



White Goods Solutions



www.onsemi.com

*Power management, motor control, and interface solutions
for home appliances from ON Semiconductor.*

ON Semiconductor Provides Products to Connect Smart Appliances to the Smart Grid

Interface

- Light & Proximity Sensing
- Touch Switch Control
- Display Drive & Control
- Smart Appliance Communication

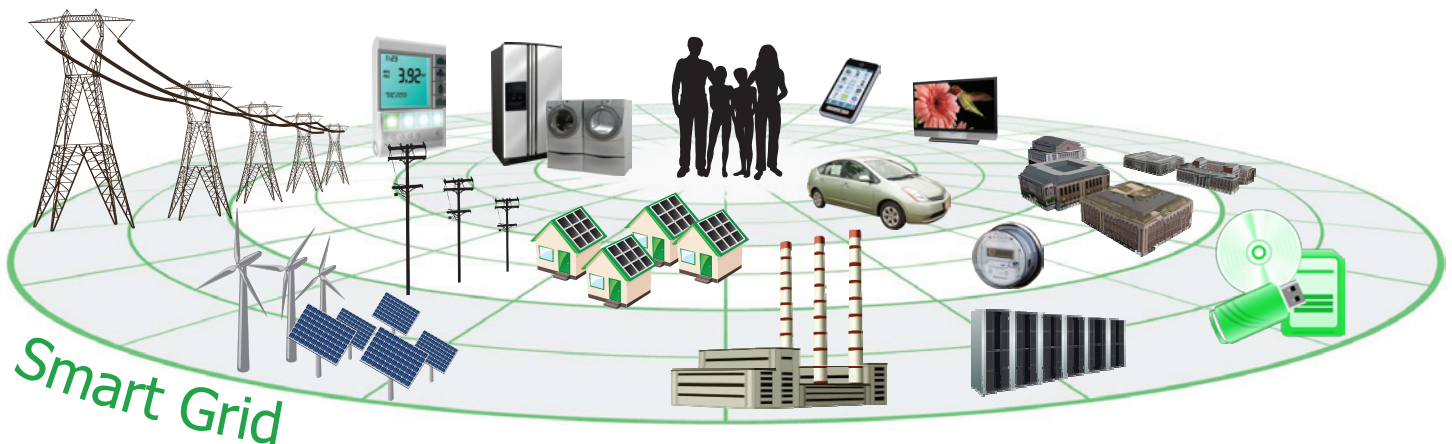


Control

- Inverter Drive
- Motor Control
- Motor Drive
- Induction Heating
- Switching & Valve Control

Power Management

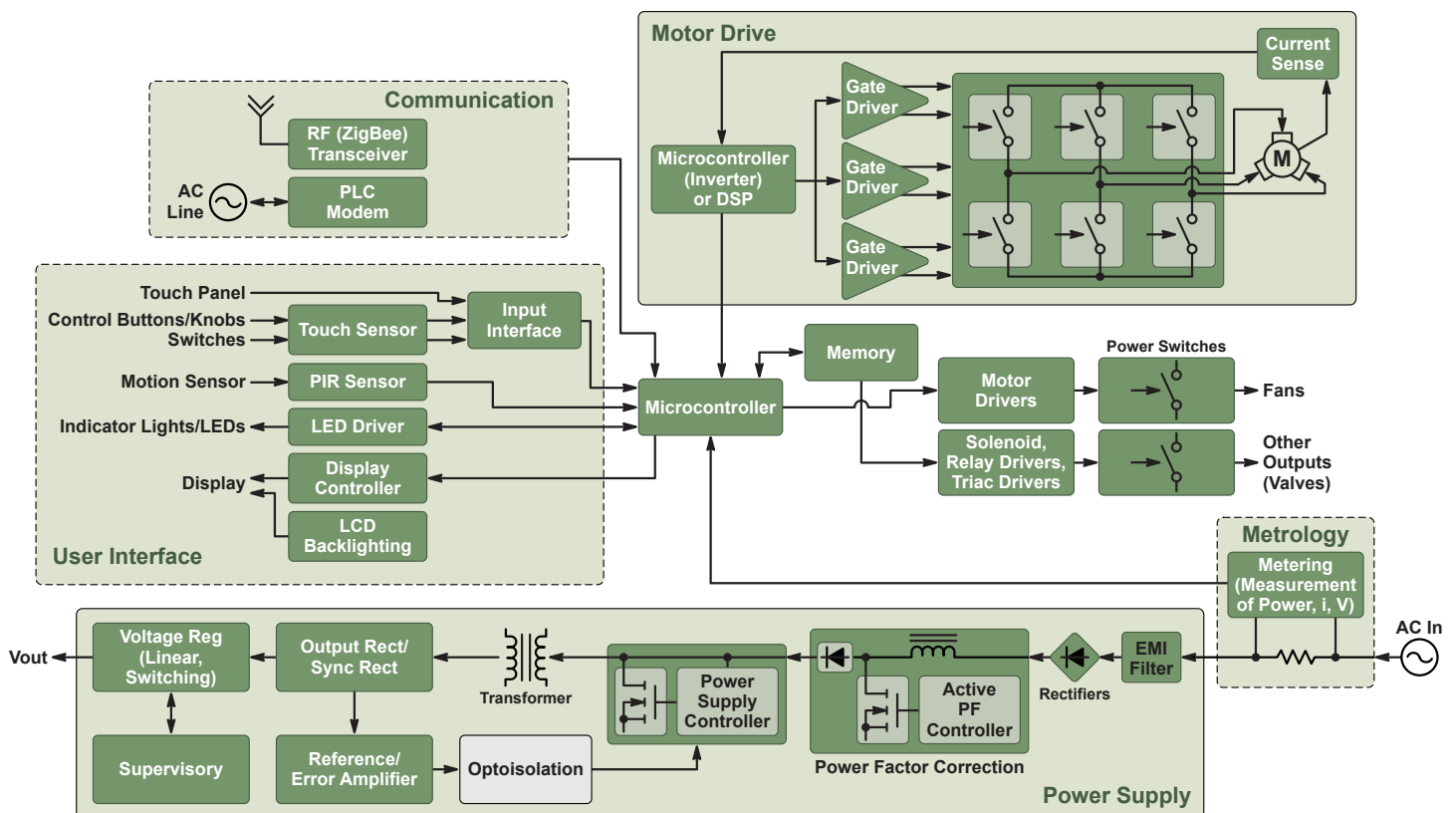
- AC-DC Conversion
- DC-DC
- Power Factor Control
- Power Inversion



White Goods Simplified Block Diagram

Functions

- **Power Supply:** Rectifies incoming AC to provide system power
- **Inverter Drive:** Used in inverter applications for variable speed motor drive
- **System Control:** Controls valves, switches, pumps, auxiliary motors, and general system operation
- **User Interface:** Input/output for human/machine interface
- **Smart Appliance:** Smart Grid and Home Area Network interface



**ON Semiconductor Provides Complete Solutions
for White Goods**

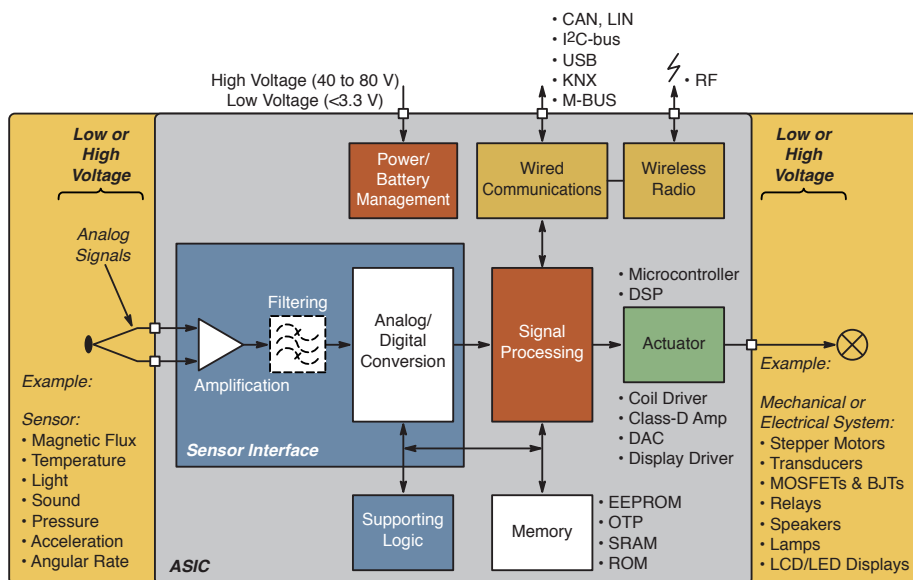
Mixed-Signal Custom Solutions

Value Proposition

- Experienced resources and assets to bring customers' design objectives successfully to market
- Ability to integrate customers' IP into single-chip solution, thereby protecting the IP
- Flexible cost models to reduce customers' total cost

Design Engineering

- Approximately 200 expert mixed-signal designers with extensive SoC and SiP experience
- Robust custom development process
- Dedicated project managers track & report development progress
- Flexible customer development engagement – from full turnkey to subcontractor production services
- Design expertise in:
 - » Sensor interface
 - » Wireless systems
 - » Medical imaging
 - » Energy management
 - » Building & home control



IP & Fab Processes

- ≥ 55 nm, analog-focused CMOS/BCDMOS process technologies utilizing internal fabs and external foundry partners
- Low, medium, high voltages – ≤ 1 V to 90 V
- Low current optimization – active & standby
- Low noise design – “count the electrons”
- High temperature – $\leq 200^\circ\text{C}$ (profile, for selected technologies)
- Integrated low power wireless
- Non-Volatile Memory (EEPROM, OTP), RAM & ROM
- Embedded digital IP
- Robust ESD protection
- Extensive building block ‘starting points’ consisting of amplifiers, references, DACs, ADCs, linear & switching regulators, power management, etc.

Category	Mixed Signal Intellectual Property (IP)
Serial Interfaces	USB 3.0/2.0/1.1, HDMI, MIPI, I2C, SPI, CAN, UART
Microprocessors	ARM, RCore DSP, R8051, AMBA/AHB/APB Peripherals
Memory	SRAM, DPRAM, ROM, EEPROM, OTP, FLASH
Clocking	Oscillators, PLLs, DLLs
Communication	Wireless (Proprietary & Standards), Wired (KNX, PLC and others)
Encryption	ECC, AES, 3-DES, DES, RSA
Data Converters	DAC, ADC (8 - 20 bits, 1 KSPS - 120 MSPS)
Wireless IP	PGA, LNA, PLLs, Correlators, DSP
Power Management	Efficient Switching Regulators, LDOs, Charge Pumps, Thermal Protection
References	Precision Bandgaps, Current References, Temperature Sensors
Analog and High Voltage Interfaces	High-Voltage Drivers, Display and LCD Drivers, Class D Amplifiers
Signal Conditioning	PGA, Instrumentation Amps, Digital and Analog Filters

ON Semiconductor Provides Expertise, Solutions, and Products that Enable Designers to Quickly Improve System Efficiency

Evolving Efficiency Standards

Evolving regulations and incentives, targeted towards improving energy efficiency, are intended to limit global climate change. Enhancing power supply efficiency alone can save over 2% of global energy consumption. Many organizations worldwide (such as China Energy Conservation Project, Japan Top Runner, USA Environmental Protection Agency, European Code of Conduct) now develop regulations and incentives for power supply efficiency, like ENERGY STAR® and 80 PLUS®. ON Semiconductor actively participates in standards organizations and working groups, so that we can provide solutions to the market that meet all of the relevant specifications, worldwide.

Power Supply Expertise

ON Semiconductor provides products and solutions that save power from line to load, enabling quick deployment of cost-effective power supplies that meet evolving global efficiency standards. Our expertise in high-efficiency power supplies helps solve your challenges in all focus areas for efficiency enhancement:

- Low standby-mode power consumption
- High active-mode power efficiency
- Power factor correction

And since we provide a full range of power supply semiconductors – from highly integrated power factor controllers, ac-dc controllers, and dc-dc controllers, to discrete MOSFETs, rectifiers, diodes, and transistors – we can help you design complete power supply solutions, with all active components sourced from and supported by a single supplier.

GreenPoint® Reference Designs

ON Semiconductor provides GreenPoint reference designs for selected types of internal and external power supplies. These open reference designs provide roadmaps for the design of highly efficient power supplies, helping you get to market quickly by providing documentation that includes schematics, BOMs, Gerber files, design descriptions, and test results. The reference designs meet all relevant global efficiency standards, providing access to global markets with a single design.



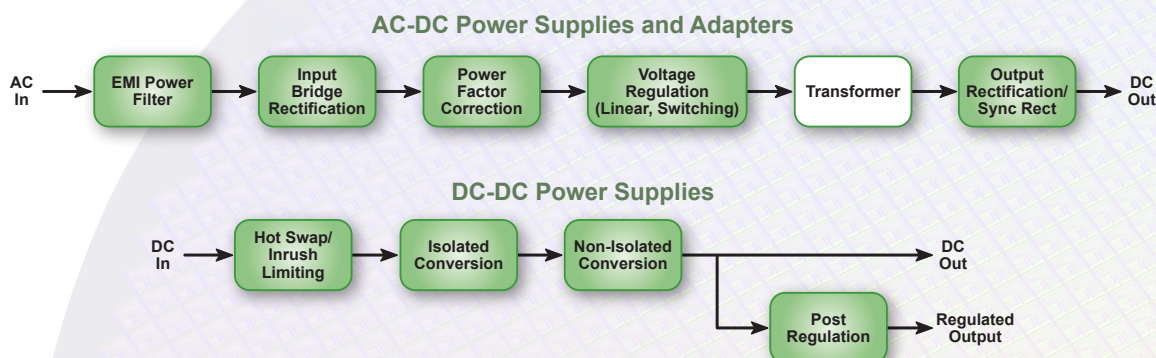
Global Power Supply Presence

ON Semiconductor maintains a broad, global network of design and applications resources, including resources devoted to power supplies.

Our Product Design Centers define and develop advanced power management integrated circuits, utilizing the latest architectures and development tools. Products are targeted for a range of process technologies, including analog CMOS, Bi-CMOS, and Very High Voltage (VHV).

Our Solutions Engineering Centers focus on developing value-added total solutions for specific end market applications. These centers are staffed with applications engineers with design experience, and are equipped with all of the resources necessary for local manufacturers to benefit from the vast power management experience of ON Semiconductor.

A global network of Field Applications Engineers provides truly customer-specific support. These local resources can help you optimize your power supply designs, by contributing their experience and training, with both applications and specific components, to your design location.



8 W Dual Output, Offline Flyback Power Supply



For more information, see [NCP1075NONGEV](#)

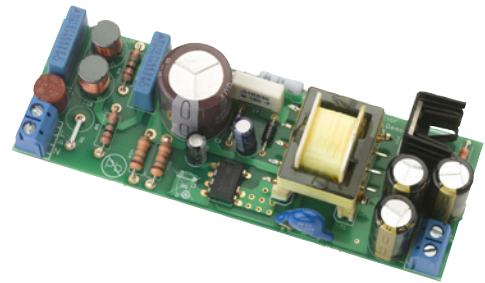
Features

- Based on NCP1075 100 kHz monolithic switching regulator
- Schottky diodes on both outputs for high efficiency
- Dual sensing options depending on desired regulation accuracy
- Input EMI filter for conducted emission compliance
- Input fuse and inrush limiting resistor
- Good load and cross regulation due to secondary winding technique on transformer

25 W High Voltage Offline Power Supply

Features

- Constant Voltage (12 V) Power Supply
- Based on NCP1129 high voltage switching regulator
 - Integrated internal 650 V MOSFET
- Peak Current Mode Control with adjustable ramp compensation ensures stability in CCM
- Improved Short Circuit Protection and True Overload detection
- Internal frequency jittering reduces EMI components
- Frequency foldback to 26 kHz under low load conditions



For more information, see [NCP1129DIPGEV](#)

AC-DC Power Management

Switching Regulators

Device	Fsw Typ (kHz)	fjitter Typ (%)	RDS(on) Typ (Ω)	VBR(DSS) Max (V)	IPeak (mA)	DSS (mA)	UVLO	Short Circuit Protection	Over Power Compensation	Brown Out	Latch	Package
NCP1070	65, 100, 130	Yes	22	700	250	8	6.4	Yes	No	No	No	PDIP-7, SOT-223-4
NCP1071	65, 100, 130	Yes	22	700	350	8	6.4	Yes	No	No	No	PDIP-7, SOT-223-4
NCP1072	65, 100	Yes	11	700	250	8	6.4	Yes	No	No	No	PDIP-7, SOT-223-4
NCP1075	65, 100, 130	Yes	11	700	450	8	6.4	Yes	No	No	No	PDIP-7, SOT-223-4
NCP1076	65, 100, 130	Yes	4.5	700	650	8	6.4	Yes	No	No	No	PDIP-7, SOT-223-4
NCP1077	65, 100, 130	Yes	4.5	700	800	8	6.4	Yes	No	No	No	PDIP-7, SOT-223-4
NCP1124	65, 100	Yes	9	650	Adj	—	8.8	Yes	No	No	Yes or No	PDIP-7
NCP1126	65, 100	Yes	6	650	Adj	—	8.8	Yes	No	No	Yes or No	PDIP-7
NCP1129*	65, 100	Yes	2	650	Adj	—	8.8	Yes	No	No	Yes or No	PDIP-7
NCP1136	65, 100	Yes	6	800	Adj	—	8.8	Yes	No	No	Yes or No	PDIP-7
NCP1027	65, 100	Yes	5.6	700	800	—	Yes	Yes	Yes	Yes	Yes	PDIP-8
NCP1028	65, 100	Yes	5.6	700	800	—	Yes	Yes	Yes	Yes	No	PDIP-8

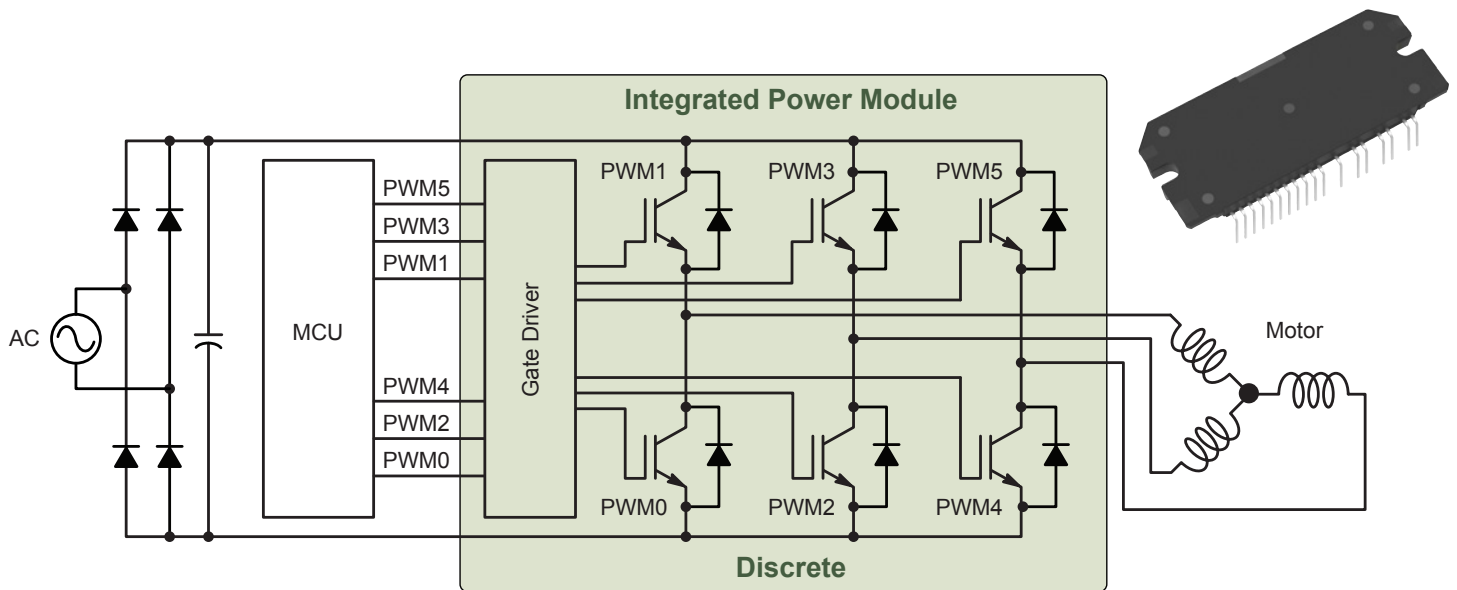
* Pending 4Q14.

Flyback Switching Controllers

Device	Control Mode	Fsw Typ (kHz)	Standby Mode	UVLO (V)	Short Circuit Protection	Latch	Soft Start	Vcc Max (V)	Drive Capability (mA)	Package
NCP1250	Current	65, 100	Yes	8.8	Yes	Yes	Yes	28	300 / 500	TSOP-6
NCP1251	Current	65, 100	Yes	8.8	Yes	Yes or No	Yes	28	300 / 500	TSOP-6
NCP1253	Current	65, 100	Yes	8.8	Yes	Yes or No	Yes	28	300 / 500	TSOP-6
NCP1254	Current	65	Yes	8.8	Yes	Yes	Yes	35	300 / 500	TSOP-6
NCP1255	Current	65	Yes	8.8	Yes	Yes	Yes	35	300 / 500	SOIC-8



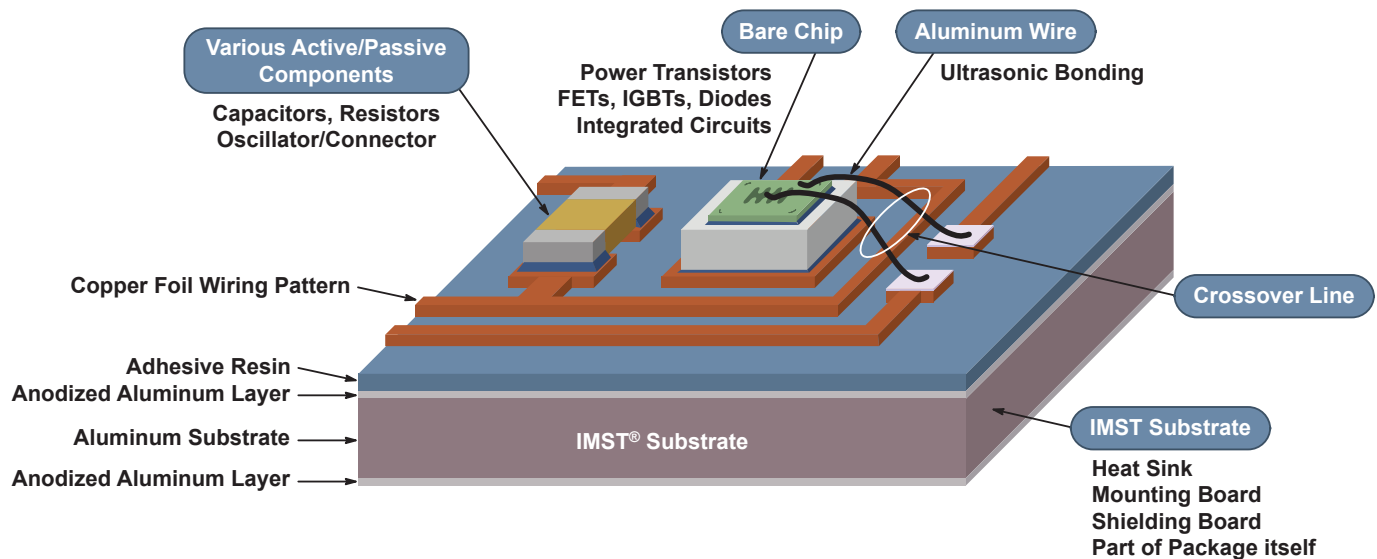
Inverter Drive – Discrete and Module Designs



Intelligent Power Modules (IPM) for Inverter Designs

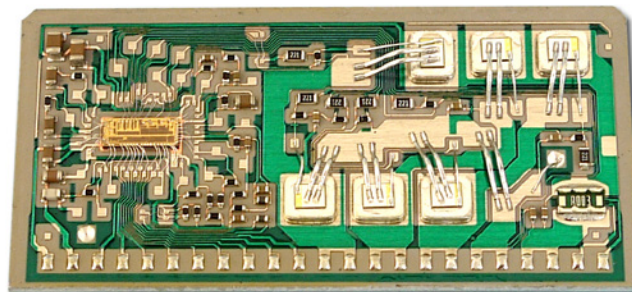
Insulated Metal Substrate Technology (IMST®) forms electronic circuits on plates of aluminum (metal substrates). IMST-based hybrid devices use the high thermal conductivity plates of aluminum for their base substrates.

Hybrid devices from ON Semiconductor enable power output circuits, control circuits, and peripheral circuits to be mounted on the same substrate. IMST succeeds in turning bare chip mounting into an element technology, and will continue to evolve as an outstanding mounting technology capable of delivery high density, high performance, and high reliability.



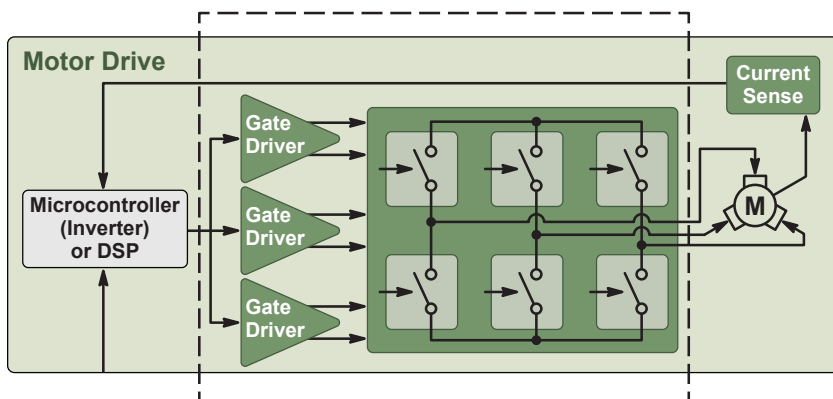
Insulated Metal Substrate Technology

IMST enables assembly of discrete passive components (resistors, capacitors); discrete active components (diodes, transistors); and more complex devices (gate drivers, DSPs, logic) into highly integrated modules.

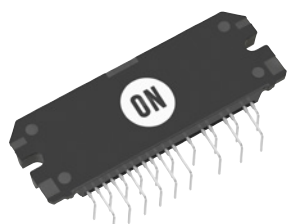


Typical Integrated Module

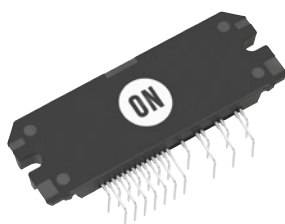
Intelligent Power Modules (IPM) for Inverter Designs



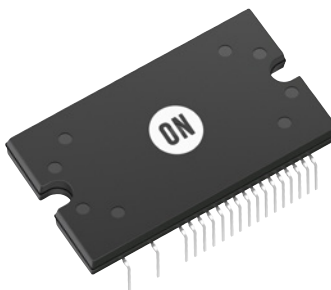
- Intelligent power module (IPM) is a 3-phase inverter with gate drivers, UVLO, thermal and current sense
- Optimized layout for EMI & thermal performance
- Insulated Metal Substrate Technology (IMST)
- Available with integrated PFC



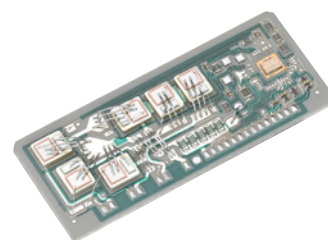
SIP1 Package



SIP1A Package



DIP4 Package

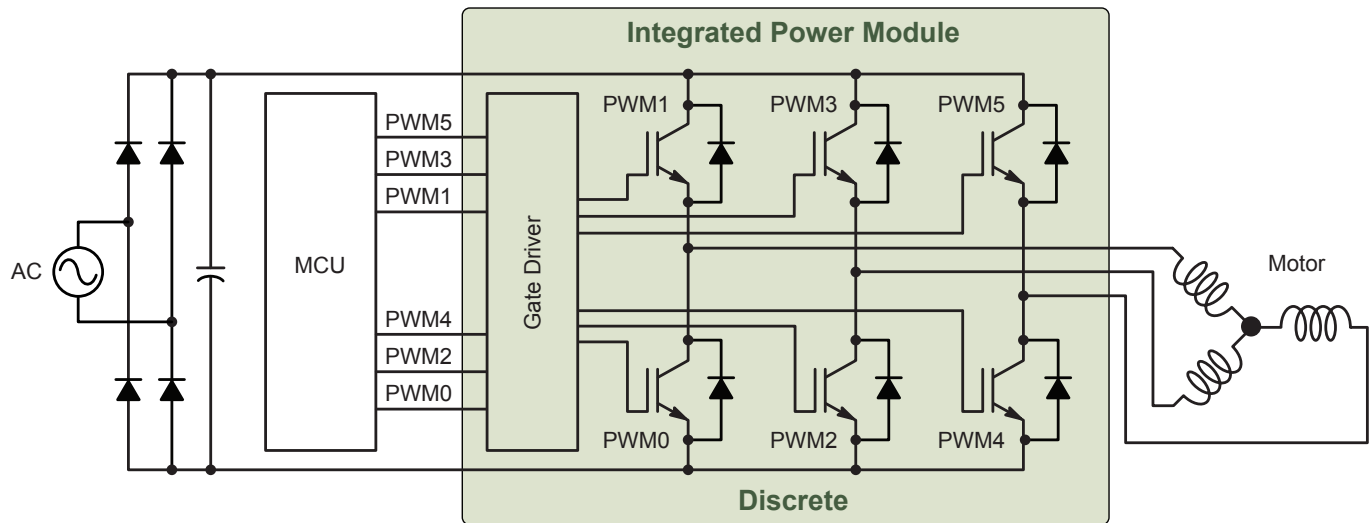


SPL Internal Board

Power Modules

Device	Type		V _{DS} Max (V)	I _{op} Peak Current (A)	Package
STK541UC62K-E	Module	1 Shunt resistor	600	10	SIP1
STK544UC62K-E	Module	3 Shunt resistor	600	10	SIP1
STK551U362A-E	Module	1 Shunt resistor	600	10	SIP1A
STK554U362A-E	Module	3 Shunt resistor	600	10	SIP1A
STK554U362C-E	Module	3 Shunt resistor	600	10	SIP1A
STK551U392A-E	Module	1 Shunt resistor	600	15	SIP1A
STK554U392A-E	Module	3 Shunt resistor	600	15	SIP1A
STK551U3A2A-E	Module	1 Shunt resistor	600	20	SIP1A
STK5F1U3C2D-E	Module	1 Shunt resistor	600	30	DIP4
STK5F4U3C2D-E	Module	3 Shunt resistor	600	30	DIP4
STK581U3C2D-E	Module	1 Shunt resistor	600	30	SIP3
STK5F1U3E2D-E	Module	1 Shunt resistor	600	50	DIP4
STK5F4U3E2D-E	Module	3 Shunt resistor	600	50	DIP4

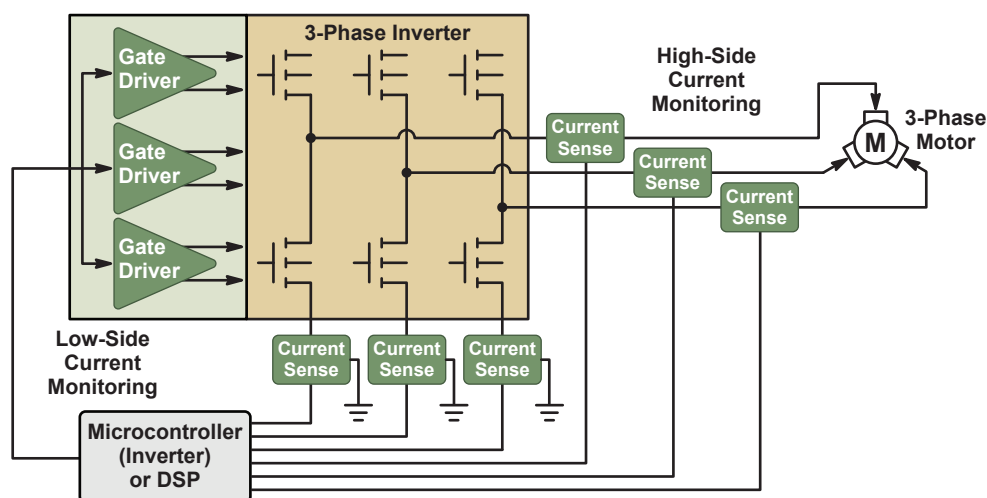
Discrete IGBTs for Inverter Design



Device	Voltage (V)	Current @ 25°C (A)	Current @ 100°C (A)	Package
NGTB15N60	600	6	3	DPAK
NGTB20N60L2	600	10	5	DPAK
NGTB30N60L2	600	20	10	DPAK
NGTB50N65L2*	600	30	14	TO-220-3FS

* Pending 4Q14.

Current Sensing



Low-Side Current Sensing

Device	Channels	V _S Min (V)	V _S Max (V)	I _O /Channel (mA)	GBW (MHz)	Slew Rate (V/μs)	V _{OS} Max (mV)	V _{OS} Drift (μV/C)	Package
NCS2003, NCS20034*	1, 4	1.7	5.5	230	7	7	4	2	SOT-23-5, SOT-553, SOIC-14
NCS20072*, NCS20074	2, 4	2.7	36	480	3	2.8	3	2	SOIC-8, TSSOP-8, Micro8, SOIC-14, TSSOP-14
NCS333, NCS2333*	1, 2	1.8	5.5	21	0.35	0.1	0.01	0.07	SOT-23-5, SC-70, SOIC-8, Micro8

* Pending 1Q15.

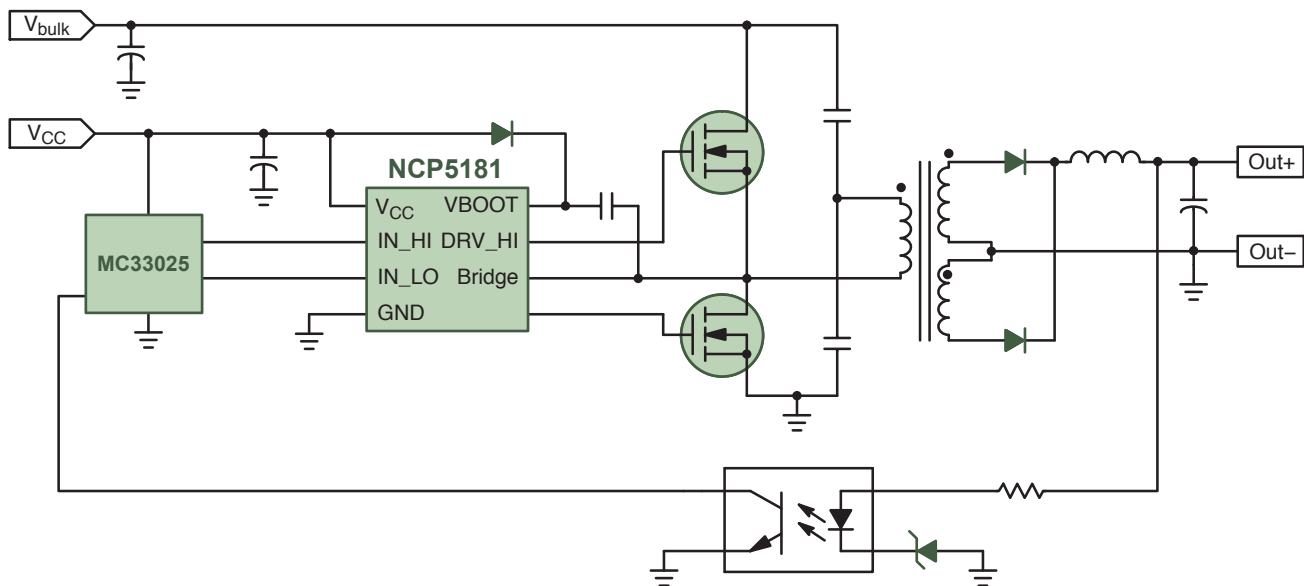
High-Side Current Sensing

Device	CMR (V)	V _S Range (V)	I _Q (μA)	Gain (V/V)	GBW (MHz)	V _{OS} Max (mV)	V _{OS} Drift (μV/C)	Gain Error (%)	CMRR (dB)	Package
NCS210*	-0.3 to 26	2.7 to 26	65	200	14	35	0.5	0.2	140	SC-70-6
NCS211*	-0.3 to 26	2.7 to 26	65	500	14	35	0.5	0.2	140	SC-70-6
NCS212*	-0.3 to 26	2.7 to 26	65	1000	14	35	0.5	0.2	140	SC-70-6
NCS213*	-0.3 to 26	2.7 to 26	65	50	14	35	0.5	0.2	140	SC-70-6
NCS214*	-0.3 to 26	2.7 to 26	65	100	14	35	0.5	0.2	140	SC-70-6

* Pending 1Q15.

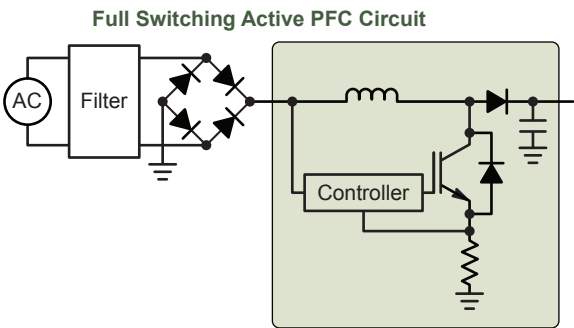
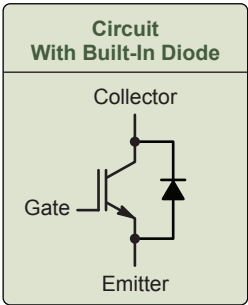
MOSFET/IGBT Gate Drivers

Device	Description	Number of Drivers	V _{CC} Max (V)	Drive Source/ Sink Typ (mA)	Rise Time (ns)	Fall Time (ns)	t _p Max (ns)	Package
NCP5104	Single Input High and Low Side Power MOSFET Driver	2	20	250 / 500	85	35	170	SOIC-8; PDIP-8
NCP5106	Dual Input High Voltage High and Low Side MOSFET or IGBT Drivers	2	23	250 / 500	85	35	170	SOIC-8; PDIP-8
NCP5111	Single Input Half-Bridge Power MOSFET or IGBT Driver	2	23	250 / 500	85	35	170	SOIC-8; PDIP-8
NCP5181	Dual Input High Voltage High and Low-Side MOSFET or IGBT Drivers	2	20	1400 / 2200	20; 40	20; 40	170	SOIC-8; PDIP-8



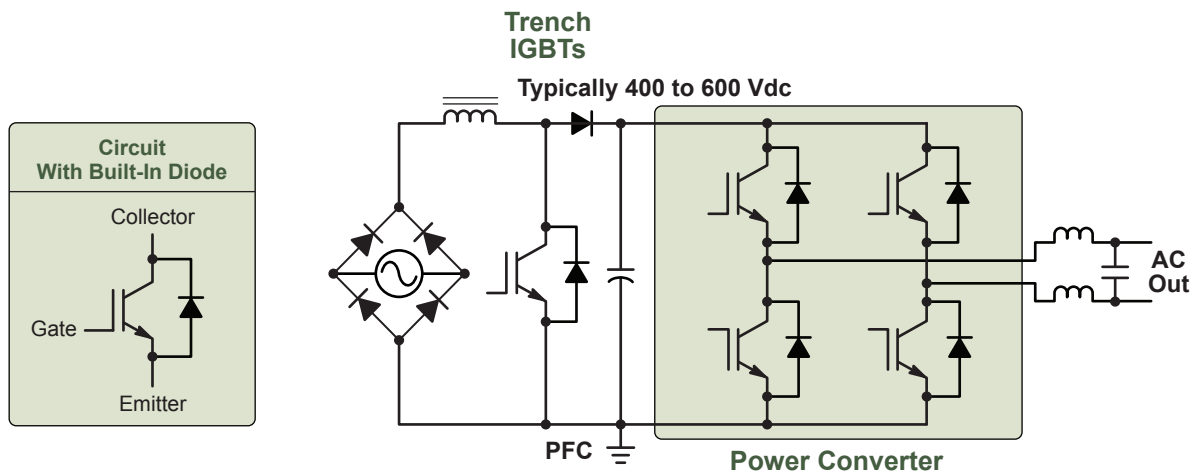
NCP5181 Application Diagram

IGBTs for Power Factor Controllers



Device	Voltage (V)	Current @ 25°C (A)	Current @ 100°C (A)	Package
NGTB20N60L2	600	40	20	TO-3PF-3L
NGTB30N60L2	600	100	30	TO-247

IGBTs for Power Converter



Device	Voltage (V)	Current @ 25°C (A)	Current @ 100°C (A)	Package
NGTB15N60	600	30	15	TO-220
NGTB20N60L2	600	40	20	TO-3PF
NGTB30N60L2	600	100	30	TO-247
NGTB50N65L2*	600	100	50	TO-247

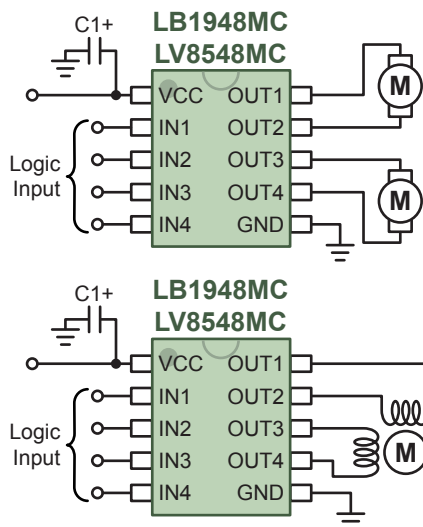
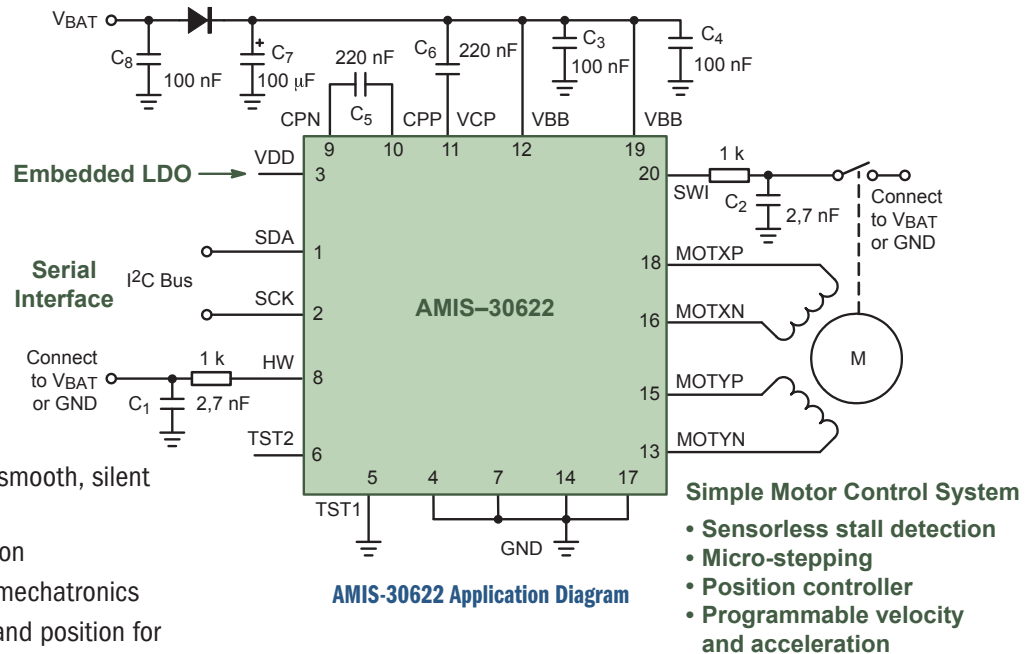
* Pending 4Q14.

Stepper Motor Drivers for Motion Control



Features

- High resolution micro-stepping for smooth, silent movement
- Integrated sensor-less stall detection
- Single chip control and drivers for mechatronics
- Dynamic control of speed, torque, and position for continuous motion



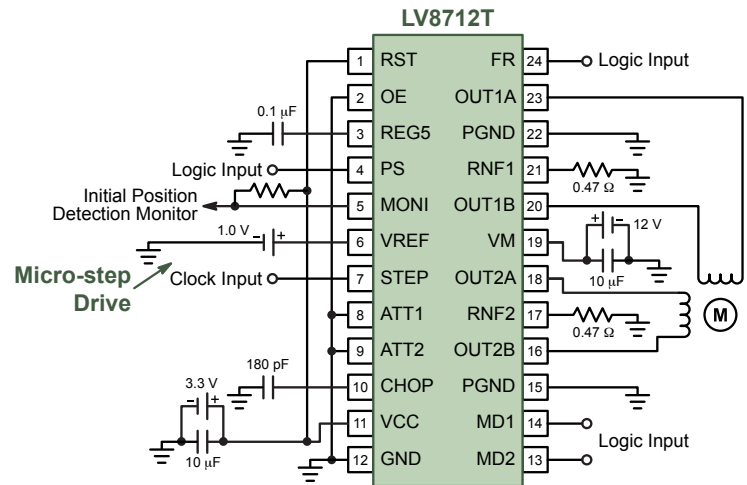
LB1948MC & LV8548MC Features

- Bipolar and BiDCMOS options available
- Dual H-Bridge Driver
 - 1 channel stepping motor/
 - 2 channel DC motor
- Excitation: full step, half step
- Low saturation voltage, low ON resistance
- Stand-by current: 0 μ A

Stepper Motor Drivers for Motion Control

Features

- Single channel PWM constant current control
- Excitation mode: LV8712T – full step, half step, 1/4 step, 1/8 step;
LV8713T – full step, half step, 1/16 step, 1/32 step
- Integrated thermal shutdown and low-voltage detection
- Integrated active flyback protection



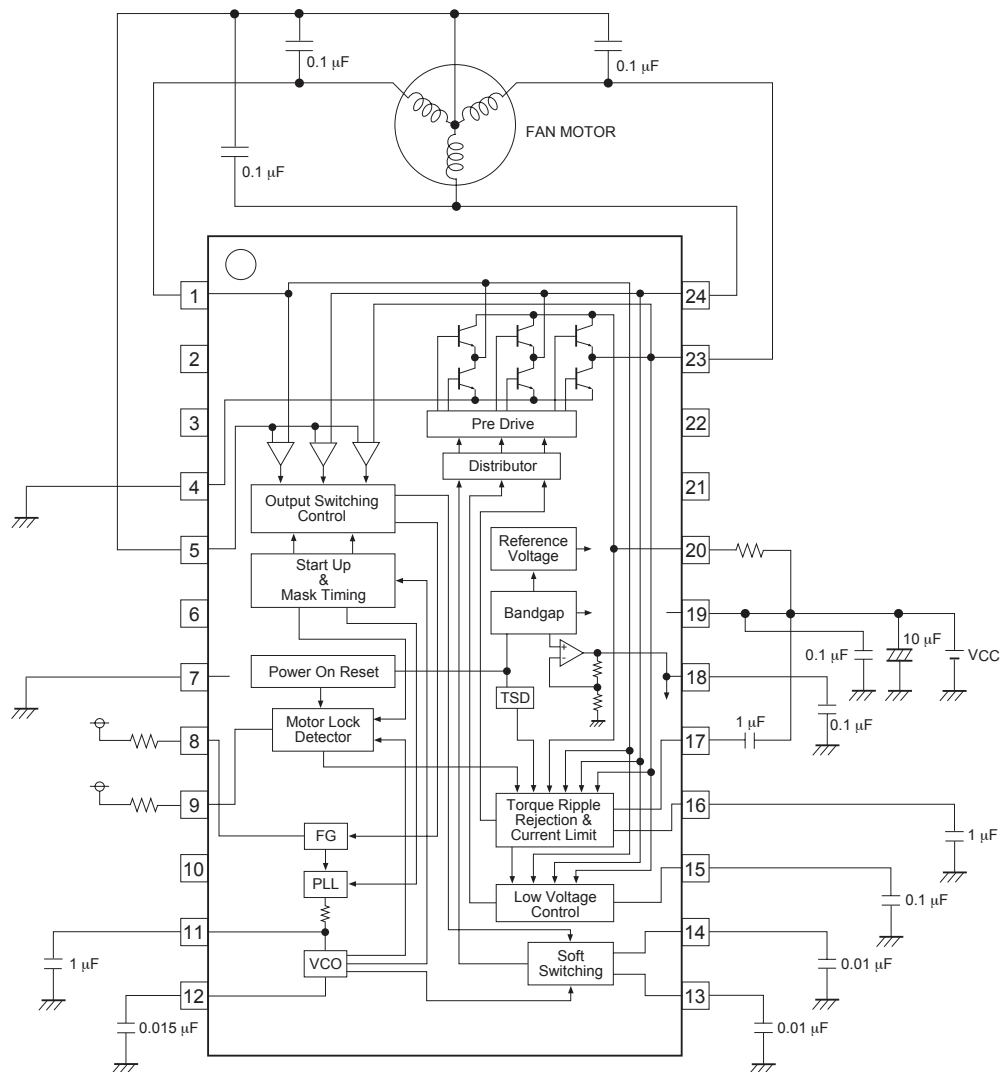
LV8712T, LV8713T: 5-12 V Application Diagram

Device	Type	V _M Max (V)	V _{CC} Max (V)	I _O Max (A)	I _O Peak Max (A)	Step Resolution	Control Type	Current Sense	Regulator Output	Package
AMIS30523	Stepper	30	40	1.2	1.6	1/32	Clock	Fully Integrated	Yes	QFN-52
AMIS30623	Stepper	30	40	0.8	0.8	1/16	LIN	Fully Integrated	Yes	NQFP-32, SOIC-20W
AMIS30624	Stepper	30	40	0.8	0.8	1/16	I2C	Fully Integrated	Yes	NQFP-32, SOIC-20W
LV8548MC	Stepper / Dual Brush DC	20	—	1	—	1, 1/2	Parallel	None	No	SOIC-10
LV8549MC	Stepper	20	—	1	—	1	Parallel	None	No	SOIC-10
LV8711T	Stepper / Dual Brush DC	18	6	0.8	1	1, 1/2	Parallel	External Resistor	Yes	TSSOP-24
LV8712T	Stepper	18	6	0.8	1	1, 1/2, 1/4, 1/8	Clock	External Resistor	Yes	TSSOP-24
LV8713T	Stepper	18	6	0.8	1	1, 1/2, 1/16, 1/32	Clock	External Resistor	Yes	TSSOP-24
LB1948MC	Stepper / Dual Brush DC	20	—	0.8	—	1, 1/2	Parallel	None	No	MFP-10SK
LB1909MC	Stepper	20	—	0.8	—	1	Parallel	None	No	SOIC-10
LB1930MC	Brush DC	11	—	1	—	—	Parallel	None	No	SOIC-10
LV8731V	Stepper / Dual Brush DC	36	—	2	2.5	1, 1/2, 1/4, 1/16	Clock; Parallel	External Resistor	Yes	SSOP-44K
LV8732V	Stepper / Dual Brush DC	36	—	2	2.5	1, 1/2, 1/4, 1/8	Clock; Parallel	External Resistor	Yes	SSOP-44K
LV8760T	Brush DC	38	6	3	4	—	Parallel	External Resistor	Yes	TSSOP-20J
LV8762T	Brush DC	36	—	1	1.5	—	Parallel	External Resistor	Yes	TSSOP-24

Brushless DC Motor Control

LB11685AV Features

- Sensorless
- Soft booting
- Soft switching
- Lock protection
- PAM (Pulse Amplitude Modulation) control
- Built-in current limiter, thermal shutdown, and beat lock protection



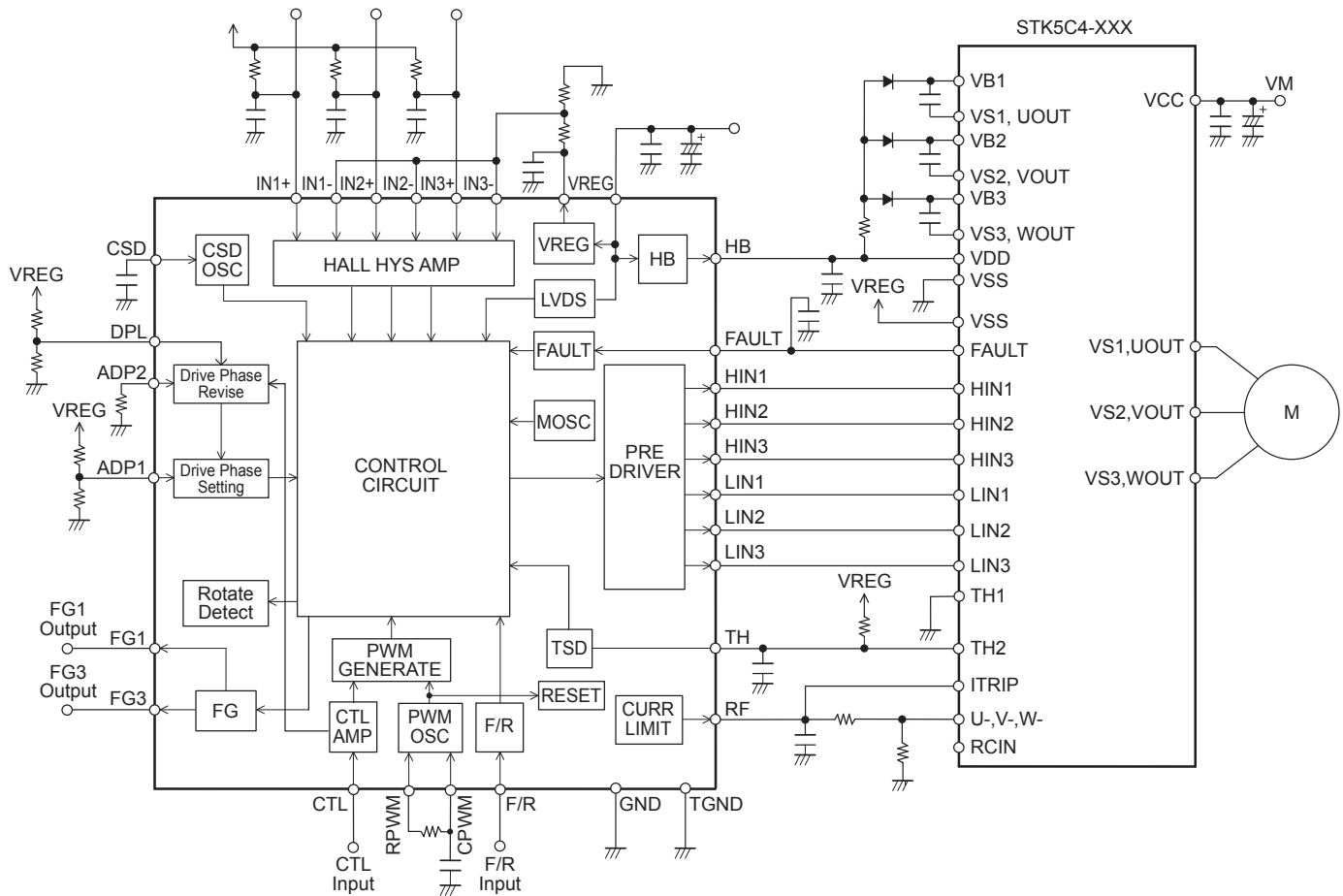
LB11685AV Application Diagram

Device	Type	Output Type	V _M Max (V)	V _{CC} Max (V)	I _O Max (A)	Speed Control Type	Standby	FG	Lock Protection	Package
LV8804FV	Sensorless	Built in	16	16	1.2	DC	None	1Hall	Yes	SSOP-20J
LV8805SV	Sensorless	Built in	16	16	1.2	PWM	None	1Hall	Yes	SSOP-20J
LB11685AV	Sensorless	Built in	19	19	1.2	PAM	None	1Hall	Yes	SSOP-24J
LB11696V	with Sensor	Pre	-	18	0.03	DC/PWM	Yes	1Hall/3Hall	Yes	SSOP-30
LV8136V	with Sensor	Pre	-	18	0.015	DC	Yes	1Hall/3Hall	Yes	SSOP-30
LB1975	with Sensor	Built in	7	46	2.5	DC	Yes	1Hall/3Hall	None	DIP-28H
LV8121V	with Sensor	Built in	36	36	3.5	DC	Yes	1Hall	Yes	SSOP-44K

Brushless DC Motor Control

LV8136V Features

- 3-phase Bipolar Driver
- Supports drive phase control
 - 15-degree lead angle for 150-degree current-carrying drive
- Bootstrap (maximum duty limit)
- Auto recovery lock protection
- Forward/reverse switching
- Current limit
- Low voltage protection
- Overheat protection
- FG1 / FG3 output pin



LV8136V Application Diagram

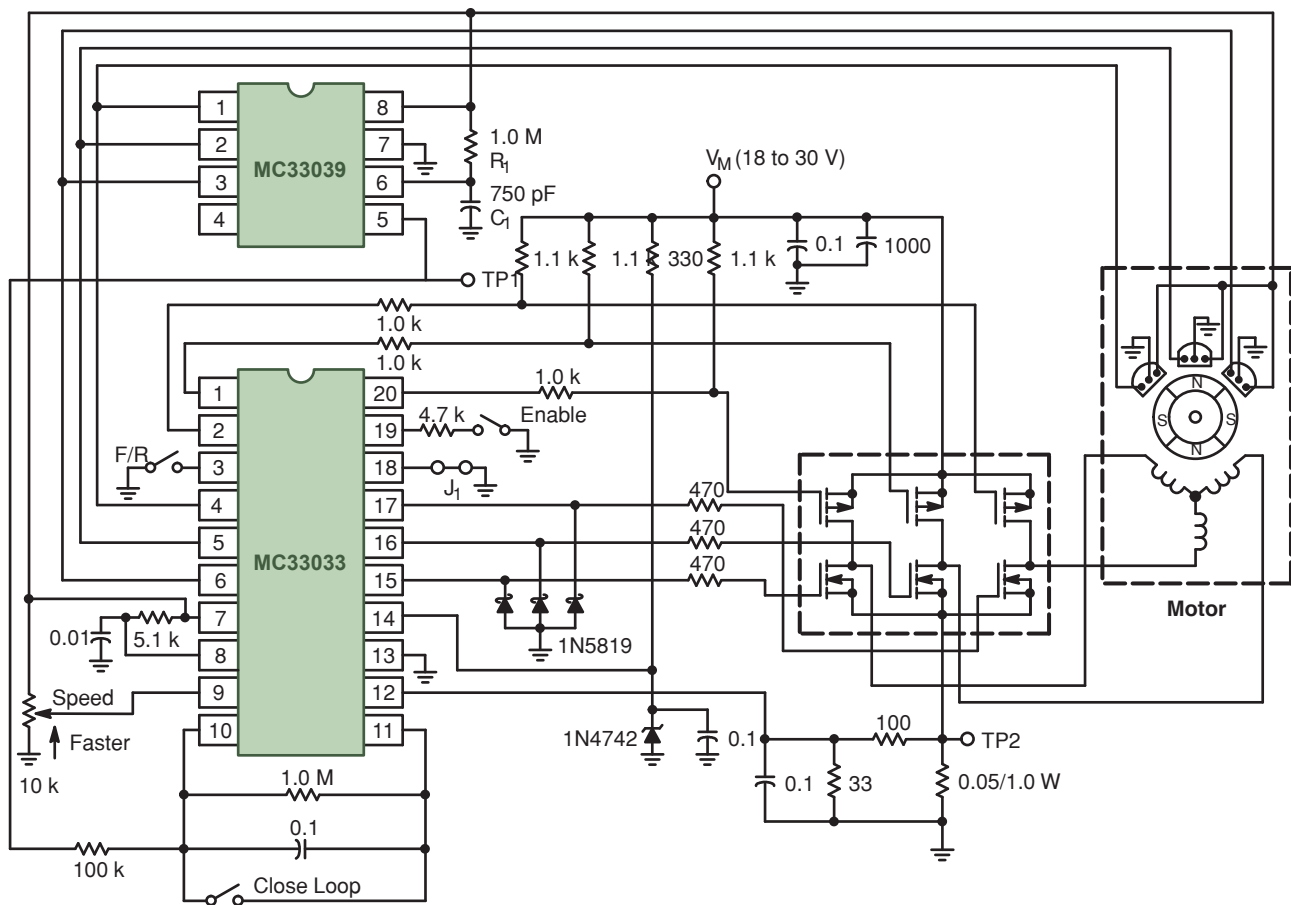
Brushless DC Motor Control

MC33033/5 Features

- Rotor position decoder for proper commutation sequencing
- Temperature compensated reference capable of supplying sensor power
- Frequency programmable sawtooth oscillator
- Three open collector top drivers
- Three high current totem pole bottom drivers

MC33039 Features

- Digital detection of each input transition for improved low speed motor operation
- Operation down to 5.5 V for direct powering from MC33035 reference
- Internal shunt regulator allows operation from a non-regulated voltage source
- Inverter output for easy conversion between 60°/300° and 120°/240° sensor phasing conventions

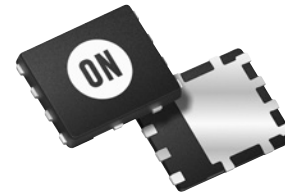


Application Diagram for MC33033 and MC33039

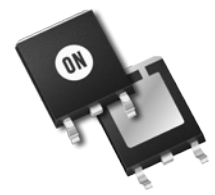
Power MOSFETs for Motor Control

Features

- Low $R_{DS(on)}$ to minimize conduction losses
- Low capacitance to minimize driver losses
- Low gate charge to minimize switching losses
- High avalanche resistance
- High current capability



SO-8 Flat Lead



ATPAK

Power MOSFETs

Device	Channel	V _{DSS} (V)	I _D (A)	R _{DS(on)} (mΩ)	Q _{G(TOT)} (nC)	Package
ATP104	P	-30	-75	8.4	76	ATPAK
ATP101	P	-30	-25	30	18.5	ATPAK
ATP108	P	-40	-70	10.4	79.5	ATPAK
ATP107	P	-40	-50	17	47	ATPAK
ATP106	P	-40	-30	25	29	ATPAK
SFT1350	P	-40	-19	59	12	DPAK, IPAK
SFT1341	P	-40	-10	112	8	DPAK, IPAK
ATP302	P	-60	-70	13	115	ATPAK
ATP114	P	-60	-55	16	92	ATPAK
ATP113	P	-60	-35	29.5	55	ATPAK
ATP112	P	-60	-25	43	33.5	ATPAK
NTTFS5116PL	P	-60	-20	52	25	u8FL
SFT1342	P	-60	-12	62	26	DPAK, IPAK
ATP301	P	-100	-28	75	73	ATPAK
SFT1345	P	-100	-11	275	21	DPAK, IPAK
ATP202	N	30	50	12	27	ATPAK
SFT1431	N	35	11	25	17.3	DPAK, IPAK
NTMFS5C410NL	N	40	302	0.9	143	SO8-FL
NTMFS5C404NL	N	40	339	0.75	181	SO8-FL
NTMFS5C442NL	N	40	121	2.8	50	SO8-FL
NTMFS5832NL	N	40	111	4.2	51	SO8-FL
NTD5802N	N	40	101	4.4	75	DPAK, IPAK
NTMFS5834NL	N	40	74	9.3	24	SO8-FL
SFT1450	N	40	21	28	14.4	DPAK, IPAK
NTD5807N	N	40	23	31	12.6	DPAK, IPAK
NTMFS5C604NL	N	60	276	1.2	120	SO8-FL
NTMFS5C612NL	N	60	226	1.5	91	SO8-FL
NTMFS5C646NL	N	60	89	4.7	33.7	SO8-FL
NTD5862N	N	60	90	5.7	82	DPAK, IPAK
NTP5863N	N	60	97	7.8	55	TO-220
ATP214	N	60	75	8.1	96	ATPAK
NTMFS5844NL	N	60	60	12	30	SO8-FL
NTP5864N	N	60	63	12.4	31	TO-220
NTD5865N	N	60	38	18	23	DPAK, IPAK
ATP212	N	60	35	23	34.5	ATPAK
NTTFS5826NL	N	60	20	24	8.4	u8FL
NTD5867NL	N	60	20	39	15	DPAK, IPAK
SFT1446	N	60	20	51	16	DPAK, IPAK
ATP405	N	100	40	33	68	ATPAK
NTD6414AN	N	100	32	37	40	DPAK, IPAK
NTD6416ANL	N	100	19	80	25	DPAK, IPAK
SFT1445	N	100	17	111	19	DPAK, IPAK
SFT1443	N	100	9	225	9.8	DPAK, IPAK
NDDP010N25AZ	N	250	10	420	16	DPAK, IPAK
SFT1452	N	250	3	2400	4.2	DPAK, IPAK
FW276	N	450	0.7	12100	3.7	SOIC-8
WPB4001	N	500	26	0.26	87	TO-3P-3L (SC-65)
WPB4002	N	600	23	0.36	84	TO-3P-3L (SC-65)
BFL4007	N	600	14	0.68	46	TO-220F-3FS (SC-67)

Energy Efficient TRIACs for High & Low Power Switching & AC Control

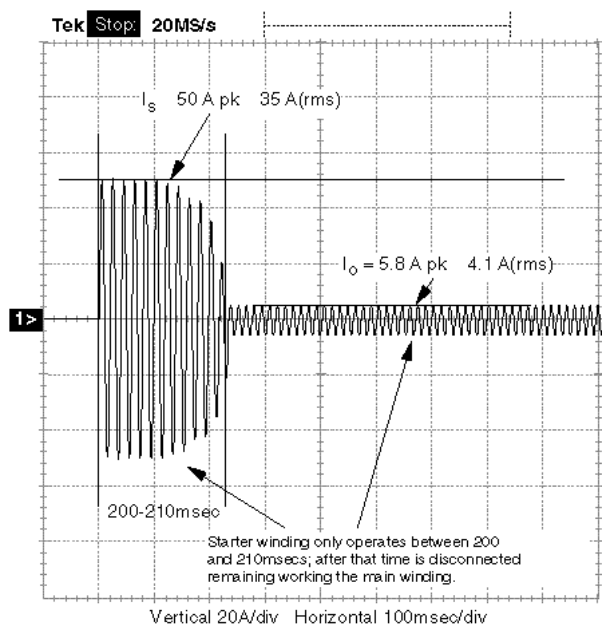
TRIACs – High Current

Device	$I_T(\text{rms})$ (A)	V_{drm} (V)	I_{gt} (mA)	dV/dt (V/ μs)	Package
BTB Series, Standard	8 - 16	600 - 800	25 - 50	25 - 400	T0-220 AB
BTB Series, Logic Level	8 - 16	600 - 800	5 - 10	15 - 50	T0-220 AB
BTB Series, Snubberless	8 - 30	600 - 800	35 - 50	500 - 2000	T0-220 AB
BTB Series, High Tj	8 - 16	600	35 - 50	1000	T0-220 AB
BTA Series, Standard	8 - 16	600 - 800	25 - 50	25 - 400	T0-220 II ¹
BTA Series, Logic Level	8 - 16	600 - 800	5 - 10	15 - 50	T0-220 II ¹
BTA Series, Snubberless	8 - 30	600 - 800	35 - 50	500 - 2000	T0-220 II ¹
BTA Series, High Tj	8 - 16	600	35 - 50	1000	T0-220 II ¹
MAC Series	8 - 16	200 - 800	5 - 50	25 - 750	T0-220 AB
MAC15 Series	15	400 - 800	50	5 - 250	T0-220 AB
2N63 Series	8 - 12	600 - 800	50	5 - 250	T0-220 AB

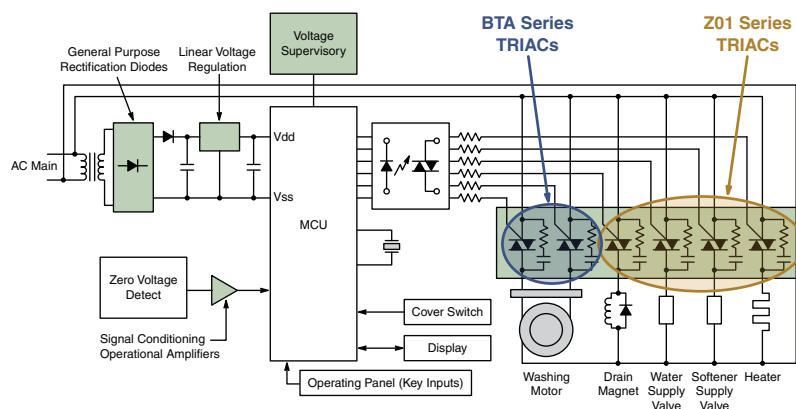
1. Internally Isolated T0-220

BTA/BTB Series Key Features

- Blocking voltage to 800 V
- On-state current ratings to 30 A RMS @ 25°C
- Greater noise immunity achieved with higher dV/dt up to 2,000 V/ μs minimum @ 125°C
- Standard and snubberless
- Logic level
- Uniform gate trigger current in 3 & 4 quadrants
- Highest industry standard isolation voltage of 2,500 V_{rms}
- Internal ceramic pad provides voltage insulated tab



Current during compressor startup (<200 ms) is too high; >200 ms, current drops to nominal value. Thyristor must be selected to sustain startup current without overheating. See AND8007/D for details.



Typical Application Using High and Low Current TRIACs

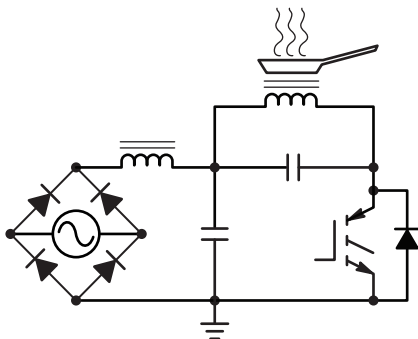
TRIACs – Low Current

Device	$I_T(\text{rms})$ (A)	V_{drm} (V)	I_{gt} (mA)	dV/dt (V/ μs)	Package
Z01 Series	0.8 - 1	600 - 800	3 - 10	25 - 400	T0-92, SOT-223
MAC97 Series	0.6 - 0.8	600 - 800	5	25	T0-92
MAC997 Series	0.8	600 - 800	3 - 5	20 - 60	T0-92
MAC08 Series	0.8	600 - 800	10	10	SOT-223
MAC4D Series	4	600 - 800	3 - 35	10	DPAK

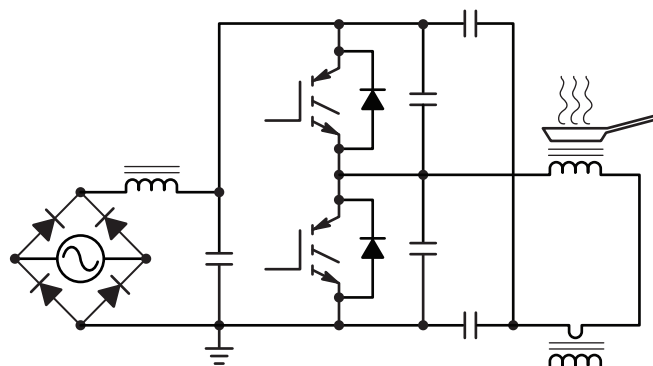
High Voltage IGBTs for Induction Heating

Induction Heating IGBTs

Device	Voltage (V)	Current (A)	Package
NGTB40N65IHL2	600	40	T0-247
NGTB30N65IHL2	600	30	T0-247
NGTB15N120IHR	1200	15	T0-247
NGTB20N120IHR	1200	20	T0-247
NGTB30N120IHR	1200	30	T0-247
NGTB15N135IHR	1350	15	T0-247
NGTB20N135IHR	1350	20	T0-247
NGTB30N135IHR	1350	30	T0-247



**Quasi-Resonant Flyback
Tailored for 1000-3500 W
Cookers**

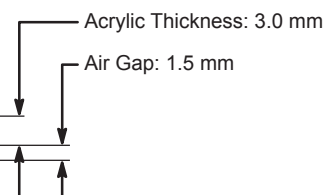
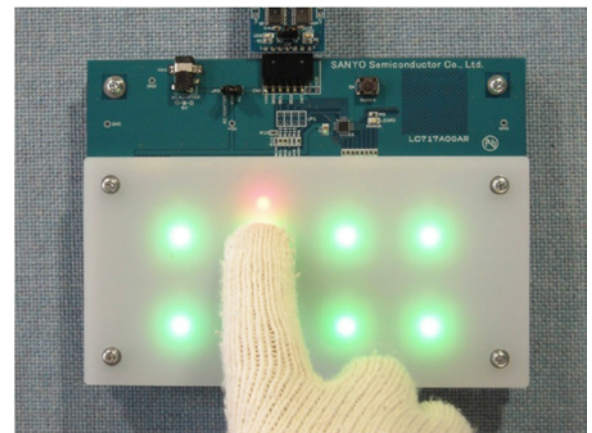
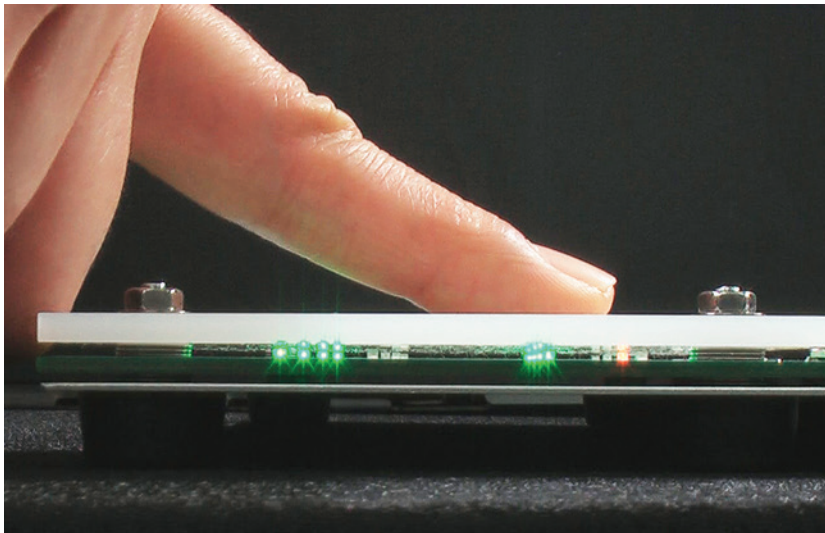


**Resonant Half-Bridge
Tailored for 1000-3500 W
Burners**

Capacitive Touch Sensors

Design Friendly, Low-Cost Operation, High Reliability

• Adhesive free	➔	• Reduce manufacturing cost and improve reliability by eliminating existing adhesive process
• Long sensor trace	➔	• Provide flexible PCB design
• Wide range operational temperature	➔	• Available in high-temperature environment
• No extra components	➔	• Reduce BOM
• High noise immunity	➔	• Improve stability and reliability



Capacitive Touch Sensors

Overview

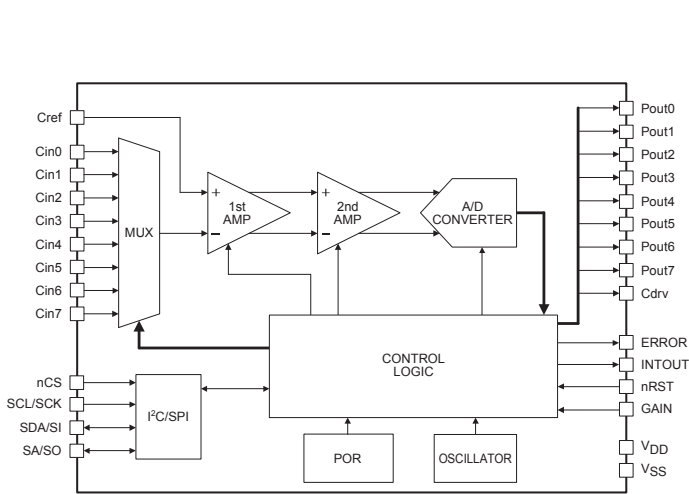
The LC717A00/10 is a high-performance and low-cost capacitance-digital-converter LSI for electrostatic capacitive touch sensor, especially focused on usability. It has 8/16 channels of capacitance-sensor input. This makes it ideal for various switch applications.

The calibration function and the judgment of ON/OFF are automatically performed internal to the LSI, reducing development time. A detection result (ON/OFF) for each input can be read out by the serial interface (I2C compatible bus or SPI). Moreover, LC717A00 outputs a detection result (ON/OFF) by changing the Pout output level.

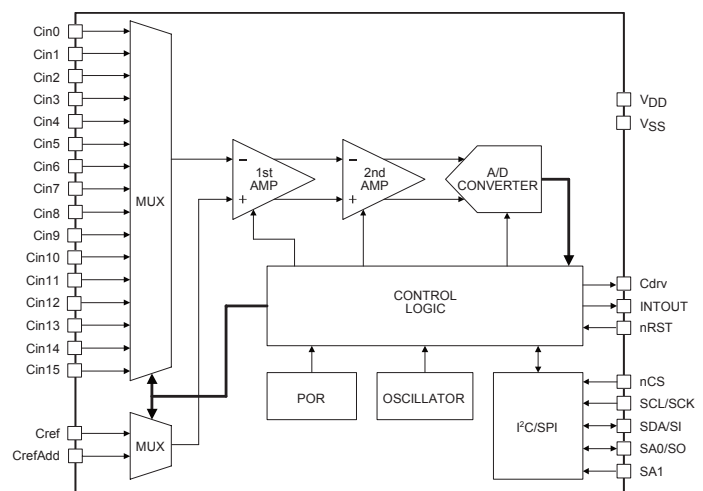
Also, the measurement value of each input can be read out as 8-bit digital data. Gain and other parameters can also be adjusted via serial interface.

Features

- Detection system: Differential capacitance detection (mutual capacitance type)
- Input capacitance resolution: Can detect capacitance changes in the femto-Farad order
- LC717A00 measurement interval (8 differential inputs)
 - 18 ms typical at initial configuration
 - 3 ms typical at minimum interval configuration
- LC717A10 measurement interval (16 differential inputs)
 - 30 ms typical at initial configuration
 - 6 ms typical at minimum interval configuration
- External components for measurement: Not required
- LC717A00 current consumption: 320 μ A typical (VDD = 2.8 V); 740 μ A typical (VDD = 5.5 V)
- LC717A10 current consumption: 570 μ A typical (VDD = 2.8 V); 1.3 mA typical (VDD = 5.5 V)
- Supply voltage: 2.6 V to 5.5 V
- Detection operations: Switch
- Packages: VCT-28 for LC717A00/10AR; SSOP-30 for LC717A00/10AJ
- Interface: I2C compatible bus or SPI selectable



LC717A00 Block Diagram

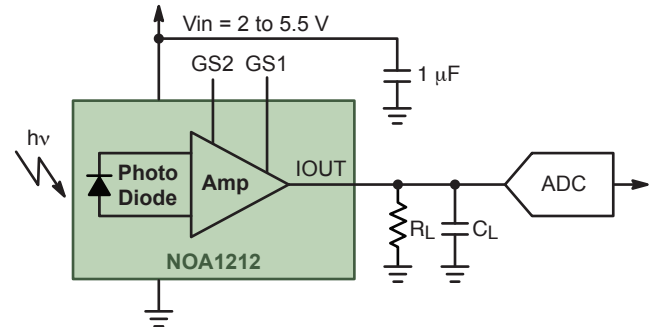


LC717A10 Block Diagram

Ambient Light & Proximity Sensors

Features

- Design flexibility/customization (i.e., EEPROM if desired for trimming)
- 0.0125 lux detection with customizable filtering (i.e., Photopic Light Response)
- Dark current and temperature compensation
- Lowest power consumption per resolution bit
- I2C Interface (including High Speed Mode) and no effect on bus during power down



Device	Description	Operating Voltage Range (V)	Operating Temp Range (°C)	Light Sensitivity Range (Lux)	Interface	Package
NOA1212	Analog Ambient Light Sensor with Dark Current Compensation and High Gain Mode	2.0 to 5.5	-40 to +85	~0.01 to 100K	Analog	CUDFN-6
NOA1305	Digital Ambient Light Sensor with I2C Interface and Dark Current Compensation	2.0 to 3.6	-40 to +85	0.125 to 100K	I2C (Standard and Fast Modes)	CUDFN-6
NOA2301*	Digital Proximity Sensor with Interrupt	2.3 to 3.6	-40 to +85	—	I2C (Standard, Fast and High-Speed Modes)	CUDFN-6
NOA3315*	Digital Proximity Sensor and Ambient Light Sensor with Interrupt	2.3 to 3.3	-40 to +85	0.0125 to 52K	I2C (Standard, Fast and High-Speed Modes)	CUDFN-8

* Pending 4Q14.

Display Drivers

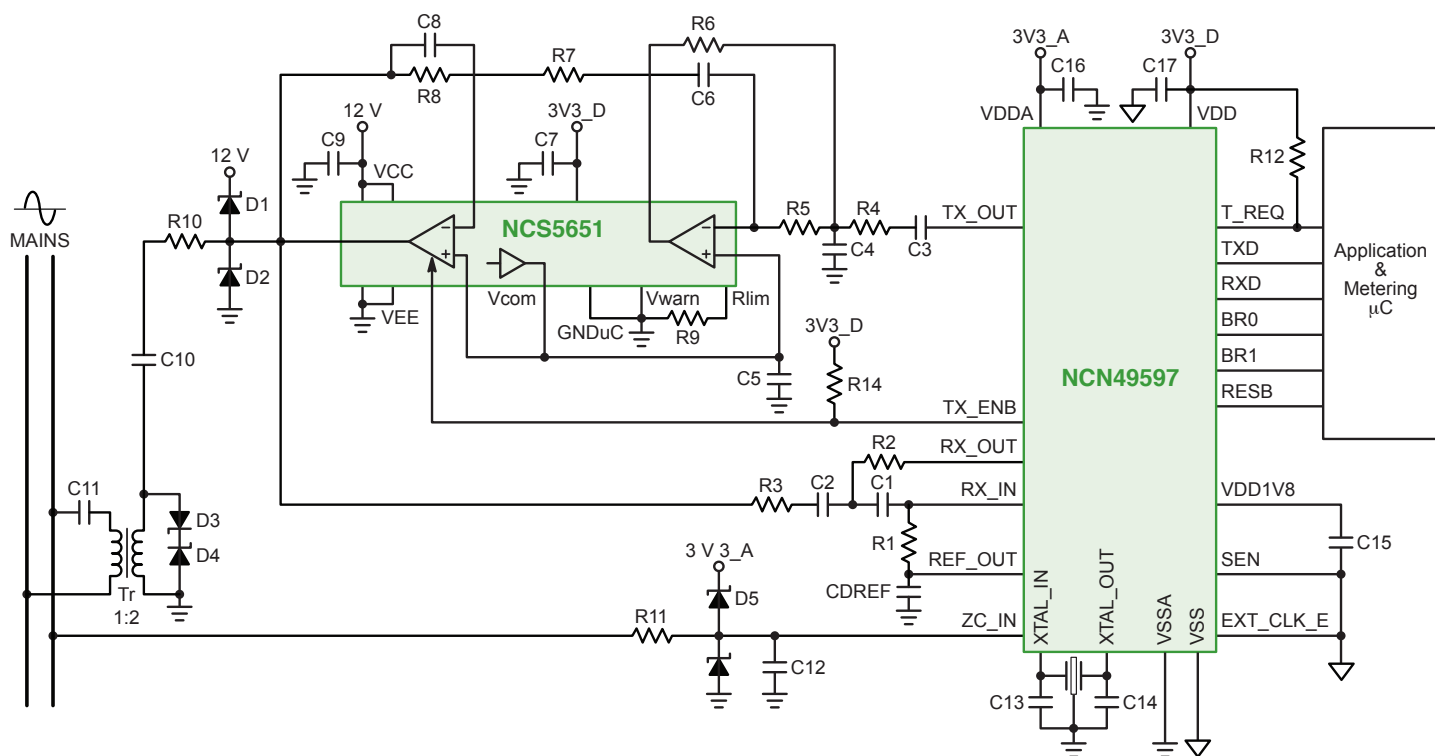


Device	Duty	Com/Seg	V _{DD} Min (V)	V _{DD} Max (V)	V _{DD} -V _{EE} Min (V)	V _{DD} -V _{EE} Max (V)	Direction of Shift Data	Mode of Shift Data	Package(s)
LC79401KNE	1/64 - 1/256	80 Segment	2.7	5.5	12	32	—	—	QIP-100E
LC79430KNE	1/64 - 1/256	80 Common	2.7	5.5	12	32	Bidirectional	Single/Dual	QIP-100E
LC79431KNE	1/64 - 1/256	80 Common	2.7	5.5	12	32	Bidirectional	Single	QIP-100E

Display Drivers

Device	Segments	Key Detect	V _{DD} Min (V)	V _{DD} Max (V)	V _{LCD} Min (V)	V _{LCD} Max (V)	V _I for Interface (V)	Output Ports	PWM Outputs	Character Generator	Package(s)
LC450029PKB	1/3 Duty: 159; 1/4 Duty: 208		4.5	6	VDD	VDD	VDD				Chip w/ Au Bumps
LC75700T		30 (15)	2.7	5.5			VDD	4			TSSOP-20
LC75805PE	1/1 Duty: 38; 1/2 Duty: 74; 1/3 Duty: 108; 1/4 Duty: 140; LED Driver: 48 Channel		4.5	5.5	VDD	VDD	VDD		7		QIP-100E
LC75806PT	1/3 Duty: 225 (198) to 231 (204); 1/4 Duty: 296 (260) to 304 (268)	20 to 30	4.5	6	VDD	VDD	3.3 or 5.0	9			TQFP-100
LC75808W	1/10 Duty: 600; 1/8 Duty: 480; 1/9 Duty: 540	30	4.5	6	4.5	11	VDD	4			SQFP-100
LC75809PT	1/3 Duty: 267(231); 1/4 Duty: 352(304)		4.5	6.3	VDD	VDD	3.3 or 5.0	12	6		TQFP-100
LC75810E/T	1/10 Duty: Dot matrix (5x9)x15+78; 1/8 Duty: Dot matrix (5x7)x16+80; 1/9 Duty: Dot matrix (5x8)x15+79		2.7	6	4.5	10	VDD			ROM 240; RAM 16	QIP-100E, TQFP-100
LC75812PT	1/8 Duty: Dot matrix (5x7)x13+65; 1/9 Duty: Dot matrix (5x8)x12+64	35 (20)	2.7	3.6	4.5	10	3.3 or 5.0	3	3	ROM 240; RAM 16	TQFP-100
LC75813E/T	1/3 Duty: 261 (237); 1/4 Duty: 344 (312)		2.7	6	2.7	6	VDD	8			QIP-100E, TQFP-100
LC75814V	1/4 Duty: 64 (48)		2.7	6	2.7	6	VDD	4			SSOP-30
LC75818PT	1/10 Duty: Dot matrix (5x9)x16+80; 1/8 Duty: Dot matrix (5x7)x16+80; 1/9 Duty: Dot matrix (5x8)x16+80	30	2.7	3.6	4.5	10	3.3 or 5.0	4		ROM 240; RAM 16	TQFP-120
LC75829PE/PW	1/3 Duty: 159 (147); 1/4 Duty: 208 (192)		4.5	6	VDD	VDD	3.3 or 5.0	4			QIP-64E, SQFP-64
LC75832E/W	1/2 Duty: 108 (100); Static: 54 (50)		2.7	6	2.7	6	VDD	4			QIP-64E, SQFP-64
LC75833E/W	1/3 Duty: 105 (81)		2.7	6	2.7	6	VDD	8			QIP-48E, SQFP-48
LC75836W	1/4 Duty: 140 (124)		4.5	6	VDD	VDD	3.3 or 5.0	4			SQFP-48
LC75839PW	1/3 Duty: 159 (147); 1/4 Duty: 208 (192)		4.5	6	VDD	VDD	3.3 or 5.0	4	3		SQFP-64
LC75841PE	1/2 Duty: 54 (46); Static: 27 (23)		4	6	VDD	VDD	3.3 or 5.0	4			QFP-36
LC75844M	1/4 Duty: 88 (72)		2.7	6	2.7	6	VDD	4			MFP-36SDJ
LC75847T	1/3 Duty: 318 (294); 1/4 Duty: 420 (388)		2.7	6	2.7	6	VDD	8			TQFP-120
LC75852E/W	1/2 Duty: 86 (78) to 90 (82)	20 to 30	4.5	6	VDD	VDD	VDD	4			QIP-64E, SQFP-64
LC75857E/W	1/3 Duty: 117 (105) to 126 (114); 1/4 Duty: 152 (136) to 164 (148)	15 to 30	2.7	6	2.7	6	VDD	4			QIP-64E, SQFP-64
LC75863W	1/3 Duty: 69 (57) to 75 (63)	20 to 30	4.5	6	VDD-0.5	6	VDD	4			SQFP-48
LC75878W	1/10 Duty: 730; 1/8 Duty: 600; 1/9 Duty: 666		2.7	6	4.5	11	VDD	4			SQFP-100
LC75879PT	1/3 Duty: 207 (183); 1/4 Duty: 272 (240)		4.5	6.3	VDD	VDD	3.3 or 5.0	8	3		TQFP-80J
LC75886PW	1/3 Duty: 165 (150) to 171 (156); 1/4 Duty: 216 (196) to 224 (204)	20 to 30	4.5	6	VDD	VDD	3.3 or 5.0	5			SQFP-80
LC75890W	1/4 Duty: 148 (100); Static: 37 (25)		2.7	3.6	2.7	5.5	VDD	12	3		SQFP-48
LC75897PW	1/3 Duty: 387 (363); 1/4 Duty: 512 (480)		2.7	6	2.7	6	VDD	8	3		SQFP-144

PLC Modems/Power Line Driver



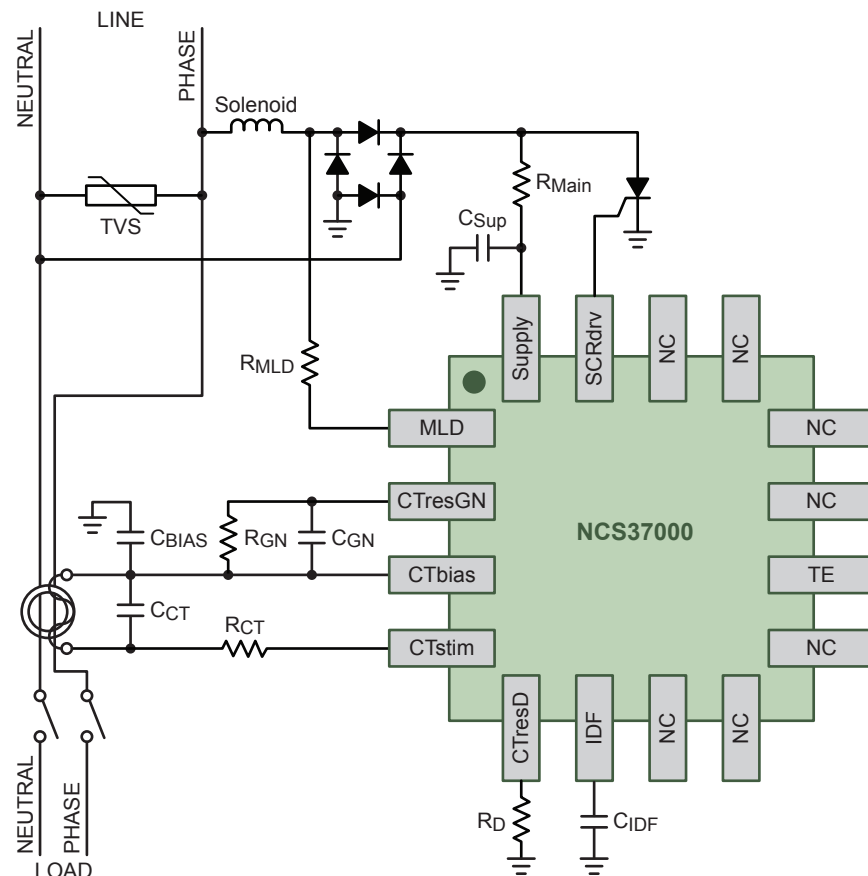
	Device	Function	Features	Package(s)
Smart Grid Modem	NCN49599	PLC S-FSK Modem; A - D Band	- ARM Cortex M0 - Baud rate: 4800 Bauds - S-FSK modulation	QFN-56
	NCN49597	PLC S-FSK Modem; A - D Band	- ARM Cortex M0 - Baud rate: 4800 Bauds	QFN-52
Smart Metering Modem	AMIS49587	PLC S-FSK Modem; A & B Band	- ARM7TDMI, 24 MHz core - Baud rate: 2400 Bauds	QFN-52
Power Amplifier	NCS5651	Power Line Driver; Class AB	- Low distortion power line driver with optimized interface for PLC modems - Capability to drive 2.0 A peak into reactive loads	QFN-20 EP



GFCI Controllers

NCS37000 Features

- Proprietary UL943 GFCI analog engine requires fewer components and only one low-turns-ratio ferrite current transformer, which results in a significant reduction in the bill of materials
- Specialized DSP controller offers best in class immunity to nuisance loads without the need for external analog filters
- Self synchronizing internal oscillator adjusts to AC mains frequency for full resolution on 50 and 60 Hz distribution systems
- Easily programmable fault sensitivity for both differential and ground-neutral faults
- Optimized solenoid deployment enabled through mains level monitoring
- Cost-effective differential-only solution available with the NCS37005
- Self test with lockout derivatives available with the NCS37010



NCS37000 Application Diagram

MCUs for White Goods

System Control

- Pins: 64 – 100
- ROM: 64 – 512 K
- ADC: 16 channel

LCD Display Control

- LCD Segments: 74 x 4 (max)
- ROM: 16 – 256 K
- ADC: 8 – 15 channel

Small Appliance System Control

- Pins: 10 – 48
- ROM: 4 – 50 K
- ADC: 7 – 14 channel

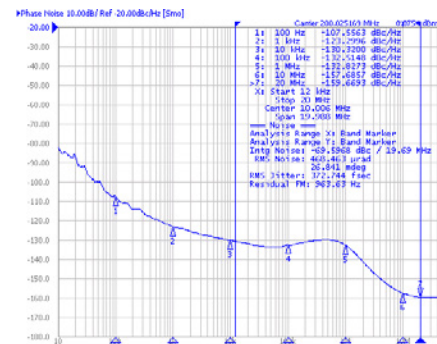
Device	Type	V _{DD} (V)	ROM (kB)	RAM (bit)	12-Bit ADC	Features	Package
LC87F2608A	8-bit	2.7 - 5.5	8	512 x 9	3 channel	High speed 12-bit PWM, analog comparator	MFP-10SK
LC87F0N04A	8-bit	5.5 - 2.8	4	128 x 9	6 channel (10-bit)	MCPWM, analog comparator x 2	SSOP-16
LC87F2R04A	8-bit	2.7 - 5.5	8	256 x 9	8 channel	PWM; internal OSC ±5%, POR, LVD	SSOP-24
LC87F0G08A	8-bit	1.8 - 5.5	8	256 x 9	7 channel	PWM; internal OSC ±2%, POR, LVD, high speed 12-bit PWM, analog comparator	SSOP-24
LC87FBG08A	8-bit	1.8 - 5.5	8	256 x 9	9 channel	PWM; internal OSC ±2%, POR, LVD	SSOP-24, VCT-24
LC87FBK08A	8-bit	2.7 - 5.5	8	256 x 9	8 channel	PWM; internal OSC ±2%, POR, LVD	SSOP-24
LC87FBH08A	8-bit	1.8 - 5.5	8	256 x 9	9 channel	PWM; internal OSC ±2%, POR, LVD	QFP-36
LC87FBL08A	8-bit	2.7 - 5.5	8	256 x 9	9 channel	PWM; internal OSC ±2%, POR, LVD	QFP-36
LC87F0808A	8-bit	3.3 - 5.5	8	256 x 9	10 channel (10-bit)	3-phase PWM, op-amp, comparator	QFP-36
LC87F2J32A	8-bit	1.8 - 5.5	32	1024 x 9	14 channel	PWM (12-bit x 2 channel), RTC, POR, LVD	QIP-48E, SQFP-48
LC87F2W48A	8-bit	2.7 - 5.5	50	1536 x 9	14 channel	PWM (12-bit x 2 channel), remote control receiver	SQFP-48
LC87FC096A	8-bit	2.5 - 3.6	96	4096 x 9	11 channel	PWM (12-bit x 4 channel), SMIIC	QIP-64E
LC87F5M64A	8-bit	2.2 - 5.5	64	2048 x 9	11 channel (8-bit)	PWM (12-bit x 2 channel), remote control receiver	QIP-64E
LC87F5R96B	8-bit	2.5 - 5.5	96	4096 x 9	11 channel (8-bit)	PWM (12-bit x 2 channel), remote control receiver	QIP-64E
LC87F2C64A	8-bit	2.4 - 5.5	64	2048 x 9	16 channel	PWM (12-bit x 4 channel), RTC, POR, LVD	QFP-80
LC87F5WC8A	8-bit	2.2 - 5.5	128	4096 x 9	15 channel	PWM (12-bit x 4 channel)	QIP-100E
LC87F5VP6A	8-bit	2.5 - 5.5	256	10K x 9	15 channel (8-bit)	PWM (12-bit x 4 channel)	QIP-100E, TQFP-100
LC88F58B0A	16-bit	2.2 - 5.5	128	6144 x 8	11 channel	PWM; 3 x SIO; 2 x UART	SQFP-64
LC88F52H0A	16-bit	2.5 - 5.5	512	24K x 8	16 channel	PWM, DAC, SMIIC x 2, SLIIC, RTC, remote control receiver	TQFP-100
LC87F7932B	8-bit	2.4 - 3.6	32	2048 x 9	7 channel	32-segment LCD controller for 4.5 V panel, RTC	QIP-64E, SQFP-64, DIE
LC87F76C8A	8-bit	2.2 - 5.5	128	4096 x 9	12 channel	32-segment LCD controller for 5.5 V panel, RTC	QFP-80
LC87F7NP6A	8-bit	2.5 - 3.6	256	8192 x 9	15 channel	54-segment LCD controller for 5.5 V panel, RTC	QIP-100E
LC88F85D0A	16-bit	2.0 - 3.6	256	4096 x 9	7 channel	1536-segment dot matrix LCD controller, RTC	TQFP-120

PLL Clock Synthesizers/Generators



Features

- Based on phase-locked-loop techniques with zero PPM synthesis error
- Low jitter for high accuracy clock signals
- Available in industrial temperature range -40°C to +85°C
- Supports output interfaces: LVPECL, LVDS, HCSL, LVTTTL/LVCMOS
- Multiple PLLs and multiple output options



**NB3N5573 Typical Phase Noise
at Fc = 200 MHz**

Device	Input (MHz)	Output (MHz)	Application	Input Level					Output Level	Vcc Typ (V)	Package(s)
				XTAL	CML	CMOS	LVPECL	TTL			
NB3N3002	25	25/125/200	CPU/DIMM, PCIe Gen 1,2,3	✓		✓		✓	HCSL	3.3	TSSOP-16
NB3N5573	25	25/100/125/200	CPU/DIMM, PCIe Gen 1,2,3	✓		✓		✓	HCSL	3.3	TSSOP-16
NB3N3020	5 to 27	5 to 210	Network GigE	✓	✓	✓	✓		ECL, LVTTTL	3.3	TSSOP-16
NB3N501	2 to 50	13 to 160	Networking, Consumer, STB	✓					CMOS	3.3, 5	SOIC-8
NB3N502	2 to 50	14 to 120	Networking, Consumer, STB	✓		✓			LVCMOS	3.3, 5	SOIC-8
NB4N507A	5 to 52	50 to 200	Networking, Consumer, STB	✓		✓			ECL	3.3, 5	SOIC-16
NB3N508S	27	216	VCXO Set Top Box	✓		✓			LVDS	3.3	TSSOP-16
NB3N511	1 to 50	14 to 200	Networking, Consumer, STB	✓					CMOS	3.3, 5	SOIC-8
NB3N51034	25	100/200	CPU/DIMM, PCIe Gen 1,2,3	✓		✓			HCSL	3.3	TSSOP-20
NB3N51044	25	100/125	CPU/DIMM, PCIe Gen 1,2,3	✓		✓			HCSL	3.3	TSSOP-28
NB3N51054	25	100	CPU/DIMM, PCIe Gen 1,2,3	✓					HCSL	3.3	TSSOP-24

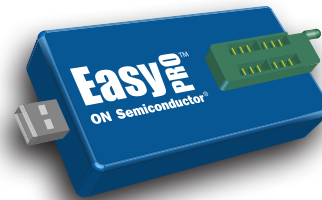


EEPROMs for Configuration and Calibration

Features

- Broad density range: 1 kb to 2 Mb
- Wide operating Vcc range: 1.8/1.7 V to 5.5 V
- High endurance: 1 million program/erase cycles
- Wide temperature range: industrial and extended

EasyPRO™ is a user-friendly, portable programming tool for ON Semiconductor serial EEPROMs (I²C, SPI, Microwire)



EEPROMs

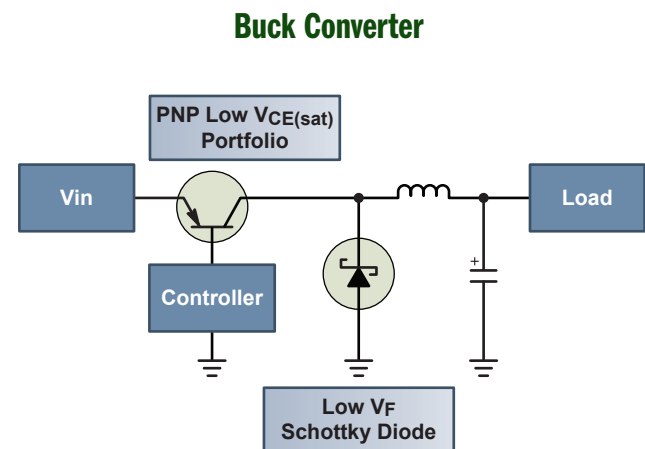
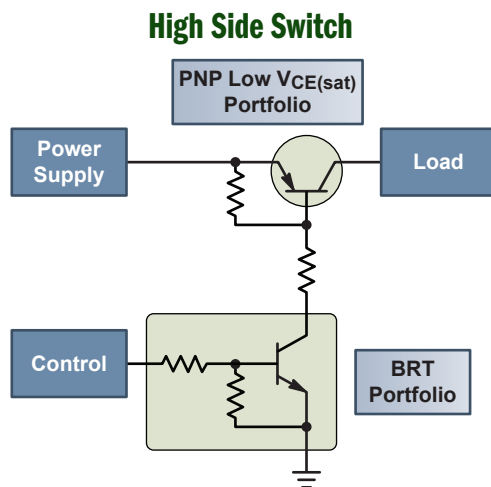
Data Transmission Standard	Device	Density	Organization*	Vcc Min (V)	Vcc Max (V)	fCLK Max (MHz)	Package(s)
I ² C	CAT24M01	1 Mb	128k x 8	1.8	5.5	1	SOIC-8, TSSOP-8, UDFN-8
	CAT24C512	512 kb	64k x 8	1.8	5.5	1	SOIC-8, TSSOP-8, UDFN-8
	CAT24C256	256 kb	32k x 8	1.8	5.5	1	SOIC-8, TSSOP-8, UDFN-8
	CAT24C128	128 kb	16k x 8	1.8	5.5	1	SOIC-8, TSSOP-8, UDFN-8
	CAT24C64	64 kb	8k x 8	1.7	5.5	1	SOIC-8, TSSOP-8, UDFN-8
	CAT24C32	32 kb	4k x 8	1.7	5.5	1	SOIC-8, TSSOP-8, UDFN-8; WLCSP-5
	CAT24C16	16 kb	2k x 8	1.7	5.5	0.4	SOIC-8, TSSOP-8, UDFN-8, TSOT23-5, WLCSP-4, WLCSP-5
	CAT24C08	8 kb	1k x 8	1.7	5.5	0.4	SOIC-8, TSSOP-8, UDFN-8, TSOT23-5, WLCSP-4, WLCSP-5
	CAT24C04	4 kb	512 x 8	1.7	5.5	0.4	SOIC-8, TSSOP-8, UDFN-8, TSOT23-5, WLCSP-4, WLCSP-5
	CAT24C02	2 kb	256 x 8	1.7	5.5	0.4	SOIC-8, TSSOP-8, UDFN-8, TSOT23-5, WLCSP-4, WLCSP-5
SPI	CAT25M02	2 Mb	256k x 8	1.7	5.5	10	SOIC-8
	CAT25M01	1 Mb	128k x 8	1.8	5.5	10	SOIC-8, TSSOP-8
	CAT25512	512 kb	64k x 8	1.8	5.5	20	SOIC-8, TSSOP-8, UDFN-8
	CAT25256	256 kb	32k x 8	1.8	5.5	20	SOIC-8, TSSOP-8, UDFN-8
	CAT25128	128 kb	16k x 8	1.8	5.5	20	SOIC-8, TSSOP-8, UDFN-8
	CAT25640	64 kb	8k x 8	1.8	5.5	20	SOIC-8, TSSOP-8, UDFN-8
	CAT25320	32 kb	4k x 8	1.8	5.5	20	SOIC-8, TSSOP-8, UDFN-8
	CAT25160	16 kb	2k x 8	1.8	5.5	20	SOIC-8, TSSOP-8, UDFN-8
	CAT25080	8 kb	1k x 8	1.8	5.5	20	SOIC-8, TSSOP-8, UDFN-8
	CAT25040	4 kb	512 x 8	1.8	5.5	20	SOIC-8, TSSOP-8, UDFN-8
	CAT25020	2 kb	256 x 8	1.8	5.5	20	SOIC-8, TSSOP-8, UDFN-8
	CAT25010	1 kb	128 x 8	1.8	5.5	20	SOIC-8, TSSOP-8, UDFN-8
Microwire	CAT93C86	16 kb	2k x 8 / 1k x 16	1.8	5.5	3	SOIC-8
	CAT93C86B	16 kb	2k x 8 / 1k x 16	1.8 / 1.65	5.5	4	SOIC-8, TSSOP-8, UDFN-8
	CAT93C76	8 kb	1k x 8 / 512 x 16	1.8	5.5	3	SOIC-8, TSSOP-8
	CAT93C76B	8 kb	1k x 8 / 512 x 16	1.8 / 1.65	5.5	4	SOIC-8, TSSOP-8, UDFN-8
	CAT93C66	4 kb	512 x 8 / 256 x 16	1.8	5.5	2	SOIC-8, TSSOP-8
	CAT93C56	2 kb	256 x 8 / 128 x 16	1.8	5.5	2	SOIC-8, TSSOP-8
	CAT93C46	1 kb	128 x 8 / 64 x 16	1.8	5.5	2	SOIC-8, TSSOP-8
	CAT93C46B	1 kb	128 x 8 / 64 x 16	1.8 / 1.65	5.5	4	SOIC-8, TSSOP-8, UDFN-8

* Organization for Microwire devices is selectable.

Wide Selection of Small Signal Discretes for White Goods

ON Semiconductor offers a wide range of devices that support the systems of white goods, including diodes, bipolar transistors, and digital transistors (BRTs). Within these different technologies, the company offers a range of large to small packaging, meeting the smaller board space requirements of space constrained environments.

Device	Voltage Range	Current Range	Key Features	Functions	Package(s)
Schottky Diodes	7 – 70 V	20 – 1000 mA	Low V_F ; Low Leakage; Duals	DC-DC converters, high-speed switching, Oring/rectifying	SOT-23, SC-70, SC-89, SC-75, SC-88, SOD-123, SOD-323, SOD-523
Switching Diodes	35 – 350 V	–	Switching speed; Low leakage	Broad range	SC-59, SOT-23, SC-70, SC-75, SC-88, SOT-563, SOD-123, SOD-323, SOD-523
Low $V_{CE(sat)}$ Transistors	12 – 100 V	700 – 6000 mA	Ultra-low $V_{CE(sat)}$; Broad portfolio	Switching of power with low power dissipation	DPAK, SOT-223, SOT-23, SC-70, SC-89, SOIC-8, ChipFET, SC-74, TSOP-6, SC-88, SOT-563
Darlington Transistors	30 – 350 V	300 mA – 50 A	High HFE	–	TO-220, TO-225, TO-247, TO-92, DPAK, SOT-223, SOT-23
Digital Transistors (BRTs)	50 V	100 – 500 mA	Integrated resistors in single package; Wide range of R1 and R2 combinations	Switching power supplies, easy interface with μC to control power to downstream electronics	SC-59, SOT-23, SC-70, SC-75, SC-88, SOT-563



Digital Transistors (BRTs)

Key Features

- Wide range of R1 and R2 combinations
- Simplifies circuit design
- Reduces board space
- Reduces component count
- Wide range of packages

Low $V_{CE(sat)}$ Transistors

Key Features

- Ultra low saturation voltage
- Broad portfolio
- Cost effective alternative to MOSFETs
- Very high current gain
- High ESD rating

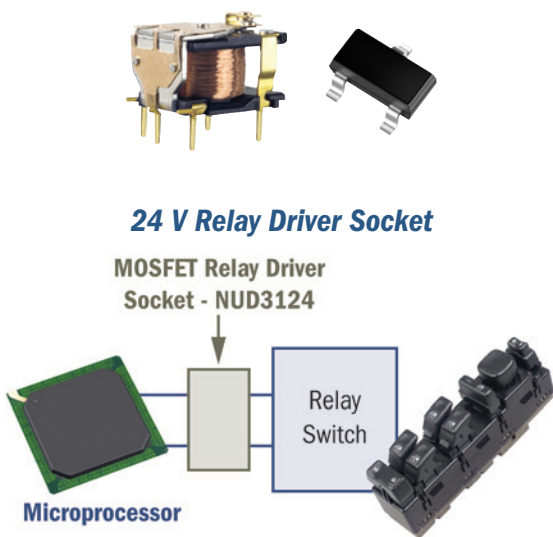
Schottky Diodes

Key Features

- Low V_F diodes
- Low leakage diodes
- Dual packaged diodes
- Broad portfolio
- Very high switching speed
- Low Capacitance

Integrated, Reliable Drive Circuits for Motors and Electro-mechanical Relays

Most relays mounted to a PCB
require a relay driver circuit!



Features

- Integrates diodes, resistors and capacitors into one circuit
- Delivers additional current to the relay coil and protects against ESD
- Meets IEC61000-4-4 Electrical Fast Transient (EFT) test standards

Relay Drivers

Device	Configuration	Circuit Type *	Voltage (V)	Current (mA)	Package
MDC3105	Single	Bipolar-Clamp	5	500	SOT-23
MDC3105D	Dual	Bipolar-Clamp	5	500	SC-74
NUD3105	Single	MOSFET	5	500	SOT-23
NUD3105D	Dual	MOSFET	5	500	SC-74
NUD3112	Single	MOSFET	12	500	SOT-23
NUD3112D	Dual	MOSFET	12	500	SC-74
NUD3124	Single	MOSFET	24	150	SOT-23
NUD3124D	Dual	MOSFET	24	150	SC-74
NUD3160	Single	MOSFET	60	150	SOT-23
NUD3160D	Dual	MOSFET	60	150	SC-74

* **Bipolar:** the driver circuit consists of a transistor combined with resistors and diodes.
MOSFET: the driver circuit consists of a MOSFET combined with resistors and diodes.

For More Information, Visit the Consumer Applications

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Consumer Applications

ON Semiconductor provides DSP systems; dc-dc controllers, converters, & regulators; drivers; thermal management; voltage & current management; amplifiers & comparators; MOSFETs; analog switches; EMI/RFI filters; interfaces; diodes & rectifiers; bipolar transistors; and MiniGate™ logic for consumer applications.

Interactive Block Diagrams

Build a customized product list to complete your design:

- ▶ Air Conditioner (Indoor Unit)
- ▶ Air Conditioner (Outdoor Unit)
- ▶ Air Purifier
- ▶ Audio Amp-Performance
- ▶ Clothes Dryer
- ▶ Clothes Washer
- ▶ Digital Video Recorder
- ▶ Dishwasher
- ▶ Game Console
- ▶ HVAC
- ▶ Half-Bridge Induction Cooker
- ▶ Induction Cooker
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