

# Supertex Product Overview

*An Overview of Supertex's Product Additions to the Microchip Portfolio*

## Overview

The Supertex portfolio is focused on high-voltage semiconductors (50V to >1000V) and featuring high-voltage process development and implementation, product development, applications knowledge/expertise and high-volume manufacturing capability. Product families include:

- Solid-State Lighting/LED Drivers
- MOSFETs
- Multi-Channel High-Voltage Drivers
- Regulators
- Special Function ICs
- Ultrasound Products
- Electroluminescence (EL) Drivers

## Solid-State Lighting/LED Driver ICs

### Sequential Linear LED Drivers

These devices can be used to drive a long string or strings of inexpensive, low-current LEDs directly from the AC mains. No magnetics or electrolytic capacitors are required, which helps reduce costs while delivering higher reliability in applications such as AC mains powered LED lighting—particularly tube retrofits—high bay lighting and street lighting. They offer a high power factor (> 0.95) and are compatible with standard triac dimmers to simplify the implementation of dimming functionality.

### Switching LED Drivers

Our line of switching LED drivers converts a high voltage input (up to AC mains) to a lower voltage output (Buck) while providing regulated current to LED strings. They minimize LED driver system cost while delivering accurate performance with smooth dimming and no 120 Hz flicker. They offer the simplest solution on the market with accurate average-mode current control for backlighting/boost, general lighting/bulb replacement and automotive applications.

### Boost/SEPIC LED Drivers

Boost LED drivers provide an output voltage that is higher than the input voltage at controlled constant current while SEPIC drivers provide an output voltage that is either higher or lower than the input voltage at controlled constant current. These drivers support wide input supplies up to 250V input and provide PWM dimming down to 500 ns with a PWM dimming ratio greater than 10,000:1. They offer LED current accuracy and can achieve a wide dimming ratio at non-audible dimming frequency (>20 kHz). They are well-suited for LED backlighting of LCD TVs, monitors and displays, and for use in low-voltage LED lighting fixtures and automotive LED lighting applications.

### DC/DC LED Drivers

DC/DC LED drivers convert DC input voltage to a different DC voltage required to drive individual LEDs or strings of LEDs at a regulated constant current. They offer high current accuracy and excellent dimming performance, while simplifying designs by reducing the number of external components required. They are well-suited for MRXX halogen bulb replacement as well as for signage and architectural, general and decorative lighting applications.

### Automotive DC/DC LED Driver ICs

These automotive-qualified devices deliver accurate LED current control and rejection of input voltage transients for automotive applications such as LED headlamps, daytime running lights and turn signals. They reduce system cost while supporting a wide range of power levels and applications.



# Supertex Product Overview

Device	Application	Topology	Input Voltage (V)	Output Current	Dimming	Package Options
<b>Automotive (AEC-Q100 Certified) LED Drivers</b>						
AT9917	Auto	Boost, Sepic	5.3–40	External FET	PWM/Linear	TSSOP-24
AT9919	Auto	Buck	4.5–40	External FET	PWM	DFN-8
AT9932	Auto	Boost-Buck (Ćuk)	5.3–40	External FET	PWM/Linear	TSSOP-24
AT9933	Auto	Boost-Buck (Ćuk)	9.0–75	External FET	PWM	SOIC-8
<b>General Purpose LED Drivers</b>						
HV9801A	AC/DC	Buck	15–450	External FET	4-Level Switch	SOIC-8, SOIC-16
HV9805	AC/DC	Two Stage	–	External FET	No	MSOP-10
HV9861A	AC/DC, DC/DC	Buck	12–450	External FET	PWM/Linear	SOIC-8, SOIC-16
HV9910B	AC/DC, DC/DC	Buck	8.0–450	External FET	PWM/Linear	SOIC-8, SOIC-16
HV9910C	AC/DC, DC/DC	Buck	15–450	External FET	PWM/Linear	SOIC-8, SOIC-16, SOIC-8 with Heat Slug
HV9918	DC/DC	Buck	4.5–40	Integrated FET	PWM	DFN-8
HV9919B	DC/DC	Buck	4.5–40	External FET	PWM	DFN-8
HV9921	AC/DC	Buck	20–400	20 mA	No	TO-92-3, SOT-89-3
HV9922	AC/DC	Buck	20–400	50 mA	No	TO-92-3, SOT-89-3
HV9923	AC/DC	Buck	20–400	30 mA	No	TO-92-3, SOT-89-3
HV9925	AC/DC	Buck	20–400	20–50 mA	PWM	SOIC-8 with Heat Slug
HV9930	DC/DC	Hysteric	8.0–200	External FET	PWM	SOIC-8
HV9931	AC/DC	Single-switch PFC	8.0–450	External FET	PWM	SOIC-8
HV9961	AC/DC, DC/DC	Buck	8.0–450	External FET	PWM/Linear	SOIC-8, SOIC-16
HV9967B	DC/DC	Buck	8.0–60	Integrated FET	PWM/Linear	DFN-8, MSOP-8
<a href="#">HV9971</a>	AC/DC	Flyback	7.0–11	External FET	PWM	SOIC-8
HV9972	AC/DC	Flyback	7.0–11	External FET	PWM	SOIC-8
HV9973	DC/DC	Flyback	7.0–11	External FET	PWM	SOIC-8
PS30	AC/DC	Flyback	–	–	Leading, Trailing Edge	MSOP-10
<b>Backlight LED Drivers</b>						
HV9803	DC/DC	Buck	7.0–13.2	External FET	PWM/Linear	SOIC-8
HV9803B	DC/DC	Buck	7.0–16.0	External FET	PWM/Linear	SOIC-8
HV9821	AC/DC, DC/DC	Buck/Linear	10–700	Integrated FET	No	DFN-19
HV9860	DC/DC	Boost	10–40	External FET	PWM	SOIC-16
HV9861A	DC/DC	Buck	15–450	External FET	PWM/Linear	SOIC-8, SOIC-16
HV9911	DC/DC	Boost, Sepic, Buck-Boost	9.0–250	External FET	PWM	SOIC-16
HV9912	DC/DC	Boost, Sepic, Buck-Boost	9.0–100	External FET	PWM	SOIC-16
HV9961	DC/DC	Buck	8.0–450	External FET	PWM/Linear	SOIC-8, SOIC-16
HV9963	DC/DC	Boost, Sepic, Buck-Boost	8.0–40	External FET	PWM/Linear	SOIC-16
HV9964	DC/DC	Boost, Sepic	8.0–40	External FET	PWM/Linear	SOIC-16
HV9967B	DC/DC	Buck	8.0–60	Integrated FET	PWM/Linear	DFN-8, MSOP-8
HV9980	DC/DC	Buck	100–160	70mA	PWM/Linear	SOW-24
HV9982	DC/DC	Boost, SEPIC	10–40	External FET	PWM/Linear	QFN-40
HV9989	DC/DC	Boost, SEPIC	10–40	External FET	PWM/Linear	QFN-40
HV9990	DC/DC	Boost	10–40/450	External FET	PWM	SOIC-16

## Sequential Linear LED Drivers

Device	V <sub>IN</sub> (VAC)	V <sub>OUT</sub> (VDC)	Output Current (peak)	Dimming	Parallelable	Package Options	Features
CL8800	90–275	70–350	115 mA	External Dimmer	Yes	QFN-23	6-Stage
CL8801	90–275	70–350	200 mA	External Dimmer	Yes	QFN-33	4-Stage

# Supertex Product Overview

## Linear Current Regulators

Device	V <sub>IN</sub> (V)	V <sub>OUT</sub> (V)	Output Current (mA)	Dimming	Parallelable	Package Options	Features
CL2	5.0–90	5.0–90	20	External FET	Yes	TO-252-3, TO-92-3, SOT-89-3	–
CL25	5.0–90	5.0–90	25	External FET	Yes	TO-92-3, SOT-89-3	–
CL220	5.0–220	5.0–220	20	External FET	Yes	TO-252-3, TO-220-3	–
CL320	6.5–90	4.0–90	20	PWM	Yes	SOIC-8 with Heat Slug	OTP, separate ENABLE pin
CL325	6.5–90	4.0–90	25	PWM	Yes	SOIC-8 with Heat Slug	OTP, separate ENABLE pin
CL330	6.5–90	4.0–90	30	PWM	Yes	SOIC-8 with Heat Slug	OTP, separate ENABLE pin
CL520	4.75–90	1.0–90	20	–	Yes	TO-252-3, TO-92-3	–
CL525	4.75–90	1.0–90	25	–	Yes	TO-252-3, TO-92-3	–
CL6	6.5–90	4.0–90	100	No	Yes	TO-252-3, TO-220-3	Reverse polarity protection, OTP
CL7	6.5–90	4.0–90	100	PWM	Yes	SOIC-8 with Heat Slug	Reverse polarity protection, OTP

## MOSFETs

Microchip's Supertex MOSFET portfolio consists of high-voltage, low-threshold DMOS transistors which are available in N-channel and P-channel versions, offered in both enhancement-mode and depletion-mode. These MOSFET devices are ideally suited to a wide range of switching and amplifying applications where very low threshold voltage, high breakdown voltage, high input impedance, low input capacitance and fast switching speeds are desired. They provide a low-voltage to high-voltage interface for gating/switching applications such as high-voltage drive and amplification, signal interface protection and solid state relay switches. Devices are available in a variety of small through-hole and surface mount packages to best suit your design requirements.

### Target Markets

- Medical
- Automatic Test Equipment (ATE)
- Test and Measurement
- Industrial Automation
- Power Supply Startup

### Depletion-Mode MOSFETs

The LNDXXXX and DNXXXX low threshold depletion-mode (normally-on) transistors utilize an advanced lateral or vertical DMOS structure and our well-proven silicon-gate manufacturing process. This combination produces devices with the power handling capabilities of bipolar transistors and with the high input impedance and positive temperature coefficient inherent in MOS devices. Characteristic of all MOS structures, these devices are free from thermal runaway and thermally induced secondary breakdown.

Applications:

- High Voltage Protected Regulator: Telecommunication, automotive, fax machines, offline control circuits
- Zero Bias Amplifier: Instrumentation amplifier for sensors/transducers
- Switchable Bleed Resistor: High-voltage power supply, lab equipment
- Off-Line Trickle Charger: Hard-wired smoke alarms, burglar alarms, security systems
- Off-Line Voltage Reference: Instrumentation, VCRs, televisions, ATEs
- High-Voltage Ramp Generator: Piezo transducer drivers, measuring instruments, soft start controls
- High Voltage Protection: Handheld meters, lab instruments, data communication lines, resettable fuses
- High Voltage High Gain Amplifier: High voltage linear regulators, instrumentation amplifiers, piezo transducer drivers
- Solid state relays: Telecommunication, instrumentation, fax machines, modems, data line diagnostics
- Current Surge Protection: Inrush limiting for lamps/motors/capacitive loads, instrumentation, telecommunication
- High Voltage Protected Regulator: Telecommunication, automotive, fax machines, off-line control circuits
- Switch Mode Power Supply (SMPS) Start-Up

# Supertex Product Overview

Device	BV <sub>DSX</sub> Min (V)	R <sub>DS(ON)</sub> Max (Ω)	V <sub>GS(OFF)</sub> Min (V)	V <sub>GS(OFF)</sub> Max (V)	I <sub>DSS</sub> @ V <sub>GS</sub> = 0V		Package Options
					Min (mA)	Max (mA)	
DN1509	90	6.0	-1.8	-3.5	300	-	SOT-23, SOT-89
DN2450	500	10	-1.5	-3.5	700	-	TO-252, SOT-89
DN2470	700	42	-1.5	-3.5	500 (typ)	-	TO-252
DN2530	300	12	-1.0	-3.5	200	-	TO-92, SOT-89
DN2535	350	25	-1.5	-3.5	150	-	TO-92, TO-220
DN2540	400	25	-1.5	-3.5	150	-	TO-92, TO-220, SOT-89
DN2625	250	3.5	-1.5	-2.1	3300	-	TO-252
DN3135	350	35	-1.5	-3.5	180	-	SOT-23, SOT-89
DN3145	450	60	-1.5	-3.5	120	-	SOT-89
DN3525	250	6.0	-1.5	-3.5	300	-	SOT-89
DN3535	350	10	-1.5	-3.5	200	-	SOT-89
DN3545	450	20	-1.5	-3.5	200	-	TO-92, SOT-89
DN3765	650	8.0	-1.5	-3.5	200	-	TO-252
LND01	9.0	1.4	-0.8	-3.0	300	-	SOT-23
LND150	500	1000	-1.0	-3.0	1.0	3.0	SOT-23, TO-92, SOT-89

## N-Channel Enhancement Mode MOSFETs

The TNXXX and VNXXX low threshold, enhancement-mode (normally-off) transistors utilize an advanced lateral or vertical DMOS structure and our well proven silicon-gate manufacturing process. This combination produces devices with the power handling capabilities of bipolar transistors and with the high input impedance and positive temperature coefficient inherent in MOS devices. Characteristic of all MOS structures, these devices are free from thermal runaway and thermally induced secondary breakdown. They are available in 30V to 1200V versions.

Applications:

- Logic level interfaces: ideal for TTL and CMOS
- Solid state relays
- Battery operated systems
- Photovoltaic devices
- Analog switches
- General purpose line drivers
- Telecom switches
- Motor controls
- Converters
- Amplifiers
- Switches
- Power supply circuits
- Drivers: Relays, hammers, solenoids, lamps, memories, displays, bipolar transistors, etc.

# Supertex Product Overview

Device	$V_{DSS}$ (V)	$R_{DS(on)}$ Max ( $\Omega$ )	$I_{D(on)}$ Min (A)	$C_{iss}$ Max (pF)	$V_{GS(TH)}$ Max (V)	Package Options
2N6660	60	3.0	1.5	50	2.0	TO-39
2N6661	90	4.0	1.5	50	2.0	TO-39
2N7000	60	5.0	0.075	60	3.0	TO-92
2N7002	60	7.5	0.5	50	2.5	SOT-23
2N7008	60	7.5	0.5	50	2.5	TO-92
TN0104	40	1.8, 2.0	2.0	70	1.6	TO-92, SOT-89
TN0106	60	3.0	2.0	60	2.0	TO-92
TN0110	100	3.0	2.0	60	2.0	TO-92
TN0604	40	0.75	4.0	190	1.6	TO-92, SOW-20
TN0606	60	1.5	3.0	150	2.0	TO-92
TN0610	100	1.5	3.0	150	2.0	TO-92
TN0620	200	6.0	1.0	150	1.6	TO-92
TN0702	20	1.3	0.5	200	1.0	TO-92
TN2106	60	2.5	0.6	50	2.0	SOT-23, TO-92
TN2124	240	15	0.14	50	2.0	SOT-23
TN2130	300	25	0.25	50	2.4	SOT-23
TN2425	250	3.5	1.5	200	2.0	SOT-89
TN2435	350	6.0	1.0	200	0.8 (min)	SOT-89
TN2501	18	2.5	0.25	110	1.0	SOT-89
TN2504	40	1.0	4.0	125	1.6	SOT-89
TN2510	100	1.5	3.0	125	2.0	SOT-89
TN2524	240	6.0	1.0	125	2.0	SOT-89
TN2529	290	6.0	1.0	125	2.0	QFN-14
TN2535	350	10	1.0	125	2.0	SOT-89
TN2540	400	12	1.0	125	2.0	TO-92, SOT-89
TN2640	400	5.0	2.0	225	2.0	TO-252 D-PAK, SOIC-8, TO-92
TN5325	250	7.0	1.2	110	2.0	SOT-23, TO-92, SOT-89
TN5335	350	15	0.75	110	2.0	SOT-23, SOT-89
VN0104	40	3.0	2.0	65	2.4	TO-92
VN0106	60	3.0	2.0	65	2.4	TO-92
VN0109	90	3.0	2.0	65	2.4	TO-92
VN0300	30	1.2	1.0	190	2.5	TO-92
VN0550	500	60	0.15	55	4.0	TO-92
VN0606	60	3.0	1.5	50	2.0	TO-92
VN0808	80	4.0	1.5	50	2.0	TO-92
VN10K	60	5.0	0.75	60	2.5	TO-92
VN1206	120	6.0	1.0	125	2.0	TO-92
VN2106	60	4.0	0.6	50	2.4	TO-92
VN2110	100	4.0	0.6	50	2.4	SOT-23
VN2210	100	0.35	8.0	500	2.4	TO-39, TO-92
VN2222LL	60	7.5	0.75	60	2.5	TO-92
VN2224	240	1.25	5.0	350	3.0	TO-92
VN2406	240	6.0	1.0	125	2.0	TO-92
VN2410	240	10	1.0	125	2.0	TO-92
VN2450	500	13	0.5	150	4.0	TO-92, SOT-89
VN2460	600	20	0.25	150	4.0	TO-92, SOT-89
VN3205	50	0.3	3.0	300	2.4	TO-92, SOT-89, DIP-14
VN3515	350	15	0.15	110	1.8	TO-92
VN4012	400	12	0.15	110	1.8	TO-92

# Supertex Product Overview

## P-Channel Enhancement Mode MOSFETs

The TPXXXX and VPXXXX enhancement-mode (normally-off) transistors utilize an advanced lateral or vertical DMOS structure and our well proven silicon-gate manufacturing process. This combination produces devices with the power handling capabilities of bipolar transistors and with the high input impedance and positive temperature coefficient inherent in MOS devices. Characteristic of all MOS structures, these devices are free from thermal runaway and thermally induced secondary breakdown. They are available in -16V to -500V versions.

Applications:

- Logic level interfaces
- Solid state relays
- Battery operated systems
- Photovoltaic drives
- Analog switches
- General purpose line drivers

Device	BV <sub>DSS</sub> (V)	R <sub>Ds(ON)</sub> Max (Ω)	I <sub>D(ON)</sub> Min (A)	C <sub>iss</sub> Max (pF)	V <sub>GS(TH)</sub> Max (V)	Package Options
LP0701	-16.5	1.5	-1.25	250	-1.0	T0-92
TP0604	-40	2.0	-2.0	150	-2.4	T0-92
TP0606	-60	3.5	-1.5	150	-2.4	T0-92
TP0610T	-60	10	-0.05	60	-2.4	SOT-23
TP0620	-200	12	-0.75	150	-2.4	T0-92
TP2104	-40	6.0	-0.6	60	-2.0	SOT-23, T0-92
TP2424	-240	8.0	-0.8	200	-2.4	SOT-89
TP2435	-350	15	-0.8	200	-2.4	SOT-89
TP2502	-20	2.0	-2.0	125	-2.4	SOT-89
TP2510	-100	3.5	-1.5	125	-2.4	SOT-89
TP2520	-200	12	-0.75	125	-2.0	SOT-89
TP2522	-220	12	-0.75	125	-2.4	SOT-89
TP2535	-350	25	-0.4	125	-2.4	T0-92
TP2540	-400	25.0	-0.4	125	-2.4	T0-92, SOT-89
TP2635	-350	15	-0.7	300	-2.0	T0-92
TP2640	-400	15	-0.7	300	-2.0	T0-92, SOIC-8
TP5322	-220	12	-0.7	110	-2.4	SOT-23, SOT-89
TP5335	-350	30	-0.4	110	-2.4	SOT-23
VP0104	-40	8.0	-0.5	60	-3.5	T0-92
VP0106	-60	8.0	-0.5	60	-3.5	T0-92
VP0109	-90	8.0	-0.5	60	-3.5	T0-92
VP0550	-500	125	-0.1	70	-4.5	T0-92
VP0808	-80	5.0	-1.1	150	-4.5	T0-92
VP2106	-60	12	-0.5	60	-3.5	T0-92
VP2110	-100	12	-0.5	60	-3.5	SOT-23
VP2206	-60	0.9	-4.0	450	-3.5	T0-92, T0-39
VP2450	-500	30	-0.2	190	-3.5	T0-92, SOT-89
VP3203	-30	0.6	-4.0	300	-3.5	T0-92, SOT-89

# Supertex Product Overview

## Complimentary Enhanced Mode MOSFET Arrays

The TCXXX portfolio consists of combinations of high-voltage N-channel and P-channel MOSFETs offered in a single package, which produces a device with the power handling capabilities of bipolar transistors and with the high input impedance and positive temperature coefficient inherent in MOS devices. Characteristic of all MOS structures, these devices are free from thermal runaway and thermally induced secondary breakdown. Devices are available in 150V to 500V versions.

Applications:

- Medical ultrasound transmitters
- High-voltage pulsers
- Amplifiers
- Buffers
- Piezoelectric transducer drivers
- General purpose line drivers
- Logic level interface

Device	BV <sub>DSS</sub> /BV <sub>DGS</sub> N-Channel (V)	BV <sub>DSS</sub> /BV <sub>DGS</sub> P-Channel (V)	R <sub>Ds(ON)</sub> N-Channel Max (Ω)	R <sub>Ds(ON)</sub> P-Channel Max (Ω)	V <sub>GS(TH)</sub> Max (V)	Package Options
TC1550 <sup>(1)</sup>	500	-500	60	125	4.0	SOIC-8
TC2320 <sup>(1)</sup>	200	-200	7.0	12	2.0	SOIC-8
TC6215 <sup>(1)</sup>	150	-150	4.0	7.0	2.0	SOIC-8
TC6320 <sup>(1)</sup>	200	-200	7.0	8.0	2.0	QFN-8, SOIC-8

Note 1: N & P-Channel pair

## Dual N-Channel MOSFET Array

The TDXXX consists of dual N-channel devices.

Applications:

- Logic level interfaces: ideal for TTL and CMOS
- Solid state relays
- Battery-operated systems
- Photovoltaic drives
- Analog switches
- General purpose line drivers
- Telecom switches

Device	Channels	BV <sub>DSS</sub> Min (V)	R <sub>Ds(ON)</sub> Max (Ω)	C <sub>ISS</sub> Typical (pF)	V <sub>GS(TH)</sub> Max (V)	Package Options
TD9944	2	240	6.0	65	2.0	SOIC-8
TN0604	4	40	1.0	140	1.6	SOIC-20

# Supertex Product Overview

## Multi-Channel High-Voltage Drivers

Devices in Microchip's Supertex portfolio of multi-channel high-voltage drivers provide the interface and drive capability from a low-voltage control point to an analog block requiring high voltage. The low-voltage control point is often a microcontroller, microprocessor, FPGA or other similar device. We offer four families of multi-channel high-voltage drivers: sink-only outputs, source-only outputs, source-sink outputs and amplifier outputs. They offer from 2 to 128 channels with different input options and are available in a number of package options to best suit your design's requirements. These ICs are suitable for any application requiring multiple high voltage outputs, with current source and sink capability such as driving inkjet and electrostatic print heads, plasma panels, vacuum fluorescent or large matrix LCD displays.

Applications:

- Print head drivers
- MEMS drivers
- Pico-projectors
- PZT drives/transducers
- VF displays

### Sink Only Outputs: Open Drain N-Channel

Device	Output Channels	Direction	Logic Direction	Output Operating Voltage (V)	Output Current per Channel (mA)	Package Options
HV5122	32	CCW	Serial to parallel converter with output enable and strobe	225	100	44-Lead PQFP, 44-Lead PLCC
HV5222	32	CW	Serial to parallel converter with output enable and strobe	225	100	44-Lead PQFP, 44-Lead PLCC
HV5522	32	CCW	Serial to parallel converter with latches, polarity, and blanking	220	100	44-Lead PQFP, 44-Lead PLCC
HV5523	32	CCW	Serial to parallel converter with latches, polarity, and blanking	220	100	44-Lead QFN
HV5530	32	CCW	Serial to parallel converter with latches, polarity, and blanking	300	100	44-Lead PQFP, 44-Lead PLCC
HV5622	32	CW	Serial to parallel converter with latches, polarity, and blanking	220	100	44-Lead PQFP, 44-Lead PLCC
HV5623	32	CW	Serial to parallel converter with latches, polarity, and blanking	220	100	44-Lead QFN
HV5630	32	CW	Serial to parallel converter with latches, polarity, and blanking	300	100	44-Lead PLCC

### Source Only Outputs: Open Drain P-Channel

Device	Output Channels	Direction	Logic Direction	Output Operating Voltage (V)	Output Current per Channel (mA)	Package Options
HV57009	64	B	Current controlled driver with latches and blanking, two 32-bit shift registers	-85	Controllable to -2	80-Lead PQFP

# Supertex Product Overview

## Source-Sink Outputs: Push-Pull

Device	Output Channels	Direction	Logic Configuration	Output Voltage (V)	Output Current Per Channel (mA)	Output Structure	Clock Rate Max (MHz)	Bits	Outputs On	Package Options
HV3418	64	Both	Serial to parallel converter with latches, polarity, and blanking	+180	±5.0	Push-Pull	6	1	All	80-Lead PQFP
HV507	64	Both	Serial to parallel converter with latches, polarity, and blanking	+300	±1.0	Push-Pull	8	1	All	80-Lead PQFP
HV508	2	–	H-Bridge output with two output voltage level selections and polarity	+45	+225 –270	Push-Pull H-Bridge	–	–	–	8-Lead SOIC
HV513	8	CW	Serial to parallel converter with latches, polarity, and blanking HI-Z and short circuit detect	+250	±20	Push-Pull	8	1	All	24-Lead SOW, 32-Lead QFN
HV518	32	CW	Serial to parallel converter with latches, enable, and strobe	+80	+1.0 –25	Push-Pull	6	1	All	40-Lead DIP, 44-Lead PLCC
HV5308B	32	CW	Serial to parallel converter with latches, and output enable	+80	±20	Push-Pull	8	1	All	44-Lead PQFP, 44-Lead PLCC
HV5408B	32	CCW	Serial to parallel converter with latches, and output enable	+80	±20	Push-Pull	8	1	All	44-Lead PQFP, 44-Lead PLCC
HV574	80	Both	Serial to parallel converter with latches, polarity, and blanking	+80	+15 –30	Push-Pull	25	4	All	100-Lead PQFP
HV57708	64	Both	EL driver with latches, polarity, and blanking with four 16-bit shift registers	+80	+12 –15	Push-Pull	6	4	All	80-Lead PQFP
HV57908	64	Both	EL or plasma driver with latches, blanking, polarity, and single shift register	+80	+12 –15	Push-Pull	8	1	All	80-Lead PQFP
HV5812	20	CW	Serial to parallel converter with latches, blanking and strobe	+80	+1.0 –25	Push-Pull	5	1	All	28-Lead DIP, 28-Lead PLCC, 28-Lead SOW
HV583	128	Both	Serial to parallel converter with latches, enable, and blanking	+80V	±20	Push-Pull	40	1	All	Die only
HV632	32	Both	Serial to parallel converter with latches, polarity, and blanking	+80	±4.0	Gray Shade PWM	10	8	All	64-Lead PQFP
HV633	32	Both	Amplitude modulated gray shade column driver with 128 output levels	+80	±7.0	Gray Shade Level	12	7	All	64-Lead PQFP
HV66	32	CW	Serial to parallel converter with latches, polarity, and blanking HI-Z and short circuit detect	+60	±5.0	Push-Pull	5	1	All	44-Lead PQFP, 44-Lead PLCC
HV6810	10	Both	Serial to parallel converter with data latches, channel polarity select, and blanking	+80	+25	Push-Pull	5	1	All	20-Lead PLCC, 20-Lead SOW
HV7022C	34	Both	Serial to parallel converter with latches, enable, and strobe	+230	±70 (min)	Push-Pull	4	1	One	44-Lead PLCC
HV7224	40	CW	Serial to parallel converter with latches, and output enable	+240	±70 (min)	Push-Pull	3	1	One	64-Lead PQFP
HV7620	32	Both	Serial to parallel converter with latches, and output enable	+200	±50 (min)	Push-Pull	10	4	All	64-Lead PQFP
HV9308	32	CW	EL or plasma panel driver with latches and output enable	+80	+5.0 –20	Push-Pull	8	1	All	44-Lead PLCC
HV9408	32	CCW	EL or plasma panel driver with latches and output enable	+80	+5.0 –20	Push-Pull	8	1	All	44-Lead PLCC
HV9708	32	CW	EL or plasma panel driver with latches, polarity and blanking	+80	+5.0 –20	Push-Pull	8	1	All	44-Lead PLCC
HV9808	32	CCW	EL or plasma panel driver with latches, polarity and blanking	+80	+5.0 –20	Push-Pull	8	1	All	44-Lead PLCC

# Supertex Product Overview

## Regulators

Microchip's portfolio of Supertex products provides regulated voltage/current for driving an MCU, LED, sensor or other circuit element from high voltage. They support an input voltage from 90V to 450V and offer fixed and adjustable outputs (voltage, current).

### Linear Current and Voltage Regulators

These devices take a variable range of input and/or current and provide a preset or user-adjustable voltage or current output.

Device	+VIN min (V)	+VIN max (V)	Output Voltage (V)	Max Output Current (mA)	Typical Line Regulation (%V)	Typical Load Regulation (%/mA)	Packages
LR8	12	450	1.2–440	10	0.003	0.15	3-lead TO-252, 3-lead TO-92, 3-lead SOT-89
LR12	12	100	1.2–88	50	0.003	0.06	3-lead TO-252, 8-lead SOIC, 3-lead TO-92
LR645	15	450	10	3.0	0.0001	0.5	8-lead SOIC, 3-lead TO-92, 3-lead TO-220, 3-lead SOT-89
LR745	25	450	20	2.0	0.0001	0.5	3-lead TO-92, 3-lead SOT-89

### Inductorless Offline Regulators

These devices are non-isolated, capacitor coupled regulators which draw power from the AC line and generate a range of fixed or adjustable voltage outputs.

Applications:

- Start-up power
- Sensor bias
- Signal detection
- Voltage/current protection

Device	+VIN (VAC)	Adjustable Vout (V)	Fixed Vout (V)	Iout max (mA)	Load Regulation (%/mA)	Packages
SR086	80–285	9.0–50	3.3	100	0.025	8-lead SOIC with Heat Slug
SR087	80–285	9.0–50	5.0	100	0.017	8-lead SOIC with Heat Slug
SR10	80–285	6.0–28	6.0, 12, 24	60	–	8-lead SOIC

# Supertex Product Overview

## Special Function ICs

### Lens Driver

Device	DC-DC	Input Voltage Min (V)	Input Voltage Max (V)	Output Voltage		Load		Package Options
				Min (VRMS)	Max (VRMS)	Min (pF)	Max (pF)	
HV892	Internal charge pump	2.65	5.5	10	60	100	200	10-Lead DFN

### Fan Controller

Device	V <sub>IN</sub> (V)	Drive	Speed Control	PWM Frequency (kHz)	Package Options
HV7100	16–90	High Side FET	Linear PWM Digital (4-bit)	0.050–100	14-Lead SOIC

### Relay Driver

Device	+V <sub>IN</sub>		I <sub>N</sub> Max (mA)	Oscillator Frequency		Oscillator Frequency f <sub>SYNC</sub> MAX (kHz)	Max Output Duty Cycle (%)	Typical Current Sense Pull-In (V)	Typical Current Sense Hold	External Adjustable Regulator Output Voltage (C)	External Adjustable Regulator Output Current (mA)	Package Options
	Min (V)	Max (V)		Min (kHz)	Max (kHz)							
HV9901	10	450	2	20	140	150	99.50	0.883	Adjustable	2.0–5.5	0–1.0	16-Lead SOIC

### High Voltage Level Translator ICs

Device	Channels	Input Voltage Low (V)	Input Voltage High (V)	Output Voltage Low (V)	Output Voltage High (V)	Input to Output Isolation (V)	Package Options
HT0440	2	3.15	5.5	6.0	10	±400	DFN-10, SOIC-8
HT0740	1	3.15	5.5	4.5	8.5	±400	SOIC-8

### Fault Protection ICs

Device	Voltage (V)	# of Channels	R <sub>ON</sub> (Ω)	V <sub>OFF</sub> (V)	Package Options
FP0100	100	1	4.5	4.5	3-Lead SOT-89

## Ultrasound Products

Microchip's family of Supertex high-voltage analog switches/multiplexers, pulsers, high-speed MOSFET drivers and discrete high voltage MOSFETs offer the best price/performance ratio available today for ultrasound applications. The feature-rich devices offer high-channel density in small packages. Integrated features such as bleed resistors in the ICs further reduce PCB density and overall cost by eliminating an external component. See Microchip's website for more details on ultrasound products.

# Supertex Product Overview

## Electroluminescence (EL) Drivers

These drivers are used to boost input voltages to the high voltages needed to drive electroluminescence lamps which provide backlighting for applications such as keyboards, instrumentation, electronic signage and gaming displays. They can drive 1–3 display channels over a wide range of input voltages (1.0–1.6V to 50–200V). We offer the following families of EL drivers:

- Inductor-based 1, 2, and 3 channel drivers
- 16-segment drivers
- Inductorless 1 channel drivers

Device	Input Voltage Low (V)	Input Voltage High (V)	Nominal Output Voltage (V)	Switch Resistance Max ( $\Omega$ )	Output Regulation	Lamp Size per Device Max (in <sup>2</sup> )	Package Options
<b>Single Lamp Drivers</b>							
HV816 <sup>(3)</sup>	2.7	5.5	$\pm 180$	–	Yes	42	QFN-16
HV823	2.0	9.5	$\pm 90$	6.0	Yes	23	SOIC-8
HV825	1.0	1.6	$\pm 56$	15	No	3.0	SOIC-8, MSOP-8
HV830	2.0	9.5	$\pm 100$	4.0	Yes	25	SOIC-8
HV833	1.8	6.5	$\pm 90$	4.0	Yes	12	MSOP-8
HV857L	1.8	5.0	$\pm 95$	6.0	Yes	5.0	DFN-8, MSOP-8
HV857	1.8	5.0	$\pm 95$	6.0	Yes	5.0	DFN-8, MSOP-8
HV859	1.8	5.0	$\pm 105$	6.0	Yes	5.0	DFN-8, MSOP-8
HV860	2.5	4.5	$\pm 110$	6.0	Yes	5.0	QFN-12
<b>Dual Lamp Drivers</b>							
HV839 <sup>(4)</sup>	2.0	5.8	$\pm 90$ – $\pm 100$	6.0	Yes	3.5	DFN-10, MSOP-10
HV843 <sup>(4)</sup>	2.0	5.8	$\pm 90$	10.0	Yes	3.5	DFN-10
HV845	2.0	5.8	$\pm 90$	10.0	Yes	3.5	QFN-12
HV861	2.5	4.5	$\pm 90$	7.0	Yes	5.0	QFN-16
<b>Tri Lamp Drivers</b>							
HV856 <sup>(2)</sup>	1.8	6.5	$\pm 105$	6.0	Yes	3.0	DFN-10
HV858 <sup>(2)</sup>	1.8	6.5	$\pm 95$	6.0	Yes	3.0	DFN-10, MSOP-10
<b>16-Segment Drivers</b>							
HV509	2.0	5.5	$\pm 200$	N/A	N/A	6.5	QFN-32
HV528	1.7	5.5	$\pm 200$	N/A	N/A	6.5	QFN-32
<b>Single Inductorless Lamp Drivers</b>							
HV850	3.0	4.2	$\pm 70$	–	Yes	1.5	MSOP-8
HV852	2.4	5.0	$\pm 80$	–	Yes	1.5	MSOP-8, DFN-10
HV853	3.2	5.0	$\pm 80$	–	Yes	1.5	MSOP-8, DFN-10

Note 1: For new cell phone designs use HV861.

2: Up to 3.0 in<sup>2</sup> in any combination.

3: The boost converter switching FET is external to the device, so its resistance will vary depending upon the application circuit.



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Microchip Technology Inc. • 2355 W. Chandler Blvd. • Chandler, AZ 85224-6199

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