



PRODUCT SELECTOR GUIDE 2024

A comprehensive catalog of high-performance analog and mixed-signal integrated circuit (IC) products for all your design needs.



WHO WE ARE

HMI is a beacon of innovation in the realm of power management integrated circuits. Its inception was the result of the collaborative efforts of industry veterans from Fairchild Semiconductor, united by their shared passion for advancing technology, they embarked on a journey to revolutionize the global power management industry.

As a fabless power management IC corporation, HMI set out to build a world-class company that would leave a lasting mark on the analog industry. With its headquarters in Silicon Valley, HMI strategically established several R&D locations across the United States, including Irvine, California, and Dallas, Texas, as well as in Suwon, South Korea, and Singapore. These global innovation centers allowed HMI to tap into diverse talents and cultural perspectives, fostering an environment of ingenuity and excellence.

At the core of HMI's success were its remarkable team members, a group of industry veterans and innovators who boasted an impressive track record. Drawn from renowned companies like Maxim, IDT, NXP, and OnSemi, HMI brings a wealth of experience and expertise to the table. Their collective knowledge and relentless pursuit of innovation were the driving forces behind HMI's meteoric rise.

HMI's philosophy was encapsulated in a simple promise: to bring their clients execution and creativity while being driven by the principles of speed, flexibility, and quality. HMI is committed to not just visualizing ideas but executing them flawlessly. This dedication to turning concepts into reality sets them apart in a sea of competitors.

As the years went by, HMI's technology expanded, and its reputation as an innovator in power management ICs grew stronger. Customers across various sectors sought out HMI's products and expertise, knowing that they could rely on them for cutting-edge solutions. HMI's commitment to delivering on its promises and consistently exceeding expectations earned them the trust and admiration of clients worldwide.

As the analog landscape continues to evolve, HMI stands as an admirable example of what could be achieved when industry veterans come together with a shared vision and an indomitable spirit.



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BATTERY MANAGEMENT

Battery Management Product Line

Linear Chargers

Part Number	Operating Input Voltage Range (V)	Absolute VIN Max	Maximum Charge Current (A)	Battery Charge Voltage Range (V)	Regulation Voltage Step (mV)	Power Path Support	Topology	Interface	Applications	Package
HL7040C	4.45-6.65	30	1	4.2-4.4	/	No	Linear	/	TWS Earphones, E-Cigarettes, Wearable Devices	DFN-10
HL7046	4.35-5.5	24	0.5	3.6-4.545	15	Yes	Linear	I ² C	Wearable Devices, Fitness Accessories, Low-Power Handheld Devices	WLCSP-9

Switching Chargers

Part Number	Operating Input Voltage Range (V)	Absolute VIN Max (V)	Maximum Charge Current (A)	Battery Charge Voltage Range (V)	Regulation Voltage Step (mV)	Power Path Support	Topology	Interface	Applications	Package
HL7005D	4.5-5.9	20	1.7	3.5-4.44	20	No	Buck	I ² C	Tablet PC, Smartphone, MP3 Player	WLCSP-20
HL7015	3.9-14	20	4.5	3.504-4.512	16	Yes	Buck	I ² C	Tablet PC, Smartphone, Power Bank, Portable Media Player	QFN-24
HL7019	3.9-14	20	3	3.504-4.512	16	Yes	Buck	I ² C		QFN-24
HL7019D	3.9-14	20	3	3.504-4.512	16	Yes	Buck	I ² C		QFN-24
HL7061	3.9-14	29	3	3.6/Cell-4.608/Cell	16/Cell	No	Boost	I ² C		QFN-28
HL7090	4.35-5.5	10	0.9	4.096-4.576	32	No	Buck	I ² C	Ear Pods	QFN-20
HL7095	4-12	22	3	4.0-4.63	10	No	Buck	I ² C	Smartphones, Tablet PC, Mobile IoT Devices	WLCSP-30

Switched Capacitor Chargers

Part Number	VIN Range (V)	VOUT Range (V)	VIN AMR (V)	IOUT Max (A)	Charge VBAT Max (V)	Switching Frequency Range (kHz)	Iq (Typ) (μA)	Modes (CP/Charge Pump Mode)	Applications	Package
HL7132	3.0-11.7	3.0-5.5	20	6	4.6	500-1600	5	2:1 CP FWD	Tablet PC, Smartphone, Mobile IoT Devices	WLCSP-42
HL7132D	3.0-11.7	3.0-5.5	20	6	4.6	500-1600	5	2:1 CP FWD/REV		WLCSP-42
HL7138	3.0-12.0	3.0-5.5	20	7	4.6	500-1600	5	2:1 CP FWD, Bypass FWD		WLCSP-36
HL7139A	3.0-12.0	3.0-5.5	20	8	4.6	500-1600	5	2:1 CP FWD, Bypass FWD		WLCSP-36
HL7227	5.0-22.0	5.0-10.0	26	6	11	200-1000	10	2:1 CP FWD/REV, Bypass FWD/REV	Mobile Devices, Wireless Charging Accessories	WLCSP-36
HL7137	3.0-11.7	3.0-5.5	20	7.5	4.6	500-1600	6	2:1 CP FWD, Bypass FWD	Tablet PC, Smartphone, Mobile IoT Devices	WLCSP-36

HIGH-PERFORMANCE DC-DC

High-Performance DC-DC Product Line

Buck Converters

Part Number	Input Voltage (V)	Output Voltage (V)	Maximum Charge Current (A)	Synchronous PWM (MHz)	I _q (Typ) (μA)	Interface	Transition	Key Features	Applications	Package
HL7501	2.5-5.5	0.6-1.42	6	2.4	60	I ² C	Seamless PFM/PWM	DVS with Programmable Voltage Slew Rate	Memory, AP, GPU	WLCSP-20
HL7504	2.5-5.5	1.05-3.30	2	3	60	/	Seamless PFM/PWM	Input Over-Voltage Lockout, Active Discharge When Disabled	Memory, AP, GPU	DFN-6
HL7507	2.5-5.5	0.30-2.75	1.5	3	42	/	Seamless PFM/PWM	Excellent Load and Line Transient	Memory, AP, GPU	DFN-6
HL7543	2.3-5.5	0.66-3.4	0.6	1.2	0.37	GPIO	Seamless PFM/PWM	Ultra Low I _q , VOUT Selection Through GPIO	Wearables, Fitness Trackers, Smart Watches	WLCSP-8
HL7546	2.2-5.5	0.5-3.3	0.8	1.5	2.6	I ² C	Seamless PFM/PWM	0.8A Synchronous Step-Down Converter	Wearables, Fitness Trackers, Smart Watches	WLCSP-8
HL7593	2.5-5.5	0.600-1.394	3	2.4	48	I ² C	Seamless PFM/PWM	DVS with Programmable Voltage Slew Rate	Memory, AP, GPU	WLCSP-15
HL7594K	2.5-5.5	0.600-1.394	3	2.4	48	I ² C	Seamless PFM/PWM	I ² C Programmable 3A DVS Buck Converter	Smart Watches	WLCSP-16

Boost Converters

Part Number	Input Voltage (V)	Output Voltage (V)	Maximum Output Current (A)	Switching Frequency (MHz)	I _q (Typ) (μA)	Interface	Transition	Key Features	Applications	Package
HL7601	2.3-5.5	2.85-6.00	2	2.5	70	I ² C	Seamless PFM/PWM	Auto Bypass or Forced Bypass Mode, Output Capacitor Discharge	Audio Power Amplifier, 2G/3G/4G RF Power Amplifier	WLCSP-16
HL7603	2.3-5.5	2.85-5.50	4	2.5	15/20/35	I ² C	Seamless PFM/PWM	Auto Bypass or Forced Bypass Mode, Output Capacitor Discharge	Smartphone, Tablet PC, Wireless Communication Devices, 2G/3G/4G RF Power Amplifier, Audio Power Amplifier, USB OTG Power Source, Si-Anode Battery Powered Devices	WLCSP-16
HL7612	2.5-5.5	3.8-6.0	1.5	2.5	22	/	Seamless PFM/PWM	Selectable Standby Mode or True Load Disconnect During Shutdown	Smartphone, Mono and Stereo APA Applications	WLCSP-9

INTERFACE SWITCH PROTECTIONS

Interface Switch Protections Product Line

Audio and Data Switches

Part Number	Input Voltage (V)	USB High Speed (480 Mbps) Switch		Audio Switch			Applications	Package
HL5280	2.7-5.5	-3dB Bandwidth: 900MHz	3.5Ω R _{ON} Typical	Negative Rail Capability: -3V to +3V	THD+N = -107dB, 1V _{RMS} , F = 20Hz-20kHz, 32Ω Load	0.8Ω R _{ON} Typical	Audio Sense Path, MP3 Players, Tablet PCs, Media Players	WLCSP-25

USB Port Protections and Load Switches

Part Number	Input Voltage (V)	VOUT AMR Max (V)	OVP (V)	Continuous Current Max (A)	Iq (μA)	ESD (kV)	Switches	Applications	Package
HL5075	HL5075WL01: 2.5-13.5	28	14.2	3	45	Contact: ±8 Air: ±15	1	Smartphone, Tablet PC, Mobile IoT Devices	WLCSP-9
	HL5075WL02: 2.5-10		10.4		42				
	HL5075WL03: 2.5-5.5		5.8		38				
	HL5075WL04: 2.5-11		11.5		44				
HL5095(K)	HL5095KA: 2.5-13.5	28	14.2	3	45	Contact: ±8 Air: ±15	1	PCs, Tablets, Mobiles	WLCSP-9
	HL5095KB: 2.5-10.0		10.4		40				
	HL5095KC: 2.5-5.5		5.8		35				
HL5097	0-5.5	28	5.8 (WL01) 4.8 (WL02)	1.25	25	Contact: ±8 Air: ±15	2	Smartphone, Mobile IoT Devices	WLCSP-6
HL5099	2.7-5.5	28	6/6.8/10/11.5/14/17/23 Programmable	3	3	Contact: ±8 Air: ±15	3	PCs, Tablets, Mobiles	WLCSP-42
HL8261	2.5-5.5	24	CC1/2: 6.0, SBU1/2: 4.5 (WL01), SBU1/2: 3.83 (WL02)	IN_CC1/2: ±1.25, IN_SBU1/2: ±0.1	40	IN_CC1/2, IN_SBU1/2, Contact: ±8, Air: ±15	4	Personal Computers, Chromebooks, Docking Stations	WLCSP-16

SIM Card Level Shifters

Part Number	Input Voltage (V)		Propagation Delay (ns)	Iq (uA)	ESD (kV)	CLK_HOST Frequency (MHz)	Applications	Package
HL5301	Host Side (VCCA) 09~2.0	SIM Card (VCCB) 1.5~3.6	8	0.3	Contact: ±8 Air: ±15	10	Smartphone, Tablet PC, Wireless Modem	STSLP-10 WLCSP-9

Interface Switch Protections Product Line

Coil Switches

Part Number	Input Voltage (V)	VOUT AMR Max (V)	OVP (V)	Continuous Current Max (A)	Iq (μA)	ESD (kV)	Switches	Applications	Package
HL5502	0-30	±40	/	2	SW OFF Current: 16 SW ON Current: 10	ESD HBM: ±2 ESD CDM: ±0.5	1	Smartphone, Tablet PC	WLCSP-16

E-Fuses and Hot Swap

Part Number	Input Voltage (V)	Vabsmax_Cont (V)	Current Limit (A)	R _{ON} Typ (mΩ)	Over-Current Response	Over-Voltage Response	Fault Response	Soft Start	Reverse Current Blocking	Applications	Package
HL8511	4.5-13.8	22	1-5	28	Clamp Limiting	Clamp	Auto Retry / Latch Off	Programmable	No	Server, SSD, POS, USB Port	DFN-10L
HL8512	4.5-13.8	22	1-5	28	Clamp Limiting	Clamp	Auto Retry / Latch Off	Programmable	Yes	Server, SSD, POS, USB Port	DFN-10L
HL8521	4.5-5.5	22	1-5	28	Clamp Limiting	Clamp	Auto Retry / Latch Off	Programmable	No	Server, SSD, POS, USB Port	DFN-10L
HL8522	4.5-5.5	22	1-5	28	Clamp Limiting	Clamp	Auto Retry / Latch Off	Programmable	Yes	Server, SSD, POS, USB Port	DFN-10L

CAMERA LENS MANAGEMENT

Camera Lens Management Product Line

Auto Focus - Opened Loop

Part Number	Type	Power Supply Voltage VDD) (V)	Driving Current (Typical) (mA)	VDDIO 1.2V	Mode	Interface	Features	Applications	Package
DW9714P/V	Normal	2.3~4.3	120	N/A	Fast Mode and Fast Mode Plus (I ² C), SAC™ (Smart Actuator Control) Mode	I ² C	120mA Output Driver with 10-Bit Resolution DAC NRC & Advanced Ringing Control (SAC)	Mobile Cameras, Digital Still Cameras, Camcorders, Web Cameras, Action Cameras	WLCSP-6
DW9718P	Normal	2.3~4.8	120	Yes	SAC™ (Smart Actuator Control) Mode, Fast Mode Plus (I ² C)	I ² C	1.2V I/F Available Conventional AF Driver IC, Advanced Ringing Control (SAC)	Mobile Cameras, Camcorders, Web Cameras	WLCSP-6
DW9768V	Memory Embedded	2.65~3.3	100	N/A	SAC™ (Smart Actuator Control) Mode, NRC™ (Noise Reduction Control) Mode, Fast Mode and Fast Mode Plus (I ² C)	I ² C	100mA, 10-Bit Resolution DAC Embedded 10Kbyte EEPROM NRC & Advanced Ringing Control (SAC)	Mobile Cameras, Digital Still Cameras, Camcorders, Web Cameras, Action Cameras	WLCSP-6
DW9769	Memory Embedded	2.65~3.3	100	N/A		I ² C	100mA, 10-Bit Resolution DAC Embedded 16Kbyte EEPROM NRC & Advanced Ringing Control (SAC)		WLCSP-6
DW9800V/K	Normal	2.3~4.8	±100/±130 Optional	N/A	SAC™ (Smart Actuator Control) Mode, Fast Mode Plus (I ² C)	I ² C	High Current Capability, Advanced Ringing Control (SAC) Thermal Shutdown Function, I ² C Slave Address Change Support by Factory Option	Mobile Cameras, Digital Still Cameras, Camcorders, Web Cameras, Nano Actuator	WLCSP-6
DW9800S	Normal	2.3~4.8	±100/ ±130 Optional	Yes	SAC™ (Smart Actuator Control) Mode, Fast Mode Plus (I ² C)	I ² C	1.2V I/F Available High Current Capability Advanced Ringing Control (SAC)		WLCSP-6
DW9738	Memory Embedded	2.65~3.3	±100/ ±130 Optional	N/A	SAC™ (Smart Actuator Control) Mode, Fast Mode and Fast Mode Plus (I ² C)	I ² C	±100mA/±130mA, 10-Bit Resolution DAC Advanced Ringing Control (SAC) Embedded 16KByte EEPROM	Mobile Cameras, Digital Still Cameras, Camcorders, Web Cameras, Action Cameras	WLCSP-6

Auto Focus - Closed Loop

Part Number	Type	Power Supply Voltage VDD) (V)	Maximum Output Current (mA)	VDDIO 1.2V	Interface	Features	Applications	Package
DW9825H	High Performance	2.65~3.6	±160	N/A	I ² C	Multi Hall CL-VCM, Advanced PID Controller, Self Settling Time Measure for Spring Type Actuator	Mobile Cameras, Digital Still Cameras, Camcorders, Web Cameras, Action Cameras	WLCSP-6
DW9827C	High Performance	2.65~3.6	±170	Yes	I ² C	High Performance AFE, 1.2V I/F & 14-Bit Position Control 16KB User Memory		WLCSP-6

Camera Lens Management Product Line

Optical Image Stabilization

Part Number	Type	Memory	Driver	VDDIO 1.2V	Interface	Features	Applications	Package
DW9784	Folded & C-Zoom	eFlash 52KB SRAM: 20KB	Constant Linear Driver for OIS (I_{OIS} =200mA, 2-Ch, 11-Bit) Constant Linear Driver for Bi-Directional Open-Loop AF (IAF=130mA, 1-Ch, 11-Bit)	N/A	I ² C/SPI	2CH OIS + OLAF Controller Embedded 32-Bit DSP	Camera Module, DSC, DVC	WLCSP-27
DW9786	Folded & C-Zoom	eFlash 64KB SRAM: 40KB	OIS: Current Type Linear Driver 2-Ch $I_{max.} = 200mA$ AF: Current Type Linear Driver 1-Ch $I_{max.} = 200mA$	N/A	I ² C/SPI	3CH OIS Controller High Performance 32-Bit MCU	Mobile Cameras, Digital Still Cameras, Camcorders, Web Cameras, Action Cameras	WLCSP-44
DW9787	SMA	eFlash 64KB, (SRAM 32KB Program)	ADC: 12-Bit for Resistance and Temperature Sensing DAC: 8-Bit for Offset Adjust of OpAmp	N/A	I ² C/SPI	4CH SMA Controller High Performance AFE		WLCSP-24
DW9828C	eOIS	32 Byte EEPROM	H-Bridge Driver VCM Driver ($I_{max.}$ =170mA, 13-Bit)	Yes	I ² C	Hall 1-Chip CL-VCM, High Performance AFE 14-Bit Position Control, 1.2V I/F Loop Gain Adjustment	Mobile Cameras, Digital Still Cameras, Camcorders, Web Cameras, Action Cameras	WLCSP-6
DW9828N	eOIS	32 Byte EEPROM	H-Bridge Driver VCM Driver ($I_{max.}$ =170mA, 13-Bit)	Yes	I ² C			WLCSP-6

AUTOMOTIVE AEC-Q GRADE

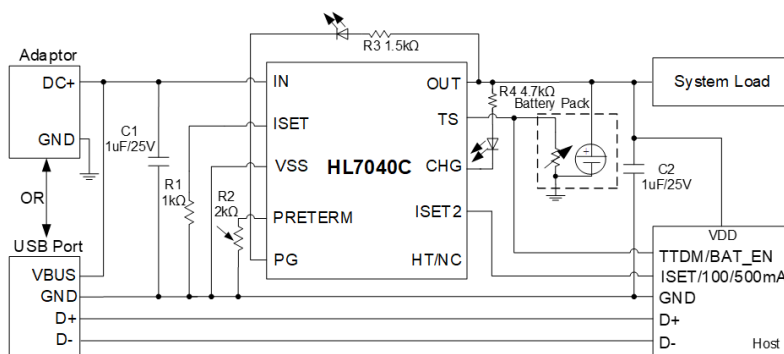
Automotive Product Line										
DC-DC Converters										
Part Number	Input Voltage (V)	Output Voltage (V)	Maximum Output Current (A)	Switching Frequency (kHz)	AEC-Q100 Qualified	Iq (Typ) (μA)	Interface	Transition	Applications	Package
HL7509FNQ	2.5-5.5	0.60-1.23	5	2400	Yes	70	I²C	Seamless PFM/PWM	Automotive, Infotainment System	DFN-14
DC-DC Controllers										
Part Number	Input Voltage (V)	Output Voltage (V)	Maximum Output Current (A)	Switching Frequency (kHz)	AEC-Q100 Qualified	Iq (Typ) (μA)	Key Features		Applications	Package
HL8021	4.5-40	4.5-40	N/A	100-3000	/	14	100% Duty Cycle Programmable Frequency from 100kHz to 3MHz Spread Spectrum for Lower EMI		Automotive, Infotainment, Telecommunication	DFN-16
LDOs										
Part Number	Input Voltage (V)	Adjustable LDO VOUT (V)	Maximum Output Current (A)	High PSRR	AEC-Q100 Qualified	Iq (Typ) (μA)	Key Features		Applications	Package
HL8743	4.5-40V	1.5-20	0.35	80dB at 100Hz	Grade 1	600	VIN 45V Load Dump, Switch Mode by Shorting FB to GND, Adjustable Current Limit, Current Sensing Feature		Infotainment Active-Antenna Power Supplies, Surround-View Camera Power Supplies, High-Side Power Switch	HTSSOP -16
Power Switches										
Part Number	VIN Min (V)	VIN Max (V)	Absolute VIN Max (V)	Output Current Max (A)	Continuous Current Max (A)	Current Limit Max (A)	Key Features		Applications	Package
HL8518	4.1	40	42	4	4	13	Automotive Single Channel High Side Switch with Full Diagnostic and Protection		Power Switch for Low Wattage Lamp, High-Side Relays and Valve, General Resistive, Inductive, and Capacitive Loads	HTSSOP -14

FEATURED PRODUCTS

Battery Management

HMI excels in compact integrated lithium battery charging ICs tailored for mobile devices, IoT, and consumer electronics. Our wide array of battery management products offering includes advanced protocols like UBS PD, universal fast charging, and voltage open-loop multi-step CC charging.

HL7040C: 1A, Single-Input, Single Cell Li-Ion and Li-Pol Battery Charger with Auto Start



Key Features

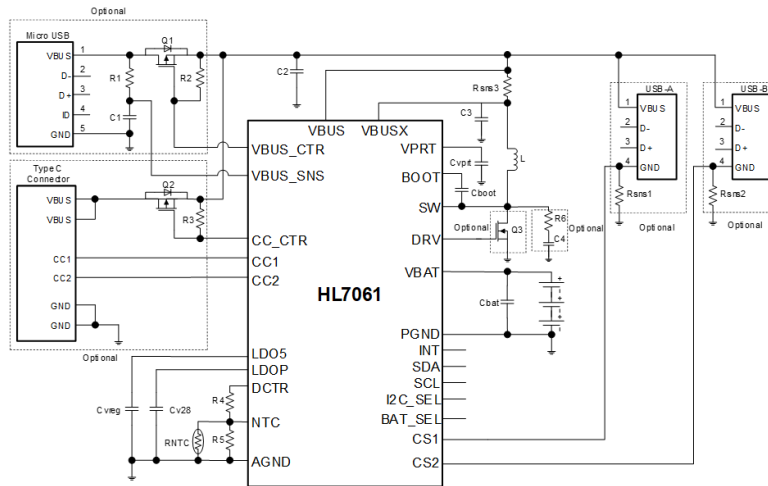
- Charging
 - 1% Charge Voltage Accuracy
 - 10% Charge Current Accuracy
 - Pin Selectable USB 100mA and 500mA Maximum Input Current Limit
- Programmable Termination and Pre-charge Threshold
- Protection
 - 30V Input Rating; with 6.6V or 7.1V Input Overvoltage Protection
 - Input Voltage Dynamic Power Management
 - 125°C Thermal Regulation; 150°C Thermal Shutdown Protection
 - OUT Short-Circuit Protection and ISET Short Detection
 - Operation over JEITA Range via Battery NTC-1/2 Fast Charge Current at Cold 4.06V at Hot
 - Fixed 10 Hour Safety Timer
- System
 - Automatic Termination and Timer Disable Mode (TTDM) for Absent Battery Pack with Thermistor
 - Status Indication-Charging/Done
 - Available in Small 2mm x 2mm DFN-10 Package
 - Integrated Auto Start Function for Production Line Testing
- Applications: Smartphones, PDAs, MP3 Players, Low-Power Handheld Devices

Part Number	HL7040CFN01	HL7040CFN03	HL7040CFN04
$V_{O(REG)}$	4.20V	4.35V	4.40V
V_{OVP}	6.6V	6.6V	6.6V
PreTerm	Yes	Yes	Yes
ASI/ASO	No	No	No
TS/BAT_EN	TS (JEITA)		
PG	Yes		
CC Current (0-10°C)	50%		
Package	2mm x 2mm DFN-10		

FEATURED PRODUCTS

Battery Management

HL7061: 5V/3A Boost 2-3S Li-ion Battery Charger with 5.4A Buck Output



Key Features

- Support 2-3s Li-ion Battery
- Integrated MOSFET
- 0.5MHz Synchronous PWM, small 2.2μH Inductor
- Max Charge Current: 3.1A
- 20V VIN max, 3.9V-14V VIN Operational
- Typical Quiescent Current: <50μA
- VDP and IDP Auto-adjust to Actual Adapter Power Capacity
- Integrated USB Port Detection
 - D+/D- BC1.2 Standard
 - Type-C UFP CC detection
- Integrated Buck Discharge
 - 3.2-12Vout Range, 10mV min Step for Type-C PD PPS
 - QC 2.0/3.0/4.0 and Other Charging Standard
 - 3.6A max with Internal Low-side MOSFET
 - 5.4A max with External Low-side MOSFET
 - Type-C DFP CC Detection
- Integrated CC Logic Detection (CC1/CC2)
- Full JEITA Compliance with Battery Temperature Detect
- 4mm x 4mm QFN-28 Package
- Applications: Laptops, Tablets, Power Banks

Part Number	HL7061FN01	HL7061FN02	HL7061FN03
VBUS Current Limit (Default)	500mA	2100mA	1900mA
IPRECHG (Default)	400mA	400mA	400mA
ITERM (Default)	200mA	200mA	200mA
VBATLOWV (Default)	3.1V	2.9V	3.1V
Charge Termination	Yes	No	Yes
Safety Timer	Yes	No	Yes
Automatic Load Detection	Yes	No	Yes
LDOP Default Voltage	3.3V	3.3V	3.3V

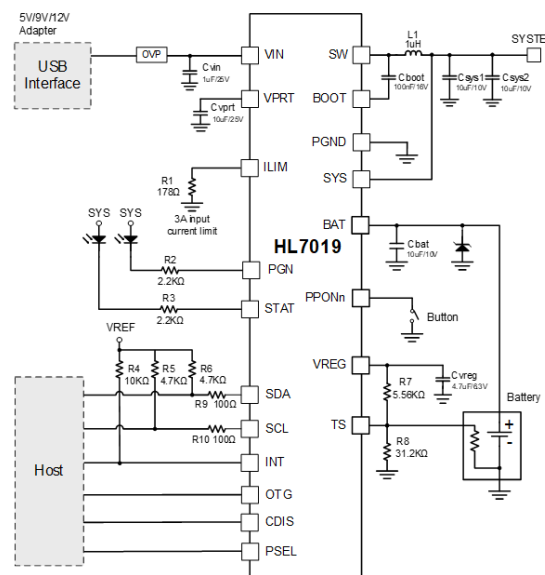
FEATURED PRODUCTS

Battery Management

HL7019: 3A I²C Controlled USB/Adapter Li-ion Battery Charger with Power Path and 2.1A OTG Boost

Key Features

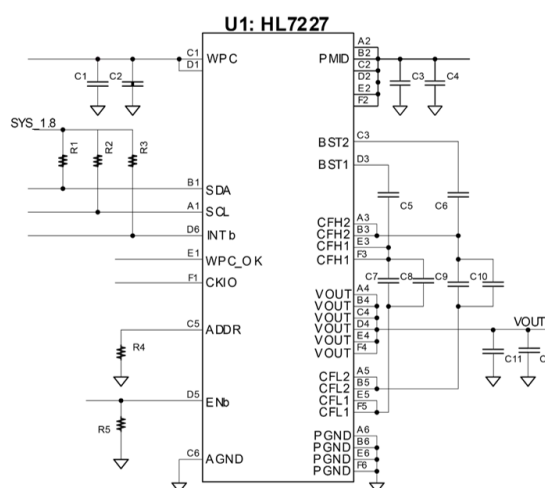
- Integrated MOSFET
- 1.5MHz Synchronous PWM, small 1 μ H inductor
- Max charge current: 3A
- 20V VIN max, 3.9V-14V VIN operational
- VDP and IDP auto adjust to actual adapter power capacity
- Integrated power path management
- Integrated USB detection (PSEL)
 - Support BC1.2 standard
- Battery impedance compensation
 - Extend CC charging, reduce charge time
- Re-activation function for short-circuit protected battery
- USB OTG boost: 5V/2.1A max
- System reset function: battery removal
- Shipping mode and low battery leakage current
- Charge status output for LED or host processor
- 4mm x 4mm QFN-24 package
- Applications: Tablet PCs, Smartphones, Power Banks



HL7227: Dual-Phase 60W Charge Pump Converter

Key Features

- 22V max operational input voltage with 26V tolerance for CAP divider 2:1 mode
- 10V max operational input voltage with 16V tolerance for CAP divider 1:2 mode
- 11V max operational output voltage for CAP Divider 2:1 mode
- 13V max operation output voltage for Bypass mode
- 98% efficient at 10V/3A output
- 97.5% efficient at 10V/4.5A output
- Dual input supply ports WPC or PMID
- Dual-phase switched capacitor architecture optimized for 50% duty cycle under CP mode
- 200kHz to 1000kHz selectable switching frequency
- Low input voltage 4V to 13V for BP mode
- Automatic switch between BP mode and CP mode in forward direction
- 2.6mm x 2.8mm 6 x 6 = 36-bump WLCSP package
- Applications: Mobile Devices, Wireless Charging Accessories



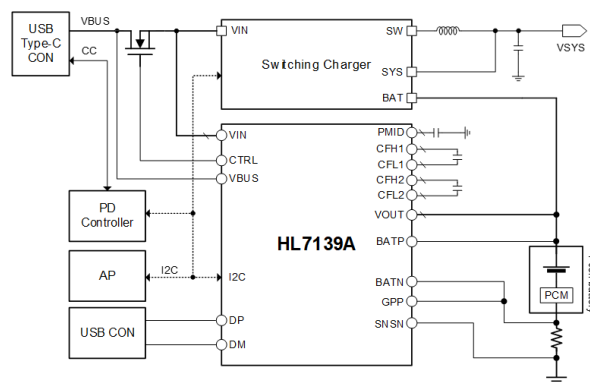
FEATURED PRODUCTS

Battery Management

HL7139A: Dual-Phase 40W Charge Pump Charger

Key Features

- High reliable AMR input/output pins
 - 37V AMR on VBUS
 - 22V AMR on VIN pin
 - 7V AMR on VOUT, BATP
- Built-in external input NFET control
- Wide range operating voltage
 - 3V to 11.7V operational VIN voltage
 - 5.5V Max operational output voltage
- Dual conversion modes
 - 2:1 charge pump mode (CP mode) Optimized for 50% Duty
 - 1:1 bypass mode (BP mode)
- High efficiency charge pump
 - 97.4% efficiency for VOUT=4.5V_5A with 2x22μF
 - 97.6% efficiency for VOUT=4.5V_5A with 3x22μF
- Selectable switching frequency from 500kHz to 1.6MHz
- 36-Bump, WLCSP 2.65mm x 2.61mm package
- Applications: Smartphones, Tablet PCs, Mobile IoT Devices

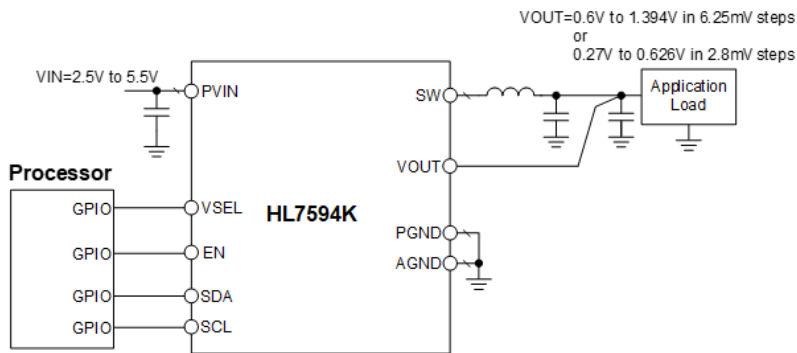


FEATURED PRODUCTS

High Performance DC-DC

HMI provides advanced DC-DC converter ICs designed specifically for smartphones, wearables, and other battery-powered portable devices. Our integrated circuits are equipped with both PFM and PWM capabilities, ensuring optimal performance and exceptional conversion efficiency.

HL7594K: I²C Programmable 3A DVS Buck Converter



Key Features

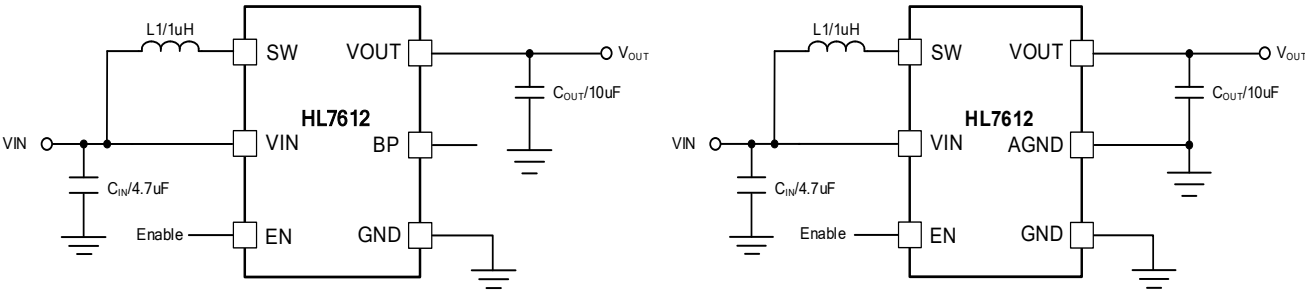
- VIN range: 2.5V-5.5V
- Programmable output voltage:
 - 0.600V to 1.394V in 6.25mV steps
 - 0.2700V to 0.6272V in 2.8125mV steps
- Maximum output current: 3A
- 2.4MHz PWM with seamless PWM/PFM switching for light-load efficiency
- Dynamic voltage scaling (DVS) with programmable voltage slew rate
- Excellent load and line transient
- Programmable VOUT startup delay times
- Quiescent current in PFM mode: 48μA
- I²C interface with SM, FM, FM+ and HS modes
- Comprehensive protection
 - Input UVLO, Input OVP, over-current and short-circuit protection, thermal shut-down
- 2.01mm x 1.21mm 15-bump WLCSP package
- Application: Memory, Hard Disk Drive and SSD, Smartphones, Tablets

Part Number	Default VOUT After POR		Default Mode After POR		EN Delay Time (ms)	I ² C Address (7-Bit)	Packing Method
	VSEL=0	VSEL=1	VSEL=0	VSEL=1			
HL7594KWL01	1.125	1.125	Auto PFM	Auto PFM	2	1010 111	Tape & Reel
HL7594KWL02	0.750	0.750	Auto PFM	Auto PFM	0	1010 001	Tape & Reel
HL7594KWL03	0.4022	0.6019	Auto PFM	Auto PFM	3	1010 000	Tape & Reel
HL7594KWL04	0.900	0.900	Auto PFM	Auto PFM	0	1010 101	Tape & Reel
HL7594KWL05	0.750	0.750	Auto PFM	Auto PFM	2	1010 010	Tape & Reel
HL7594KWL06	1.225	1.225	Auto PFM	Auto PFM	0	1010 110	Tape & Reel
HL7594KWL07	1.050	1.050	Auto PFM	Auto PFM	0	1010 111	Tape & Reel
HL7594KWL08	0.5034	0.6019	Auto PFM	Auto PFM	0	1010 110	Tape & Reel
HL7594KWL09	0.4247	0.9188	Auto PFM	Auto PFM	0	1010 001	Tape & Reel
HL7594KWL10	0.5203	0.9375	Auto PFM	Auto PFM	0	1010 111	Tape & Reel

FEATURED PRODUCTS

High Performance DC-DC

HL7612: 2.5MHz High Efficiency Boost Converter



Key Features

- 95% Efficiency at 2.5MHz operation
- 22 μ A quiescent current in normal operation
- 17.5 μ A quiescent current in standby operation
- Wide VIN range from 2.5V to 5.5V
- VIN $\geq$ VOUT operation
- IOUT $\geq$ 1000mA at VOUT = 5.0V, VIN $\geq$ 3.0V
- IOUT $\geq$ 1500mA at VOUT = 5.0V, VIN $\geq$ 4.0V
- $\pm$ 2% Total DC voltage accuracy
- Light-load PFM mode
- Selectable standby mode or true load disconnect during shutdown
- Thermal shutdown and overload protection
- Only three surface-mount external components required
- 9-bump WLCSP or DFN-6 packaging
- Applications: Smartphones, Mono and Stereo APA Applications, USB Charging Ports (5V)

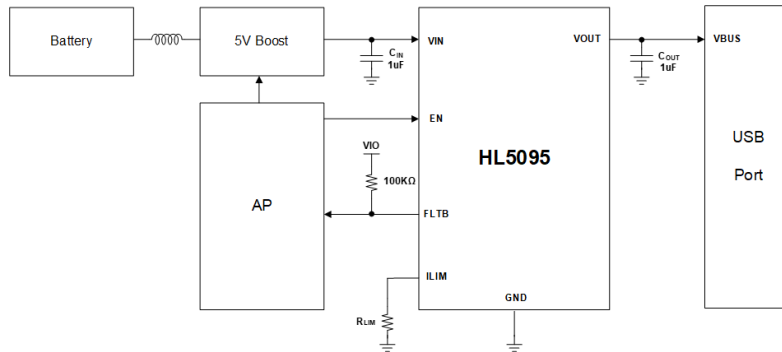
Part Number	Switching Frequency	VOUT (V)	Mode	BP/AGND	Package	Body Size
HL7612WL01	2.5MHz	5.0	PWM/PFM	BP	WLCSP	1.20 mm x 1.20 mm
HL7612WL02	2.5MHz	5.4	PWM/PFM	BP	WLCSP	1.20 mm x 1.20 mm
HL7612WL05	2.5MHz	5.0	PWM/PFM	AGND	WLCSP	1.20 mm x 1.20 mm
HL7612WL06	2.5MHz	5.3	PWM/PFM	BP	WLCSP	1.20 mm x 1.20 mm
HL7612WL07	2.5MHz	5.5	PWM/PFM	BP	WLCSP	1.20 mm x 1.20 mm
HL7612WL08	2.5MHz	5.2	PWM/PFM	BP	WLCSP	1.20 mm x 1.20 mm

FEATURED PRODUCTS

Interface Switch Protections

HMI solutions offer seamless integration of power switches and SIM card level shifters for mobile and portable applications, ensuring highly efficient power supplies and protection.

HL5095(K): Back-to-Back OVP with Adjustable Current Limit



Key Features

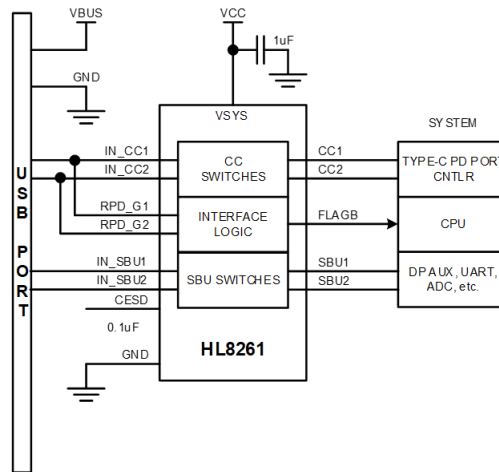
- Input voltage range :
 - HL5095A, HL5095KA: 2.5V-13.5V
 - HL5095B, HL5095KB: 2.5V-10V
 - HL5095C, HL5095KC: 2.5V-5.5V
- 28V absolute maximum voltage rating of VOUT
- Adjustable current limit with external resistor
- Integrated power FET switch with 53mΩ Rds(on) @ 5V/1A
- Built-in soft start to prevent in-rush current
- Protection
 - Over-temperature protection (OTP)
 - Over-voltage protection (OVP)
 - HL5095A, HL5095KA: 14.2V
 - HL5095B, HL5095KB: 10.4V
 - HL5095C, HL5095KC: 5.8V
 - Over-current protection
 - Reverse-current protection
- Compliance to IEC61000-4-2 on Vout
 - Contact discharge: ±8kV
 - Air gap discharge: ±15kV
- 0.4mm pitch 9-bump WLCSP package
 - HL5095A/B/C: 1.23mm x 1.23mm
 - HL5095KA/KB/KC: 1.22mm x 1.22mm
- Applications: Smartphones, Tablet PCs, Note PCs, Mobile IoT Devices

Part Number	VOUT OVP Threshold	Input Voltage Range	Package
HL5095AWL01 HL5095KAWL01	14.2V	2.5V ~ 13.5V	WLCSP-9
HL5095BWL01 HL5095KBWL01	10.4V	2.5V ~ 10V	WLCSP-9
HL5095CWL01 HL5095KCWL01	5.8V	2.5V ~ 5.5V	WLCSP-9

FEATURED PRODUCTS

Interface Switch Protections

HL8261: 4-Channels USB Type-C Port Protector



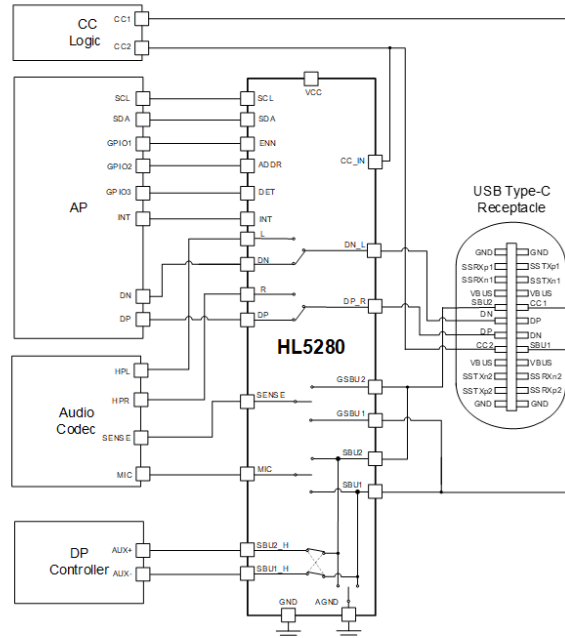
Key Features

- Short-to-VBUS over-voltage protection for CC1, CC2, SBU1, SBU2: 24VDC tolerance for connector side pins
- Over-voltage protection
 - $CC1/2 = 6.0V$
 - $SBU1/2 = 4.5V$ (HL8261WL01), $3.8V$ (HL8261WL02)
 - Ultra-fast 30ns response time
- IEC61000-4-2 ESD protection
 - $\pm 15kV$ air gap on IN_CC1/2, IN_SBU1/2
 - $\pm 8kV$ contact on IN_CC1/2, IN_SBU1/2
 - $\pm 2kV$ HBM on all pins
- IEC61000-4-5 surge protection
 - $\pm 50V$ surge tolerance on IN_CC1/2
 - $\pm 45V$ surge tolerance on IN_SBU1/2
- CC switches
 - Built-in dead battery pull-down
 - Low 230 m Ω RON for passing VCONN power
 - 140MHz bandwidth
- SBU switches
 - 4 Ω RON
 - 900MHz bandwidth
- Low quiescent current: 40 μA (Typ.)
- Moisture detection compatible
- VSYS voltage range: 2.5 to 5.5V
- Operating temperature range = $-40^{\circ}C \sim 85^{\circ}C$
- 16-bump WLCSP, 1.7mm $\times$ 1.7mm, 0.4mm pitch
- Applications: Personal Computers, Chromebooks, Docking Stations, Port Dongles and Adapters

FEATURED PRODUCTS

Interface Switch Protections

HL5280: USB Type-C Analog Audio Switch with Protection Function



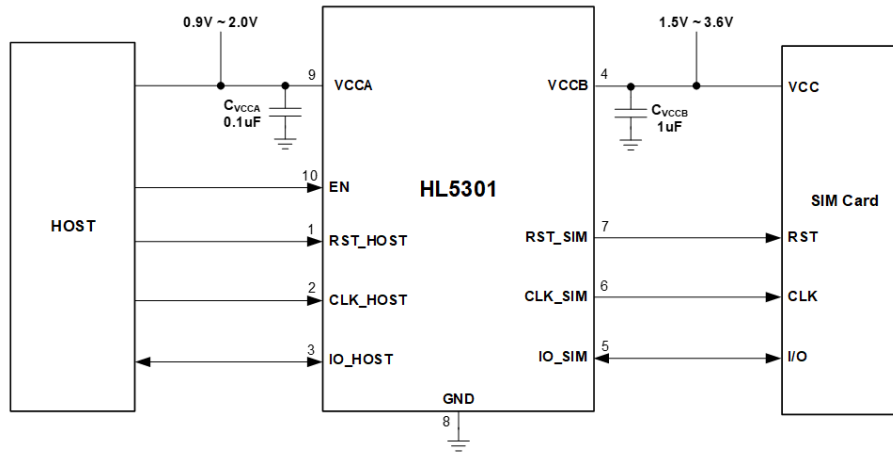
Key Features

- Power supply: VCC, 2.7-5.5V
- USB high speed (480Mbps) switch
 - -3dB bandwidth: 900MHz
 - 3.5Ω RON typical
- Audio
 - Negative rail capability: -3V to +3V
 - THD + N = -107dB
 - 1 VRMS, f = 20Hz to 20kHz, 32Ω load
 - 0.8Ω RON typical
- High-voltage protections
 - 20V DC tolerance on connector side pins
 - Over-voltage protection: VTH = 5V (type)
- OMTP and CTIA pinout support
- Support audio sense path
- 25-bump WLCSP package (2.00mm x 2.00mm)
- Applications: Smartphones, Tablet PCs, Notebook PCs, Media Players

FEATURED PRODUCTS

Interface Switch Protections

HL5301: SIM Card Interface Level Translator



Key Features

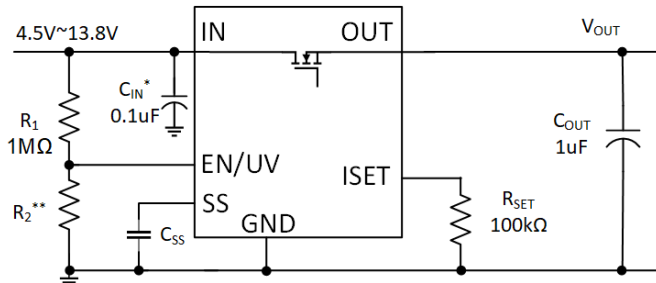
- SIM card interface level translator
 - Host side (VCCA): 0.9-2.0V
 - SIM card side (VCCB): 1.5-3.6V
- Low quiescent current: 0.3mA
- Level translation of IO, RST, and CLK between SIM card and host side interface with capacitance isolation
 - RST, CLK: unidirection
 - IO: bidirection with auto direction detection
- Advanced one-shot circuit to accelerate rising time on IO channels
- Built-in pull-up resistor in IO channels
- Built-in pull-down resistor in SIM card side
- Built-in series resistance in SIM side pins for short protection and EMI reduction
- Supports clock speed up to 10MHz
- Incorporates shutdown feature for the SIM card signals according to ISO-7816-3
- IEC61000-4-2 ESD protection on SIM card interface side (RST_SIM, CLK_SIM, IO_SIM, VCCB)
 - Contact discharge: ±8kV
 - Air discharge: ±15kV
- Two packages available:
 - 10-Pin STSLP, 1.40 mm x 1.80 mm x 0.55 mm package
 - WLCSP-9, 0.35 mm pitch, 1.12 mm x 1.12 mm package
- Applications: Smartphones, Tablet PCs, and Wireless Modems

FEATURED PRODUCTS

Interface Switch Protections

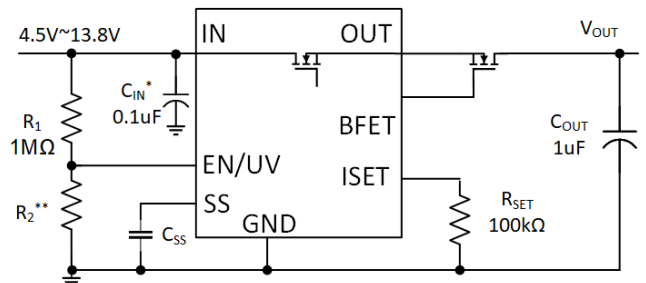
HL8511/21: 12V/5V Input Voltage 5A Continuous Load E-Fuse

HL8512/22: 12V/5V Input Voltage 5A Continuous Load E-Fuse



**Only needed for external UVLO
*Only needed for noise suppression

HL8511/21



**Only needed for external UVLO
*Only needed for noise suppression

HL8512/22

Key Features

- Integrated 23 mΩ power FET
- Operating voltage range
 - HL8511: 4.5 V – 13.8 V
 - HL8521: 4.5 V – 5.5 V
- Output over-voltage clamp
 - HL8511: 16 V maximum clamp voltage
 - HL8521: 6.75 V maximum clamp voltage
- Thermal fault protection
 - HL8511FN01/21FN01: auto retry
 - HL8511FN02/21FN02: latch off
- Programmable output ramps up rate
- Programmable UVLO
- Programmable, high accuracy current limit range from 1A to 5A
- Meet the IEC 62368 requirements (single point failure and Annex G.9)
- DFN-10L 3mm x 3mm
- Applications: Server, SSD, POS, USB Port

Key Features

- Integrated 23 mΩ power FET
- Operating voltage range
 - HL8512: 4.5 V – 13.8 V
 - HL8522: 4.5 V – 5.5 V
- Output over-voltage clamp
 - HL8512: 16 V maximum clamp voltage
 - HL8522: 6.75 V maximum clamp voltage
- Thermal fault protection
 - HL8512FN01/22FN01: auto retry
 - HL8512FN02/22FN02: latch off
- Programmable output ramps up rate
- Programmable UVLO
- Programmable, high accuracy current limit range from 1A to 5A
- Reverse current blocking control
- Meet the IEC 62368 requirements (single point failure and Annex G.9)
- DFN-10L 3mm x 3mm
- Applications: Server, SSD, POS, USB Port

Part Number	UV (V)	OV CLAMP (V)	Fault Response	Package
HL8511FN01	4.3	15	Auto Retry	DNF-10L 3mm x 3mm
HL8511FN02	4.3	15	Latched	DNF-10L 3mm x 3mm
HL8521FN01	4.3	6.1	Auto Retry	DNF-10L 3mm x 3mm
HL8521FN02	4.3	6.1	Latched	DNF-10L 3mm x 3mm
Part Number	UV (V)	OV CLAMP (V)	Fault Response	Package
HL8512FN01	4.3	15	Auto Retry	DNF-10L 3mm x 3mm
HL8512FN02	4.3	15	Latched	DNF-10L 3mm x 3mm
HL8522FN01	4.3	6.1	Auto Retry	DNF-10L 3mm x 3mm
HL8522FN02	4.3	6.1	Latched	DNF-10L 3mm x 3mm

FEATURED PRODUCTS

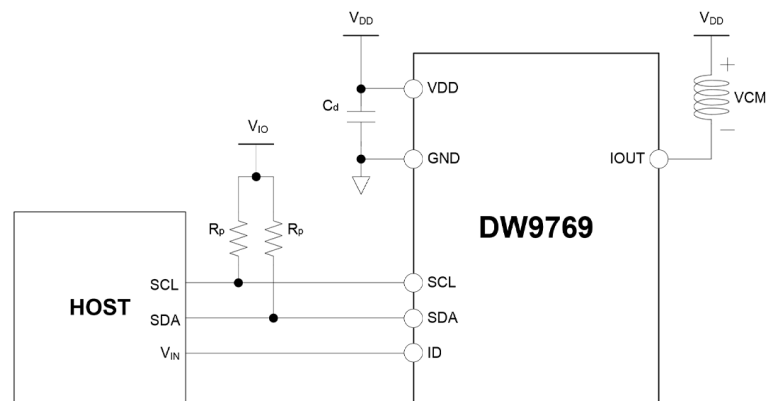
Camera Lens Management

HMI is at the forefront of revolutionizing Camera Lens Management solutions. Through advanced precision and intelligent vision technology, our portfolios in conventional VCM and bi-directional VCM drivers, as well as closed-loop autofocus and optical image stabilization devices are driving innovation in the smartphones, tablets, and the digital camera industries.

DW9769: AF Driver IC with 16Kbyte EEPROM

Key Features

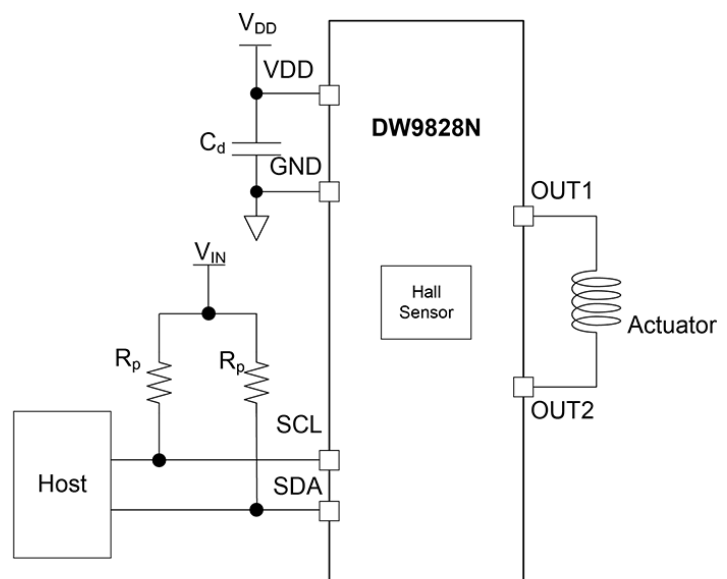
- 100mA, 10-bit resolution DAC
- Embedded 16Kbyte EEPROM
- Smart Actuator Control (SACTM) mode
- Noise Reduction Control (NRCTM) mode
- Supply voltage range (VDD): 2.65V to 3.3V
- I/O voltage range (VIO): 1.8V to VDD
- Fast mode and Fast mode plus I²C interface compatible
- Power On Reset (POR)
- Under Voltage Lock Out (UVLO)
- Package: 6-pin WLCSP (0.77mm x 1.36mm x 0.30mm)
- Application: Mobile Cameras, Digital Still Cameras, Camcorders, Web Cameras, Action Cameras



DW9828N: eOIS Driver with Digital Controller and Internal Hall

Key Features

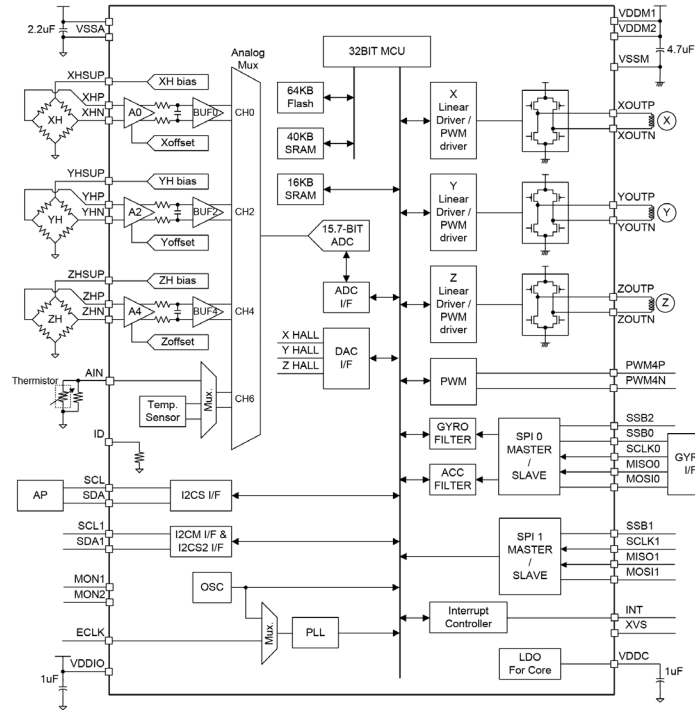
- Supply voltage: 2.65V to 3.6V
- Fast Mode, Fast Mode plus and HS mode I²C Interface
- 1.2V I²C interface available
- Reverse I²C interface available
- H-Bridge driver
- Hall sensor calibration
- Internal FRA test mode
- Internal Loop Gain adjust
- Internal AF settling time measure
- Coil resistance measure
- High resolution Analog-to-Digital Converter (ADC)
- PID Controller
- Package: 6 pins WLCSP (0.620mm X 1.840mm X 0.335mm)
- Application: Mobile Cameras, Digital Still Cameras, Camcorders, Web Cameras, Action Cameras



FEATURED PRODUCTS

Camera Lens Management

DW9786: General Purpose OIS+CLAF Controller and Driver IC



Key Features

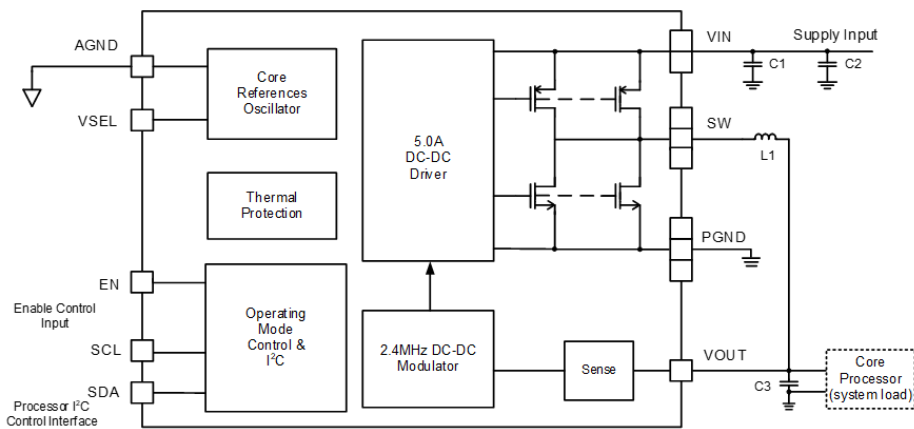
- On-chip 32bit MCU
- eFlash 64KB: 40KB for Program, 8KB for LUT, 16KB for User
- SRAM: 40KB for program, 16KB for data,
- 1KB for filter, 1KB for FMC, 256B for ring_buffer, 128B for ADC buffer
- VDDM = 1.8V ~ 3.6V, VDDA = 2.6V ~ 3.6V, VDDIO = 1.7V ~ 3.6V
- OIS: Current type linear driver 2ch I_{max}. = 200mA
- AF: Current type linear driver 1ch I_{max}. = 200mA
- ADC: 15.7bit resolution Analog-to-Digital Converter (ADC)
- DAC: 8bit Hall offset control
- I²C slave main: Fast Mode, Fast Mode plus and HS mode
 - ID Pin Low: 0x24 (OIS), 0x46 (Memory)
 - ID Pin High: 0x32 (OIS), 0x74 (Memory)
- I²C master/slave sub: Fast Mode, Fast Mode plus and HS mode
- 2ch SPI master/slave: multi-CS slave function available
- SAC: SAC2, 3, 4
- Internal OSC: 72MHz
- 192MHz PLL for PWM
- PWM frequency: 20KHz ~ 1MHz
- Internal Temperature Sensor
- External Thermometer
- LDO with external capacitor (1uF)
- Gyro I/F: SPI I/F
- Current sourcing type (PMOS)
- Consider TMR solution: Sensor LDO, Offset control, 6ch
- Package: 44 pins WLCSP (1.65mm x 4.8mm x 0.32mm)
- Application: Moblie Cameras, Digital Still Cameras, Camcorders, Web Cameras, Action Cameras

FEATURED PRODUCTS

Automotive AEC-Q Grade

HMI is committed to providing robust and high-quality automotive-grade products that meet AEC-Q100 qualifications with exceptional performances. Our diverse automotive offerings include DC-DC converters, LDOs, and protection switches tailored for applications such as infotainment systems, instrument clusters, ADAS, and body electronics.

HL7509FNQ: I²C Programmable 5A DVS Buck Converter



Key Features

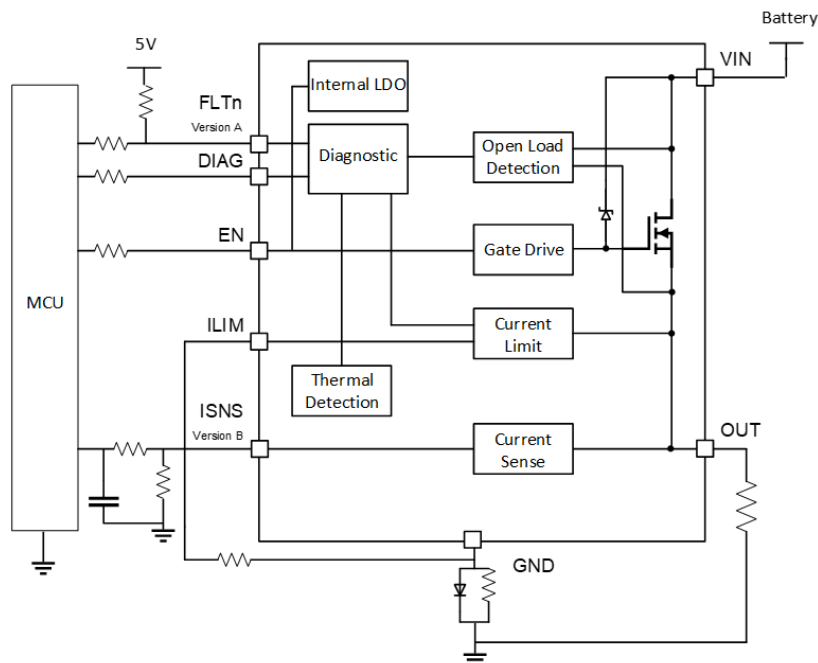
- Input voltage ranges: 2.5-5.5V
- Programmable output voltage
 - 0.600-1.230V in 10mV steps
- Maximum output current
 - 5A Continuous, 8A peak for 10ms
- VOUT remote sensing capable for point-of-load operation
- 2.4MHz PWM with seamless PWM/PFM switching for light-load efficiency
- Dynamic voltage scaling (DVS) with programmable voltage slew rate
- Class-leading load and line transient
- Quiescent current in PFM tristate: 70µA
- I²C Interface with SM, FM, FM+ and HS modes
- Comprehensive protections
 - Output under-voltage lockout (OVLDT)
 - Input over-voltage protection (OVP)
 - Over-current and short-circuit protections
 - Thermal shut-down
- 4mm x 3mm 14-pin DFN package
- AEC-Q100 qualified grade 3, automotive temperature ranges (-40°C to +85°C)
- Application: Application Processors, Graphics Processors, Memory, Hard Disk Drive, SSD, Smartphones, Tablets, Handheld Devices, Automotive Infotainment Systems

Part Number	Default VOUT After POR		Default Mode After POR		Max Output Current (rms)	Max Pulse Current (10ms)	I ² C Address	Package
	VSEL=0	VSEL=1	VSEL=0	VSEL=1				
HL7509FNQ00	0.870V	0.910V	FPWM	FPWM	5A	8A	1101000	DFN-14

FEATURED PRODUCTS

Automotive AEC-Q Grade

HL8518: Single Channel 80mΩ High Side Switch



Key Features

- Operating voltage range, 3.5V ~ 40 V
- Very-low standby current, <0.5 μ A
- AEC-Q100 Qualified:
 - Device temperature grade 1: -40°C to 125°C
- Operating junction temperature, -40°C to 150°C
- 3.3 V and 5V compatible control logic
- High-accuracy current sense, ± 30 mA at 1 A
- Programmable current limit with external resistor
- Diagnostic function can be enabled or disabled
- Tested according to AECQ100-12 Grade A, 1 million times Short to GND test
- Electrical transient disturbance immunity certification of ISO7637-2 and ISO16750-2
- Protections
 - Overload and short-circuit protection
 - Inductive load negative voltage clamp
 - Undervoltage lockout (UVLO) protection
 - Thermal shutdown/swing with selfrecovery Loss of GND, loss of supply protection
 - Reverse battery protection with external circuitry
- Diagnosis
 - On- and Off-state output open and short to battery detection
 - Overload and short to ground detection and current limit
 - Thermal shutdown/swing detection
- Diagnosis reports
 - Version A: open-drain digital output
 - Version B: current sense analog output
- HTSSOP-14L
- Application: Power Switch for Low Wattage Lamps, High-Side Relays and Valves, General Resistive, Inductive, and Capacitive Loads



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