

Supertex inc.

Short Form Catalog

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High Voltage, Mixed Signal Integrated Circuits and MOSFETs

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Supertex inc. Short Form Catalog

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Supertex inc. is a publicly held mixed signal semiconductor manufacturer, focused in high performance analog and high voltage interface products for use in the medical, flat panel display, automotive, industrial electronics and telecommunications industries.

Our competitive and leadership position in these markets is focused on our efforts in designing new products with existing process technologies, while also developing new process technologies to be used in future products. Our direct and close customer involvement allows us to develop products and processes that have real market value and bring timely and cost effective solutions to meet the needs of our customers.

Since our inception in 1976, we have been a leader in developing advanced technologies that utilize high-performance Complementary Metal Oxide Semiconductors (CMOS) and Double-Diffused MOS (DMOS) processes. Twenty years ago we pioneered high voltage integrated circuitry with our proprietary HVCMOS® technology, a merging of the CMOS and DMOS process technologies onto one chip. Supertex HVCMOS chips have the “brains” and low power consumption of CMOS ICs and the high voltage output of DMOS FET transistors. These advanced HVCMOS ICs provide performance and cost benefits that give our customers a competitive edge in developing their products.

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Product Selector Guides

High Voltage Analog Multiplexer/Switch ICs

Device	Interface	Configuration	Supply Voltage $V_{PP}-V_{NN}$ (V)	Analog Signal Voltage (V)	Switch Current (A)	Switch Resistance (typ) ⁵ (Ω)	Output Bleed Resistors	Package	Notes
HV2601	Serial	16-SPST	200	180	± 2	16	No	48-Lead LQFP (FG)	-
								48-Ball fpBGA (GA)	
HV2701	Serial	16-SPST	200	180	± 2	16	Yes	48-Lead LQFP (FG)	-
								48-Ball fpBGA (GA)	
HV2631	2 Banks of 8	16-SPST	220	200	± 2	18	No	48-Lead LQFP (FG)	-
HV2731	2 Banks of 8	16-SPST	220	200	± 2	18	Yes	48-Lead LQFP (FG)	-
HV2203	Serial	8-SPST	180	180	± 1	29	No	48-Lead LQFP (FG)	-
								28-Lead PLCC (PJ)	-
HV2303	Serial	8-SPST	180	180	± 1	29	Yes	48-Lead LQFP (FG)	-
								28-Lead PLCC (PJ)	-
HV2201	Serial	8-SPST	200	180	± 2	16	No	48-Lead LQFP (FG)	-
								28-Lead PLCC (PJ)	-
HV2301	Serial	8-SPST	200	180	± 2	16	Yes	48-Lead LQFP (FG)	-
								28-Lead PLCC (PJ)	-
HV220	Serial	8-SPST	200	180	± 2	16	No	25-Lead fpBGA (GA)	-
HV230	Serial	8-SPST	200	180	± 2	16	Yes	26-Lead BCC (B1)	-
								26-Lead LLGA (G1)	-
HV2221	Serial	8-SPST	240	220	± 4	12	No	48-Lead LQFP (FG)	-
HV2321	Serial	8-SPST	240	220	± 4	12	Yes	48-Lead LQFP (FG)	-
HV20220	Serial	8-SPST	200	180	± 2	16	No	48-Lead LQFP (FG)	1
								28-Lead PLCC (PJ)	1
HV20320	Serial	8-SPST	200	180	± 2	16	No	28-Lead PLCC (PJ)	1
HV232	Serial	8-SPST	220	180	± 2	16	Yes	48-Lead LQFP (FG)	2
								28-Lead PLCC (PJ)	2
HV209	Serial	6-SPDT	200	180	± 2	16	Yes	48-Lead LQFP (FG)	-
HV214	Serial	8-SPST	250	230	± 2	27	No	48-Lead LQFP (FG)	-
								28-Lead PLCC (PJ)	-
HV219	Serial	8-SPST	200	180	± 2	8.0	No	48-Lead LQFP (FG)	-
								28-Lead PLCC (PJ)	-
HV20822	2 Banks of 8	16-SPST	220	200	± 2	18	No	48-Lead LQFP (FG)	3
HV238	2 Banks of 8	16-SPST	220	200	± 2	18	Yes	48-Lead LQFP (FG)	4

Notes:

1. Use HV2201 for new designs
2. Use HV2301 for new designs
3. Use HV2631 for new designs
4. Use HV2731 for new designs

Ultrasound Pulsers

Device	Channels	Voltage (V)	Current (A)	Features	Driver	Package	Demoboards
HV738	4-channel	±65	±0.75	Built-in coupling, 4 current modes	Monolithic	48-Lead QFN (K6)	HV738DB1
HV748		±75	±1.25				HV748DB1

Ultrasound Receive Channel ICs - Low Noise Amplifiers

Device	# of Channels	Voltage (V)	Gain (dB)	Noise (nV/Hz)	Features	Package	Demoboard
MD3880	4	2.5	70	0.740	Built-in LNP+, TGC+, PGA	84-Lead BCC+ (B2)	MD3880DB1

Ultrasound Transmit Beamforming Source Drivers

Device	# of Channels	Voltage (V)	Output Current (A)	PWM Sampling Rate (MHz)	Features	Package	Demoboard
MD2130	1	5.0	0-3.0	120	Built-in 8-bit current DAC, 48-step phase rotator	40-Lead QFN (K7)	MD2130DB2

Unipolar Positive Analog Switches

Device	# of Channels	Voltage (V)	On-Resistance Typ. (Ω)	Output Current (A)	Package
HV2612	16-SPDT	140	8.5	3.0	48-Lead LQFP (FG)

Ultrasound T/R Switch

Device	# of Channels	Voltage (V)	R_{SW} (Ω)	$C_{SW(ON/OFF)}$ (pF)	V_{TRIP} (V)	BW (MHz)	Package
MD0100	1	±100	15	21/15	±2.0	100	SOT-89 (N8)
MD0100D	2						8-Lead DFN (K6)

Ultrasound MOSFETs

Device	BV_{DSS} (V)	$R_{DS(ON)}$ (Ω)	C_{ISS} typ (pF)	$V_{GS(TH)}$ max (V)	Package
TN2425	250	3.5	105	0.8 (min)	3-Lead SOT-89 (N8)
					8-Lead SOIC (TG)
TN2524	240	6.0	65	2.0	3-Lead SOT-89 (N8)
TN2640	400	5.0	180	2.0	3-Lead TO-92 (N3)
TN5325	250	7.0	70	2.0	3-Lead SOT-23 (K1)
					3-Lead TO-92 (N3)
					3-Lead SOT-89 (N8)
TP2424	-240	8.0	200	-2.4	3-Lead SOT-89 (N8)
TP2520	-200	12	75	-2.0	3-Lead SOT-89 (N8)
TP2522	-220	12	75	-2.4	3-Lead SOT-89 (N8)
TP5322	-220	12	75	-2.4	3-Lead SOT-23 (K1)
					3-Lead SOT-89 (N8)

Ultrasound MOSFET Arrays

Device	BV_{DSS}/BV_{DGS}		$R_{DS(ON)}$ Max		$V_{GS(TH)}$ max (V)	Package	Application Notes
	N-Channel (V)	P-Channel (V)	N-Channel (Ω)	P-Channel (Ω)			
TC1550	500	-500	60	125	4	8-Lead SOIC (TG)	-
TC2320	200	-200	7.0	12	2	8-Lead SOIC (TG)	-
TC6215	150	-150	4.0	7.0	2.0	8-Lead SOIC (TG)	-
TC6320	200	-200	7.0	8.0	2	8-Lead SOIC (TG)	AN-H53
						8-Lead DFN (K6)	
TC7320	200	-200	20	20	0.4 (typ)	32-Lead LQFP (FG)	AN-H53

Ultrasound MOSFET Drivers

Device	Channels	Input Voltage		Output Voltage (V)		Package	Demoboards	Application Notes
		min (V)	max (V)					
MD1210	2	1.2	5.0	-	0-12	12-Lead QFN (K6)	-	-
MD1211	2	1.2	5.0	-	0-12	8-Lead SOIC (LG)	-	-
MD1213	2	1.2	5.0	± 5.0	0-12	12-Lead QFN (K6)	MD1213DB1	
MD1711	12	1.8	5.5	± 5.0	0-12	48-Lead QFN (K6)	MD1711DB2	-
						48-Lead LQFP (FG)		
MD1810	4	1.2	5.0	± 5.0	0-12	16-Lead QFN (K6)	-	-
MD1811	4	1.2	5.0	± 5.0	0-12	16-Lead QFN (K6)	-	AN-H54
MD1812	4	1.2	5.0	± 5.0	0-12	16-Lead QFN (K6)	-	AN-H56
MD1813	4	1.2	5.0	± 5.0	0-12	16-Lead QFN (K6)	-	AN-H56

LED Driver ICs

Switching Converters

Device	Topology	V _{IN}		Output Current (mA)	Dimming	Package	Demoboards	Application/ Design Notes
		min (V)	max (V)					

Automotive (AEC-Q100 Certified)

AT9917	Boost, SEPIC	5.3	40	External FET	PWM /Linear	24-Lead TSSOP (TS)	---	-
AT9932	Boost-Buck (Ĉuk)	5.3	40	External FET	PWM /Linear	24-Lead TSSOP (TS)	---	-
AT9933	Boost-Buck (Ĉuk)	9.0	75	External FET	PWM	8-Lead SOIC (LG)	AT9933DB1	AN-H51 AN-H58

General Purpose

HV9918	Buck	4.5	40	Integrated FET	PWM	8-Lead DFN (K7)	HV9918DB1	-
HV9919	Buck	4.5	40	External FET	PWM	8-Lead DFN (K7)	HV9919DB1	-
HV9921	Buck	20	400	20	No	3-Lead TO-92 (N3)	HV9921DB1	-
						3-Lead SOT-89 (N8)		
HV9922	Buck	20	400	50	No	3-Lead TO-92 (N3)	HV9922DB1 HV9922DB2	DN-H04
						3-Lead SOT-89 (N8)		
HV9923	Buck	20	400	30	No	3-Lead TO-92 (N3)	HV9923DB1	-
						3-Lead SOT-89 (N8)		
HV9925	Buck	20	400	20 - 50	PWM	8-Lead SOIC (SG)	HV9925DB1	-
HV9930	Boost-Buck (Ĉuk)	8.0	200	External FET	PWM	8-Lead SOIC (LG)	HV9930DB1 HV9930DB2	AN-H51 AN-H58

General Purpose and Backlight

HV9910B	Buck	8.0	450	External FET	PWM / Linear	8-Lead SOIC (LG)	HV9910DB1 HV9910DB2	AN-H48 AN-H50 DN-H01
						16-Lead SOIC (NG)		
HV9911	Boost, SEPIC, Buck-Boost	9.0	250	External FET	PWM	16-Lead SOIC (NG)	HV9911DB1v2 HV9911DB2 HV9911DB3 HV9911DB4	AN-H55
HV9912	Boost, SEPIC, Buck-Boost	9.0	100	External FET	PWM	16-Lead SOIC (NG)	HV9912DB1	-
HV9961	Buck	8.0	450	External FET	PWM / Linear	8-Lead SOIC (LG)	HV9961DB1	-
						16-Lead SOIC (NG)		
HV9963	Boost, SEPIC, Buck-Boost	8.0	40	External FET	PWM / Linear	16-Lead SOIC (NG)	-	-
HV9980	Buck	100	160	70	PWM / Linear	24-Lead SOW (WG)	HV9980DB1	-
HV9982	Buck, Boost, SEPIC	10	40	External FET	PWM / Linear	40-Lead QFN (K6)	HV9982DB1	-

LED Driver ICs

Switching Converters

Device	Topology	V _{IN}		Output Current (mA)	Dimming	Package	Demoboards	Application/ Design Notes
		min (V)	max (V)					
HV9985	Buck, Boost, SEPIC	10	40	External FET	PWM / Linear	40-Lead QFN (K6)	HV9985DB1	-
						44-Lead QSOP (QP)		

Offline PFC

HV9931	Buck, BIBRED	8.0	450	External FET	PWM	8-Lead SOIC (LG)	HV9931DB1 HV9931DB4 HV9931DB5	AN-H52 DN-H04
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Linear Regulators

Device	V _{IN}		V _{OUT}		Output Current (mA)	Dimming	Parallelable	Package	Features
	min (V)	max (V)	min (V)	max (V)					
CL2	5.0	90	5.0	90	20	External FET	Yes	3-Lead TO-252 (K4)	-
								3-Lead TO-92 (N3)	
								3-Lead SOT-89 (N8)	
CL25	5.0	90	5.0	90	25	External FET	Yes	3-Lead TO-92 (N3)	-
								3-Lead SOT-89 (N8)	
CL320	6.5	90	4.0	90	20	PWM	Yes	8-Lead SOIC (SG)	OTP, separate ENABLE pin
CL325	6.5	90	4.0	90	25	PWM	Yes	8-Lead SOIC (SG)	
CL330	6.5	90	4.0	90	30	PWM	Yes	8-Lead SOIC (SG)	
CL520	4.75	90	1.0	90	20	-	Yes	3-Lead TO-252 (K4)	-
								3-Lead TO-92 (N3)	
CL525	4.75	90	1.0	90	25	-	Yes	3-Lead TO-252 (K4)	-
								3-Lead TO-92 (N3)	
CL6	6.5	90	4.0	90	100	No	Yes	3-Lead TO-252 (K4)	Reverse polarity protection, OTP
								3-Lead TO-220 (N5)	
CL7	6.5	90	4.0	90	100	PWM	Yes	8-Lead SOIC (SG)	Reverse polarity protection, OTP

High Voltage Electroluminescent Backlight Driver ICs

Device	Input Voltage Range		Nominal Output Voltage (V)	Maximum Switch Resistance (Ω)	Output Regulation	Max Lamp Size per Device (in ²)	Package	Demoboard	Application Notes	Notes
	Low (V)	High (V)								

Single Lamp Drivers

HV860	2.5	4.5	± 110	6.0	Yes	5.0	12-Lead QFN (K7)	HV860DB1	-	-
HV857L	1.8	5.0	± 95	6.0	Yes	5.0	8-Lead DFN (K7)	HV857LDB1	AN-H43	-
HV857							8-Lead MSOP (MG)	HV857DB1		1
HV859	1.8	5.0	± 105	6.0	Yes	5.0	8-Lead DFN (K7)	HV859DB1	-	-
							8-Lead MSOP (MG)			
HV823	2.0	9.5	± 90	6.0	Yes	23	8-Lead SOIC (LG)	HV823DB1	AN-H34	-
HV825	1.0	1.6	± 56	15	No	3.0	8-Lead SOIC (LG)	HV825DB1	AN-H34	-
							8-Lead MSOP (MG)			
HV826	1.8	3.5	± 80	6.0	Yes	4.0	8-Lead SOIC (LG)	-	AN-H38	-
							8-Lead MSOP (MG)			
HV830	2.0	9.5	± 100	4.0	Yes	25	8-Lead SOIC (LG)	HV830DB1	-	-
HV833	1.8	6.5	± 90	4.0	Yes	12	8-Lead MSOP (MG)	HV833DB1	AN-H45	-

Dual Lamp Drivers

HV861	2.5	4.5	± 90	7.0	Yes	5.0	16-Lead QFN (K7)	HV861DB1	-	-
HV843	2.0	5.8	± 90	10.0	Yes	3.5	10-Lead DFN (K7)	HV843DB1	-	2
HV845	2.0	5.8	± 90	10.0	Yes	3.5	12-Lead QFN (K7)	HV845DB1	-	-
HV839	2.0	5.8	± 90 / ± 100	6.0	Yes	3.5	10-Lead DFN (K6)	-	AN-H46	2
							10-Lead MSOP (MG)			
HV841	2.0	5.8	± 90 / ± 100	6.0	Yes	3.5	10-Lead DFN (K6)	-	AN-H46	2
							10-Lead MSOP (MG)			

Tri-Lamp Drivers

HV858	1.8	6.5	± 95	6.0	Yes	3.0	10-Lead DFN (K7)	-	-	3
							10-Lead MSOP (MG)			
HV856	1.8	6.5	± 105	6.0	Yes	3.0	10-Lead DFN (K7)	-	-	3

16-Segment Drivers

HV528	1.7	5.5	± 200	N/A	N/A	6.5	32-Lead QFN (K6)	-	-	-
HV509	2.0	5.5	± 200	N/A	N/A	6.5	32-Lead QFN (K6)	-	-	-

Offline Driver

HV809	50	200	± 50 - ± 200	-	N/A	100	8-Lead SOIC (LG)	HV809DB1 HV809DB2	AN-H36	-
							8-Lead SOIC (SG) w/ heat slug			
							7-Lead TO-220 (K2)			

Notes:

1. For new cell phone designs use HV857L or HV860.
2. For new cell phone designs use HV861.
3. Up to 3.0in² in any combination.

High Voltage Electroluminescent Backlight Driver ICs

Device	Input Voltage Range		Nominal Output Voltage (V)	Maximum Switch Resistance (Ω)	Output Regulation	Max Lamp Size per Device (in ²)	Package	Demoboard
	Low (V)	High (V)						

Single Inductorless Lamp Drivers

HV853	3.2	5.0	± 80	-	Yes	1.5	8-Lead MSOP (MG)	HV853DB1
							10-Lead DFN (K7)	
HV852	2.4	5.0	± 80	-	Yes	1.5	8-Lead MSOP (MG)	HV852DB1
							10-Lead DFN (K7)	
HV850	3.0	4.2	± 70	-	Yes	1.5	8-Lead MSOP (MG)	-

Inductorless Off-Line Regulator ICs / Linear Regulator ICs**Inductorless Off-Line Regulator ICs**

Device	V _{IN} (VAC)	Adjustable V _{OUT} (V)	Fixed V _{OUT} (V)	I _{OUT max} (mA)	Load Regulation (%/mA)	Package	Application Notes	Demoboards
SR086	80-285	9-50	3.3	100	0.025	8-Lead SOIC (SG)	-	SR086DB1
SR087	80-285	9-50	5.0	100	0.017	8-Lead SOIC (SG)	-	SR087DB1
SR10	80-285	6.0-2.8	6.0, 12, 24	60	-	8-Lead SOIC (SG)	AN-H65	SR10DB1

Linear Regulator ICs

Device	+V _{IN}		Output Voltage (V)	Max Output Current (mA)	Typical Regulation		Package	Application Notes
	min (V)	max (V)			Line (%/V)	Load (%/mA)		
LR8	12	450	1.2 - 440	10	0.003	0.15	3-Lead TO-252 (K4)	AN-H40
							3-Lead TO-92 (N3)	
							3-Lead SOT-89 (N8)	
LR12	12	100	1.2 - 88	50	0.003	0.06	3-Lead TO-252 (K4)	AN-H40
							8-Lead SOIC (LG)	
							3-Lead TO-92 (N3)	
LR645	15	450	10	3.0	0.0001	0.5	8-Lead SOIC (LG)	-
							3-Lead TO-92 (N3)	
							3-Lead TO-220 (N5)	
							3-Lead SOT-89 (N8)	
LR745	25	450	20	2.0	0.0001	0.5	3Lead TO-92 (N3)	-
							3Lead SOT-89 (N8)	

Lens Driver ICs

Device	DC - DC	Input Voltage		Output Voltage		Load		Package
		min (V)	max (V)	min (V _{RMS})	max (V _{RMS})	min (pF)	max (pF)	
HV892	Internal charge pump	2.65	5.5	10	60	100	200	10-Lead DFN (K7)
HV895	Internal charge pump	2.65	5.5	10	60	100	200	Bumped Die

High Side Current Monitor ICs

Device	V _{IN} (V)	Gain	Rise and Fall Time (μs)	V _{SENSE} max (mV)	Quiescent Current max (μA)	Package
HV7800	8.0 - 450	Fixed, 1	0.7 - 2.0	500	50	5-Lead SOT-23 (K1)
HV7801	8.0 - 450	Fixed, 5	0.7 - 2.0	500	50	5-Lead SOT-23 (K1)
HV7802	8.0 - 450	Adjustable	0.7 - 1.4	500	50	8-Lead MSOP (MG)

Relay Driver IC

Device	+V _{IN}		I _{IN} max (mA)	Oscillator Frequency			Max Output Duty Cycle (%)	Typical Current Sense		External Adjustable Regulator Output		Package
	min (V)	max (V)		min (kHz)	min (kHz)	f _{sync} min (kHz)		Pull-In (V)	Hold	Voltage (V)	Current (mA)	
HV9901	10	450	2	20	140	150	99.50	0.883	Adjustable	2.0 - 5.5	0 - 1.0	16-Lead SOIC (NG)

Fan Controller IC

Device	V _{IN} (V)	Drive	Speed Control	PWM Frequency (kHz)	Package	Demoboard
HV7100	16 - 90	High Side FET	Linear PWM Digital (4-bit)	.050 - 100	14-Lead SOIC (NG)	HV7100DB1

Switchmode PWM Controller ICs

Device	+V _{IN}		Feedback Accuracy max (%)	Duty Cycle (%)	Switch	MOSFET Switch BV _{DSS} (V)	MOSFET Switch R _{DS(ON)} (Ω)	Package	Application Notes
	min (V)	max (V)							
HV9110	10	120	±1	49	External	-	-	14-Lead SOIC (NG)	AN-H13
HV9112	9.0	80	±2	49	External	-	-	14-Lead SOIC (NG)	-
HV9113	10	120	±1	99	External	-	-	14-Lead SOIC (NG)	-
HV9120	10	450	±2	49	External	-	-	16-Lead SOIC (NG)	AN-H13
								16-Lead DIP (P)	
								20-Lead PLCC (PJ)	
HV9123	10	450	±2	99	External	-	-	16-Lead SOIC (NG)	AN-H13
								16-Lead DIP (P)	
								20-Lead PLCC (PJ)	

High Voltage Interface/Driver ICs**Sink Only Outputs - Open Drain N-Channel**

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

Sink Only Outputs - Open Drain P-Channel

Device	Output Channels	Direction	Logic Configuration	Output		Package
				Operating Voltage (V)	Current per Channel (mA)	
HV3922	4	CW	Pin Diode Driver	-220	-1.7	28-Lead Quad Cerpac (DJ)
						28-Lead PLCC (PJ)
HV4522	32	CCW	Serial to parallel converter with latches, polarity, and blanking	-220	-60	44-Lead PLCC (PJ)
HV4622	32	CW	Serial to parallel converter with latches, polarity, and blanking	-220	-60	44-Lead PLCC (PJ)
HV57009	64	B	Current controlled driver with latches and blanking, two 32-bit shift registers	-85	Controllable to -2	80-Lead PQFP (PG)

High Voltage Interface/Driver ICs (cont.)**Source-Sink Outputs - Push-Pull**

Device	Output Channels	Dir.	Logic Configuration	Output Voltage (V)	Output Current per Channel (mA)	Output Structure	Max Clock Rate (MHz)	Bits	Outputs On	Package
HV3418	64	Both	Serial to parallel converter with latches, polarity, and blanking	+180	±5.0	Push-Pull	6	1	All	80-Lead PQFP (PG)
HV507	64	Both	Serial to parallel converter with latches, polarity, and blanking	+300	±1.0	Push-Pull	8	1	All	80-Lead PQFP (PG)
HV508	2	-	H-Bridge output with two output voltage level selections and polarity	+45	+225 -270	Push-Pull H-Bridge	-	-	-	8-Lead SOIC (LG)
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 (WG)
										32-Lead QFN (K7)
HV514	8	CW	Serial to parallel converter with data latches, channel polarity select, and blanking	+250	±20	Push-Pull	8	1	All	24-Lead SOW (WG)
HV518	32	CW	Serial to parallel converter with latches, enable, and strobe	+80	+1.0 -25	Push-Pull	6	1	All	40-Lead DIP (P)
										44-Lead PLCC (PJ)
HV5308B	32	CW	Serial to parallel converter with latches, and output enable	+80	±20	Push-Pull	8	1	All	44-Lead PQFP (PG)
										44-Lead PLCC (PJ)
HV5408B	32	CCW	Serial to parallel converter with latches, and output enable	+80	±20	Push-Pull	8	1	All	44-Lead PQFP (PG)
										44-Lead PLCC (PJ)
HV574	80	Both	Serial to parallel converter with latches, polarity, and blanking	+80	+15 -30	Push-Pull	25	4	All	100-Lead PQFP (PG)
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 (PG)
HV57908	64	Both	EL or plasma driver w/latches, blanking, polarity, and single shift register	+80	+12 -15	Push-Pull	8	1	All	80-Lead PQFP (PG)
HV5812	20	CW	Serial to parallel converter with latches, blanking and strobe	+80	+1.0 -25	Push-Pull	5	1	All	28-Lead DIP (P)
										28-Lead PLCC (PJ)
										28-Lead SOW (WG)

High Voltage Interface/Driver ICs (cont.)**Source-Sink Outputs - Push-Pull**

Device	Output Channels	Dir.	Logic Configuration	Output Voltage (V)	Output Current per Channel (mA)	Output Structure	Clock Rate max (MHz)	Bits	Outputs On	Package
HV632	32	Both	Serial to parallel converter with latches, polarity, and blanking	+80	±4.0	Gray Shade PWM	10	8	All	64-Lead PQFP (PG)
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 (PG)
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 (PG)
										44-Lead PLCC (PJ)
HV6810	10	Both	Serial to parallel converter with data latches, channel polarity select, and blanking	+80	+100 -25	Push-Pull	5	1	All	20-Lead PLCC (PJ)
										20-Lead SOW (WG)
HV7022C	34	Both	Serial to parallel converter with latches, enable, and strobe	+230	±70 (min)	Push-Pull	4	1	One	44-Lead PLCC (PJ)
HV7224	40	CW	Serial to parallel converter with latches, and output enable	+240	±70 (min)	Push-Pull	3	1	One	64-Lead PQFP (PG)
HV7620	32	Both	Serial to parallel converter with latches, and output enable	+200	±50 (min)	Push-Pull	10	4	All	64-Lead PQFP (PG)
HV9308	32	CW	Serial to parallel converter with latches, polarity, and blanking	+80	+5.0 -20	Push-Pull	8	1	All	44-Lead PLCC (PJ)
HV9408	32	CCW	EL driver with latches, polarity, and blanking with four 16-bit shift registers	+80	+5.0 -20	Push-Pull	8	1	All	44-Lead PLCC (PJ)
HV9708	32	CW	EL or plasma driver w/latches, blanking, polarity, and single shift register	+80	+5.0 -20	Push-Pull	8	1	All	44-Lead PLCC (PJ)
HV9808	32	CCW	Serial to parallel converter with latches, blanking and strobe	+80	+5.0 -20	Push-Pull	8	1	All	44-Lead PLCC (PJ)

High Voltage Telecommunication ICs**Electronic Line Switch ICs**

Device	Switch Resistance (Ω)	Maximum Breakdown (V)	Package	Application Notes
HT0638	15	375	8-Lead SOIC (LG)	AN-H42
HT18/ HT19	18	350	8-Lead SOIC (LG)	AN-H39

Ring Generator ICs

Device	Ring Voltage max (VRMS)	Output Load max (REN)	High Voltage Supplies		PWM Function	Package	Application/Design Notes
			Positive	Negative			
HV430	105	50	Yes	Yes	External	20-Lead SOIC (WG)	AN-H42
HV440	70	5 or 20	Yes	Yes	External	16-Lead SOIC (WG)	AN-H37
HV461	105	40	No	No	Built-in	48-Lead LQFP (FG)	DN-H07

Hotswap Controller ICs/Inrush Current Limiters/ Circuit Breaker ICs

Device	UV/OV Protection	Circuit Breaker	Auto Retry	Type	Input Voltage max (V)	UV Threshold Voltage (V)	Supply Current max (mA)	Number of Channels	Package
HV100	UV	Until C-Load Fully Charged	Yes	Negative Rail Break, High Voltage	± 72	34 (typ)	1.0	1	3-Lead SOT-223 (K5)
HV101	UV	Until C- Load Fully Charged	Yes	Negative Rail Break, High Voltage	± 72	14	1.0	1	3-Lead SOT-223 (K5)

High Voltage Level Translator ICs

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

MEMS Drivers/High Voltage Array Amplifier ICs

Device	HV _{OUT} max (V)	Quiescent Current I _{PP} / channel typical (μ A)	Slew Rate (V/ μ s)	Closed Loop Gain (V/V)	Feedback Resistance (M Ω)	HV _{OUT} Current Capability Max			Configura- tion	Output Current Limit	Package	Demoboard
						Source (μ A)	Sink (μ A)	Capacitive Load (pF)				
HV254	250	45	3 (min)	50	12	300	300	100	Amp Only	No	100-Lead MQFP (FG)	HV254DB1
HV256	295	15	2	72	12	715	715	3000	Amp Only	Yes	100-Lead MQFP (FG)	HV256DB1
HV257	295	15	2	72	12	500	500	3000	Amp with S/H	Yes	100-Lead MQFP (FG)	HV257DB2

Depletion Mode MOSFETs

Device	BV _{DSS} min (V)	R _{DS(ON)} max (Ω)	V _{GS(OFF)}		I _{DSS} @ V _{GS} = 0V		Package	Application Notes	Notes
			min (V)	max (V)	min (mA)	max (mA)			
DN1509	90	6.0	- 1.8	- 3.5	300	-	3-Lead SOT-89 (N8)	-	-
DN2470	700	42	- 1.5	- 3.5	500	-	3-Lead TO-252 (K4)	-	1
DN2530	300	12	- 1.0	- 3.5	200	-	3-Lead TO-92 (N3)	-	-
							3-Lead SOT-89 (N8)	-	-
DN2535	350	25	- 1.5	- 3.5	150	-	3-Lead TO-92 (N3)	AN-D30	-
							3-Lead TO-220 (N5)		
DN2540	400	25	- 1.5	- 3.5	150	-	3-Lead TO-92 (N3)	-	-
							3-Lead TO-220 (N5)		
							3-Lead SOT-89 (N8)		
DN2625	250	3.5	-1.5	-2.1	1100	-	3-Lead TO-252 (K4)	-	-
							14-Lead QFN (K6)		
DN3135	350	35	- 1.5	- 3.5	180	-	3-Lead SOT-23 (K1)	-	-
							3-Lead SOT-89 (N8)		
DN3145	450	60	- 1.5	- 3.5	120	-	3-Lead SOT-89 (N8)	-	-
DN3525	250	6.0	- 1.5	- 3.5	300	-	3-Lead SOT-89 (N8)	-	-
DN3535	350	10	- 1.5	- 3.5	200	-	3-Lead SOT-89 (N8)	-	-
DN3545	450	20	- 1.5	- 3.5	200	-	3-Lead TO-92 (N3)	-	-
							3-Lead SOT-89 (N8)		
DN3765	650	8.0	-1.5	-3.5	200	-	3-Lead TO-252 (K4)	-	-
LND150	500	1000	- 1.0	- 3.0	1.0	3.0	3-Lead SOT-23 (K1)	AN-D10 AN-D11 AN-D12 AN-D16 AN-D17 AN-D25 AN-D27	-
							3-Lead TO-92 (N3)		
							3-Lead SOT-89 (N8)		

Note:
1. I_{DSS} of 500mA is a typical value

N-Channel Enhancement Mode MOSFETs

Device	BV_{DSS} (V)	$R_{DS(ON)}$ max (Ω)	$I_{D(ON)}$ min (A)	C_{ISS} max (pF)	$V_{GS(TH)}$ max (V)	Package	Application Notes
2N6660	60	3.0	1.5	50	2.0	3-Lead TO-39 (N2)	-
2N6661	90	4.0	1.5	50	2.0	3-Lead TO-39 (N2)	-
2N7000	60	5.0	0.075	60	3.0	3-Lead TO-92 (N3)	-
2N7002	60	7.5	0.5	50	2.5	3-Lead SOT-23 (K1)	-
2N7008	60	7.5	0.5	50	2.5	3-Lead TO-92 (N3)	-
TN0104	40	1.8	2.0	70	1.6	3-Lead TO-92 (N3)	-
		2.0				3-Lead SOT-89 (N8)	
TN0106	60	3.0	2.0	60	2.0	3-Lead TO-92 (N3)	-
TN0110	100	3.0	2.0	60	2.0	3-Lead TO-92 (N3)	-
TN0604	40	0.75	4.0	190	1.6	3-Lead TO-92 (N3)	AN-D09
						20-Lead SOW (WG)	
TN0606	60	1.5	3.0	150	2.0	3-Lead TO-92 (N3)	AN-D09
TN0610	100	1.5	3.0	150	2.0	3-Lead TO-92 (N3)	AN-D09
TN0620	200	6.0	1.0	150	1.6	3-Lead TO-92 (N3)	AN-D09 AN-H53
TN0702	20	1.3	0.5	200	1.0	3-Lead TO-92 (N3)	-
TN2106	60	2.5	0.6	50	2.0	3-Lead SOT-23 (K1)	-
						3-Lead TO-92 (N3)	
TN2124	240	15	0.14	50	2.0	3-Lead SOT-23 (K1)	-
TN2130	300	25	0.25	50	2.4	3-Lead SOT-23 (K1)	-
TN2425	250	3.5	1.5	200	2.0	3-Lead SOT-89 (N8)	-
TN2435	350	6.0	1.0	200	0.8 (min)	3-Lead SOT-89 (N8)	-
TN2501	18	2.5	0.25	110	1.0	3-Lead SOT-89 (N8)	-
TN2504	40	1.0	4.0	125	1.6	3-Lead SOT-89 (N8)	-
TN2510	100	1.5	3.0	125	2.0	3-Lead SOT-89 (N8)	-
TN2524	240	6.0	1.0	125	2.0	3-Lead SOT-89 (N8)	-
TN2529	290	6.0	1.0	125	2.0	14-Lead QFN (K6)	-
TN2535	350	10	1.0	125	2.0	3-Lead SOT-89 (N8)	-
TN2540	400	12	1.0	125	2.0	3-Lead TO-92 (N3)	-
						3-Lead SOT-89 (N8)	
TN2640	400	5.0	2.0	225	2.0	3-Lead TO-252 D-PAK (K4)	-
						8-Lead SOIC (LG)	
						3-Lead TO-92 (N3)	
TN5325	250	7.0	1.2	110	2.0	3-Lead SOT-23 (K1)	AN-H53
						3-Lead TO-92 (N3)	
						3-Lead SOT-89 (N8)	

N-Channel Enhancement Mode MOSFETs (cont.)

Device	BV_{DSS} (V)	$R_{DS(ON)}$ max (Ω)	$I_{D(ON)}$ min (A)	C_{ISS} max (pF)	$V_{GS(TH)}$ max (V)	Package	Application Notes
TN5335	350	15	0.75	110	2.0	3-Lead SOT-23 (K1)	-
						3-Lead SOT-89 (N8)	
VN0104	40	3.0	2.0	65	2.4	3-Lead TO-92 (N3)	-
VN0106	60	3.0	2.0	65	2.4	3-Lead TO-92 (N3)	-
VN0300	30	1.2	1.0	190	2.5	3-Lead TO-92 (L)	-
VN0550	500	60	0.15	55	4.0	3-Lead TO-92 (N3)	-
VN0606	60	3.0	1.5	50	2.0	3-Lead TO-92 (L)	-
VN0808	80	4.0	1.5	50	2.0	3-Lead TO-92 (L)	-
VN10K	60	5.0	0.75	60	2.5	3-Lead TO-92 (N3)	-
VN1206	120	6.0	1.0	125	2.0	3-Lead TO-92 (L)	-
VN2106	60	4.0	0.6	50	2.4	3-Lead TO-92 (N3)	-
VN2110	100	4.0	0.6	50	2.4	3-Lead SOT-23 (K1)	-
VN2210	100	0.35	8.0	500	2.4	3-Lead TO-39 (N2)	-
						3-Lead TO-92 (N3)	
VN2222NC	220	1.25	5.0	350	3.0	20-Lead C-DIP (NC)	-
VN2222LL	60	7.5	0.75	60	2.5	3-Lead TO-92 (LL)	-
VN2224	240	1.25	5.0	350	3.0	3-Lead TO-92 (N3)	-
VN2406	240	6.0	1.0	125	2.0	3-Lead TO-92 (L)	-
VN2410	240	10	1.0	125	2.0	3-Lead TO-92 (L)	-
VN2450	500	13	0.5	150	4.0	3-Lead TO-92 (N3)	-
						3-Lead SOT-89 (N8)	
VN2460	600	20	0.25	150	4.0	3-Lead TO-92 (N3)	-
						3-Lead SOT-89 (N8)	
VN3205	50	0.3	3.0	300	2.4	3-Lead TO-92 (N3)	-
						3-Lead SOT-89 (N8)	
						14-Lead DIP (P)	
VN3515	350	15	0.15	110	1.8	3-Lead TO-92 (L)	-
VN4012	400	12	0.15	110	1.8	3-Lead TO-92 (L)	-

P-Channel Enhancement Mode MOSFETs

Device	V_{DSS} (V)	$R_{DS(ON)}$ max (Ω)	$I_{D(ON)}$ min (A)	C_{ISS} max (pF)	$V_{GS(TH)}$ max (V)	Package	Application Notes
LP0701	-16.5	1.5	-1.25	250	-1.0	3-Lead TO-92 (N3)	AN-D14
						8-Lead SOIC (LG)	-
TP0604	-40	2.0	-2.0	150	-2.4	3-Lead TO-92 (N3)	-
						20-Lead SOIC (WG)	
TP0606	-60	3.5	-1.5	150	-2.4	3-Lead TO-92 (N3)	-
TP0610	-60	10	-0.05	60	-2.4	3-Lead SOT-23 (T)	-
TP0620	-200	12	-0.75	150	-2.4	3-Lead TO-92 (N3)	AN-H53
TP2104	-40	6.0	-0.6	60	-2.0	3-Lead SOT-23 (K1)	-
						3-Lead TO-92 (N3)	
TP2424	-240	8.0	-0.8	200	-2.4	3-Lead SOT-89 (N8)	-
TP2435	-350	15	-0.8	200	-2.4	3-Lead SOT-89 (N8)	-
TP2502	-20	2.0	-2.0	125	-2.4	3-Lead SOT-89 (N8)	-
TP2510	-100	3.5	-1.5	125	-2.4	3-Lead SOT-89 (N8)	-
TP2520	-200	12	-0.75	125	-2.0	3-Lead SOT-89 (N8)	-
TP2522	-220	12	-0.75	125	-2.4	3-Lead SOT-89 (N8)	-
TP2535	-350	25	-0.4	125	-2.4	3-Lead TO-92 (N3)	-
TP2540	-400	25.0	-0.4	125	-2.4	3-Lead TO-92 (N3)	AN-D27
						3-Lead SOT-89 (N8)	
TP2635	-350	15	-0.7	300	-2.0	3-Lead TO-92 (N3)	-
TP2640	-400	15	-0.7	300	-2.0	3-Lead TO-92 (N3)	AN-D27
						8-Lead SOIC (LG)	
TP5322	-220	12	-0.7	110	-2.4	3-Lead SOT-23 (K1)	-
						3-Lead SOT-89 (N8)	
TP5335	-350	30	-0.4	110	-2.4	3-Lead SOT-23 (K1)	-
VP0104	-40	8.0	-0.5	60	-3.5	3-Lead TO-92 (N3)	-
VP0106	-60	8.0	-0.5	60	-3.5	3-Lead TO-92 (N3)	-
VP0109	-90	8.0	-0.5	60	-3.5	3-Lead TO-92 (N3)	-
VP0550	-500	125	-0.1	70	-4.5	3-Lead TO-92 (N3)	-
VP0808	-80	5.0	-1.1	150	-4.5	3-Lead TO-92 (L)	-
VP2106	-60	12	-0.5	60	-3.5	3-Lead TO-92 (N3)	-
VP2110	-100	12	-0.5	60	-3.5	3-Lead SOT-23 (K1)	-
VP2206	-60	0.9	-4.0	450	-3.5	3-Lead TO-92 (N3)	-
						3-Lead TO-39 (N2)	
VP2450	-500	30	-0.2	190	-3.5	3-Lead TO-92 (N3)	-
						3-Lead SOT-89 (N8)	
VP3203	-30	0.6	-4.0	300	-3.5	3-Lead TO-92 (N3)	-
						3-Lead SOT-89 (N8)	

Enhancement Mode MOSFET Arrays (Includes Low Threshold MOSFETs)

N-Channel

Device	Channels	BV_{DSS} min (V)	$R_{DS(ON)}$ max (Ω)	C_{ISS} typ (pF)	$V_{GS(th)}$ max (V)	Package	Application Notes
TD9944	2	240	6.0	65	2.0	8-Lead SOIC (TG)	-
TN0604	4	40	1.0	140	1.6	3-Lead TO-92 (N3) 20-Lead SOIC (WG)	AN-D09
VN2222	4	220	1.25	300	3.0	20-Lead Side Braze (NC)	-

P-Channel

Device	Channels	BV_{DSS} min (V)	$R_{DS(ON)}$ max (Ω)	Package	Application Notes
TP0604	4	-40	2.0	20-Lead SOIC (WG)	AN-D09

Complementary MOSFET Arrays

Device	BV_{DSS}/BV_{DGS}		$R_{DS(ON)}$ Max		$V_{GS(th)}$ max (V)	Package	Application Notes	Notes
	N-Channel (V)	P-Channel (V)	N-Channel (Ω)	P-Channel (Ω)				
TC1550	500	-500	60	125	4	8-Lead SOIC (TG)	-	1
TC2320	200	-200	7.0	12	2	8-Lead SOIC (TG)	-	1
TC6320	200	-200	7.0	8.0	2	8-Lead QFN (K6) 8-Lead SOIC (TG)	AN-H53	1
TC7320	200	-200	20	20	0.4 (typ)	32-Lead LQFP (FG)	AN-H53	2

Notes:

1. N & P-channel pair.
2. Six N & P-channel pairs.

Insulated Gate Bipolar Transistors (IGBT)

Device	$BV_{(continuous)}$ (V)	$IC_{(continuous)}$ (A)	$IC_{(pulsed)}$ (A)	Package
GN2470	700	1.0	3.5	3-Lead TO-252 (K4)

Application & Design Notes

Application & Design Notes

Title	Description
AN-D02	Low-Threshold MOSFETs: Structure, Performance and Applications
AN-H03	Basics of EL Panel Drive Techniques
AN-D09	TN0604/TN2504: Battery Back-Up Utilizes Low Threshold MOSFETs
AN-D10	LND150: Off-Line Compact Universal Linear Regulator
AN-D11	LND150: ± 500 Volt Protection Circuit
AN-D12	LND150: High Voltage Ramp Generator
AN-H13	HV9110/HV9120: Designing High-Performance Flyback Converters
AN-D14	LP0701: Low Dropout 3.0 Volt Linear Regulator
AN-D15	Understanding MOSFET Data
AN-D16	LND150: High Voltage Regulators and Linear Circuits
AN-D17	LND150: High Voltage Off-Line Linear Regulator
AN-D18	DN2540: High Voltage Regulators and Linear Circuits
AN-H20	HV3418: HVCMOS Drivers for Non-Impact Printing
AN-H21	HV91xx: Calculating Power Dissipation and Supply Current
AN-H22	HV91xx: Customizing the Linear Circuitry Response via the Bias Resistor
AN-H23	HV91xx: Avoiding Turn-on Oscillations
AN-H24	HV9120: Expected Voltages and Waveforms from the Flyback Converter
AN-D25	LND150: Efficient Switchmode Power Supply Start-Up Circuit
AN-D26	HT0440: High Voltage Isolated MOSFET Driver
AN-D27	DMOS Devices for Telecommunications
AN-D30	DN2535: Off-Line 5.0V Output Non-Isolated Linear Regulator
AN-H32	HT0638: Electronic Line Switch
AN-H34	HV823/HV825: EL Lamp Driver Circuits
AN-H36	HV809: EL Lamp Driver for Battery Powered and Off-line Equipment
AN-H37	HV440: High Voltage Ring Generator
AN-H38	HV826: EL Lamp Driver Circuits
AN-H39	HT18/HT19: Electronic Line Switch
AN-H40	LR8: High Voltage Linear Regulator and Constant Current Sources
AN-H42	HV430: 105 Volt RMS Ring Generator
AN-H43	HV857: EL Lamp Driver Circuits for Low Audible Noise or High Brightness Applications
AN-H45	HV833: EL Lamp Driver Circuits
AN-H46	HV839: Dual EL Lamp Driver Circuits
AN-H48	HV9910/HV9910B: Buck-based LED Lamp Drivers
AN-H50	HV9910/HV9910B: Constant Off-Time, Buck-Based LED Lamp Drivers

Application & Design Notes (cont.)

Title	Description
AN-H51	HV9930/AT9933: Designing a Boost-Buck (Ćuk) Converter
AN-H52	HV9931: Unity Power Factor LED Lamp Driver
AN-H53	MD1210/TC6320: High Voltage Pulser Circuits
AN-H54	MD1810/MD1811: Driving a High Voltage Pulser
AN-H55	HV9911: Boost Converter LED Lamp Driver
AN-H56	MD1812 and MD1813: Designing an Ultrasound Pulser with the Composite Drivers
AN-H58	HV9930/AT9933: Improving the Efficiency of a Controlled Boost-Buck Converter
AN-H59	High Voltage DC/DC Converter for Supertex Ultrasound Transmitter Demoboards
AN-H60	Designing a Four-Channel, Return-to-Zero, Ultrasound Pulser Using Supertex HV7370 & HV748 ICs
AN-H61	MD7120: Class-D Audio Amplifier Design
AN-H63	HV857 EL Lamp Driver Circuits
AN-H64	Compatibility and Functional Differences between the HV9961 and HV9910B LED Drivers
AN-H65	SR10: Synchronous CCSS Regulator
DN-H02	HV9922: Isolated Constant Power Converter
DN-H03	HV9922: Alternate Use as an Off-line Non-Isolated 50mA to 100mA Auxiliary Power Supply
DN-H04	HV9931: Charting a Driver Design
DN-H05	HV9931: 56W Off-line LED Lamp Driver Design
DN-H06	HV9931: 14W Off-line LED Lamp Driver Design
DN-H07	HV461: 15 REN Ring Generator

All Application Notes can be downloaded at: www.supertex.com/documents/application_notes.html

Packaging Information

Supertex Position Statement on Green/Lead-Free RoHS Compliant Products

Introduction

Environmental concerns around the world are fueling the need for lead-free solutions in electronic components and systems within the semiconductor and electronics industries. Potential health hazards posed by Lead (Pb) contamination are a major concern to everyone. Supertex's Green/Lead (Pb)-Free initiative ensures the complete removal of lead from our entire device portfolio, without adversely affecting technical specifications or your own manufacturing processes. Supertex now offers Green/Lead (Pb)-Free RoHS-compliant products, and will offer them exclusively as of January 1, 2008.

Green Package

A semiconductor package is considered "Green" when four elements-lead (Pb), bromine (Br), chlorine (Cl) and antimony (Sb_2O_3) are not intentionally added during the manufacturing process. A Green product contains materials with less than 1000ppm of lead content and less than 900ppm of halogen and antimony content. To achieve these levels in the semiconductor manufacturing process, Supertex uses only mold compounds and substrate materials that contain less than 900ppm of chlorine and bromine, known as halogens, and avoids the use of brominated flame retardant (Sb_2O_3 listed by IARC as a carcinogen) where technically and economically possible

GREEN PACKAGE	SUBSTANCE	UPPER LIMIT	PACKAGE MATERIAL
Lead-Free	Pb	<1000ppm	Lead finish, Solder balls
Halogen-Free	Cl + Br	<900ppm	Mold Compound, Laminate, Solder resist
Antimony-Free	Sb_2O_3	<900ppm	Mold Compound, Laminate, Solder resist

Supertex uses this Green mold compound plus a Lead (Pb)-Free plating for finishing the leads of integrated circuits. The material used in this manufacturing step is pure tin. Further, Supertex does not support the use of non-Green mold compounds plus Pb-Free plating products. This means the Supertex manufacturing process is totally Green, which, by definition, includes Pb-Free.

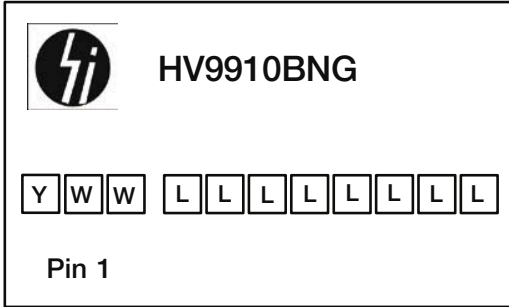
Marking

Once the industry adopts standards on marking Green/Lead (Pb)-Free certified parts, Supertex will make every effort to adhere to the standards.

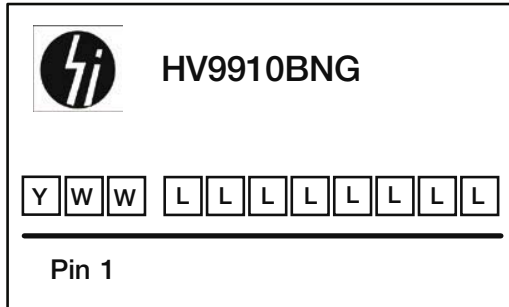
Package Marking Instructions for RoHS Compliant - Green/Lead (Pb) - Free Parts

Example:

Standard Part Top Marking



Green/Lead (Pb)-Free Top Marking



YY: Year Sealed
WW: Week Sealed
L: Lot Number

Note:
The only difference between markings on standard parts and Green/Lead (Pb)-Free parts is that the last row of the top mark is underlined.

Ordering Supertex Green/Lead (Pb) - Free Parts

Example:

Code for standard tin-lead product: HV9910BNG

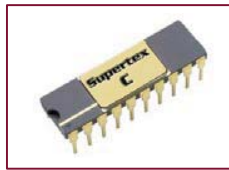
Code for Green/Lead (Pb)-Free products: HV9910BNG-G

To order Supertex Green/Lead (Pb)-Free products:	
Orders for parts with Green/Lead (Pb)-Free plating can be placed using the following flow or options:	
Option 1	<p>To order a standard non-tape and reel part that is available with Green/Lead (Pb)-Free plating, add "-G" to the part number:</p> <p>For example: Sn/Pb part: HV9910BNG Green part: HV9910BNG-G</p>
Option 2	<p>To order a part with Green/Lead (Pb)-Free plating that is available in tape and reel, add "-G" and the tape and reel suffix to the part number:</p> <p>For example: Sn/Pb part: HV9910BNG M901 Green part: HV9910BNG-G M901</p>

Packaging Information



B2
84-Lead BCC+



C/N/C
20-Lead Ceramic
Side-Brazed DIP



DJ
28-Lead Quad Cerpac



DJ
44-Lead Quad Cerpac



FB
64-Ball FCBGA



FG
32-Lead LQFP



FG
48-Lead LQFP



FG
64-Lead LQFP



FG
100-Lead MQFP



G1
26-Lead LLGA



GA
25-Ball fpBGA



GA
26-Ball fpBGA



K1/T
3-Lead
TO-236AB (SOT-23)



K1
5-Lead
TO-236AB (SOT-23)



K2
7-Lead TO-220



K4
3-Lead
TO-252 (D-PAK)



K5
3-Lead SOT-223



K6
6-Lead DFN



K6
8-Lead DFN



K6
10-Lead DFN



K6
12-Lead QFN



K6
14-Lead QFN



K6
16-Lead QFN



K6
32-Lead QFN



K6
40-Lead QFN



K6
44-Lead QFN



K6
48-Lead QFN



K7
8-Lead DFN



K7
10-Lead DFN



K7
12-Lead QFN



K7
16-Lead QFN



K7
32-Lead QFN



K7
40-Lead QFN

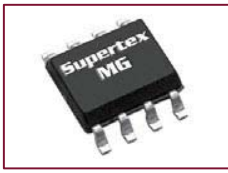


L, LL, N3
TO-92



LG/TG (w/ Heat Slug)
8-Lead SOIC
Narrow Body

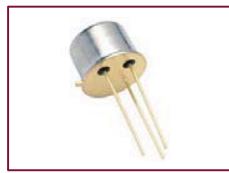
Packaging Information (cont.)



MG
8-Lead MSOP



MG
10-Lead MSOP



N2
TO-39 Metal Can



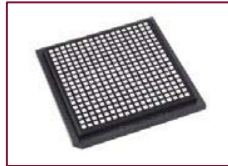
N5
3-Lead TO-220
Power Package



N7
14-Lead Ceramic
Side-Brazed



N8
3-Lead TO-243AA
(SOT-89)



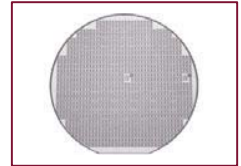
ND
Die in Waffle Pack



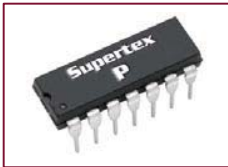
NG
14-Lead SO
Narrow Body



NG
16-Lead SO
Narrow Body



NW
Die in Wafer Form



P
14-Lead Plastic DIP



P
16-Lead Plastic DIP



P
28-Lead Plastic DIP



P
40-Lead Plastic DIP



PG
44-Lead PQFP



PG
64-Lead PQFP



PG
80-Lead PQFP



PG
100-Lead PQFP



PJ
20-Lead PLCC



PJ
28-Lead PLCC



PJ
44-Lead PLCC



SG
8-Lead Power SOIC
Narrow Body



WG
16-Lead SOIC
Wide Body



WG
20-Lead SOIC
Wide Body



WG
24-Lead SOIC
Wide Body



WG
28-Lead SOIC
Wide Body

Packaging Specifications

Suffix	Package Type	Standard Packing	Optional Packing	
		Tube/Tray/Bag/T&R	T&R Qty	T&R Suffix
B2	84-Lead BCC+	260/Tray	--	--
C	20-Lead Ceramic Side-Brazed	--	--	--
DJ	28-Lead Quad Cerpac	--	--	--
DJ	44-Lead Quad Cerpac	--	--	--
FB	64-Ball FCBGA	348/Tray	--	--
FG	32-Lead LQFP	250/Tray	1,000/Reel	M931
FG	48-Lead LQFP	250/Tray	1,000/Reel	M931
FG	64-Lead LQFP	160/Tray	--	--
FG	100-Lead MQFP	66/Tray	--	--
G1	26-Lead LLGA	490/Tray	--	--
GA	25-Ball Grid Array (fpBGA)	Any Qty (490/Tray)	1,500/Reel	M918
GA	26-Ball Grid Array (fpBGA)	Any Qty (490/Tray)	1,500/Reel	M918
K1	3-Lead TO-236AB (SOT-23)	3,000/Reel	--	--
K1	5-Lead TO-236AB (SOT-23)	2,500/Reel	--	--
K2	7-Lead TO-220	50/Tube	--	--
K4	3-Lead TO-252 (D-PAK)	2,000/Reel	--	--
K5	3-Lead SOT-223	2,500/Reel	--	--
K6	6-Lead DFN (3x3, Pitch 0.95)	3,000/Reel	--	--
K6	8-Lead DFN (4x4, Pitch 1.00 Dual Pad)	3,000/Reel	--	--
K6	10-Lead DFN (3x3, Pitch 0.50)	3,000/Reel	--	--
K6	12-Lead QFN (4x4, Pitch 0.80)	3,000/Reel	--	--
K6	14-Lead QFN (5x5, Pitch 1.27)	490/Tray	--	--
K6	16-Lead QFN (4x4, Pitch 0.65)	3,000/Reel	--	--
K6	32-Lead QFN (5x5, Pitch 0.50)	490/Tray	2,500/Reel	M932
K6	32-Lead QFN (7x7, Pitch 0.65)	260/Tray	--	--
K6	40-Lead QFN (6x6, Pitch 0.50)	490/Tray	--	--
K6	44-Lead QFN (7x7, Pitch 0.50)	260/Tray	--	--
K6	48-Lead QFN (7x7, Pitch 0.50)	260/Tray	--	--
K7	8-Lead DFN (3x3, Pitch 0.65)	3,000/Reel	--	--
K7	10-Lead DFN (3x3, Pitch 0.50)	3,000/Reel	--	--
K7	10-Lead DFN (4x4, Pitch 0.65)	3,000/Reel	--	--
K7	12-Lead QFN (3x3, Pitch 0.50)	3,000/Reel	--	--
K7	16-Lead QFN (3x3, Pitch 0.50)	3,000/Reel	--	--
K7	32-Lead QFN (6x6, Pitch 0.50)	490/Tray	--	--

Packaging Specifications (cont.)

Suffix	Package Type	Standard Packing	Optional Packing	
		Tube/Tray/Bag/T&R	T&R Qty	T&R Suffix
K7	40-Lead QFN (5x5, Pitch 0.40)	490/Tray	--	--
LG	8-Lead SOIC (Narrow Body)	2,500/Reel	--	--
L / LL	3-Lead TO-92	1,000/Bag	2,000/Reel	P002, P003, P005, P013, P014
MG	8-Lead MSOP	2,500/Reel	--	--
MG	10-Lead MSOP	2,500/Reel	--	--
N2	3-Lead TO-39 (Metal Can)	500/Bag	--	--
N3	3-Lead TO-92 (for DMOS)	1,000/Bag	2,000/Reel	P002, P003, P005, P013, P014
N3	3-Lead TO-92 (for HVIC)	1,000/Bag	--	--
N5	3-Lead POWER TO-220	50/Tube	--	--
N8	3-Lead TO-243AA (SOT 89)	2,000/Reel	--	--
NC	20-Lead Ceramic Side-Brazed	--	--	--
NG	14-Lead SOIC (Narrow Body)	53/Tube	2,500/Reel	M905
NG	16-Lead SOIC (Narrow Body)	45/Tube	1,000/Reel	M901
P	14-Lead PDIP (300 mils)	24/Tube	--	--
P	16-Lead PDIP (300 mils)	24/Tube	--	--
P	28-Lead PDIP (600 mils)	13/Tube	--	--
P	40-Lead PDIP (600 mils)	9/Tube	--	--
PG	44-Lead PQFP	96/Tray	500/Reel	M919
PG	64-Lead PQFP	66/Tray	--	--
PG	80-Lead PQFP	66/Tray	--	--
PG	100-Lead PQFP	66/Tray	--	--
PJ	20-Lead PLCC	48/Tube	1,000/Reel	M910
PJ	28-Lead PLCC	38/Tube	500/Reel	M904
PJ	44-Lead PLCC	27/Tube	500/Reel	M903
SG	8-Lead SOIC w/Heat Slug	2,500/Reel	--	--
T	3-LeadL TO-236AB (SOT-23)	3,000/Reel	--	--
TG	8-Lead SOIC (Narrow Body-Dual)	2,000/Reel	--	--
WG	16-Lead SOW (Wide Body)	1,000/Reel	--	--
WG	20-Lead SOW (Wide Body)	1,000/Reel	--	--
WG	24-Lead SOW (Wide Body)	1,000/Reel	--	--
WG	28-Lead SOW (Wide Body)	1,000/Reel	--	--

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