

Uninterruptible Power Supply

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Uninterruptible Power Supply

VISHAY components used for a UPS can include:

- Power MOSFETS
- High-Power Modules
- Diodes and Rectifiers
- Capacitors
- Resistors
- Analog Switches
- Visible LEDs
- Optical Isolators
- Inductors / EMI Filters
- Shunt Resistors
- ESD Protection Devices
- LDOs

Application Overview

An Uninterruptible Power Supply, or UPS, is required when the AC power that runs sensitive equipment is not reliable or not well regulated or filtered. During power brownouts or blackouts the UPS can provide AC power to the equipment, such as computers or emergency lighting, for a period of time, usually until normal power source is restored. Most UPS circuits include some or all of the system blocks shown above.

Uninterruptible Power Supply : AC INPUT SECTION, Diode Bridge

Single Phase

Product Name	Status	Description	Features	Package	Q-Level
36MB60A		Glass Passivated Bridge Rectifier	600V, 35 A	TH / Module D-34	
GBPC3506A		Glass Passivated Bridge Rectifier	600V, 35 A	TH / Module GBPC	

Three Phase

Product Name	Status	Description	Features	Package	Q-Level
100MT160PA		High-Power Modules	3-phase, 1600 V, 100 A	Module / MTP MTP module	

Uninterruptible Power Supply : AC INPUT SECTION, Power Factor Correction

Bulk Capacitor

Product Name	Status	Description	Features	Package	Q-Level
2222 102 series		Screw-Terminal Aluminium Capacitor	3300 μ F 490 V 20%	TH / Screw T 35x60mm to 76 x146mm	
2222 157 series		Snap-In Aluminium Capacitor	2200 μ F 420 V 20%	TH / Radial 22x25mm to 35 x 60mm	
MKP 1848 DC-Link	NEW	DC-link film capacitor	up to 400 μ F; up to 1200V no electrolyte, long life	TH / Radial	

Inductor

Product Name	Status	Description	Features	Package	Q-Level
IHLP series		Surface-Mount Power Inductors	0.047 μ H to 100 μ H; Up to 60 Amps	SMD 1616 to 5050	

PFC fast diode

Product Name	Status	Description	Features	Package	Q-Level
15ETX06		UltraFast Diode	600 V, 15 A, 18 nsec Trr	TH / Radial TO-220AC	
30EPH06		UltraFast Diode	600 V, 30 A, 35 nsec Trr	TH / Radial TO-247 (2 lead)	
8ETX06		UltraFast Diode	600 V, 8 A, 16 nsec Trr	TH / Radial TO-220AC	
HFA50PA60C		HexFRED Diode	600 V, 50 A, 75 nsec Trr	TH / Radial TO-247	

PFC MOSFET

Product Name	Status	Description	Features	Package	Q-Level
IRF32N50K		Power MOSFET	500 V, 160 mohm	TH / Radial TO-247	
IRFP460N		Power MOSFET	500 V, 240 mohm	TH / Radial TO-247	
IRFPS43N50K		Power MOSFET	500 V, 90 mohm	TH / Radial Super TO-247	

PFC pre-charge diode

Product Name	Status	Description	Features	Package	Q-Level
10ETS08S		Standard Recovery Diode; High Surge Rating;	800 V, 10 A cont., 200 Amp Surge	SMD D2-Pak	

Shunt resistor

Product Name	Status	Description	Features	Package	Q-Level
WSL, WSH series		Power Metal Strip Resistor	Ideal for Current Sensing Low Value,	SMD 0603 to 4527	

Uninterruptible Power Supply : AC INPUT SECTION, XY Capacitors

Film RFI caps

Product Name	Status	Description	Features	Package	Q-Level
BFC2 336 60103		Film Capacitor Y2 Polypropylene	300V, 10 nF, 20%	TH / Radial 5.0x11.0x17.5mm	
F1772 447 3200		Film Capacitor X2 Polyester	300V, .47 μ F, 20%	TH / Radial 11.0x20.3x41.3mm	
F1772 522 3200		Film Capacitor X2 Polyester	300V, 2.2 μ F, 20%	TH / Radial 17.8x32.3x41.3mm	

Uninterruptible Power Supply : BATTERY CHARGER, Discretes

Inductor

Product Name	Status	Description	Features	Package	Q-Level
IHLP series		Surface-Mount Power Inductors	0.047 uH to 100 uH; Up to 60 Amps	SMD 1616 to 5050	

Multilayer Ceramic Chip Capacitors

Product Name	Status	Description	Features	Package	Q-Level
X7R Dielectric		Multilayer Ceramic Chip Capacitors, Ideal for Decoupling and Filtering Excellent Aging Characteristics	100 pF - 1 μ F	SMD 0402 - 3640 EIA	

Power transformer

Product Name	Status	Description	Features	Package	Q-Level
Custom		Dale Custom Magnetics		TH	

Shunt Resistor

Product Name	Status	Description	Features	Package	Q-Level
WSL, WSH series		Power Metal Strip Resistor	Ideal for Current Sensing Low Value,	SMD 0603 to 4527	

Tantalum Capacitors

Product Name	Status	Description	Features	Package	Q-Level
292D		Solid Tantalum Chip Capacitors; TANTAMOUNT®; Lead Frameless Molded	3 - 20 Volt; 1 μ F - 47 μ F	SMD 0805 -2012	
592D		Solid Tantalum Chip Capacitors; Low-Profile, Conformal Terminals, Maximum C/V, Extended Range Offerings	4 - 35 Volt , 1 μ F - 3300 μ F 2.5mm down to 1.3mm Heigh	SMD A - X Case	
595D		Solid Tantalum Chip Capacitors, TANTAMOUNT®, Conformal-Coated, Maximum CV, Low ESR	4 - 50Volt; 0.1 μ F - 1500 μ F	SMD T - R Case	

Uninterruptible Power Supply : BATTERY CHARGER, Power Semiconductors

Power Switches

Product Name	Status	Description	Features	Package	Q-Level
IRFP22N60K		Power MOSFET	600 V, 280 mohm	TH / Radial TO-247	
IRFP450N		Power MOSFET	500 V, 370 mohm	TH / Radial TO-247	
IRFPE50		Power MOSFET	800 V, 1.2 ohm	TH / Radial TO-247	

Rectifier

Product Name	Status	Description	Features	Package	Q-Level
16CTQ100		Schottky	100 V, 16 A, dual	TH / Radial TO-220AC	
V20100S	NEW	Schottky	100 V, 20 A, single	TH / Radial TO-220AC	

Uninterruptible Power Supply : CONTROL SECTION, Capacitors

Multilayer Ceramic Chip Capacitors

Product Name	Status	Description	Features	Package	Q-Level
X7R Dielectric		Multilayer Ceramic Chip Capacitors, Ideal for Decoupling and Filtering Excellent Aging Characteristics	100 pF - 1 μ F	SMD 0402 - 3640 EIA	

Tantalum Capacitors

Product Name	Status	Description	Features	Package	Q-Level
292D		Solid Tantalum Chip Capacitors; TANTAMOUNT®; Lead Frameless Molded	3 - 20 Volt; 1 μ F - 47 μ F	SMD 0805 -2012	
592D		Solid Tantalum Chip Capacitors; Low Profile, Conformal Terminals, Maximum C/V, Extended Range Offerings	4 - 35 Volt , 1 μ F - 3300 μ F 2.5mm down to 1.3mm Heigh	SMD A - X Case	
595D		Solid Tantalum Chip Capacitors, TANTAMOUNT®, Conformal-Coated, Maximum CV, Low ESR	4 - 50Volt; 0.1 μ F - 1500 μ F	SMD T - R Case	

Uninterruptible Power Supply : CONTROL SECTION, Discretes

ESD Protection Diodes

Product Name	Status	Description	Features	Package	Q-Level
GSOT03 to GSOT36		Low-Capacitance Single Line ESD Protection Diode	VZT = 3.3-36V, C=80-800pF	SMD SOT-23	
GSOT03-HT3 to GSOT36-HT3	NEW	Low-Capacitance Single Line ESD Protection Diode	VZT = 3.3-36V, C=80-800pF	SMD LLP75-3B	

LED

Product Name	Status	Description	Features	Package	Q-Level
TLMH3100		SMD LEDs with Exceptional Brightness	Indicator and backlight in office equipment	SMD PLCC-2	

Linear Reg

Product Name	Status	Description	Features	Package	Q-Level
Si9181		Micropower 350-mA CMOS LDO Regulator	Vin = 2.6V, Vout = 5Vmax, 350 mA out	SMD TSSOP-8	
Si9182		Micropower 350-mA CMOS LDO Regulator	Vin = 2.6V, Vout = 5Vmax, 250 mA out	SMD MSOP-8	

Opto Isolator

Product Name	Status	Description	Features	Package	Q-Level
4N25		Optocoupler, Phototransistor Output	Isolation Test Voltage 5300 VRMS	SMD SMD-6, DIP-6	
CNY17-3		Optocoupler, Phototransistor Output	Isolation Test Voltage 5300 VRMS	SMD SMD-6, DIP-6	

Switching Diode

Product Name	Status	Description	Features	Package	Q-Level
1N4148WS		Small-Signal Switching Diodes	VRRM = 50-75 Volts , IFRM = 350 mA	SMD SOD-323	
BAS16WS-V		Space-Saving SMD Packages in SOD323	VRRM = 75 Volts	SMD SOD323	
BAV19WS		Fast Switching	VRRM = 120-250 Volts , IFRM = 625 mA	SMD SOD323	

Uninterruptible Power Supply : CONTROL SECTION, Measurement Multiplexing

Analog Switch

Product Name	Status	Description	Features	Package	Q-Level
DG2002		Single-Pole/Double-Throw Analog Switches	Supply Voltage max = 6V, Ron = 15 Ohms	SMD SC70-6	
DG2011		Single-Pole/Double-Throw Analog Switches	Supply Voltage max = 6V, Ron = 2.7 Ohms	SMD SC89-6	
DG2711		Single-Pole/Double-Throw Analog Switches	Supply Voltage max =3.6V, Ron = 0.6 Ohms	SMD SC70-6	
DG2717		Single-Pole/Double-Throw Analog Switches	Supply Voltage max = 5V, Ron = 0.7 Ohms	SMD SC89-6	
DG2731	NEW	Dual Single-Pole/Double-Throw Analog Switches	Supply Voltage max =4.3V, Ron = 0.3 Ohms	SMD DFN-10 MSOP-10	
DG4599		Single-Pole/Double-Throw Analog Switches	Supply Voltage max = 6V, Ron = 95 Ohms	SMD SC70-6	

Uninterruptible Power Supply : DC/DC STEP-UP (boost or full bridge), Batt to 180 VDC to the inverter

Boost Converter FET

Product Name	Status	Description	Features	Package	Q-Level
IRFB18N50K		Power MOSFET	500 V, 290 mohm	TH / Radial TO-220	
IRFP450N		Power MOSFET	500 V, 370 mohm	TH / Radial TO-247	
SUM65N20-30		Power MOSFET	200 V, 30 mohm	SMD D2-Pak	

High Power Module

Product Name	Status	Description	Features	Package	Q-Level
19MT050XF		Full-Bridge, FETs	500 V, 19A, 31 mohm	Module / MTP MTP module	
25MT060WF		Full-Bridge, Warp-Speed IGBTs	600 V, 50A, 900W	Module / MTP MTP module	

Uninterruptible Power Supply : HOUSE-KEEPING SUPPLY (off-line, flyback), Discretes

Film RFI Capacitors

Product Name	Status	Description	Features	Package	Q-Level
BFC2 336 60103		Film Capacitor Y2 Polypropylene	300 V, 10 nF, 20%	TH / Radial 5.0x11.0x17.5mm	
F1772 447 3200		Film Capacitor X2 Polyester	300 V, .47 μ F, 20%	TH / Radial 11.0x20.3x41.3mm	
F1772 522 3200		Film Capacitor X2 Polyester	300 V, 2.2 μ F, 20%	TH / Radial 17.8x32.3x41.3mm	

Inductor

Product Name	Status	Description	Features	Package	Q-Level
IHLP series		Surface-Mount Power Inductors	0.047 uH to 100 uH; Up to 60 Amps	SMD 1616 to 5050	

Multilayer Ceramic Chip Capacitors

Product Name	Status	Description	Features	Package	Q-Level
X7R Dielectric		Multilayer Ceramic Chip Capacitors, Ideal for Decoupling and Filtering Excellent Aging Characteristics	100pF - 1 μ F	SMD 0402 - 3640 EIA	

Shunt resistor

Product Name	Status	Description	Features	Package	Q-Level
WSL, WSH series		Power Metal Strip Resistor	Ideal for Current Sensing Low Value,	SMD 0603 to 4527	

Tantalum Capacitors

Product Name	Status	Description	Features	Package	Q-Level
292D		Solid Tantalum Chip Capacitors; TANTAMOUNT®; Lead Frameless Molded	3 - 20 Volt; 1 μ F - 47 μ F	SMD 0805 -2012	
592D		Solid Tantalum Chip Capacitors; Low-Profile, Conformal Terminals, Maximum C/V, Extended Range Offerings	4 - 35 Volt , 1 μ F - 3300 μ F 2.5mm down to 1.3mm Heigh	SMD A - X Case	
595D		Solid Tantalum Chip Capacitors, TANTAMOUNT®, Conformal-Coated, Maximum CV, Low ESR	4 - 50Volt; 0.1 μ F - 1500 μ F	SMD T - R Case	

Transformer

Product Name	Status	Description	Features	Package	Q-Level
Custom		Dale Custom Magnetics		TH	

TVS and ESD protection

Product Name	Status	Description	Features	Package	Q-Level
GSOT03 to GSOT36		Low-Capacitance Single Line ESD Protection Diode	VZT=3.3-36V, C=80-800pF	SMD SOT-23	
GSOT03-HT3 to GSOT36-HT3	NEW	Low-Capacitance Single Line ESD Protection Diode	VZT=3.3-36V, C=80-800pF	SMD LLP75-3B	
P4KE series		Transient Voltage Suppressor Diodes	Clamps at 10.5 to 772V	TH / Axial DO-204AL (DO-41)	

Uninterruptible Power Supply : HOUSE-KEEPING SUPPLY (off-line, flyback), Power Semiconductors

Flyback Diode

Product Name	Status	Description	Features	Package	Q-Level
16CTQ100		Schottky	100 V, 16A, dual	TH / Radial TO-220AC	
V20100S	NEW	Schottky	100 V, 20A, single	TH / Radial TO-220AC	

Flyback Switch

Product Name	Status	Description	Features	Package	Q-Level
IRFIBE30G		Power MOSFET	800 V, 3 ohm	TH / Radial FullPak TO-220	
IRFPE40		Power MOSFET	800 V, 2 ohm	TH / Radial TO-247	
IRFPE50		Power MOSFET	800 V, 1.2 ohm	TH / Radial TO-247	

Uninterruptible Power Supply : INVERTER SECTION (DC/AC) AC OUTPUT, Discretes

Balancing Resistors

Product Name	Status	Description	Features	Package	Q-Level
RW 20 x 117 series		Wirewound High-Power Vitreous Resistor	3K3 - 3K9 80 W		

Electrolytic, Ceramic Capacitors

Product Name	Status	Description	Features	Package	Q-Level
2222 102 series		Screw-Terminal Aluminium Capacitor	3300 μ F 490 V 20%	TH / Screw T 35x60mm to 76 x146mm	
2222 157 series		Snap-In Aluminium Capacitor	2200 μ F 420 V 20%	TH / Radial 22x25mm to 35 x 60mm	

Film Capacitors

Product Name	Status	Description	Features	Package	Q-Level
2222 368 series		Snubber Capacitor	1200 V 1 μ F 20%	TH / Radial 22.0x38.0x44.0mm	
PHMKP series		AC Filter Capacitor Polypropylene; 1-Phase	330 V - 100 μ F - 600 μ F	Tubular case	IEC 60831-1
PHMKPg series		AC Filter Capacitor Polypropylene; 3-Phase	448 V - 285 μ F - 720 μ F	Rectangular case	

Pre-Charge Resistor

Product Name	Status	Description	Features	Package	Q-Level
RSO 30x250 series		Wirewound High-Power Resistor	5R1 - 10R 350 W		

Shunt Resistor

Product Name	Status	Description	Features	Package	Q-Level
WSL, WSH series		Power Metal Strip Resistor	Ideal for Current Sensing Low Value,	SMD 0603 to 4527	

Uninterruptible Power Supply : INVERTER SECTION (DC/AC) AC OUTPUT, Full bridge

High Power Module

Product Name	Status	Description	Features	Package	Q-Level
19MT050XF		Full-Bridge, FETs	500 V, 19A, 31 mohm	Module / MTP MTP module	
25MT060WF		Full-Bridge, Warp speed IGBTs	600 V, 50A, 900W	Module / MTP MTP module	

Power Switches

Product Name	Status	Description	Features	Package	Q-Level
IRFP32N50K		Power MOSFET	500 V, 160 mohm	TH / Radial TO-247	
IRFP460N		Power MOSFET	500 V, 240 mohm	TH / Radial TO-247	
IRFPS40N60K		Power MOSFET	600 V, 130 mohm	TH / Radial Super TO-247	

Uninterruptible Power Supply : INVERTER SECTION (DC/AC) AC OUTPUT, Gate Drive

Gate Drivers

Product Name	Status	Description	Features	Package	Q-Level
LPE-3325		Gate Drive Transformer	SMD Transformers	SMD 6.5 x 8.2 mm	
VO3120	SOON	Opto IGBT and MOSFET Driver	2.5-A drive current	SMD SO-8, DIP-8	

Power Transformer

Product Name	Status	Description	Features	Package	Q-Level
Custom		Dale Custom Magnetics		TH	

