

COMPONENTS FOR THE INTERNET OF THINGS



BUILD VISHAY
into your **DESIGN**

+ Touching the
Human Body

+ In the Home

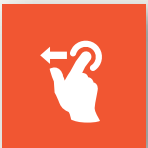
VISHAY and the INTERNET of THINGS (IoT)

Vishay has stepped up to the challenges of the Internet of Things (IoT) with a broad portfolio of unique passive and active solutions. These best-in-class components are optimally suited for the “Things” being controlled and monitored through IoT applications.



the Categories

Vishay offers many best-in-class components for equipment in IoT categories.



Touching The Human Body

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Biometric Monitoring

What is Biometric Monitoring?

Biometrics refers to metrics related to human characteristics and traits. Using distinctive, measurable characteristics, biometric identifiers are often categorized as physiological and include fingerprint, palm veins, face recognition, DNA, palm print, hand geometry, iris, and retina recognition.



CERAMIC CAPACITORS **MLCC Hi Q Capacitors**

Ultra-stable dielectric low dissipation factor (DF) capacitors using robust design build with wet process. Non magnetic copper or epoxy bondable available.

OPTOELECTRONICS **VSMY7850X01**

High-power SurfLight™ emitter with 850 nm peak wavelength and 170 mW/sr intensity at 1 A forward current, 780 mW/sr at 5 A forward current.



ICs **SiP32431**

1.0 A slew rate controlled load switch with reverse blocking in SC70-6 and TDFN4 1.2 mm x 1.6 mm packages. Industry's lowest operating current (only 50 pA).

INDUCTORS **IHLP-2020CZER4R7M01**

Low-profile, high-current IHLP® inductors. Compact composite for high-efficiency DC/DC conversion. High-frequency operation up to 5 MHz for excellent saturation.



OPTOELECTRONICS **VSMY98545**

High-power SurfLight™ emitter with 850 nm peak wavelength. Radiant intensity of 350 mW/sr at 1 A and 1600 mW/sr at 5 A pulsed. Radiant power of 660 mW in a compact package.

OPTOELECTRONICS **TFBS4711**

Infrared transceiver with data rate up to 115.2 kbit/s, idle current of: 70 µA, shutdown current of 10 nA, transmit range of 1 meter, in small 1.9 mm x 3 mm x 6 mm (H x L x W) package.



Clip-On / Pocket-Worn Devices



What are Clip-On / Pocket-Worn Devices?

Clip-on and pocket-worn devices measure steps in our day, analyze our sleeping patterns, track the whereabouts of friends and loved ones, or monitor health and safety of those most vulnerable.

	<p>RESISTORS MCT0603 / MCS0402</p> <p>Professional and precision chip resistors with excellent stability. CECC approved and sulfur resistant.</p>	<p>MLCC CAPACITORS MLCC Hi Q Capacitors</p> <p>Ultra-stable dielectric low dissipation factor (DF) capacitors using robust design build with wet process. Non magnetic copper or epoxy bondable available.</p>	
	<p>RESISTORS CRCW0201 ...e3</p> <p>Lead (Pb)-free commodity thick film chip resistors in a very small 0.6 mm x 0.3 mm package for high-volume commercial product applications.</p>	<p>ICs SiP32458</p> <p>20 mΩ smart load switch designed for 1.5 V to 5.5 V operation in compact WSCP6 package.</p>	
	<p>CERAMIC CAPACITORS MLCC RF Capacitors</p> <p>Excellent power handling capabilities in sizes from 0402 to 3838. Non magnetic copper or epoxy bondable available and lead bearing for hi-rel applications.</p>	<p>ICs DG2501</p> <p>Ultra-low power quad SPST switches optimized for sensors in portables/wearable technology with power consumption < 0.01 μW for superior switching characteristics in a compact WCSP16 package.</p>	
	<p>TANTALUM CAPACITORS T55</p> <p>vPolyTan™ polymer tantalum capacitors. High-capacitance, low-ESR polymer tantalum capacitors for stable electrical performance over temperature and voltage.</p>	<p>MOSFETs Si8457DB</p> <p>P-channel 12 V (D-S) MOSFET using TrenchFET® Gen III for extremely low on-resistance. MICRO FOOT® ultra-small 1.6 mm x 1.6 mm outline, ultra-thin 0.6 mm height package.</p>	
	<p>ESD DIODES VESD05A4A-HS4</p> <p>ESD protection diode in LLP1010-6L ultra compact package with low package height < 0.4 mm. ESD protection acc. IEC 61000-4-2, ± 30 kV contact and air discharge.</p>		



Fitbands

What is a Fitband?

Worn on the wrist, fitbands track physical activity to monitor and record fitness metrics.



RESISTORS

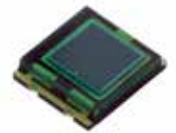
CRCW0201 ...e3

Lead (Pb)-free commodity thick film chip resistors in a very small package size of 0.6 mm x 0.3 mm for high volume commercial product applications.

OPTOELECTRONICS

TEMD5510FX01

Ambient light sensor with analog output with peak sensitivity at 540 nm with a 7.5 mm² detector chip in a low-profile package



RESISTORS

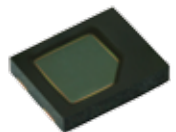
MCT0603 / MCS0402

Professional and precision chip resistors with excellent stability. CECC approved and sulfur resistant.

OPTOELECTRONICS

VEVD5010X01

High-sensitivity PIN photodiode in leadless low-profile 0.8 mm high package, with 7.5 mm² sensitive area and daylight blocking filter.



MOSFETS

Si8817DB

Industry leading p-channel 20 V (D-S) MOSFET with max $R_{DS(ON)}$ 76 m Ω in smallest 0.8 mm x 0.8 mm chip scale package with 0.4 mm height.

NON LINEAR RESISTORS

NTCS0402

SMD NTC thermistors with glass protected flex terminations. and AEC-Q200 compliant



MOSFETS

SiB441EDK

Industry leading p-channel 12 V (D-S) MOSFET with max $R_{DS(ON)}$ down to 25.5 m Ω in 1.6 mm x 1.6 mm PowerPAK SC-70 package.

ICs

DG2501

Ultra-low power quad SPST switches optimized for sensors in portables/wearable technology with power consumption < 0.01 μ W for superior switching characteristics in a compact WCSP16 package.



DIODES

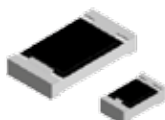
VBUS05A1-SDO

Low-capacitance bidirectional symmetrical (BiSy) single line ESD-protection diode in ultra-compact package.

MLCC CAPACITORS

VJ0201

High capacitance per unit size in COG, X5R and X7R dielectrics. Miniaturized case sizes for board space savings and better ESL performance.



RESISTORS

RCWE

Thick film surface-mount chip resistors with extremely low resistance values from 0.01 Ω to 0.99 Ω , tolerance of 1 %, and high-power 2X power capacity.

TANTALUM CAPACITORS

298D / 298W

Solid tantalum chip capacitors. MICROTAN[®], and extended range MICROTAN[®] in small case sizes for space constrained designs.



Patient Monitoring



What is Patient Monitoring?

Wireless health systems for the next level of healthcare delivery. RPM (remote patient monitoring) devices support healthcare away from the hospital and into the patient's home.

	<p>RESISTORS TNPW0402 ...e3 High-stability thin film flat chip resistors with excellent overall stability, endurance < 0.05 %, TCR down to 10 ppm/K. AEC-Q200 qualified, sulfur resistant, and halogen free.</p>	<p>DISPLAYS LCD, Color TFT, OLED High-quality displays offer excellent human to machine interface solutions using standard and custom display modules and high brightness options for LCD, OLED, and color TFT.</p>	
	<p>RESISTORS P (Sizes 0302 to 2512) High-precision wraparound thin film chip resistors with low TCR down to 5 ppm/°C and tight tolerance down to 0.01 %. Sulfur resistant.</p>	<p>OPTOELECTRONICS TFDU4101 115.2 kbit/s infrared transceiver in an SMD package measuring 9.7 mm × 4.7 mm × 4 mm, capable of surface-mount soldering in side or top view orientation.</p>	
	<p>ICs DG2037 Low-voltage, low R_{ON} (down to 3 Ω), dual SPST analog switch in cost-effective SOT-23-8 and MSOP-8 packages.</p>	<p>NON LINEAR RESISTORS NTCS0805E3 SMD 0805 NTC thermistors with glass protected flex terminations and tolerance on R25 down to 1 %.</p>	
	<p>MOSFETS SiA906EDJ Dual n-channel 20-V (D-S) MOSFET with TrenchFET technology. Low maximum $R_{DS(on)}$ down to 0.046 mΩ at $V_{GS} = 4.5$ V in compact 2 mm x 2 mm PowerPAK SC-70 package.</p>	<p>CERAMIC CAPACITORS Hi-Rel MLCCs MIL-PRF-55681 qualified facility. Reliability testing done on maintenance basis with multiple screening options and customized certification available.</p>	
	<p>DIODES VBUS052CD-FAH 2-line bus-port ESD-protection with flow through design. Low load capacitance at $C_D = 0.8$ pF in compact LLP1713-7L package.</p>	<p>IC's SiC403A microBUCK® 6 A, 28 V integrated buck regulator with programmable LDO. Offers a scalable design with 10 A and 15 A parts in the same footprint.</p>	
	<p>CERAMIC CAPACITORS MLCC RF Capacitors Excellent power handling capabilities in sizes from 0402 to 3838. Non magnetic copper or epoxy bondable available and lead bearing for high-rel.</p>		



Smartwatches

What is a Smartwatch?

The next generation of wristwatch. Computerized functionality providing mobile apps, games, media players, phone, cameras, even video recording. And it tells you the time.

	<p>RESISTORS <u>MCT0603 / MCS0402</u> Professional and precision chip resistors with excellent stability. CECC approved and sulfur resistant.</p>	<p>NON LINEAR RESISTORS <u>NTCS0402</u> SMD glass protected NTC thermistors with glass protected flex terminations. AEC-Q200 compliant.</p>	
	<p>MOSFETS <u>Si8805EDB</u> Low on-resistance, guaranteed with gate voltages down to 1.2 V. In industry-smallest 0.8 mm by 0.8 mm chip scale package with 0.4 mm height</p>	<p>INDUCTORS <u>IWAS and Custom Rx Coils</u> Wireless charging receiving coil/shield with thin, high-efficiency, low saturation Rx coils. Custom designs available.</p>	
	<p>RECTIFIERS <u>MSS2P2</u> Surface-mount schottky barrier rectifiers in low-profile AEC-Q101 package.</p>	<p>INDUCTORS <u>IFSC</u> Low-profile, high-current inductors for DC/DC converter filtering.</p>	
	<p>DIODE <u>VBUS05A1-SDO</u> Low-capacitance bidirectional symmetrical (BiSy) single line ESD protection diode in ultra-compact package</p>	<p>TANTALUM CAPACITORS <u>298D / 298W</u> Solid tantalum chip capacitors. MICROTAN® and extended range MICROTAN® in small case sizes for space constrained designs.</p>	
	<p>OPTOELECTRONICS <u>VCNL4020</u> Fully integrated proximity and ambient light sensor with I²C interface. 16-bit resolution, proximity range of up to 20 cm with programmable thresholds</p>	<p>ICs <u>SiP32461</u> 50 mΩ, slew rate controlled load switch in WCSP package.</p>	
	<p>OPTOELECTRONICS <u>TEMD6200FX01</u> Ambient light sensor with high-speed and high-sensitivity. PIN photodiode output.</p>		

Smart Glasses



What are Smart Glasses?

The next wave in wearable computers. Offering heads-up display (HUD) or augmented reality (AR) with transparent overlay of projected digital images.

	<p>RESISTORS <u>MCT0603 / MCS0402</u> Professional and precision chip resistors with excellent stability. CECC approved and sulfur resistant.</p>	<p>TANTALUM CAPACITORS <u>TL8</u> Solid tantalum Microtan® chip capacitors. High-CV leadframeless molded low-profile devices for space constrained designs.</p>	
	<p>RECTIFIERS <u>MSS2P2</u> Surface-mount Schottky barrier rectifiers in low-profile AEC-Q101 package.</p>	<p>NON LINEAR RESISTORS <u>NTCS0402</u> SMD glass protected NTC thermistors with glass protected flex terminations. AEC-Q200 compliant.</p>	
	<p>DIODE <u>VBUS05A1-SDO</u> Low-capacitance bidirectional symmetrical (BiSy) single line ESD protection diode in ultra-compact package.</p>	<p>INDUCTORS <u>IWAS and Custom Rx Coils</u> Wireless charging receiving coil/shield with thin, high-efficiency, low-saturation Rx coils. Custom designs available.</p>	
	<p>OPTOELECTRONICS <u>VCNL4020</u> Fully integrated proximity and ambient light sensor with I²C interface. 16-bit resolution, proximity range of up to 20 cm with programmable thresholds.</p>	<p>INDUCTORS <u>IFSC</u> Low-profile, high-current inductors for DC/DC converter filtering.</p>	
	<p>OPTOELECTRONICS <u>TEMD6200FX01</u> Ambient light sensor with high-speed and high-sensitivity PIN photodiode output.</p>	<p>ICs <u>DG9451</u> 8-channel, dual 4-channel, triple 2-channel multiplexers.</p>	
	<p>OPTOELECTRONICS <u>VSMY3850/ VSMG3700</u> High-speed infrared emitting diode, 850 nm, SurfLight™ surface emitter technology with high radiant intensity of 17 mW/sr.</p>	<p>ENERGY STORAGE CAPACITORS <u>196 HVC ENYCAP™</u> Hybrid storage capacitors with extremely small profile and high energy density. Instant rechargeable, suitable for solar power charging.</p>	

DESIGN SUPPORT TOOLS

Vishay has developed a number of software support tools to assist design engineers. These include SPICE models, and custom calculators. The full list of support tools can be found at <http://www.vishay.com/how/design-support-tools/>

Here are a few examples:

Ohm's Law Calculator

Enter any two values and the Vishay calculator will provide the missing information

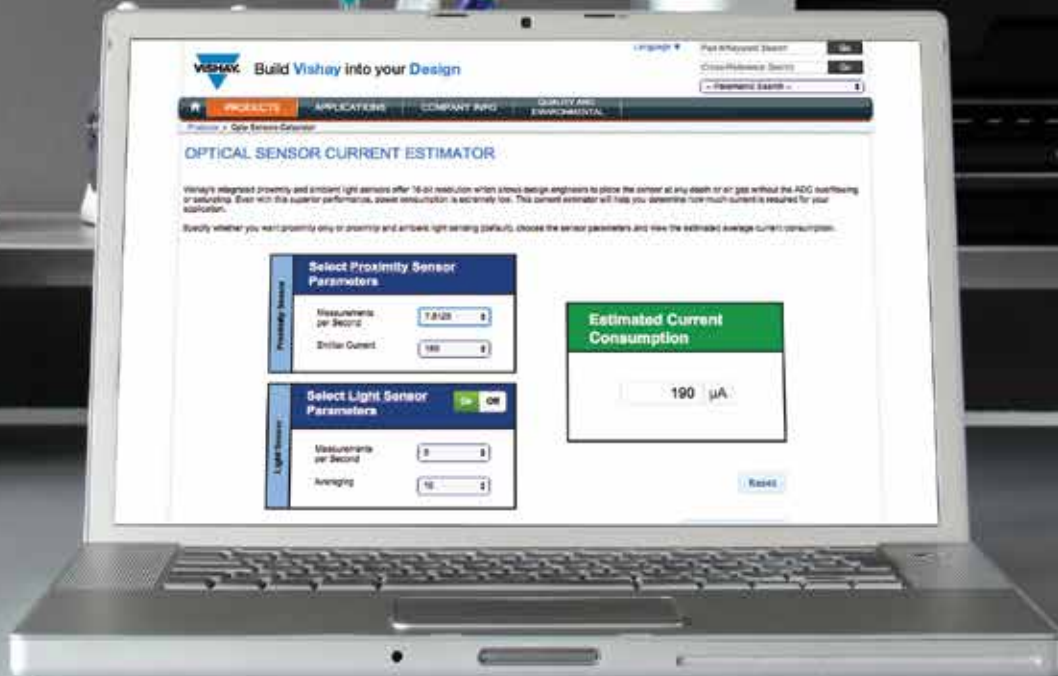
Ohm's Law Calculator

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Resistance	<input type="text" value="10k"/>	<input type="text" value="500"/>	<input type="text" value="500"/>
Current	<input type="text" value="500"/>	<input type="text" value="10k"/>	<input type="text" value="500"/>
Power	<input type="text" value="500"/>	<input type="text" value="10k"/>	<input type="text" value="500"/>

Please use American number formats that use decimal points instead of commas. For example, use "10.0" and not "10,0".

Calculate Run

IHLP® Inductor Loss Calculator Tool



Optical Sensor Current Estimator

Smart Meters



What are Smart Meters?

Remotely record and monitor energy consumption within the home with the ability to reduce load and disconnect-reconnect in emergencies.

	<p>RESISTORS Z300-C Axial cemented wirewound resistors with high voltage surge (up to 12 kV) capability and non flammable cement coating.</p>	<p>OPTOELECTRONICS VOW2611 10 MBd widebody high-speed, high-isolation optocoupler with > 10 mm creepage/clearance.</p>	
	<p>FILM CAPACITORS F1772S Interference suppression film capacitor, class X2, MKT 310 V_{AC}, high stability grade. Withstanding 85 °C / 85 % RH for 1000 h at 240 V_{AC}.</p>	<p>NON LINEAR RESISTORS VDRH14-VDRH20 VDR metal oxide varistors high surge resistor with extended operating temperature to 125°C. UL recognized up to 105°C (selected types).</p>	
	<p>MOSFETS SiHD7N60E E Series 600 V Power MOSFET with maximum R_{DS(ON)} of 600 mΩ and continuous current of 7 A in popular DPAK package.</p>	<p>OPTOELECTRONICS VSMB2020X01 High-speed and high-power infrared emitting diodes with peak wavelength of 940 nm, radiant intensity of 40 mW/sr at I_F = 100 mA, 15 ns rise/fall time, and angle of half intensity of ± 12°.</p>	
	<p>DIODES SMAJxx Surface-mount TRANSZORB transient voltage suppressors with 400 W peak pulse power capability with a 10/1000 μs waveform. AEC-Q101 qualified.</p>	<p>INDUCTORS IDCP2218 High-current, surface mount non-shielded inductors with low cost filtering and DC/DC conversion.</p>	
	<p>RESISTORS WSMS Power Metal Strip® meter shunt resistor with very low resistance value (down to 0.0001 Ω) offering high accuracy for smart meter applications.</p>	<p>CERAMIC CAPACITORS MLCC Hi Q Capacitors Ultra-stable dielectric low dissipation factor (DF) capacitors using robust design build with wet process. Non magnetic copper or epoxy bondable available.</p>	
	<p>RESISTORS MM / SMM Thin film Mini-MELF resistors with unrivaled surge handling capability for ultimate stability over lifetime. AEC-Q200 qualified, approved acc. EN 140401-803, sulfur resistant, and Vishay Green.</p>	<p>ICs SiP32419/SiP32429 28 V, 56 mΩ, load switch with programmable current limit and slew rate control. Simplifies design while increasing reliability of the circuit.</p>	



Lighting Controls

What are Lighting Controls?

Control and monitor lighting in the home for safety and energy savings.

	<p>RESISTORS VR25 High-ohmic (100K - 22 MΩ), high-voltage metal glaze leaded resistors with continuous voltage of 1600 V and pulse loading capacity of 7 kV in small 0207 package.</p>	<p>RESISTORS HVW Carbon film (metal alloy) resistors. Special purpose, high-voltage up to 15 kV with wide value range of 1 kΩ to 200 MΩ.</p>	
	<p>RESISTORS PR01/02/03 High-power metal film leaded resistors with power ratings of 1 W, 2 W, and 3 W. Non flammable lacquer coating in small package with various lead forming options.</p>	<p>OPTOELECTRONICS TEMT6200FX01 Ambient light sensor in miniature 0805 package with phototransistor output. Wavelength of peak sensitivity of 550 nm and linearity over operating temperature range of -40 to +100 °C.</p>	
	<p>MOSFETS SiHD7N60E E Series 600 V power MOSFET with maximum $R_{DS(ON)}$ of 600 mΩ and continuous current of 7 A in popular DPAK package.</p>	<p>FILM CAPACITORS MKP385 Single metallized AC and pulse capacitors. MKP radial plotted type. Low loss dielectric, small dimensions for high density packaging.</p>	
	<p>RECTIFIERS VT10200C Trench MOS barrier Schottky rectifier with low forward voltage drop and low power losses.</p>	<p>OPTOELECTRONICS V04157 Zero crossing phototriac optocoupler. 5000 V/μs dV/dt minimum with 800 V blocking voltage, 300 mA on-state output current, and 1.6 mA trigger current with VISO of 5300 V.</p>	
	<p>DIODES BZD27CxxP Series Zener diodes with surge current specification. AEC-Q101 qualified.</p>	<p>OPTOELECTRONICS V02223A Power phototriac optocoupler with optically coupled phototriac driving a power triac, load current of 1 A_{RMS} and 5300 V of input to output isolation in a DIP-8 package</p>	
	<p>RESISTORS ROX Metal oxide resistors. Special purpose. High-voltage up to 45 kV and wide value range of 100 Ω to 3 GΩ.</p>	<p>NON LINEAR RESISTORS PTCCL... PTC thermistors for overload protection with best current/size ratio. UL recognized.</p>	

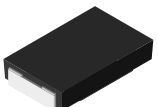
White Goods Air Conditioners



What are White Goods?

Control and monitor the home environment to maximize comfort and efficiency.

Air Conditioners

	<p>MOSFETS SUP85N10-10 N-channel 100-V (D-S) 175 °C MOSFET with TrenchFET technology. Max $R_{DS(on)}$ down to 10 mΩ in popular TO-220 package.</p>	<p>RECTIFIERS PB3510 Enhanced isoCink+™ bridge rectifiers with enhanced high-current density single in-line and UL recognition (file number E312394).</p>	
	<p>MOSFETS IRF19Z34G P-channel 60 V (D-S) MOSFET with rugged planar technology for maximum $R_{DS(on)}$ 140 mΩ and continuous current of -12 A in TO-220 FullPAK package.</p>	<p>RESISTORS CMA0204 High pulse load MELF resistors with ESD capability to 6 kV. Up to 4 kV single pulse capability. Advanced carbon technology. Sulfur resistant, Vishay Green.</p>	
	<p>FILM CAPACITORS MKP1848C Metallized polypropylene DC-Link film capacitor. Compact, high performance device. Built with environmentally friendly materials.</p>	<p>RESISTORS WSHM2818 Power Metal Strip® resistors with very high power rating of 7 W. Low resistance values, 0.001 Ω to 0.10 Ω, with tolerance of 1 % in small 2818 package.</p>	
	<p>DIODES P6KE200A TRANSZORB® transient voltage suppressors. 600 W peak pulse power capability with 10/1000 μs waveform. AEC-Q101 qualified</p>	<p>RECTIFIERS FEP30JP Dual common cathode ultrafast recovery rectifier with low switching losses and high efficiency.</p>	
	<p>INDUCTORS IMC1812 Wirewound, surface-mount, molded RF inductors for high-frequency filtering</p>	<p>RESISTORS WSR Power Metal Strip® resistors with high power ratings to 5 W and low values down to 0.001 Ω in 4527 surface-mount package.</p>	
	<p>NON LINEAR RESISTORS NTCLP450.. NTC thermistor sensors. Miniature pipe sensor with fast time response against industry standards.</p>	<p>OPTOELECTRONICS TSOP34xxxR IR receiver with industry leading range of 45 m, directivity of ± 45°, and 38 kHz carrier frequency in copper leadframe for high humidity / saline atmospheres.</p>	



White Goods Washing Machines

What are White Goods?

Control and monitor the home environment to maximize safety and energy savings.

Washing Machines

	<p>ALUMINUM CAPACITORS <u>093PMG-Si</u> Miniaturized general-purpose snap-in power aluminum capacitors with useful life of 2000 h at 85°C.</p>	<p>OPTOELECTRONICS <u>V0615A</u> Phototransistor output optocoupler with broad operating temperature range of - 55 °C to + 110 °C and 6 kV peak transient overvoltage protection in a 4-pin DIP or SMD package. VDE, BSI, FIMKO, UL certified.</p>	
	<p>CERAMIC CAPACITORS <u>VJ OMD Series</u> Internal design reduces risk of shorts caused by board flex. Polymer termination available for intensive board flex requirements and 100 % voltage conditioning available up to 630 V_{DC} rating.</p>	<p>RESISTORS <u>WSHM2818</u> Power Metal Strip® resistors with very high power rating of 7 W. Low resistance values, 0.001 Ω to 0.10 Ω, with tolerance of 1 % in small 2818 package.</p>	
	<p>MOSFETS <u>IRFB20</u> N-channel 800-V (D-S) Power MOSFET built on rugged planar technology. Max R_{DS(on)} of 6.5 Ω and maximum continuous current of 1.8 A. Available in popular TO-220 package.</p>	<p>RESISTORS <u>VR25</u> High-ohmic (100K - 22 MΩ), high-voltage metal glaze leaded resistors with continuous voltage of 1600 V and pulse loading capacity of 7 kV in small 0207 package.</p>	
	<p>MOSFETS <u>Si2307CDS</u> P-channel 30-V (D-S) MOSFET using TrenchFET technology. Max R_{DS(on)} down to 88 mΩ in popular SOT-23 package.</p>	<p>RECTIFIERS <u>GSIB2560-E3</u> Single-phase, single in-line bridge rectifiers with UL recognition and high surge current capability.</p>	
	<p>NON LINEAR RESISTORS <u>NTCS0603</u> SMD 0603 NTC thermistors with glass protected flex terminations. AEC-Q200 compliant.</p>	<p>RESISTORS <u>AC03...CS</u> Cemented fusible wirewound safety resistors with 3 W, UL 1412 approved, non-flammable cement coating, and surge handling of 4 kV.</p>	
	<p>OPTOELECTRONICS <u>VCNL4020</u> Fully integrated proximity and ambient light sensor with I²C interface.</p>	<p>FILM CAPACITORS <u>MKP339</u> Interference suppression film capacitors, MKP radial potted type, RFI X2 for standard across-the-line applications.</p>	

White Goods Induction Cooking



What are White Goods?

Control and monitor the home environment to maximize safety and energy savings.

Induction Cooking

	<p>CERAMIC CAPACITORS <u>YY1</u> AC line rated ceramic disc capacitors. Class X1, 760 V_{AC} and class Y1, 500 V_{AC}. X1/Y1 safety rating according to IEC 60384-14 (3rd edition) for highest reliability and lifetime over operating temperature range of -40 °C to +125 °C.</p>	<p>MOSFETs <u>SiHB15N60E</u> E Series 600 V n-channel MOSFET. High-performance, high-voltage technology with maximum R_{DS(on)} 280 mΩ, maximum continuous current of 15 A, in popular D²PAK package.</p>	
	<p>FILM CAPACITORS <u>MKP1848C</u> Metallized polypropylene film capacitor with compact and high performance DC-link. Built with environmentally friendly materials.</p>	<p>DIODES <u>BAT54 / MMSZ5242B</u> Small-signal Schottky diode (BAT54), and Zener diode (MMSZ5242B), featuring very low turn-on voltages and AEC-Q101 qualifications.</p>	
	<p>MOSFETs <u>Si2307CDS</u> P-channel 30-V (D-S) MOSFET with TrenchFET technology. Max R_{DS(on)} down to 88 mΩ in popular SOT-23 package.</p>	<p>FILM CAPACITORS <u>MKP1839HQ</u> AC and pulse metallized polypropylene film capacitors. MKP axial type for low building height and precision applications down to ± 1 %.</p>	
	<p>OPTOELECTRONICS <u>VCNL4010</u> Fully integrated proximity and ambient light sensor with I²C interface. 16-bit resolution, proximity range of up to 20 cm with programmable thresholds.</p>	<p>RESISTORS <u>WSLP2512</u> Power Metal Strip[®] resistors. Surface-mount with extremely low resistance values from 0.0005 Ω to 0.5 Ω, tolerance of 1 %, and high power of 1 W in 2512 size.</p>	
	<p>RESISTORS <u>AC03</u> Cemented wirewound resistors. Non flammable cement coating, power to 3 W, excellent pulse handling capability with good size to power ratio and various lead forming options</p>	<p>NON LINEAR RESISTORS <u>NTCALUG01A</u> NTC thermistors, standard lug for robust surface temperature sensor. AEC-Q200 compliant, UL recognized.</p>	
	<p>MOSFETs <u>Si2307CDS</u> P-channel 30 V (D-S) MOSFET with TrenchFET[®] technology for max R_{DS(on)} down to 88 mΩ in SOT-23 package</p>	<p>OPTOELECTRONICS <u>6N136</u> 1 MBd high-speed optocoupler with photodiode-to-transistor output. Transmit signal frequency of 2 MHz and isolation test voltage of 5300 V_{RMS}.</p>	



White Goods Refrigerators / Freezers

What are White Goods?

Control and monitor the home environment to maximize safety and energy savings.

Refrigerators / Freezers

	<p>DIODES BAT54S Small-signal Schottky diodes, single and dual, featuring very low turn-on voltage. AEC-Q101 qualified.</p>	<p>CERAMIC CAPACITORS VJ2220Y182KXUSTX1 Robust design build with wet process. IEC 60384-14:2005, CAN/CSA/cCSAus, and ANSI/UL CB certificates. Surface-mount design for simpler assembly and reduced board space requirements.</p>	
	<p>NON LINEAR RESISTORS NTCACAPE3... NTC thermistors, double insulated refrigerator sensors.</p>	<p>MOSFETs IRF740B High-voltage 400 V V_{DS} MOSFET with dynamic dV/dt rating, repetitive avalanche rated, fast switching, ease of paralleling, and simple drive requirements.</p>	
	<p>RESISTORS AC03 Cemented wirewound resistors. Non flammable cement coating, power ratings to 3 W, excellent pulse handling capability with good size to power ratio, and various lead forming options.</p>	<p>MOSFETs Si9407BDY P-channel 60 V (D-S) MOSFET using classic TrenchFET® technology with maximum $R_{DS(on)}$ down to 120 mΩ in popular S0-8 package.</p>	
	<p>RESISTORS AC05...CS Cemented fusible wirewound safety resistors. Power rating to 5 W, UL 1412 approved, non flammable cement coating for surge handling of 6 kV. Safe and silent fusing to prevent flame or explosion.</p>	<p>RESISTORS WSL2512 Power Metal Strip® resistors. Surface-mount with extremely low resistance values from 0.0005 Ω to 0.5 Ω, tolerance of 1 %, and high power of 1 W in 2512 size.</p>	
	<p>CERAMIC CAPACITORS VY1 AC line rated ceramic disc capacitors. Class X1, 760 V_{AC} and class Y1, 500 V_{AC}. X1/Y1 safety rating according to IEC 60384-14 (3rd edition) for highest reliability and lifetime over operating temperature of -40 °C to +125 °C.</p>	<p>FILM CAPACITORS MKP339 Interference suppression film capacitors, MKP radial potted type, RFI X2 for standard across-the-line applications.</p>	
	<p>RECTIFIERS MURS160-M3 Surface-mount ultrafast plastic rectifier with low switching losses, ultrafast reverse recovery time, and high efficiency.</p>	<p>OPTOELECTRONICS V0615A Phototransistor output optocoupler with broad operating temperature range of -55 °C to +110 °C and 6 kV peak transient overvoltage protection in a 4-pin DIP or SMD package. VDE, BSI, FIMKO, UL certified.</p>	

Robotic Appliances Domestic Robots



What are Domestic Robots?

A domestic robot, or service robot, is an autonomous robot that is used for household chores.

Robotic Vacuum

	<p>MOSFETs Si7938DP Dual n-channel 40 V (D-S) MOSFET using TrenchFET® Gen III technology for maximum $R_{DS(on)}$ down to 5.8 mΩ in thermally enhanced PowerPAK® SO-8 package.</p>	<p>DIODES SMBJ26CA-E3/52 Surface-mount TransZorb® transient voltage suppressors. 600 W peak pulse power capability with a 10/1000 μs waveform. Available in unidirectional and bidirectional.</p>	
	<p>DISPLAYS LCD, Color TFT, OLED High-quality displays offer excellent Human to Machine interface solutions using standard and custom display modules and high brightness options for LCD, OLED, and color TFT.</p>	<p>RECTIFIERS SS10P6-M3/86A High-current density surface-mount Schottky barrier rectifier in very low profile (typ. 1.1 mm). AEC-Q101 qualified.</p>	
	<p>OPTOELECTRONICS VSLB3948 High-speed infrared-emitting diode with peak wavelength of 940 nm in a T-1 clear package. Intensity of 65 mW/sr, $I_F = 100$ mA, angle of half intensity: $\phi = \pm 22^\circ$, and rise / fall time of 15 ns</p>	<p>INDUCTORS IHLP-6767GZ Low-profile, high-current IHLP® inductors. Large size, low saturation, and high current SMD inductor. DC/DC conversion and filter applications</p>	
	<p>OPTOELECTRONICS TEFT4300 Silicon NPN phototransistor with peak sensitivity of 925 nm, spectral bandwidth from 875 nm to 1000 nm ($\lambda_{0.5}$), angle of half sensitivity of $\pm 30^\circ$, and output current of 3.2 mA at $E_o = 1$ mW/cm²</p>	<p>CERAMIC CAPACITORS MLCC SMD Safety Capacitor IEC 60384-14:2005, CAN/CSA/cCSAus, and ANSI/UL CB certificates. Surface-mount design for simpler assembly and reduced board space requirements. Available in NPO (COG) or X7R dielectrics.</p>	
	<p>OPTOELECTRONICS TSAL6100 High-power infrared-emitting diode with peak wavelength of 940 nm in a T-1 package. Typ. radiant intensity of 170 mW/sr at $I_F = 100$ mA, 1450 mW/sr at $I_F = 1$ mA, and angle of half intensity: $\phi = \pm 10^\circ$</p>	<p>OPTOELECTRONICS TSOP34438 IR receiver modules with industry leading range of 45 m, directivity of $\pm 45^\circ$, minimum irradiance of 0.08 mW/m², and AGC-4 noise suppression.</p>	
	<p>OPTOELECTRONICS VO2223A Power phototriac optocoupler with optically coupled phototriac driving a power triac, load current of 1 A_{RMS}, and 5300 V of input to output isolation in a DIP-8 package.</p>	<p>OPTOELECTRONICS VO3052 Optocoupler, non-zero crossing phototriac with 1500 V/μs dV/dt minimum, 2000 V/μs typical, 600 V blocking voltage, 100 mA on-state output current, and 10 mA trigger current with VISO of 5300 V.</p>	



**Automotive /
Transportation**



Powertrain – 12 V / 24 V
Powertrain – Injection
Control and Fuel Pump
Chassis Control
Body Electronics
Passive Safety

Powertrain – 12 V / 24 V
Exterior Lighting
48 V_{DC} Boardnet
Micro Hybrid – Start /
Stop (12 V)
Full Hybrid Vehicles
(HEVs)

Full Electric Vehicles
(FEVs)
Off-Road Equipment
AC and Hybrid Trains
Forklifts, Lift Trucks
Heavy Transportation



**Alternative
Energy**



Solar Energy
Wind Turbines
Smart Grids
Energy Exploration
Power Transmission /
Distribution / Grid Quality



Industrial



Factory Automation
Fabrication
Detection and
Initial Safety
Devices
Surveillance
Systems



Computer



Portable Computers
Stationary Computing
Computer Peripherals



Consumer



Wearables
Home Entertainment
Gaming / E-Bikes
Home Appliances
Robotic Applications /
Domestic Robots
Lighting



Mobile
Infrastructure



Telecommunications



Medical Equipment
X-ray / Computed Tomography (CT)
Cardiac Pacing
External Defibrillators
Patient Monitoring
Glucose Meters
MRI / MRT



Medical



Airborne Systems
Satellite / GPS
Flight Control
Computers
Cockpit Panels

Braking Systems
UAVs (Unmanned Aerial
Vehicles) / Drones



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