Fairchild New Product Highlights

Contents

1

Smart Power Module Series 10A to 20A

Smart Power Module (SPM™) products in compact Dual In-line Packages (DIP) offer an optimized, integrated solution for 10A to 20A appliance motor controls.
http://www.fairchildsemi.com/whats_new/spm_nph.html

The new DIP-SPM products provide complete adjustable-speed motor drive control and fully integrated circuit protection for AC appliance motors. Compared to discrete IGBT solutions, the integrated SPM requires less than half the board space while providing low-voltage control and high-voltage output stage rated at 10A to 20A at 230V AC.

Features

- Adjustable 600V to 10A, 15A and 20A three-phase IGBT inverter bridge including control ICs
- Adjustable current protection level
- Divided negative DC-link terminals
- Single-grounded power supply
- Built-in thermistor
- Isolation rating of 2500V rms/min
- Inverter power rating of 0.4kW, 0.75kW, 1kW and 1.4kW/100V AC to 253V AC

Benefits

- Provides complete adjustable-speed motor drive control
- Uses less than half the board space compared to discrete IGBT solutions
- Provides low-voltage control and high-voltage output stage rated at 10A to 20A at 230V AC
- Ceramic-based transfer molded-type package achieves 27% higher power rating than conventional TO-220F package
- Very low leakage current due to ceramic substrate
- Reduces time for system design and manufacturing
- Diminishes field failure ratio

Applications

- Air conditioner drive systems
- Washing machines
- 100V AC to 253V AC three-phase inverter drives

New Product Highlights

Analog; Discrete; Interface & Logic; Optoelectronics. Innovative multi-market products developed by Fairchild. These highlights define our latest offerings and the product features and benefits to solve your most complex design challenges.

www.fairchildsemi.com/whats_new

A full list of new product highlights and detailed information is available online and through quarterly e-mail updates.

Comprehensive New Product List

(April–June 2002)

Analog

FAN5240	Two-Phase PWM Controller
FAN8404D	Two-Phase Halfwave BLDC Motor Drive IC

Discrete

FDB045AN08A0	Discrete Automotive N-Channel UltraFET® Trench MOSFET, 75V, 80A, 0.0045Ω @ V_{GS}=10V
FDD16AN08A0	Discrete Automotive N-Channel UltraFET Trench MOSFET, 75V, 50A, 0.016Ω @ V_{GS}=10V
FDP047AN08A0	Discrete Automotive N-Channel UltraFET Trench MOSFET, 75V, 80A, 0.0047Ω @ V_{GS}=10V
FGL60N100D	Copak Discrete IGBT
FSAM10SH60	10A, Smart Power Module (SPM)
FSAM15SH60	15A, Smart Power Module (SPM)
FSAM15SL60	15A, Smart Power Module (SPM)
FSAM20SL60	20A, Smart Power Module (SPM)
FSBM10SH60	10A, Smart Power Module (SPM)
FSBM15SH60	15A, Smart Power Module (SPM)
FSBM15SL60	15A, Smart Power Module (SPM)
FSBM20SL60	20A, Smart Power Module (SPM)
ISL9K30120G3	30A, 1200V Stealth™ Dual Diode
ISL9K8120P3	8A, 1200V Stealth Dual Diode
ISL9R30120G2	30A, 1200V Stealth Diode
ISL9R8120P2	8A, 1200V Stealth Diode
ISL9R8120S3S	8A, 1200V Stealth Diode

Interface and Logic

74ALVCF322835	Low-Voltage 36-Bit Universal Bus Driver with 3.6V Tolerant Outputs and 26Ω Series Resistors in Outputs
74LCXH16245	Low-Voltage 16-Bit Bidirectional Transceiver with Bushold
74LCXH32245	Low-Voltage 32-Bit Bidirectional Transceiver with 5V Tolerant Inputs and Outputs with Bushold
74LVTH322245	Low-Voltage 32-Bit Transceiver with 3-STATE Outputs and 25Ω Series Resistors in A Port Outputs
74LVTH322373	Low-Voltage 32-Bit Transparent Latch with 3-STATE Outputs and 25Ω Series Resistors in the Outputs
74LVXZ161284	Low-Voltage IEEE 161284 Translating Transceiver with Power Up Protection
FIN1025	3.3V LVDS 2-Bit High-Speed Differential Driver
FIN1026	3.3V LVDS 2-Bit High-Speed Differential Receiver
FSAV330	Low On-Resistance Quad SPDT Wide Bandwidth Video Switch
FST32X245	16-Bit Bus Switch
FST33X257	Quad 24:12 Multiplexer/Demultiplexer Bus Switch
FSTU16862	20-Bit Bus Switch with -2V Undershoot Protection
FSTU32X384	10-Bit Low-Power Bus Switch with -2V Undershoot Protection
NC7SBU3157	TinyLogic™ Low-Voltage UHS SPDT Analog Switch with -2V Undershoot Protection
NC7SP57	TinyLogic ULP Universal Configurable 2-Input Logic Gates
NC7SP58	TinyLogic ULP Universal Configurable 2-Input Logic Gates
NC7SZ10	TinyLogic UHS 3-Input NAND Gate
NC7SZ11	TinyLogic UHS 3-Input AND Gate
NC7SZ27	TinyLogic UHS 3-Input NOR Gate
NC7SZ332	TinyLogic UHS 3-Input OR Gate
NC7SZ386	TinyLogic UHS 3-Input Exclusive-OR Gate

New Product Highlights

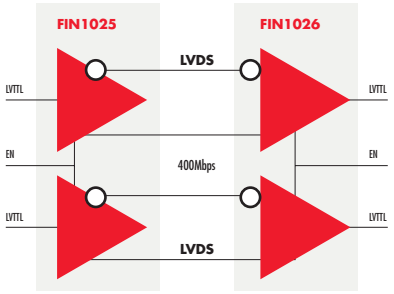
(*continued from cover*)

2

FIN1025/FIN1026

Fairchild expands its LVDS portfolio with driver and receiver chipsets featuring the first output-enabled dual LVTTL to LVDS and LVDS to LVTTL translators.

http://www.fairchildsemi.com/lvds



Output-enabled drivers and receivers

Fairchild's new FIN1025 and FIN1026 devices provide the only available dual LVDS drivers and receivers with output enables. These enables allow both ports to be placed in a high impedance state for increased flexibility in applications. The FIN1025 is a dual LVTTL to LVDS translator with enables, and the FIN1026 is a dual LVDS to LVTTL translator with enables. Both devices meet or exceed the RS-644 specification for interoperability with other LVDS devices.

Features

- Guarantee up to 400Mbps (200MHz) data rates
- Output enables
- 400ps max pulse skew
- 2.5ns max prop delay
- Low power consumption (15.8mW typ.)
- Failsafe and power off protection
- 10kV ESD protection
- Flow-through pinout in TSSOP packaging

Benefits

- Enables provide high impedance state for outputs
- Allow bidirectional (half duplex) LVDS configurations
- High-performance AC characteristics for demanding applications
- Provide fault protection through ESD, failsafe, and power off protection

Applications

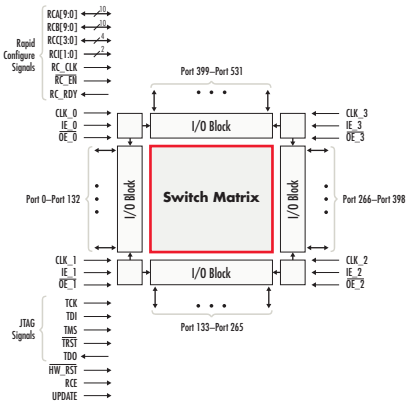
- LVTTL/LVDS signal level translation for ASICs, FPGAs, processors and other system devices
- High-speed clock/data/control driving across racks, shelves, backplanes or on card
- Fault protection with failsafe, high ESD and I_{OFF}

3

MSX532

MSX532 is the largest digital crosspoint switch available, with 532 individually configured I/O channels.

http://www.fairchildsemi.com/products/interface/crosspoint.html



Largest digital crosspoint switch available

This switch features a patented non-blocking crosspoint architecture that enables users to connect any I/O port to any other I/O port in a one-to-one or one-to-many configuration. Its flexibility and performance enable engineers to develop scalable system designs that can easily be modified to meet growing customer needs for increased I/O density.

Features

- 532 individually configurable I/O ports—each configurable as input, output, bidirectional or Bus Repeater™ mode
- Registered and flow-through data modes
- Flexible control signals per I/O port—multiple input enable, output enable and clock options per I/O port
- Up to 150 Mb/s NRZ data rate per port
- Bus Repeater automatically senses and configures the device for the direction of the incoming signal
- Up to 75MHz clock frequency in registered mode
- Non-blocking switch matrix for one-to-one or one-to-many connections
- RapidConfigure™ parallel interface and JTAG serial interface available for configuration and readback
  - – Double-buffered configuration cells for rapid configuration
- 3.3V operation, LVTTL I/Os (5V tolerant)
- 792 BGA package

Benefits

- I/O flexibility allows designers to route signals as efficiently as possible
- Protocol independence allows designers to route multiple data types through a single switch
- JTAG interface allows boundary scan testing as well as the ability to program multiple MSX532 switches through a single JTAG chain

Applications

Backplane signal switching and routing in

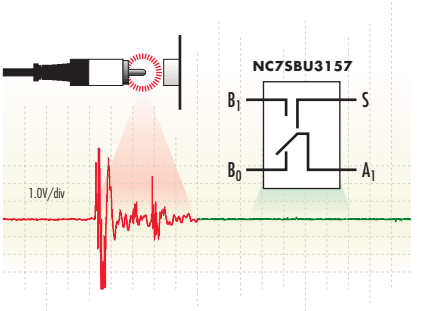
- SONET add/drop multiplexers and digital cross connects
- Multiservice WAN switching platforms
- WAN access systems
- Telecom test equipment
- Broadcast video and audio equipment
- Image processing
- VLSI and memory testers
- ASIC emulation and prototyping

4

NC7SBU3157

The industry's first analog switch that protects ASICs and microprocessors against negative voltage spikes.

http://www.fairchildsemi.com/products/interface/analogswitch.html



Analog switch protects internal circuitry

This single-pole/double-throw (SPDT) switch protects internal ICs from noise or undershoot events whenever a connector is inserted into an MP3 player, CD player, notebook, mobile phone or other device with an analog or digital signal connector.

Features

- SC70 6 lead surface mount package
- Low On Resistance (3Ω on typ. @ 4.5V V_{CC})
- Broad V_{CC} operating range (1.65V to 5.5V)
- Low Total Harmonic Distortion (THD) of 0.001%
- High bandwidth (250MHz)

Benefits

- Protects ASICs and internal circuitry from -2V undershoot transients
- Low On Resistance reduces signal attenuation
- Offers space-saving packaging technology
- Preserves signal integrity

Applications

Switching and routing of analog or digital signals in

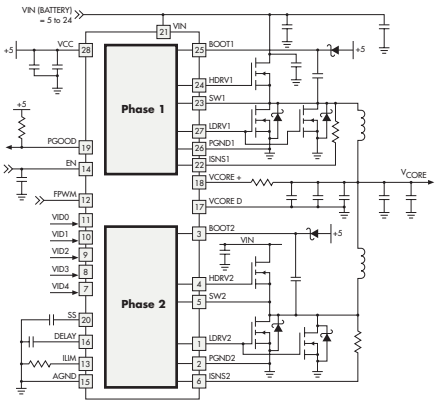
- MP3 players
- CD players
- PDAs
- Mobile phones

5

FAN5240

Two-phase PWM controller for AMD mobile Athlon™ and Duron™ processors.

http://www.fairchildsemi.com/pf/FA/FAN5240.html



Two-phase PWM controller

The FAN5240 is a two-phase PWM controller defined in cooperation with AMD. This new single-chip controller/driver meets the requirements for VCORE power in mobile AMD Athlon 4 and mobile AMD Duron processors. Providing a complete solution for the latest notebook PCs, the FAN5240 has the features needed to achieve optimal performance at high efficiency over a wide load range.

Features

- Output voltage is dynamically adjustable over the range of 0.925V to 2.00V
- IC implements all required protection and monitoring functions
- Precision sense resistor
- Shutdown control
- Over-voltage protection
- Programmable soft start
- Thermal limiting
- Under-voltage lockout
- Power good output
- Available in 28 lead QSOP and TSSOP packages

Benefits

- Internally compensated to reduce external component count
- Programmable Active Droop™ minimizes output capacitor requirements and optimizes transient response
- Under light loads, the FAN5240 switches to variable frequency, hysteretic mode to maximize efficiency

Applications

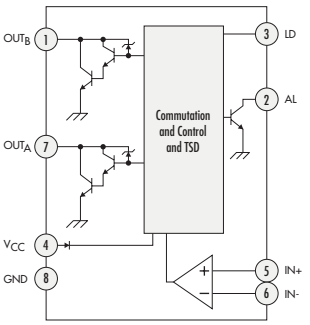
- Mobile AMD Athlon 4 and mobile AMD Duron processors

6

FAN8404D

New DC cooling fan motor drive ICs improve system reliability while minimizing supply current.

http://www.fairchildsemi.com/pf/FA/FAN8404D.html



High-efficiency cooling fan motor drive

The FAN8404D and FAN8408D are two-phase, halfwave motor drive ICs that provide an optimum high-efficiency solution for cooling fan motors found in PC, game console and test equipment applications.

Features

- FAN8408D features Hall Output (HO) for motor speed detection
- FAN8404D features an alarm output to signal fan lockup
- Wide range of operating voltages (4V to ~15V)
- Integrated motor lock detection and auto restart functions
- Built-in thermal shutdown (TSD) circuits
- Reverse-current protection diode
- 8 SOP package

Benefits

- Capable of sinking 1.2A motor load current while requiring just 2.2mA typical supply current in standby—over 50% lower than competitive limits
- Enhanced system reliability through thermal shutdown, lock detection and auto restart
- Reduces system power consumption
- Lower cost compared to similar products

Applications

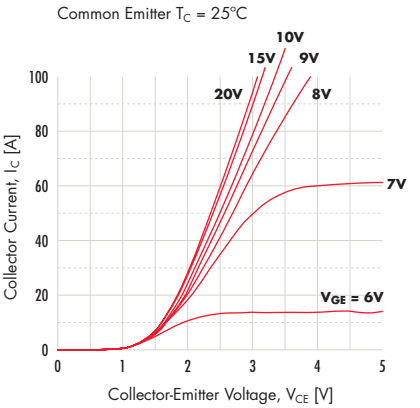
- PCs
- Game consoles
- Test equipment

7

FGL60N100D

1000V Trench IGBT offers superior conductance and switching performance for induction heating appliance solutions.

http://www.fairchildsemi.com/whats_new/igbt_nph.html



Trench IGBT current vs. voltage

The FGL60N100D, a 1000V Trench IGBT with FRD (fast recovery diode) is designed for high-power induction heating appliances such as cookers and microwave ovens. Compared to IGBTs with planar gate structure, the FGL60N100D's trench technology offers superior conductance and high-speed switching performance.

Features

- High-speed switching
- Low saturation voltage: $V_{CE}(sat)$=2.5V @ I_C=60A
- High input impedance

Benefits

- Sufficient voltage margins for both quasi-resonant and single-ended topologies
- Superior conductance (V_{CE}(sat)=2.5V @ I_C=60A) and high-speed switching performance (up to 50KHz) in comparison to IGBTs with planar gate structure
- Built-in fast recovery diode simplifies topologies and reduces costs

Applications

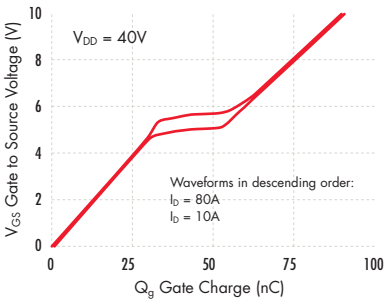
- Induction heating cooking appliances

8

Trench MOSFET for 42V Automotive Applications

New Trench MOSFET devices provide industry's lowest $R_{DS(ON)}$ and exceptionally low gate charge for 42V automotive applications.

http://www.fairchildsemi.com/whats_new/75v_autoigbt_nph.htm



Lowest gate charge

Fairchild Semiconductor's line of new medium-voltage (60V to 150V) UltraFET Trench MOSFETs are qualified in accordance with the internationally accepted AEC Q101 standard. These devices are specifically designed for high-current, 42V automotive systems.

Features

- $R_{DS(ON)}$=3.9mW (typ.), V_{GS}=10V, ID=80A
- Qg(tot)=92nC (typ.), V_{GS}=10V
- Low Miller Charge
- Low Q_{rr} body diode
- UIS capability (single pulse and repetitive pulse)
- Qualified to AEC Q101

Benefits

- Paralleling devices can accommodate starting currents of up to 1500A
- UltraFET Trench MOSFETs boast the lowest $R_{DS(ON)}$ per package type in the industry
- Smaller die size for lower cost
- Low gate charge trench process reduces drive circuitry

Applications

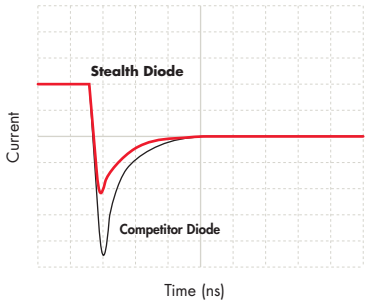
- 42V automotive load control
- Starter/Alternator systems
- Electronic power steering systems
- Electronic valve train systems
- DC/DC converters and off-line UPS

9

1200V Stealth

1200V Stealth fast/soft recovery diodes improve efficiency, reduce EMI and save space in high-power/high-frequency applications.

http://www.fairchildsemi.com/whats_new/stealthdiode_nph.html



Fast/Soft current recovery

New 1200V avalanche energy rated devices extend Fairchild's line of Stealth fast/soft recovery diodes. Stealth technology combines fast/soft recovery switching with low reverse recovery current (I_{rrm}) to reduce switching transistor turn-on losses in hard-switched applications.

Features

ISL9R8120P2/S3S/ISL9K8120P3

- Soft recovery—t_b/t_a>5.5
- Fast Recovery—t_{rr}<32ns
- Operating temperature—150°C
- Reverse voltage—1200V
- Avalanche energy rated
- TO-220 and TO-247 available in single and dual packaged (common cathode) configurations
- TO-263 (D2PAK) available in surface mount package

ISL9R8120P2/S3S/ISL9K8120P3

- Soft recovery—t_b/t_a>4.5
- Fast Recovery—t_{rr}<56ns
- Operating temperature—150°C
- Reverse voltage—1200V
- Avalanche energy rated
- TO-220 and TO-247 available in single and dual packaged (common cathode) configurations
- TO-263 (D2PAK) available in surface mount package

Benefits

- Reduced EMI
- Reduced diode switching losses
- Soft recovery minimizes ringing
- Reduces additional snubber circuitry
- Improved device efficiency
- Improved system reliability

Applications

- Switch mode power supplies
- Hard-switched PFC Boost Diode
- Motor drive FWD
- Uninterruptible power supply (UPS) free-wheeling diode
- SMPS FWD
- Induction heating
- Snubber diode

For more information on innovative Fairchild products and to sign up for future editions of *Fairchild New Product Highlights*, please visit www.fairchildsemi.com/whats_new

For a complete listing of sales representatives and sales offices, visit www.fairchildsemi.com/cf/sales_contacts/

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