td><td>0.40</td><td></td> </tr> <tr> <td>I<sub>ind</sub> =</td><td>6.7</td><td>Amps</td> <td>P<sub>core</sub></td><td>0.100</td><td>Watts</td> </tr> <tr> <td>ET<sub>100</sub> =</td><td>1.57</td><td>V-usec</td> <td>P<sub>DC</sub></td><td>0.193</td><td>Watts</td> </tr> <tr> <td>B<sub>pk</sub> =</td><td>255.8</td><td>G</td> <td>P<sub>AC</sub></td><td>0.102</td><td>Watts</td> </tr> <tr> <td>A</td><td>0.453</td><td>Inch</td> <td>P<sub>tot</sub></td><td>0.395</td><td>Watts</td> </tr> <tr> <td>B</td><td>0.405</td><td>Inch</td> <td>Temp. Coeff.</td><td>30.6</td><td>°C/W</td> </tr> <tr> <td>C</td><td>0.158</td><td>Inch</td> <td>Temp Rise</td><td>12.1</td><td>°C</td> </tr> <tr> <td></td><td></td><td></td> <td>Comp Temp</td><td>37.1</td><td>°C</td> </tr> </tbody> </table>	Inputs:			Outputs:			Enter data into yellow fields						Frequency =	300000	Hz	ET <sub>ext</sub>	4.02	V-usec	Output Current =	4	Amps	F <sub>(eff)</sub>	198138.7	Hertz	Ambient Temp =	25	°C	Res	0.004270	Ohms	Volts In =	3	Volts	I <sub>max</sub>	8.73	Amps	Volts Out =	5	Volts	I <sub>min</sub>	4.71	Amps	V <sub>SW</sub> =	0.025	Volts	I <sub>ripple</sub>	4.02	Amps	V <sub>D</sub> =	0.025	Volts	Duty	0.40		I <sub>ind</sub> =	6.7	Amps	P <sub>core</sub>	0.100	Watts	ET <sub>100</sub> =	1.57	V-usec	P <sub>DC</sub>	0.193	Watts	B <sub>pk</sub> =	255.8	G	P <sub>AC</sub>	0.102	Watts	A	0.453	Inch	P <sub>tot</sub>	0.395	Watts	B	0.405	Inch	Temp. Coeff.	30.6	°C/W	C	0.158	Inch	Temp Rise	12.1	°C				Comp Temp	37.1	°C	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3">Ratings</th> </tr> </thead> <tbody> <tr> <td>Inductance</td><td>1.0</td><td>µH</td> </tr> <tr> <td>25° C DC Res</td><td>0.0037</td><td>Ohms</td> </tr> <tr> <td>I<sub>sat</sub></td><td>36</td><td>Amps</td> </tr> <tr> <td>I<sub>H(heat)</sub></td><td>17.5</td><td>Amps</td> </tr> </tbody> </table> <div style="text-align: center;"> <p>Inductor Current (One Cycle)</p> <p>Time (µSec)</p> </div>	Ratings			Inductance	1.0	µH	25° C DC Res	0.0037	Ohms	I <sub>sat</sub>	36	Amps	I <sub>H(heat)</sub>	17.5	Amps
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