

# LCD Television

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# LCD Television

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## VISHAY components used in LCD Televisions include:

- Power MOSFETS
- Controller Power ICs
- Optocouplers
- Schottky Diodes / Rectifiers
- Ultrafast Rectifiers
- TVS
- Bridge Rectifiers
- Zener Diodes
- Switching Diodes
- X / Y Capacitors
- Aluminum Electrolytic Capacitors
- High-Voltage Resistors
- NTC and PTC Thermistors
- Inductors / EMI Filters
- Secondary Protection Fuses
- IR Receivers
- Ambient Sensors
- LDOs
- Analog Switches

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## Application Overview

LCD TV design is separated into three segments: Main Circuit Board, Backlight Inverter, and Power Supply. The Main Circuit Board segment involves hardware device and power sources. For power sources, using a switching mode is an excellent way to improve converter efficiency. High current is its key feature. Power sources that use this technology include system power, power switching, and Class D audio amplification. Low-dropout linear power is another solution for converter efficiency. Its main benefits are low prices and simple circuitry. Hardware can be regarded as a non-power segment. Type of hardware includes remote controls, sensors, and interface protection devices. Some of these need similar functions, such as ESD protection, current limiting, and load switching. The Backlight Inverter segment includes lighting igniters, protection devices, and MOSFET drivers. For lighting igniters, high voltage is a key design concern. Ceramic disc capacitors can meet 6 kV and provide good decoupling. The Power Supply segment involves open-frame switching mode power supplies. Components for primary AC applications include EMI filters, bridge rectifiers, buck capacitors, and PFC rectifiers. The most important design concept is PFC, which involves efficiency improvement. When a PFC rectifier performs well, the power supply can be efficient at a light current load. Regarding secondary side design, the output rectifier is the most important device, especially for multi-output of power supplies. The Trench MOS Schottky rectifier features both high current capabilities and good forward voltage performance at high ambient temperatures. Different solutions are based on different specifications.

## LCD Television : BACKLIGHT INVERTER, Lighting Ignitor

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### Ceramic Capacitors

Product Name	Status	Description	Features	Package	Q-Level
HV 3kV LCD		Ceramic disc capacitors Class 1, 3KV (DC)	C = 4.9 pF to 100 pF, 3kV	TH / Radial	
HV 4kV LCD		Ceramic disc capacitors Class 1, 4KV (DC)	C = 2pF to 100 pF, 4kV	TH / Radial	
HV 6kV LCD		Ceramic disc capacitors Class 1, 6KV (DC)	C = 2pF to 150 pF, 6kV	TH / Radial	

## LCD Television : BACKLIGHT INVERTER, MOSFET Driver

### MOSFETs

Product Name	Status	Description	Features	Package	Q-Level
2N7002K		Single n-channel 60-V MOSFET	Single N-Ch; 60V; MOSFET rDS(on) at 4.5V=4Ohms; ID(max) = 300mAmp;	SMD SOT-23	
SI4425BDY		P-channel 30-V single MOSFET	VDS = 30 V; rDS(on)@4.5 V = 0.019ohms ID(max) = 11.4 A	SMD SO-8	
SI4435BDY		Single p-channel 30-V MOSFET	Single P-Ch; VDS = -30 V; rDS(on)@4.5 V = 0.035ohms ID(max) = 9.1 A;	SMD SO-8	
SI4563DY		N- and p-channel VDS = 40 V pair	VDS = -40 V; rDS(on)@4.5 V = 0.019ohms ID(max) = 8 A	SMD SO-8	
SI4565ADY		N- and p-channel VDS = 40 V pair	VDS = -40 V; rDS(on)@4.5 V = 0.072ohms ID(max) = 5.6 A	SMD SO-8	
SI4567DY		N- and p-channel VDS = 40 V pair	VDS = -40 V; rDS(on)@4.5 V = 0.122ohms ID(max) = 4.4 A	SMD SO-8	
SI4569DY		N- and p-channel VDS = 40 V pair	VDS = -40 V; rDS(on)@4.5 V = 0.032ohms ID(max) = 7.6 A	SMD SO-8	
SI4800BDY		N-channel 30-V single MOSFET	VDS = 30 V; rDS(on)@4.5 V = 0.03 ohms ID(max) = 9 A	SMD SO-8	
SI7501DN		N- and p-channel VDS = 30 V pair	VDS = 30 V; rDS(on)@4.5 V = 0.075ohms ID(max) = 6.4 A	SMD 1212-8 PowerPAK	
SI7530DP		N- and p-channel VDS = 60 V pair	VDS = 60 V; rDS(on)@4.5 V = 0.1 ohms ID(max) = 4.6 A	SMD SO-8 PowerPAK	
SUD50N04-10P		N-channel 40-V single MOSFET, DPAK	VDS = 40 V; rDS(on)@4.5 V=0.012ohms ID(max) = 20 A	SMD TO-252 DPAK	
SUD50N06-09L		N-channel 60-V single MOSFET, DPAK	VDS = 60 V; rDS(on)@4.5 V=0.0122ohms ID(max) = 50A	SMD TO-252 DPAK	
SUD50NP04-62		N- and p-channel VDS = 40 V pair, DPAK	VDS = -40 V; rDS(on)@4.5 V=0.041ohms ID(max) = 8 A	SMD TO-252-4	
SUD50NP04-94		N- and p-channel VDS = 40 V pair, DPAK	VDS = -40 V; rDS(on)@4.5 V=0.072ohms ID(max) = 8 A	SMD TO-252-4	
SUD50P04-09L		P-channel 40 V single MOSFET, DPAK	VDS = -40 V; rDS(on)@4.5 V=0.0145ohms ID(max) = 50A	SMD TO-252 DPAK	

## LCD Television : BACKLIGHT INVERTER, Protection

### Fuses

Product Name	Status	Description	Features	Package	Q-Level
MFU0603		Thin film flat chip fuses	0.5 A to 5 A, 32 V	SMD 0603	
MFU0805		Thin film flat chip fuses	0.5 A to 5 A, 32 V	SMD 0805	
MFU1206		Thin film flat chip fuses	0.5 A to 5 A, 32 V	SMD 1206	

### Switch Diode

Product Name	Status	Description	Features	Package	Q-Level
1N4148WS-V		Fast switching diode;	Current = 500 mA; VF = 1.0 V; VRRM = 75 V	SMD SOD-323	
BAT54A-V		Small-signal schottky diode;	Rated current 200 mA; VR = 30 V; VF = 0.32 V;	SMD SOT-23 3.1x2.6x1.15mm	
BAT54W-V		Small-signal schottky diode;	Rated current = 200 mA; VR = 30 V; VF = 0.32 V;	SMD SOD-123	
BAV99-V		Small-signal switching diode;	Rated current = 50 mA; VRRM = 70 V	SMD SOT-23 3.1x2.6x1.15mm	

### Zener Diode

Product Name	Status	Description	Features	Package	Q-Level
BZX384		Small-signal Zener diodes;	Ptot = 200 mW, Vz = 2.4 V to 75 V; Tj = 150 °C,	SMD SOD323 plastic case	
TLZ		Small-signal Zener diodes Tj = 175 °C;	Vz = 2.4 V to 56 V Ptot = 500 mW,	SMD SOD-80 MINI Melf	
TZX		Small-signal Zener diodes; Tj = 175 °C;	Vz = 2.4 V to 36 V Ptot = 500 mW,	TH / Axial DO-35 glass case	

## LCD Television : MAIN CIRCUIT BOARD, Analog/Digital Signal Switch

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### Analog Switch

Product Name	Status	Description	Features	Package	Q-Level
DG9051DQ		Precision 8-channel, dual 4-channel, triple 2-channel, low-voltage analog switches/multiplexers	VSS = 12 V to 14 V; r(on) = 130Ω @ V+=2.7 V; 8:1 multiplexer	SMD TSSOP-16	
DG9052DQ		Precision 8-channel, dual 4-channel, triple 2-channel, low-voltage analog switches/multiplexers	VSS = 12 V to 14 V; r(on) = 130Ω @ V+=2.7 V; 4:1 differential	SMD TSSOP-16	
DG9053DQ		Precision 8-channel, dual 4-channel, triple 2-channel, low-voltage analog switches/multiplexers	VSS = 12 V to 14 V; r(on) = 130Ω @ V+=2.7 V; DPTT	SMD TSSOP-16	

## LCD Television : MAIN CIRCUIT BOARD, Class D Audio Amplifier

### MOS Driver

Product Name	Status	Description	Features	Package	Q-Level
SI4532ADY		N- and p-channel VDS = 30 V pair;	VDS = 30 V; rDS(on)@4.5 V = 0.075ohms ID(max) = 4.1 A	SMD SO-8	
SI4542DY		N- and p-channel VDS = 30 V pair;	VDS = 30 V; rDS(on)@4.5 V = 0.035ohms ID(max) = 5.8 A	SMD SO-8	
SI4567DY		N- and p-channel VDS = 40 V pair;	VDS = -40 V; rDS(on)@4.5 V = 0.122ohms ID(max) = 4.4 A	SMD SO-8	
SI4569DY		N- and p-channel VDS = 40 V pair;	VDS = -40 V; rDS(on)@4.5 V = 0.032ohms ID(max) = 7.6 A	SMD SO-8	
SI5504BDC		N- and p-channel VDS = 30 V pair;	VDS = 30 V; rDS(on)@4.5 V = 0.235ohms ID(max) = 3.7 A	SMD 1206-8 ChipFET	
SI7501DN		N- and p-channel VDS = 30 V pair;	VDS = 30 V; rDS(on)@4.5 V = 0.075ohms ID(max) = 6.4 A	SMD 1212-8 PowerPAK	
SI7530DP		N- and p-channel VDS = 60 V pair;	VDS = 60 V; rDS(on)@4.5 V = 0.1 ohms ID(max) = 4.6 A	SMD SO-8 PowerPAK	

### Schottky Diodes

Product Name	Status	Description	Features	Package	Q-Level
B140		Low VF , Low leakage current;	10 A,40 V	SMD SMA	
B240A		Low VF, low leakage current;	20 A,40 V	SMD SMA	
B340A		Low VF, low leakage current;	30 A, 40 V	SMD SMA	
SS1P4		Small package, low VF, low leakage current	10 A, 40 V	SMD SMP	
SS2P4		Small package, low VF, low leakage current	20 A, 40 V	SMD SMP	
SS3P4		Small package, low VF, low leakage current	30 A, 40 V	SMD SMP	

### Shielded Power Inductors

Product Name	Status	Description	Features	Package	Q-Level
IHLP1616-01	NEW	Low DCR , high-current power inductor	Rated current up to 11 A	SMD 1616	
IHLP2525CZ-01		Low DCR , high-current power inductor	Rated current up to 25 A	SMD 2525	
IHLP4040DZ-01		Low DCR , high-current power inductor	Up to 100 $\mu$ H; IDC up to 40 A;	SMD 4040	
IHLP4040DZ-11		Low DCR , high-current power inductor	Up to 100 $\mu$ H; IDC up to 40 A;	SMD 4040	

## LCD Television : MAIN CIRCUIT BOARD, Interface Protection

### ESD Protection

Product Name	Status	Description	Features	Package	Q-Level
GMF05C		ESD protection diode array, 6 lines unidirectional or 5 lines bidirectional	VZT = 5 V, C = 150 pF	SMD SOT-363	
GMF05C - HS3		ESD protection diode array, 6 lines unidirectional or 5 lines bidirectional	VZT = 5 V, C = 150 pF	SMD LLP75-6 A	
GMF05LC		ESD protection diode array, 6 lines unidirectional or 5 lines bidirectional	VZT = 5 V, C = 50 pF	SMD SOT-363	
GMF05LC - HS3		ESD protection diode array, 6 lines unidirectional or 5 lines bidirectional	VZT = 5 V, C = 50 pF	SMD LLP75-6 A	
VBUS054B-HS3	NEW	4-line ESD protect additional power line protect Zener diode	low capacitance <1 pF VRWM = 5 V	SMD LLP75	
VBUS054B-HSF	NEW	4-line ESD protect additional power line protect Zener diode	low capacitance <1 pF VRWM = 5 V	SMD LLP75-6L	

### Load Switch

Product Name	Status	Description	Features	Package	Q-Level
SIP4280A		1-A slew rate controlled load switch	VIN = 1.8 V to 5.5 V, rDS(on)@5 V = 80 mΩ;	SMD SOT-23-6	
SIP4282A	NEW	1-A slew rate controlled load switch	VIN = 1.8 V to 5.5 V, rDS(on)@5 V = 140 mΩ;	SMD SC75-6 PowerPAK	
SiP4610A		Protected 1-A high-side load switch	Vmax = 5.5 V, rDS(on)@5 V = 145 mΩ; ID(max) = 1 A	SMD SOT-23-5 Thin	
SIP4612A		Protected 1-A high-side load switch	Vmax = 5.5 V, rDS(on)@5 V = 150 mΩ; ID(max) = 1 A	SMD TSC75-6 PowerPAK	

### Small Signal Protection

Product Name	Status	Description	Features	Package	Q-Level
BAT54A		Small-signal switching diodes, dual;	Dual, VRRM = 30 V; IF = 0.2 A, VF = 0.5V;	SMD SOT-23 3.1x2.6x1.15mm	
BAT54A-V		Small-signal switching diodes, dual;	Dual, VRRM = 30 V; IF = 0.2 A, VF = 0.8V;	SMD SOT-23 3.1x2.6x1.15mm	
BAT54AW		Small-signal switching diodes, dual;	VRRM = 30 V; IF = 0.2 A, VF = 0.5V;	SMD SOT323 2.2x2.2x1mm	
BAV99-V		Small-signal switching diodes, dual;	Dual, VRRM = 70 V; IF = 0.25A, VF = 1.25V;	SMD SOT-23 3.1x2.6x1.15mm	

## LCD Television : MAIN CIRCUIT BOARD, IR Receiver

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### IR Receiver Modules

Product Name	Status	Description	Features	Package	Q-Level
TSOP348XX		Infrared remote control receiver module; DIP molded type, 3 V	VC = 3V	TH / Radial Leaded molded	
TSOP382XX		Infrared remote control receiver module; DIP molded type, 3 V	VC = 3V	TH / Radial 5.5mm Leaded MiniCast	
TSOP48XX		Infrared remote control receiver module; DIP molded type, 3 V	VC = 5 V	TH / Radial Leaded molded	

## LCD Television : MAIN CIRCUIT BOARD, Power Switch

### Fuse

Product Name	Status	Description	Features	Package	Q-Level
MFU0603		Thin film flat chip fuses	0.5 A to 5 A, 32 V	SMD 0603	
MFU0805		Thin film flat chip fuses	0.5 A to 5 A, 32 V	SMD 0805	
MFU1206		Thin film flat chip fuses	0.5 A to 5 A, 32 V	SMD 1206	

### Load Switch

Product Name	Status	Description	Features	Package	Q-Level
SIP4280A		1-A slew rate controlled load switch	VIN = 1.8 V to 5.5 V, rDS(on)@5 V = 0.080ohms	SMD SOT-23-6	
SIP4282A	NEW	1-A slew rate controlled load switch	VIN = 1.8 V to 5.5 V, rDS(on)@5 V = 0.140ohms	SMD SC75-6 PowerPAK	

### Power MOSFETs

Product Name	Status	Description	Features	Package	Q-Level
2N7002K		Single n-channel 60-V MOSFET	Single N-Ch; 60V; MOSFET rDS(on) at 4.5V=4Ohms; ID(max) = 300mA	SMD SOT-23	
SI3865BDV		MOSFET with level shift;	VDS = -8 V; level shift rDS(on)@4.5 V = 0.06 ohms ID(max) = 2.9 A	SMD TSOP-6	
SI4435BDY		Single p-channel 30-V MOSFET	Single P-Ch; VDS = -30 V; rDS(on)@4.5 V = 0.035ohms ID(max) = 9.1 A	SMD SO-8	
SI4914DY		Dual MOSFET plus Schottky	VDS = 30 V; rDS(on)@4.5 V = 0.032ohms ID(max) = 5.6 A	SMD SO-8	
SI4925BDY		Dual p-channel SO-8 low-rDS(on) MOSFET	Dual N-Ch; VDS = -30 V; rDS(on)@4.5 V = 0.041ohms ID(max) = 7.1 A	SMD SO-8	
SI4936BDY		Dual n-channel SO-8 low-rDS(on) MOSFET	Dual N-Ch; VDS = -30 V; rDS(on)@4.5 V = 0.051ohms ID(max) = 6.9 A	SMD SO-8	
SI4943BDY		Dual p-channel SO-8 low-rDS(on) MOSFET	Dual P-Ch; VDS = -20 V; rDS(on)@4.5 V = 0.031ohms ID(max) = 8.4 A	SMD SO-8	
SI4953ADY		Dual p-channel SO-8 low-rDS(on) MOSFET	Dual P-Ch; VDS = -30 V; rDS(on)@4.5 V = 0.09 ohms ID(max) = 4.9 A	SMD SO-8	
SI4963BDY		Dual p-channel SO-8 low-rDS(on) MOSFET	VDS = -20 V; rDS(on)@4.5 V = 0.032ohms ID(max) = 6.5 A	SMD SO-8	
SI4973DY		Dual p-channel SO-8 low-rDS(on) MOSFET	VDS = -30 V; rDS(on)@4.5 V = 0.023ohms ID(max) = 7.6 A	SMD SO-8	
SI9433BDY		Single p-channel 20-V MOSFET	Single P-Ch; VDS = -20 V; rDS(on)@4.5V = 0.04ohms; ID(max) = 6.2 A	SMD SO-8	

Product Name	Status	Description	Features	Package	Q-Level
SI9435BDY		Dual p-channel SO-8 low-rDS(on) MOSFET	Dual P-Ch; VDS = -30 V; rDS(on)@4.5V = 0.041ohms; ID(max) = 7.1 A	SMD SO-8	
SI9933BDY		Dual p-channel SO-8 low-rDS(on) MOSFET	Dual P-Ch; VDS = -20 V; rDS(on)@4.5V = 0.06ohms; ID(max) = 4.7 A	SMD SO-8	

## LCD Television : MAIN CIRCUIT BOARD, Sensors

### Ambient Light Sensors

Product Name	Status	Description	Features	Package	Q-Level
TEMD5510FX01	NEW	Ambient light sensor photo diodes RoHS-compliant	540 nm, bandwidth 430-510nm +/-65	SMD 4.2x5.2x1.1mm	AEC Q101
TEMD6010FX01	NEW	Ambient light sensor photo diodes RoHS-compliant	540 nm, bandwidth 430-510nm +/-60	SMD 2.0x4.0x1.0mm	AEC Q101
TEMT6000X01	NEW	Ambient light sensor photo diodes RoHS-compliant	570 nm, bandwidth 430-800nm +/-60	SMD 2.0x4.0x1.0mm	AEC Q101
TEMT6200FX01	NEW	Ambient light sensor photo diodes RoHS-compliant	NPN Phototransistor,	SMD 0805 2x1.25x0.85mm	AEC Q101
TEPT4400	NEW	Ambient light sensor photo diodes RoHS-compliant	570 nm; bandwidth 430-800nm +/-20	TH / Radial Lead 3 mm	AEC Q101
TEPT5600	NEW	Ambient light sensor photo diodes RoHS-compliant	570 nm; bandwidth 430-800nm +/-30	TH / Radial Lead 5 mm	AEC Q101
TEPT5700	NEW	Ambient light sensor photo diodes RoHS-compliant	570 nm, bandwidth 430-800nm +/-50	TH / Radial Lead 5 mm Flat Top	AEC Q101

### Thermistors NTC

Product Name	Status	Description	Features	Package	Q-Level
2381 615 1...		Surface-mount NTC thermistors;	R @ 25 °C = 2 to 470kΩ	SMD 0805	
2381 615 2...		Surface-mount NTC thermistors;	R @ 25 °C = 4.7 to 100kΩ	SMD 0603	
2381 615 3...		Surface-mount NTC thermistors;	R @ 25 °C = 2.2 to 100kΩ	SMD 0603	
2381 615 5...		Surface-mount NTC thermistors;	R @ 25 °C = 2.2 to 470kΩ	SMD 0805	

## LCD Television : MAIN CIRCUIT BOARD, System Power Supply

### DC/DC Converter

Product Name	Status	Description	Features	Package	Q-Level
SIP12101	NEW	High-performance step-down dc-to-dc converter with adjustable output voltage	VIN = 2.6-6 V; VREF(V) = 1.3 V; 2-MHz operation	SMD MSOP-10	
SIP12201	NEW	Synchronous step-down controller	VIN = 4.2 V to 26 V; VREF(V) = 0.6 V; 500-kHz operation	SMD MLP33-10	
SIP12202	NEW	Synchronous step-down controller	VIN = 4.2 V to 26 V; VREF(V) = 0.6 V; 500-kHz operation	SMD MLP33-10	

### LDOs

Product Name	Status	Description	Features	Package	Q-Level
Si9181		Micropower CMOS LDO regulator with error flag/power-on reset	VIN = 2 V to 6 V, VOUT = 1.5 V to 5 V; IOUT = 350 mA;	SMD TSSOP-8	
Si9182		Micropower CMOS LDO regulator with error flag/power-on reset	VIN = 2 V to 6 V, VOUT = 1.5 V to 5 V; IOUT = 250 mA;	SMD MSOP-8	
Si91821		Micropower low-noise CMOS LDO regulator with error flag/power-on reset	VIN = 2.35 V to 6 V, VOUT = 1.5 V to 5 V; IOUT = 300 mA;	SMD MSOP-8	
Si91822		Micropower CMOS LDO regulator with error flag/power-on reset	VIN = 2 V to 6 V, VOUT = 1.5 V to 5 V; IOUT = 250 mA;	SMD MSOP-8	
Si9183		High-performance, space-saving CMOS LDO	VIN = 2 V to 6 V, VOUT = 1.5 V to 5 V; IOUT = 150 mA;	SMD SOT-23-5 Thin	
Si91841		Low-noise CMOS LDO regulator	VIN = 2 V to 6 V, VOUT = 1.2 V to 5 V; IOUT = 150 mA;	SMD SOT-23-5 Thin	
Si91842		CMOS LDO regulator with error flag and auto-discharge option	VIN = 2 V to 6 V, VOUT = 1.2 V to 5 V; IOUT = 150 mA;	SMD SOT-23-5 Thin	
Si9185		Micropower CMOS LDO regulator with error flag/power-on reset	VIN = 2 V to 6 V, VOUT = 1.2 V to 5 V; IOUT = 500 mA;	SMD MLP33-8 PowerPAK	
Si91871		Low-noise CMOS LDO regulator	VIN = 2 V to 6 V, VOUT = 1.2 V to 5 V; IOUT = 300 mA;	SMD MLP33-8 PowerPAK	
Si91872		CMOS LDO regulator with error flag and auto-discharge	VIN = 2 V to 6 V, VOUT = 1.2 V to 5 V; IOUT = 300 mA;	SMD MLP33-8 PowerPAK	
SiP21101		Ultra low-noise LDO regulator with discharge	VIN = 2 V to 6 V; VOUT = 1.2 V to 5 V; IOUT = 150 mA	SMD SC70-5	
SiP21102		Low-noise LDO regulator with error flag and discharge	VIN = 2 V to 6 V; VOUT = 1.2 V to 5 V; IOUT = 150 mA	SMD SC70-5	
SiP21103		Ultra low-noise LDO regulator with discharge	VIN = 2 V to 6 V; VOUT = 1.2 V to 5 V; IOUT = 250 mA	SMD MLP33-10 PowerPAK	
SiP21104		Low-noise LDO regulator with error flag and discharge	VIN = 2 V to 6 V; VOUT = 1.2 V to 5 V; IOUT = 250 mA	SMD MLP33-10 PowerPAK	
SIP21106		150-mA low-noise, low dropout regulator	VIN = 2.2 V to 5.5 V; VOUT = 1.3 V to 5 V; IOUT = 150 mA	SMD SC70-5	

Product Name	Status	Description	Features	Package	Q-Level
SIP21107		150-mA low-noise, low dropout regulator	VIN = 2.2 V to 5.5 V; VOUT = 1.3 V to 5 V; IOUT = 150 mA	SMD TSC75-6L PowerPAK	
SIP21108		150-mA low-noise, low dropout regulator	VIN = 2.2 V to 5.5 V; VOUT = 1.3 V to 5 V; IOUT = 150 mA	SMD SOT-23-5 Thin	
SiP2210		Low-noise dual-output, 150mA and 300mA LDO regulator with open drain driver output	VIN = 2.25 V to 5 V, VOUT = 1.5 V to 3.6 V	SMD MLP44-16 PowerPAK	
SiP2211		Low-noise Independent dual-output 150 and 300 mA LDO regulator	VIN = 2.25 V to 5 V, VOUT = 1.5 V to 3.6 V	SMD MLP44-16 PowerPAK	
SiP2213		Low-noise Sequenced dual-output 150 and 300 mA LDO regulator	VIN = 2.25 V to 5 V, VOUT = 1.5 V to 3.6 V	SMD MLP44-16 PowerPAK	
SiP2214		Low-noise dual-output 150 and 300 mA LDO regulator	VIN = 2.25 V to 5 V, VOUT = 1.5 V to 3.6 V	SMD MLP44-16 PowerPAK	

### Schottky Diodes

Product Name	Status	Description	Features	Package	Q-Level
B140		low VF , low leakage current;	10 A, 40 V	SMD SMA	
B240A		Low VF, low leakage current;	20 A, 40 V	SMD SMA	
B340A		Low VF, low leakage current;	30 A, 40 V	SMD SMA	

### Tantalum Capacitors

Product Name	Status	Description	Features	Package	Q-Level
293D		Solid tantalum chip capacitors; SMD; TANTAMOUNT; commercial	0.1 $\mu$ F to 680 $\mu$ F 4 VDC to 50 VDC;	SMD A-E Case	

## LCD Television : POWER SUPPLY, Bulk Capacitor

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### Snap-in Aluminum Capacitor

Product Name	Status	Description	Features	Package	Q-Level
094 series	NEW	Aluminum capacitors; power miniaturized; economy long-life Snap-In	47 - 680 $\mu$ F; 400V, 450V; Temp = -55°C to +105°C life at 105°C = 2000h	TH / Radial 22x25 to 35x50mm	

## LCD Television : POWER SUPPLY, EMI Filtering

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### X-Capacitor

Product Name	Status	Description	Features	Package	Q-Level
MKP339 X2		Interference suppression film capacitors MKP; Radial Potted Type	0.001- 4.7 $\mu$ F; X2 class 275 VAC; 630 VDC; Temp=110°C	TH / Radial 7.5 to 27.5mm lead pitch	

### Y-Capacitor

Product Name	Status	Description	Features	Package	Q-Level
VY1		Ceramic disc capacitors; safety standard approved	10 pF-4700 pF; (Y1); 500 V (AC), 50 Hz; - 40 °C to + 125 °C	TH / Radial 10mm lead pitch	
VY2		Ceramic disc capacitors; safety standard approved	10 pF-0.01 $\mu$ F; (Y2); 300 V (AC), 50 Hz; - 40 °C to + 125 °C	TH / Radial 5 to 10mm lead pitch	

## LCD Television : POWER SUPPLY, Feedback Loop

### Multilayer Ceramic Chip Capacitors

Product Name	Status	Description	Features	Package	Q-Level
K10		Multilayer ceramic K10 capacitors; Dipped Radial;	COG (NP0); X7R; Y5V C = 10pF to 0.1 $\mu$ F VR=50 to 100V	TH / Radial 3.6x3.6x2.3mm L2, H5, K2, K5	

### Optocouplers

Product Name	Status	Description	Features	Package	Q-Level
SFH617A		Optocoupler, phototransistor output; high reliability	VISO = 5300 VRMS; CTR = 40 % to 320 % Tamb = -55 °Cto+110°C	TH / DIP DIP-4	
SFH690CT		Optocoupler, phototransistor output;	VISO = 3750 VRMS; CTR = 40 % to 400 % Tamb = -55 °Cto+100°C	SMD SOP-4 Small Outline	
TCET1104		Optocoupler, phototransistor output; high temperature	VISO = 5000 VRMS; Tamb = -40°Cto+100°C; CTR = 50%-600%	TH / DIP DIP-4	
TCET1114		Optocoupler, phototransistor output; high temperature	VISO = 5000 VRMS; Tamb = -40°Cto+100°C; CTR = 50%-600%	TH / DIP DIP-4	

### Switch Diodes

Product Name	Status	Description	Features	Package	Q-Level
1N4007		General-purpose Plastic Rectifier; Tj max = 150 °C;	IF(AV) = 1.0 A; VRRM = 50 V to1000 V; IFSM = 30 A; VF = 1.1 V	TH / Axial DO-204AL(DO-41)	
1N4148		Small-signal fast switching diodes;	VRRM = 100 V; VR = 75 V; IFSM = 2 A; IF = 300 mA; IFAV = 150mA; Ptot=500mW	TH / Axial DO35 glass case	

### Zener Diode

Product Name	Status	Description	Features	Package	Q-Level
BZX384		Small-signal Zener diodes;	Ptot = 200 mW; Vz = 2.4 V to 75 V; Tj = 150°C;	SMD SOD323 plastic case	
TLZ		Small-signal Zener diodes Tj = 175 °C;	Vz = 2.4 V to 56 V Ptot = 500 mW,	SMD SOD-80 MINI Melf	
TZX		Small-signal Zener diodes; Tj = 175 °C;	Vz = 2.4 V to 36 V Ptot = 500 mW,	TH / Axial DO-35 glass case	

## LCD Television : POWER SUPPLY, Input Rectifier

### Bridge Rectifiers

Product Name	Status	Description	Features	Package	Q-Level
BU1506	NEW	High-current density single-phase bridge rectifier Tjmax = 150 °C	IF(AV) = 15 A; VRRM = 600V to 1000V; IFSM = 200A; VF = 0.87V	TH / Radial BU	
BU1508	NEW	High-current density single-phase bridge rectifier Tjmax = 150 °C	IF(AV) = 15 A; VRRM = 600V to 1000V; IFSM = 200A; VF = 0.87V	TH / Radial BU	
BU2506	NEW	High-current density single-phase bridge rectifier Tjmax = 150 °C	IF(AV) = 25 A; VRRM = 600V to 800V; IFSM = 300A; VF = 0.87V	TH / Radial BU	
BU2508	NEW	High-current density single-phase bridge rectifier Tjmax = 150 °C	IF(AV) = 25 A; VRRM = 600V to 800V; IFSM = 300A; VF = 0.87V	TH / Radial BU	
GSIB1560		Single-phase single in-line bridge rectifiers Tjmax = 150 °C	IF(AV) = 15 A; VRRM = 200 V to 800 V; IFSM = 300A; VF = 0.95V;	TH / Radial GSIB-5S	
GSIB1580		Single-phase single in-line bridge rectifiers Tjmax = 150 °C	IF(AV) = 15 A; VRRM = 200 V to 800 V; IFSM = 300A; VF = 0.95V;	TH / Radial GSIB-5S	
GSIB2560		Single-phase single in-line bridge rectifiers Tjmax = 150 °C	IF(AV) = 25 A; VRRM = 200 V to 800 V; IFSM = 350A; VF = 1V;	TH / Radial GSIB-5S	
GSIB2580		Single-phase single in-line bridge rectifiers Tjmax = 150 °C	IF(AV) = 25 A; VRRM = 200 V to 800 V; IFSM = 350A; VF = 1V;	TH / Radial GSIB-5S	

## LCD Television : POWER SUPPLY, Output Filter

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### Aluminum Capacitor

Product Name	Status	Description	Features	Package	Q-Level
037RSM		Aluminum capacitors, radial, miniature;	0.47 - 10000 $\mu$ F; 6.3-100V Temp = -40°C to +85°C life at 85°C = 2500h	TH / Radial 5x11 to 16x31mm	
136RVI		Aluminum capacitors, radial; very low impedance	22 - 10000 $\mu$ F; 10V-100V; Temp = -55°C to +105°C life at 105°C=4000-10000h	TH / Radial 10x12 to 18x35mm	

### Multilayer Ceramic Chip Capacitors

Product Name	Status	Description	Features	Package	Q-Level
K10		Multilayer ceramic K10 capacitors; Dipped Radial;	COG (NP0); X7R; Y5V C = 10pF to 0.1 $\mu$ F VR=50 to 100V	TH / Radial 3.6x3.6x2.3mm L2, H5, K2, K5	

## LCD Television : POWER SUPPLY, Output Rectifier

### Low-Voltage MOSFETs

Product Name	Status	Description	Features	Package	Q-Level
SUP90N08-4m8P	NEW	N-channel 75-V (D-S) MOSFET	VDSS = 75 V; Qg = 105 nC; rDS(on)@4.5 V=0.0048ohms ID(max) = 90A	TH / Radial TO-220AB	
SUP90N10-8m8P	NEW	N-channel 100-V (D-S) 175 °C MOSFET	VDSS = 100 V; rDS(on)@4.5 V=0.0088ohms ID(max) = 90A	TH / Radial TO-220AB	

### Schottky Diodes

Product Name	Status	Description	Features	Package	Q-Level
M30L45C	NEW	Dual common-cathode Schottky rectifier Tj max.= 150 °C;	IF(AV) = 2 x 15 A; VRRM = 40 V; VF = 0.413V;	TH / Radial TO-220AB	
M6045C		Dual common-cathode Schottky rectifier Tj max.= 150 °C;	IF(AV) = 2 x 30 A; VRRM = 35 V to 60 V; VF = 0.51 V to 0.56 V	TH / Radial TO-220AB	
V20100C		Dual high-voltage Trench MOS Barrier Schottky rectifier; Tj max.= 150 °C	IF(AV) = 2 x 10 A; VRRM = 100 V; VF = 0.58 V;	TH / Radial TO-220AB;TO-262A TO-263AB	
V30100C		Dual high-voltage Trench MOS Barrier Schottky rectifier; Tj max.= 150 °C	IF(AV) = 2 x 15 A; VRRM = 100 V; VF = 0.627 V;	TH / Radial TO-220AB	
V40100C	NEW	Dual high-voltage Trench MOS Barrier Schottky rectifier; Tj max.= 150 °C	IF(AV) = 2 x 205 A; VRRM = 100 V; VF = 0.61 V;	TH / Radial TO-220AB	

## LCD Television : POWER SUPPLY, PFC

### 600-V Ultrafast Diode

Product Name	Status	Description	Features	Package	Q-Level
8STH06FP	NEW	Hyperfast rectifier; Tjmax = 175°C	IF(AV)= 8A; VRRM = 600V; Trr = 17 ns; VF = 2V;	TH / Radial ITO-220AB	
UH15JT	SOON	High-voltage ultrafast rectifier; Tjmax = 175°C	IF(AV)= 15A; Trr= 30 ns; VRRM = 600 V VF = 1.4 V;	TH / Radial TO-220AC; TO-263AB	
UH8JT	NEW	High-voltage ultrafast rectifier; Tjmax = 175°C	IF(AV)= 8A; Trr= 25 ns; VRRM = 600 V; VF = 1.47 V;	TH / Radial TO-220AC	

### General Rectifier

Product Name	Status	Description	Features	Package	Q-Level
1N5406		General-purpose Plastic Rectifier; Tj max = 150 °C;	IF(AV) = 3 A; VRRM = 50 V to 1000 V; IFSM = 200A; VF = 1.2V	TH / Axial DO-201 AD	

### High Voltage MOSFETs

Product Name	Status	Description	Features	Package	Q-Level
IRFB17N60KPBF	NEW	Low gate charge (Qg) results in simple drive requirement	VDSS = 600 V; rDS(on) = 0.35 ohms; ID = 17 A; Qg = 99 nC	TH / Radial TO-220AB	
IRFPS40N60KPBF	NEW	Low gate charge (Qg) results in simple drive requirement; low rDS(on) for hard-switching primary or PFC switch	VDSS = 600 V; rDS(on) = 0.11 ohms; ID = 40 A; Qg = 330 nC	TH / Radial Super TO-247AC	
SiHFP22N60K-E3 IRFP22N60KPbF	NEW	Low gate charge (Qg) Hard Switching Primary Switch	VDSS = 600 V; Rds(on) = 0.240 Ohm ID = 22 A; Qg = 150 nC	TH / Radial TO-247AC	
SiHFP460N-E3 IRFP460NPbF	NEW	Low gate charge (Qg) improved dv/dt Ruggedness	VDSS = 500 V; Rds(on) = 0.240 Ohm ID = 20 A; dv/dt = 5 V/ns	TH/ Radial TO-247AC	

### High-Voltage Resistor

Product Name	Status	Description	Features	Package	Q-Level
VR25		High-ohmic, high-voltage resistors	High pulse loading cap.; small size;	TH / Axial 0204 A5;A2;A1;R5;N4	

## LCD Television : POWER SUPPLY, PWM

### High-Voltage MOSFETs

Product Name	Status	Description	Features	Package	Q-Level
IRFB17N60KPBF	NEW	Low gate charge (Qg) results in simple drive requirement	VDSS = 600 V; rDS(on) = 0.35 ohms; ID = 17 A; Qg = 99 nC	TH / Radial TO-220AB	
IRFB20N50KPBF	NEW	Low gate charge (Qg) results in simple drive requirement; low rDS(on)	VDSS = 500 V; rDS(on) = 0.21 ohms; ID = 20 A; Qg = 110 nC	TH / Radial TO-220AB	
IRFPS38N60LPBF	NEW	Low (Qg) results in simple drive req.; low trr and soft diode recovery; ZVS and high-frequency circuit	VDSS = 600 V; Trr = 170ns rDS(on) = 0.120 ohms; ID = 38 A; Qg = 320 nC	TH / Radial Super TO-247AC	
IRFPS40N50LPBF	NEW	Low (Qg) results in simple drive req.; low trr and soft diode recovery; ZVS and high-frequency circuit	VDSS = 500 V; Trr = 170ns rDS(on) = 0.087 ohms; ID = 46 A; Qg = 380 nC	TH / Radial Super TO-247AC	
IRFPS40N60KPBF	NEW	Low gate charge (Qg) results in simple drive requirement; low rDS(on) for hard-switching primary or PFC switch	VDSS = 600 V; rDS(on) = 0.11 ohms; ID = 40 A; Qg = 330 nC	TH / Radial Super TO-247AC	
IRFPS43N50KPBF	NEW	Low gate charge (Qg) results in simple drive requirement; low rDS(on) for hard-switched and high-frequency	VDSS = 500 V; rDS(on) = 0.078 ohms; ID = 47 A; Qg = 350 nC	TH / Radial Super TO-247AC	

## LCD Television : POWER SUPPLY, Snubber

### Switch Diodes

Product Name	Status	Description	Features	Package	Q-Level
1N4007		General-purpose Plastic Rectifier; Tj max = 150 °C;	IF(AV) = 1.0 A; VRRM = 50 V to1000 V; IFSM = 30 A; VF = 1.1 V	TH / Axial DO-204AL(DO-41)	
1N5408		General-purpose Plastic Rectifier; Tj max = 150 °C;	IF(AV) = 3.0 A; VRRM = 50 V to1000 V; IFSM = 200 A; VF = 1.2 V	TH / Axial DO-201 AD	
BYV26EGP		Glass-passivated ultrafast rectifier; Tj max = 175 °C	IF(AV)= 1.0A; Trr= 75ns; VRRM = 800 V, 1000 V; IFSM = 30 A; VF = 1.3 V	TH / Axial DO-204AC (DO-15)	
RS1PD	NEW	High-current density Surface Mount; glass passivated Rectifier; fast switching; Tj max = 150 °C	IF(AV)=1.0A;Trr=150~250ns VRRM = 100 V to 600 V; IFSM = 30 A; VF = 1.3 V	SMD DO-220AA (SMP)	

### TVS

Product Name	Status	Description	Features	Package	Q-Level
1.5KE		TRANSZORB® transient voltage suppressors Tj max: 175 °C	Unidirect V(BR)6.8V-540V; bidirect V(BR) 6.8V-440V; PPPM: 1500 W; PD: 6.5 W;	TH / Axial 1.5KE	
P4KE		TRANSZORB® transient voltage suppressors Tj max: 175 °C	Unidirect V(BR)6.8V-540V; bidirect V(BR) 6.8V-440V; PPPM: 400 W; PD: 1 W;	TH / Axial DO-204AL (DO-41)	
P6KE		TRANSZORB® transient voltage suppressors Tj max: 175 °C	Unidirect V(BR)6.8-540V; bidirect V(BR) 6.8V-440V; PPPM: 600 W; PD: 5 W;	TH / Axial DO-204AC (DO-15)	

