



Is Now Part of



**ON Semiconductor®**

To learn more about ON Semiconductor, please visit our website at  
[www.onsemi.com](http://www.onsemi.com)

Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (\_), the underscore (\_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (\_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at [www.onsemi.com](http://www.onsemi.com). Please email any questions regarding the system integration to [Fairchild\\_questions@onsemi.com](mailto:Fairchild_questions@onsemi.com).

ON Semiconductor and the ON Semiconductor logo are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.



# FPAM50LH60

## PFC SPM<sup>®</sup> 2 Series for 2-Phase Interleaved PFC

### Features

- UL Certified No.E209024 (UL1557)
- 600 V - 50 A 2-Phase Interleaved PFC with Integral Gate Driver and Protection
- Very Low Thermal Resistance Using Al<sub>2</sub>O<sub>3</sub> DBC Substrate
- Full-Wave Bridge Rectifier and High-Performance Output Diode
- Optimized for 20kHz Switching Frequency
- Built-in NTC Thermistor for Temperature Monitoring
- Isolation Rating: 2500 V<sub>rms</sub>/min

### Applications

- 2-Phase Interleaved PFC Converter

### General Description

The FPAM50LH60 is a PFC SPM<sup>®</sup> 2 module providing a fully-featured, high-performance Interleaved PFC (Power Factor Correction) input power stage for consumer, medical, and industrial applications. These modules integrate optimized gate drive of the built-in IGBTs to minimize EMI and losses, while also providing multiple on-module protection features including under-voltage lockout, over-current shutdown, thermal monitoring, and fault reporting. These modules also feature a full-wave rectifier and high-performance output diodes for additional space savings and mounting convenience.

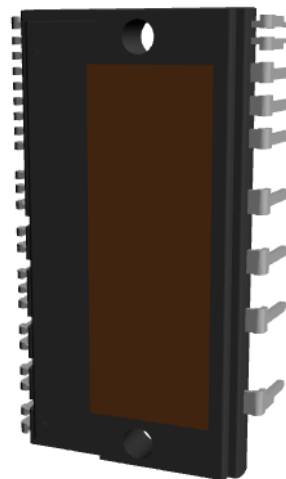


Fig. 1. 3D Package Drawing  
(Click to Activate 3D Content)

### Package Marking and Ordering Information

Device	Device Marking	Package	Packing Type	Quantity
FPAM50LH60	FPAM50LH60	S32EA-032	Rail	8

### Integrated Drive, Protection and System Control Functions

- For IGBTs: gate drive circuit, Over-Current Protection (OCP), control supply circuit Under-Voltage Lock-Out (UVLO) Protection
- Fault signal: corresponding to OC and UV fault
- Built-in thermistor: temperature monitoring
- Input interface : active-HIGH interface, works with 3.3 / 5 V logic, Schmitt trigger input

### Pin Configuration

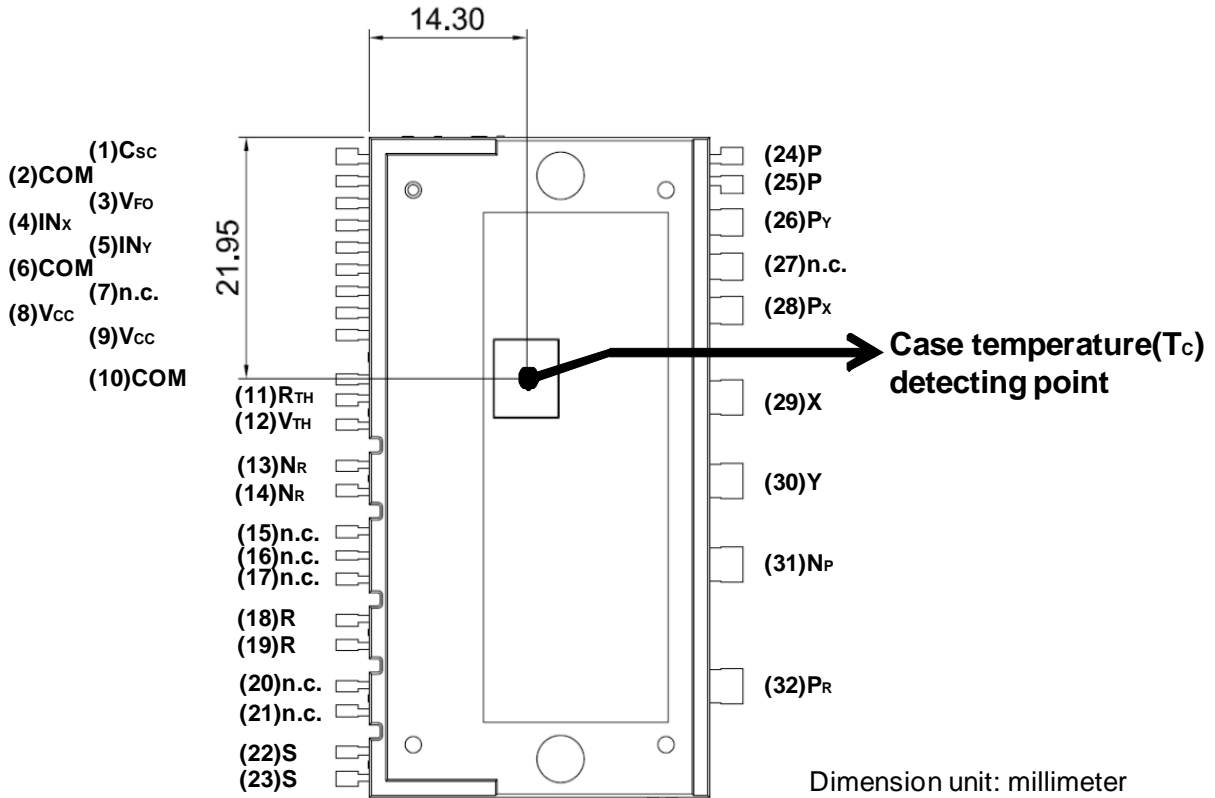


Figure 2. Top View

## Pin Descriptions

Pin Number	Pin Name	Pin Description
1	C <sub>SC</sub>	Signal Input for Over-Current Detection
2,6,10	COM	Common Supply Ground
3	V <sub>FO</sub>	Fault Output
4	IN <sub>X</sub>	PWM Input for X IGBT Drive
5	IN <sub>Y</sub>	PWM Input for Y IGBT Drive
7	N.C	No Connection
8,9	V <sub>CC</sub>	Common Supply Voltage of IC for IGBT Drive
11	R <sub>TH</sub>	Series Resistor for The Use of Thermistor
12	V <sub>TH</sub>	Thermistor Bias Voltage
13,14	N <sub>R</sub>	Negative DC-Link of Rectifier Diode
15,16,17	N.C	No Connection
18,19	R	AC Input for R-Phase
20,21	N.C	No Connection
22,23	S	AC Input for S-Phase
24,25	P	Output of Diode
26	P <sub>Y</sub>	Input of Diode
27	N.C	No Connection
28	P <sub>X</sub>	Input of Diode
29	X	Output of X Phase IGBT
30	Y	Output of Y Phase IGBT
31	N <sub>P</sub>	Negative DC-Link of IGBT
32	P <sub>R</sub>	Positive DC-Link of Rectifier Diode

## Internal Equivalent Circuit

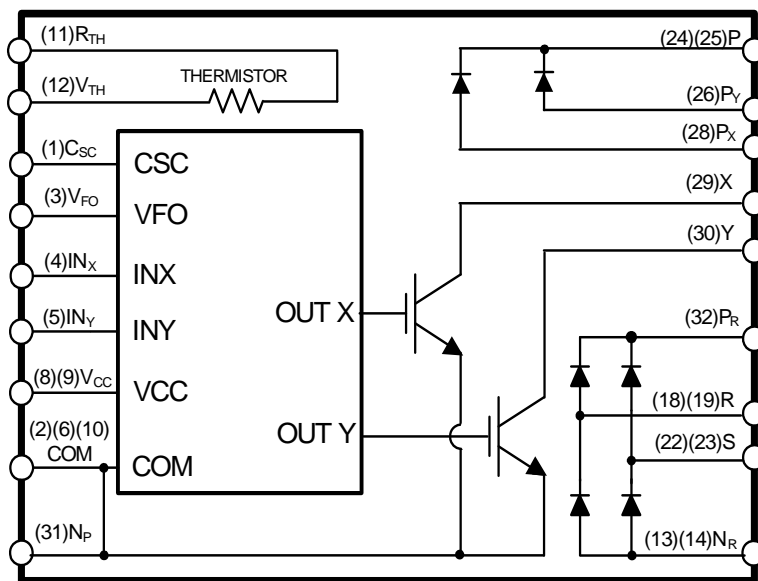


Figure 3. Internal Block Diagram

## Absolute Maximum Ratings (T<sub>J</sub> = 25°C, unless otherwise specified.)

### Converter Part

Symbol	Parameter	Conditions	Rating	Unit
V <sub>i</sub>	Input Supply Voltage	Applied between R - S	264	V <sub>rms</sub>
V <sub>PN</sub>	Output Voltage	Applied between X - N <sub>P</sub> , Y - N <sub>P</sub> , P - P <sub>X</sub> , P - P <sub>Y</sub>	450	V
V <sub>PN(Surge)</sub>	Output Supply Voltage (Surge)	Applied between X - N <sub>P</sub> , Y - N <sub>P</sub> , P - P <sub>X</sub> , P - P <sub>Y</sub>	500	V
V <sub>CES</sub>	Collector-emitter Voltage	Breakdown Voltage between X - N <sub>P</sub> , Y - N <sub>P</sub>	600	V
V <sub>RRM</sub>	Repetitive Peak Reverse Voltage of FRD	Breakdown Voltage between P - P <sub>X</sub> , P - P <sub>Y</sub>	600	V
V <sub>RRMR</sub>	Repetitive Peak Reverse Voltage of Rectifier	Breakdown Voltage between P <sub>R</sub> - R, P <sub>R</sub> - S, R - N <sub>R</sub> , S - N <sub>R</sub>	900	V
*I <sub>F</sub>	FRD Forward Current	T <sub>C</sub> = 25°C, T <sub>J</sub> < 125°C	50	A
*I <sub>FSM</sub>	Peak Surge Current of FRD	Non-Repetitive, 60 Hz Single Half-Sine Wave	500	A
*I <sub>FR</sub>	Rectified Forward Current	T <sub>C</sub> = 25°C, T <sub>J</sub> < 125°C	50	A
*I <sub>FSMR</sub>	Peak Surge Current of Rectifier	Non-Repetitive, 60 Hz Single Half-Sine Wave	500	A
± *I <sub>C</sub>	Each IGBT Collector Current	T <sub>C</sub> = 25°C, T <sub>J</sub> < 125°C	50	A
± *I <sub>CP</sub>	Each IGBT Collector Current(Peak)	T <sub>C</sub> = 25°C, T <sub>J</sub> < 125°C, Under 1 ms Pulse Width	100	A
*P <sub>C</sub>	Collector Dissipation	T <sub>C</sub> = 25°C per IGBT	135	W
T <sub>J</sub>	Operating Junction Temperature	(1st Note 1)	-40 ~ 125	°C

#### 1st Notes:

1. The maximum junction temperature rating of the power chips integrated within the PFC SPM® product is 125°C.
2. Marking "\*" is calculation value or design factor.

### Control Part

Symbol	Parameter	Conditions	Rating	Unit
V <sub>CC</sub>	Control Supply Voltage	Applied between V <sub>CC</sub> - COM	20	V
V <sub>IN</sub>	Input Signal Voltage	Applied between IN <sub>X</sub> , IN <sub>Y</sub> - COM	-0.3 ~ V <sub>CC</sub> + 0.3	V
V <sub>FO</sub>	Fault Output Supply Voltage	Applied between V <sub>FO</sub> - COM	-0.3 ~ V <sub>CC</sub> + 0.3	V
I <sub>FO</sub>	Fault Output Current	Sink Current at V <sub>FO</sub> Pin	1	mA
V <sub>SC</sub>	Current Sensing Input Voltage	Applied between C <sub>SC</sub> - COM	-0.3 ~ V <sub>CC</sub> + 0.3	V

### Total System

Symbol	Parameter	Conditions	Rating	Unit
T <sub>STG</sub>	Storage Temperature		-40 ~ 125	°C
V <sub>ISO</sub>	Isolation Voltage	60 Hz, Sinusoidal, AC 1 Minute, Connect Pins to Heat-Sink Plate	2500	V <sub>rms</sub>

### Thermal Resistance

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
R <sub>th(j-c)Q</sub>	Junction to Case Thermal Resistance	Each IGBT under Operating Condition	-	-	0.74	°C/W
R <sub>th(j-c)D</sub>		Each Diode under Operating Condition	-	-	1.13	°C/W
R <sub>th(j-c)R</sub>		Each Rectifier under Operating Condition	-	-	0.74	°C/W

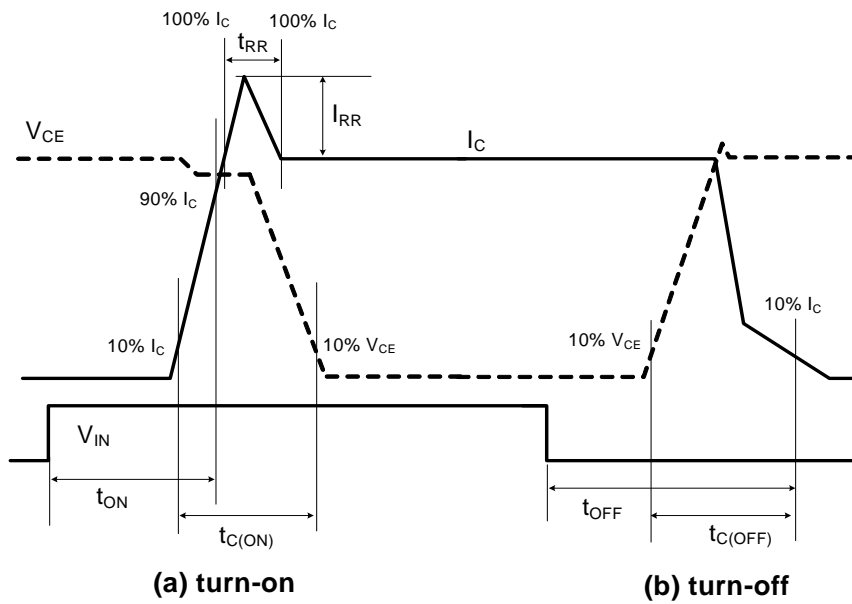
**Electrical Characteristics** ( $T_J = 25^\circ\text{C}$ , unless otherwise specified.)

**Converter Part**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{CE(SAT)}$	IGBT Saturation Voltage	$V_{CC} = 15\text{ V}$ , $V_{IN} = 5\text{ V}$ , $I_C = 50\text{ A}$	-	1.7	2.2	V
$V_{FF}$	FRD Forward Voltage	$I_F = 50\text{ A}$	-	1.9	2.4	V
$V_{FR}$	Rectifier Forward Voltage	$I_{FR} = 50\text{ A}$	-	1.13	1.35	V
$I_{RR}$	Switching Characteristic	$V_{PN} = 400\text{ V}$ , $V_{CC} = 15\text{ V}$ , $I_C = 25\text{ A}$ , $V_{IN} = 0\text{ V} \leftrightarrow 5\text{ V}$ , Inductive Load (1st Note 3), per IGBT	-	27	-	A
$t_{RR}$			-	55	-	ns
$t_{ON}$			-	772	-	ns
$t_{OFF}$			-	1117	-	ns
$t_{C(ON)}$			-	110	-	ns
$t_{C(OFF)}$			-	125	-	ns
$I_{CES}$			Collector - Emitter Leakage Current	$V_{CES} = 600\text{ V}$	-	-

**1st Notes:**

3.  $t_{ON}$  and  $t_{OFF}$  include the propagation delay of the internal drive IC.  $t_{C(ON)}$  and  $t_{C(OFF)}$  are the switching time of IGBT itself under the given gate driving condition internally. For the detailed information, please see Figure 4.



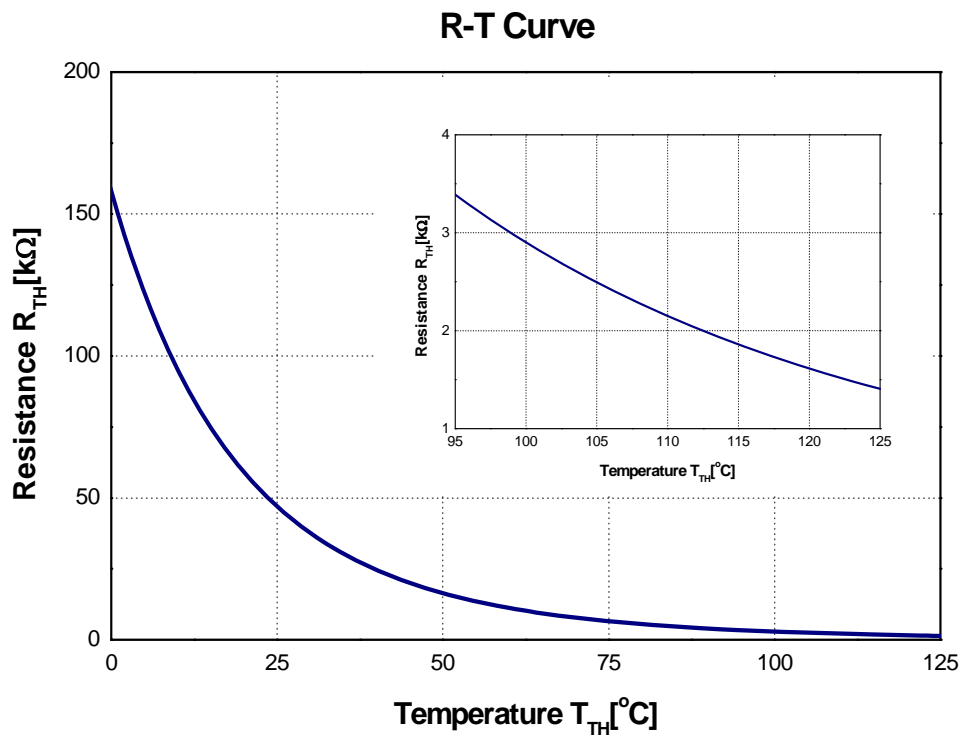
**Figure 4. Switching Time Definition**

**Control Part**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_{OCC}$	Quiescent $V_{CC}$ Supply Current	$V_{CC} = 15\text{ V}$ , $IN_X$ , $IN_Y - COM = 0\text{ V}$ , Supply current between $V_{CC}$ and COM	-	-	2.65	mA
$I_{PCC}$	Operating $V_{CC}$ Supply Current	$V_{CC} = 15\text{ V}$ , $f_{PWM} = 20\text{ kHz}$ , Duty = 50% Applied to One PWM Signal Input per IGBT Supply Current between $V_{CC}$ and COM	-	-	7.0	mA
$V_{FOH}$	Fault Output Voltage	$V_{SC} = 0\text{ V}$ , $V_{FO}$ Circuit: 10 k $\Omega$ to 5 V Pull-up	4.5	-	-	V
$V_{FOL}$		$V_{SC} = 1\text{ V}$ , $V_{FO}$ Circuit: 10 k $\Omega$ to 5 V Pull-up	-	-	0.5	V
$V_{SC(Ref)}$	Over-Current Protection Trip Level Voltage of CSC Pin	$V_{CC} = 15\text{ V}$	0.45	0.5	0.55	V
$UV_{CCD}$	Supply Circuit Under-Voltage Protection	Detection Level	10.5	-	13.0	V
$UV_{CCR}$		Reset Level	11.0	-	13.5	V
$t_{FOD}$	Fault-Out Pulse Width		30	-	-	$\mu\text{s}$
$V_{IN(ON)}$	ON Threshold Voltage	Applied between $IN_X$ , $IN_Y - COM$	2.6	-	-	V
$V_{IN(OFF)}$	OFF Threshold Voltage	Applied between $IN_X$ , $IN_Y - COM$	-	-	0.8	V
$R_{TH}$	Resistance of Thermistor	at $T_{TH} = 25^\circ\text{C}$ (1st Note 4, Figure 5)	-	47	-	k $\Omega$
		at $T_{TH} = 100^\circ\text{C}$ (1st Note 4, Figure 5)	-	2.9	-	k $\Omega$

**1st Notes:**

4.  $T_{TH}$  is the temperature of thermister itself. To know case temperature ( $T_C$ ), please make the experiment considering your application.



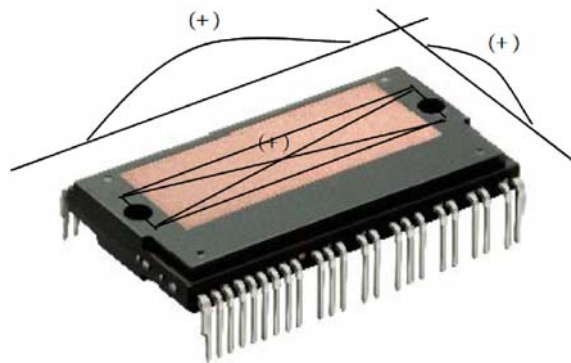
**Figure 5. R-T Curve of The Built-in Thermistor**

**Recommended Operating Conditions** ( $T_J = 25^\circ\text{C}$ , unless otherwise specified.)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_i$	Input Supply Voltage	Applied between R - S	187	-	253	$V_{rms}$
$I_i$	Input Current	$T_C < 100^\circ\text{C}$ , $V_i = 220\text{ V}$ , $V_O = 360\text{ V}$ , $f_{PWM} = 20\text{ kHz}$ per IGBT	-	-	35	$A_{rms}$
$V_{PN}$	Supply Voltage	Applied between X - N <sub>P</sub> , Y - N <sub>P</sub> , P - P <sub>X</sub> , P - P <sub>Y</sub>	-	-	400	V
$V_{CC}$	Control Supply Voltage	Applied between $V_{CC}$ - COM	13.5	15.0	16.5	V
$dV_{CC}/dt$	Supply Variation		-1	-	1	$V/\mu\text{s}$
$I_{FO}$	Fault Output Current	Sink Current at $V_{FO}$ Pin	-	-	1	mA
$f_{PWM}$	PWM Input Frequency	$-40^\circ\text{C} < T_J < 125^\circ\text{C}$ per IGBT	-	20	-	kHz

**Mechanical Characteristics and Ratings**

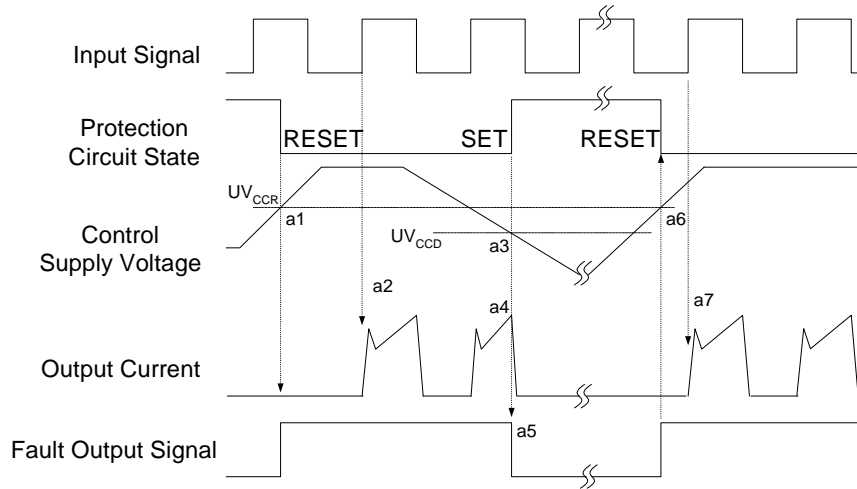
Parameter	Conditions		Min.	Typ.	Max.	Unit
Mounting Torque	Mounting Screw: M4	Recommended 0.98 N•m	0.78	0.98	1.17	N•m
		Recommended 10 kg•cm	8	10	12	kg•cm
Device Flatness	See Figure 6		0	-	+150	$\mu\text{m}$
Weight			-	32	-	g



**Figure 6. Flatness Measurement Position**

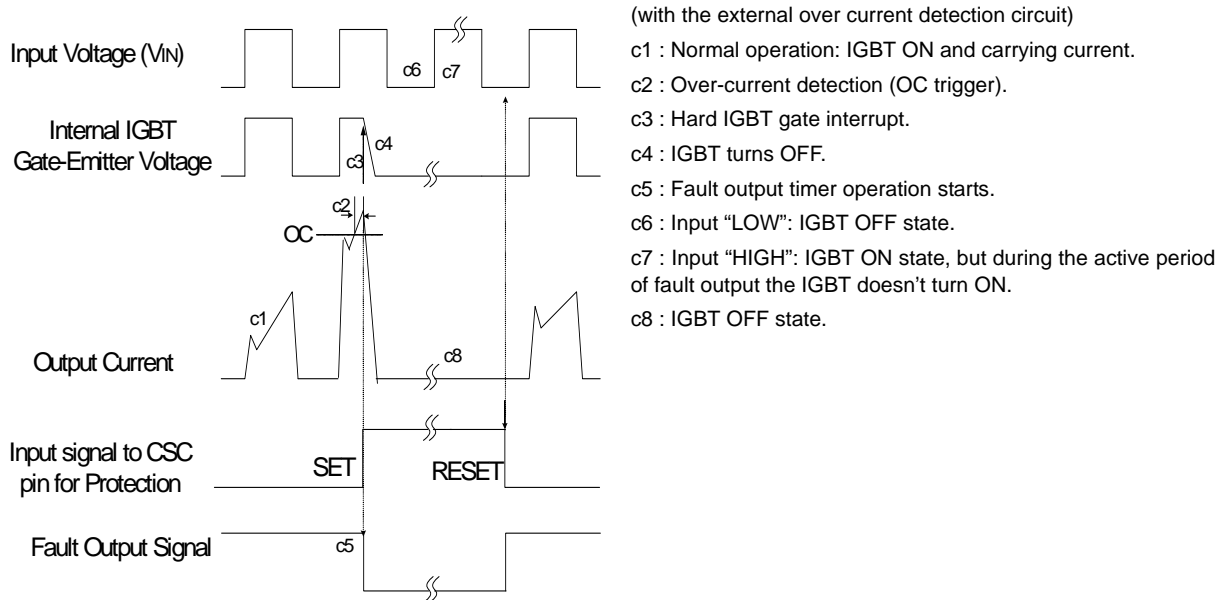


### Time Charts of Protective Function



- a1 : Control supply voltage rises: after the voltage rises  $UV_{CCR}$ , the circuits start to operate when the next input is applied.
- a2 : Normal operation: IGBT ON and carrying current.
- a3 : Under-voltage detection ( $UV_{CCD}$ ).
- a4 : IGBT OFF in spite of control input condition.
- a5 : Fault output operation starts.
- a6 : Under-voltage reset ( $UV_{CCR}$ ).
- a7 : Normal operation: IGBT ON and carrying current.

**Figure 7. Under-Voltage Protection**



- (with the external over current detection circuit)
- c1 : Normal operation: IGBT ON and carrying current.
  - c2 : Over-current detection (OC trigger).
  - c3 : Hard IGBT gate interrupt.
  - c4 : IGBT turns OFF.
  - c5 : Fault output timer operation starts.
  - c6 : Input "LOW": IGBT OFF state.
  - c7 : Input "HIGH": IGBT ON state, but during the active period of fault output the IGBT doesn't turn ON.
  - c8 : IGBT OFF state.

**Figure 8. Over-Current Protection**

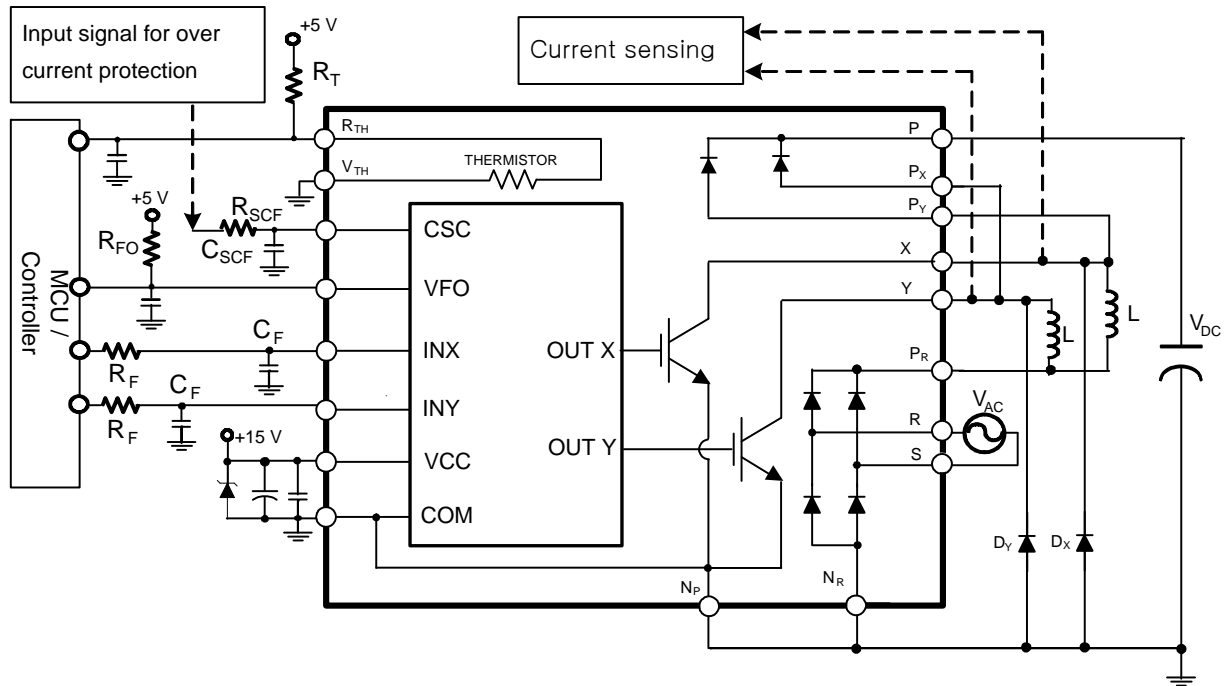
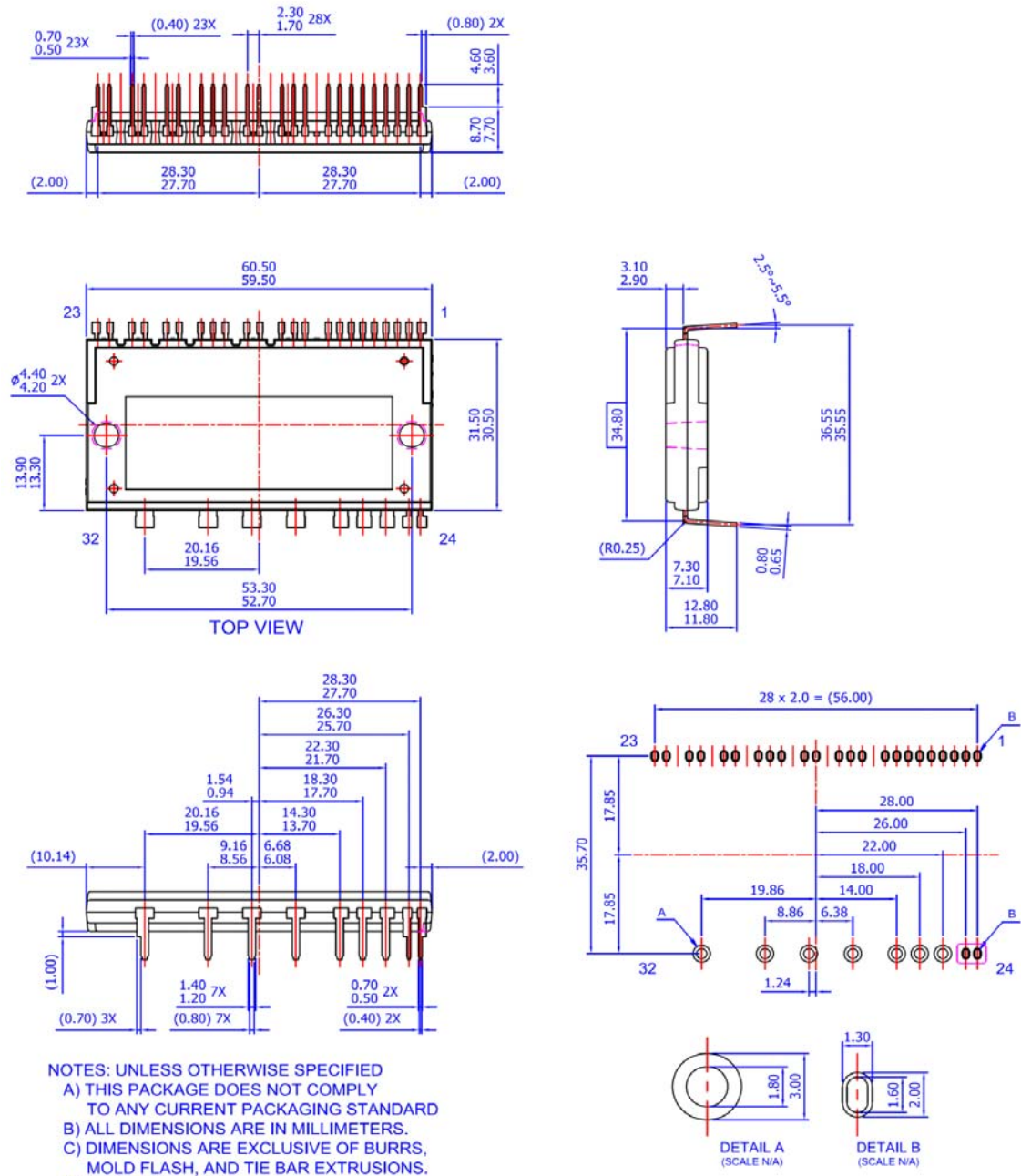


Figure 9. Typical Application Circuit

**2nd Notes:**

1. To avoid malfunction, the wiring of each input should be as short as possible (less than 2 ~ 3 cm).
2. V<sub>FO</sub> output is open-drain type. This signal line should be pulled up to the positive-side of the MCU or control power supply with a resistor that makes I<sub>FO</sub> up to 1 mA.
3. Input signal is active-HIGH type. There is a 5 kΩ resistor inside the IC to pull-down each input signal line to GND. RC coupling circuits is recommended for the prevention of input signal oscillation. R<sub>F</sub>C<sub>F</sub> constant should be selected in the range 50~150ns (recommended R<sub>F</sub> = 100 Ω , C<sub>F</sub> = 1 nF).
4. To prevent error of the protection function, the wiring related with R<sub>SCF</sub> and C<sub>SCF</sub> should be as short as possible.
5. In the over current protection circuit, please select the R<sub>SCF</sub> , C<sub>SCF</sub> time constant in the range 1.5 ~ 2 μs.
6. Each capacitors should be mounted as close to the PFC SPM® product pins as possible.
7. Relays are used at almost every systems of electrical equipments of home appliances. In these cases, there should be sufficient distance between the MCU / controller and the relays.
8. Internal NTC thermistor can be used for monitoring of the case temperature and protecting the device from the overheating operation. Select an appropriate resistor R<sub>T</sub> according to the application.
9. It is recommended that anti-parallel diode (D<sub>X</sub> ,D<sub>Y</sub>) be connected with each IGBT.

### Detailed Package Outline Drawings



Package drawings are provided as a service to customers considering Fairchild components. Drawings may change in any manner without notice. Please note the revision and/or data on the drawing and contact a FairchildSemiconductor representative to verify or obtain the most recent revision. Package specifications do not expand the terms of Fairchild's worldwide therm and conditions, specifically the the warranty therein, which covers Fairchild products.






Always visit Fairchild Semiconductor's online packaging area for the most recent package drawings:

<http://www.fairchildsemi.com/dwg/MO/MOD32BA.pdf>



**TRADEMARKS**

The following includes registered and unregistered trademarks and service marks, owned by Fairchild Semiconductor and/or its global subsidiaries, and is not intended to be an exhaustive list of all such trademarks.

- |   |  |   |   |
|---|--|---|---|
| AccuPower™  | F-PFS™   |  |  |
| Awinda®   | FRFET®   | PowerTrench®  | TinyBoost®  |
| AX-CAP®*  | Global Power Resource™                         | PowerXS™  | TinyBuck®   |
| BitSiC™   | GreenBridge™                                   | Programmable Active Droop™  | TinyCalc™   |
| Build it Now™   | Green FPS™                                     | QFET®   | TinyLogic®  |
| CorePLUS™   | Green FPS™ e-Series™                           | QS™   | TINYOPTO™   |
| CorePOWER™  | Gmax™  | Quiet Series™   | TinyPower™  |
| CROSSVOLT™  | GTO™   | RapidConfigure™   | TinyPWM™  |
| CTL™  | IntelliMAX™                                    |  | TinyWire™   |
| Current Transfer Logic™   | ISOPLANAR™                                     | Saving our world, 1mW/W/kW at a time™   | TranSiC™  |
| DEUXPEED®   | Making Small Speakers Sound Louder and Better™ | SignalWise™   | TriFault Detect™  |
| Dual Cool™  | MegaBuck™                                      | SmartMax™   | TRUECURRENT®*   |
| EcoSPARK®   | MICROCOUPLER™                                  | SMART START™  | µSerDes™  |
| EfficientMax™   | MicroFET™                                      | Solutions for Your Success™   |  |
| ESBC™   | MicroPak™                                      | SPM®  | UHC®  |
|  | MicroPak2™                                     | STEALTH™  | Ultra FRFET™  |
| Fairchild®  | MillerDrive™                                   | SuperFET®   | UniFET™   |
| Fairchild Semiconductor®  | MotionMax™                                     | SuperSOT™-3   | VCX™  |
| FACT Quiet Series™  | MotionGrid®                                    | SuperSOT™-6   | VisualMax™  |
| FACT®   | MTI®   | SuperSOT™-8   | VoltagePlus™  |
| FAST®   | MTx®   | SupreMOS®   | XS™   |
| FastvCore™  | MVN®   | SyncFET™  | Xsens™  |
| FETBench™   | mWSaver®                                       | Sync-Lock™  | 仙童™   |
| FPS™  | OptoHiT™                                       |   |   |

\* Trademarks of System General Corporation, used under license by Fairchild Semiconductor.

**DISCLAIMER**

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION, OR DESIGN. TO OBTAIN THE LATEST, MOST UP-TO-DATE DATASHEET AND PRODUCT INFORMATION, VISIT OUR WEBSITE AT [HTTP://WWW.FAIRCHILDSEMI.COM](http://www.fairchildsemi.com). FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS. THESE SPECIFICATIONS DO NOT EXPAND THE TERMS OF FAIRCHILD'S WORLDWIDE TERMS AND CONDITIONS, SPECIFICALLY THE WARRANTY THEREIN, WHICH COVERS THESE PRODUCTS.

**LIFE SUPPORT POLICY**

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein:

- Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
- A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

**ANTI-COUNTERFEITING POLICY**

Fairchild Semiconductor Corporation's Anti-Counterfeiting Policy. Fairchild's Anti-Counterfeiting Policy is also stated on our external website, [www.fairchildsemi.com](http://www.fairchildsemi.com), under Sales Support.

Counterfeiting of semiconductor parts is a growing problem in the industry. All manufacturers of semiconductor products are experiencing counterfeiting of their parts. Customers who inadvertently purchase counterfeit parts experience many problems such as loss of brand reputation, substandard performance, failed applications, and increased cost of production and manufacturing delays. Fairchild is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. Fairchild strongly encourages customers to purchase Fairchild parts either directly from Fairchild or from Authorized Fairchild Distributors who are listed by country on our web page cited above. Products customers buy either from Fairchild directly or from Authorized Fairchild Distributors are genuine parts, have full traceability, meet Fairchild's quality standards for handling and storage and provide access to Fairchild's full range of up-to-date technical and product information. Fairchild and our Authorized Distributors will stand behind all warranties and will appropriately address any warranty issues that may arise. Fairchild will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources. Fairchild is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.

**PRODUCT STATUS DEFINITIONS**

**Definition of Terms**

Datasheet Identification	Product Status	Definition
Advance Information	Formative / In Design	Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

Rev. I71

ON Semiconductor and  are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## PUBLICATION ORDERING INFORMATION

### LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor  
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA  
**Phone:** 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
**Fax:** 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
**Email:** [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada  
**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910  
**Japan Customer Focus Center**  
Phone: 81-3-5817-1050

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)  
**Order Literature:** <http://www.onsemi.com/orderlit>  
For additional information, please contact your local  
Sales Representative

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[ON Semiconductor:](#)

[FPAM50LH60](#)

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А