

# Hitachi High Voltage Monolithic ICs

## Motor Driver IC Series

**Status List**

**Date: Sep. 2016**

Compliance status of RoHS directive

**C:** Compliant

**S.C:** Compliant

**N:** Non compliant

(Included RoHS exemption substance)

Production Status

**M:** Mass production

**W:** Working sample

**UDT:** Under Development

**A:** Abolition

**Please order Hitachi High Voltage IC products 1,000pcs/M or 3,000pcs/Lot or more at the time of mass production.**

### Motor Driver IC (Single Chip Inverter IC)

◆ VSP Input Series (Charge pump system)  
Brushless motor application

| No. | Type        | Voltage(V) |     | Current(A) |         | Remarks                                                                   | RoHS status | Status |
|-----|-------------|------------|-----|------------|---------|---------------------------------------------------------------------------|-------------|--------|
|     |             | VCC        | VSM | Peak       | Average |                                                                           |             |        |
| 1   | ECN30110F/P | 15         | 250 | 1.4        | 1.0     | Power on/off sequence-free, Embedded Hall amplifiers, high-voltage diodes | C           | M      |
| 2   | ECN30210F/P | 15         | 600 | 1.5        | 0.7     | Power on/off sequence-free, Embedded Hall amplifiers, high-voltage diodes | C           | M      |

◆ Three Input, Six Input Series (Charge pump system)  
Brushless motor, Induction motor application

| No. | Type               | Voltage(V) |     | Current(A) |         | Remarks                               | RoHS status | Status |
|-----|--------------------|------------|-----|------------|---------|---------------------------------------|-------------|--------|
|     |                    | VCC        | VSM | Peak       | Average |                                       |             |        |
| 3   | ECN33101SP/SPV/SPR | 15         | 250 | 1.4        | 1.0     | 3-input                               | S.C         | M      |
| 4   | ECN33201SP/SPV/SPR | 15         | 500 | 1.5        | 0.7     | 3-input                               | S.C         | M      |
| 5   | ECN33202SP/SPV/SPR | 15         | 500 | 2.0        | 1.4     | 3-input                               | S.C         | M      |
| 6   | ECN30620F/P/PN     | 15         | 600 | 2.0        | 1.0     | 6-input, Embedded high-voltage diodes | C           | M      |
| 7   | ECN30622F/P/PN     | 15         | 600 | 3.0        | 2.0     | 6-input, Embedded high-voltage diodes | C           | M      |

# Status List

continue

## Gate Driver IC (Predriver IC for IGBT or Power MOSFET Drive)

◆ VSP Input Series (Charge pump system)  
Brushless motor application

| No. | Type      | Voltage(V) |     | Current(A)                            |                                       | Remarks                  | RoHS status | Status |
|-----|-----------|------------|-----|---------------------------------------|---------------------------------------|--------------------------|-------------|--------|
|     |           | VCC        | VSM | source                                | sink                                  |                          |             |        |
| 8   | ECN30300S | 15         | 250 | top arm<br>0.10<br>bottom arm<br>0.20 | top arm<br>0.25<br>bottom arm<br>0.20 | Embedded Hall amplifiers | C           | M      |

◆ Three Input, Six Input Series (Bootstrap system)  
Brushless motor, Induction motor application

| No. | Type       | Voltage(V) |     | Current(A) |      | Remarks                                                       | RoHS status | Status |
|-----|------------|------------|-----|------------|------|---------------------------------------------------------------|-------------|--------|
|     |            | VCC        | VSM | source     | sink |                                                               |             |        |
| 9   | ECN33500FP | 15         | 620 | 0.25       | 0.4  | 3-input, Embedded high-voltage diodes,<br>For sensor type     | C           | M      |
| 10  | ECN33550FP | 15         | 620 | 0.25       | 0.4  | 3-input, Embedded high-voltage diodes,<br>For sensorless type | C           | M      |
| 11  | ECN30551FP | 15         | 620 | 0.25       | 0.4  | 6-input, Embedded high-voltage diodes                         | C           | M      |

## ■ To be Obsolete

Please ask sales representative in the reference about the substitution version part no.

### ◆ VSP Input Series for driving motor

| No. | Type               | Voltage(V) |     | Current(A) |         | Substitution version part no. | RoHS status | Status |
|-----|--------------------|------------|-----|------------|---------|-------------------------------|-------------|--------|
|     |                    | VCC        | VSM | Peak       | Average |                               |             |        |
| 12  | ECN30107SP/SPV/SPR | 15         | 250 | 1.4        | 1.0     | ECN30110F/P                   | S.C         | A      |
| 13  | ECN30108P          | 15         | 250 | 1.4        | 1.0     | ECN30110F/P                   | S.C         | A      |
| 14  | ECN30206SP/SPV/SPR | 15         | 500 | 1.5        | 0.7     | ECN30210F/P                   | S.C         | A      |
| 15  | ECN30208P          | 15         | 500 | 1.5        | 0.7     | ECN30210F/P                   | S.C         | A      |

### ◆ Six Input Series for driving motor

| No. | Type               | Voltage(V) |     | Current(A) |         | Substitution version part no. | RoHS status | Status |
|-----|--------------------|------------|-----|------------|---------|-------------------------------|-------------|--------|
|     |                    | VCC        | VSM | Peak       | Average |                               |             |        |
| 16  | ECN30603SP/SPV/SPR | 15         | 500 | 1.5        | 0.7     | ECN30620F/P                   | S.C         | A      |

### ◆ Gate Driver IC (Predriver IC for IGBT or Power MOSFET Drive) for Six Input Series (Bootstrap system)

| No. | Type      | Voltage(V) |     | Current(A) |      | Substitution version part no. | RoHS status | Status |
|-----|-----------|------------|-----|------------|------|-------------------------------|-------------|--------|
|     |           | VCC        | VSM | source     | sink |                               |             |        |
| 17  | ECN30531F | 15         | 620 | 0.25       | 0.5  | ECN30551FP                    | C           | A      |
| 18  | ECN30541F | 15         | 620 | 0.25       | 0.5  | ECN30551FP                    | C           | A      |

# Status List

continue

## Withdrawn products

Please ask sales representative in the reference about the substitution version part no.

### ◆ VSP Input Series for driving motor

| No. | Type               | Voltage(V) |     | Current(A) |         | Substitution version part no. | RoHS status | Status |
|-----|--------------------|------------|-----|------------|---------|-------------------------------|-------------|--------|
|     |                    | VCC        | VSM | Peak       | Average |                               |             |        |
| 19  | ECN30105SP/SPV/SPR | 15         | 250 | 1.8        | 1.0     | ECN30110F/P                   | S.C         | A      |
| 20  | ECN30102SP/SPV/SPR | 15         | 250 | 1.2        | 0.7     | ECN30110F/P                   | S.C         | A      |
| 21  | ECN3018SP/SPV/SPR  | 15         | 250 | 1.8        | 1.0     | ECN30110F/P                   | S.C         | A      |
| 22  | ECN30207SP/SPV/SPR | 15         | 500 | 2.0        | 1.4     | ECN30210F/P                   | S.C         | A      |
| 23  | ECN30204SP/SPV/SPR | 15         | 500 | 1.5        | 0.7     | ECN30210F/P                   | S.C         | A      |
| 24  | ECN3021SP/SPV/SPR  | 15         | 500 | 1.0        | 0.7     | ECN30210F/P                   | S.C         | A      |
| 25  | ECN3022SP/SPV/SPR  | 15         | 500 | 1.5        | 0.7     | ECN30210F/P                   | S.C         | A      |

### ◆ Six Input Series for driving motor

| No. | Type               | Voltage(V) |     | Current(A) |         | Substitution version part no. | RoHS status | Status |
|-----|--------------------|------------|-----|------------|---------|-------------------------------|-------------|--------|
|     |                    | VCC        | VSM | Peak       | Average |                               |             |        |
| 26  | ECN30611SP/SPV/SPR | 15         | 250 | 1.4        | 1.0     | ECN30620F/P                   | S.C         | A      |
| 27  | ECN3061SP/SPV/SPR  | 15         | 250 | 1.8        | 1.0     | ECN30620F/P                   | S.C         | A      |
| 28  | ECN30604SP/SPV/SPR | 15         | 500 | 2.0        | 1.4     | ECN30622F/P                   | S.C         | A      |
| 29  | ECN30601SP/SPV/SPR | 15         | 500 | 1.5        | 0.7     | ECN30620F/P                   | S.C         | A      |
| 30  | ECN3063SP/SPV/SPR  | 15         | 500 | 1.0        | 0.7     | ECN30620F/P                   | S.C         | A      |
| 31  | ECN3064SP/SPV/SPR  | 15         | 500 | 1.5        | 0.7     | ECN30620F/P                   | S.C         | A      |
| 32  | ECN3067SL/SLV/SLR  | 15         | 500 | 5.0        | 2.5     |                               | —           | A      |
| 33  | ECN30671SP/SPV/SPR | 15         | 500 | 3.0        | 1.5     | ECN30622F/P                   | S.C         | A      |

### ◆ Gate Driver IC (Predriver IC for IGBT or Power MOSFET Drive) for VSP and Six input series

| No. | Type      | Voltage(V) |     | Current(A)                            |                                       | Remarks    | RoHS status | Status |
|-----|-----------|------------|-----|---------------------------------------|---------------------------------------|------------|-------------|--------|
|     |           | VCC        | VSM | source                                | sink                                  |            |             |        |
| 34  | ECN30301S | 15         | 250 | top arm<br>0.10<br>bottom arm<br>0.20 | top arm<br>0.25<br>bottom arm<br>0.20 | ECN30300S  | C           | A      |
| 35  | ECN3030F  | 15         | 250 | top arm<br>0.05<br>bottom arm<br>0.2  | top arm and<br>bottom arm             | ECN30551FP | C           | A      |
| 36  | ECN3031F  | 15         | 250 | top arm<br>0.05<br>bottom arm<br>0.2  | top arm and<br>bottom arm<br>0.2      | ECN30551FP | C           | A      |
| 37  | ECN3035F  | 15         | 500 | top arm<br>0.05<br>bottom arm<br>0.2  | top arm<br>and<br>bottom arm<br>0.2   | ECN30551FP | C           | A      |
| 38  | ECN3036F  | 15         | 500 | top arm<br>0.05<br>bottom arm<br>0.2  | top arm<br>and<br>bottom arm<br>0.2   | ECN30551FP | C           | A      |
| 39  | ECN3053F  | 15         | 620 | 0.25                                  | 0.5                                   | ECN30551FP | C           | A      |
| 40  | ECN3054F  | 15         | 620 | 0.25                                  | 0.5                                   | ECN30551FP | C           | A      |

# Hitachi High Voltage Monolithic ICs

## High Voltage Analog Switch

### Status List

Date: Sep. 2016

Compliance status of RoHS directive

**C:** Compliant

**S.C:** Compliant

**N:** Non compliant

(Included RoHS exemption substance)

Production Status

**M:** Mass production

**W:** Working sample

**UDT:** Under Development

**A:** Abolition

**Please order Hitachi High Voltage IC products 1,000pcs/M or 3,000pcs/Lot or more at the time of mass production.**

#### High Voltage Analog Switch (HVMUX)

◆ Ultrasound Imaging System/NDT application

| No. | Type      | Voltage(V) |         | Clock (MHz)        | Input Signal Range(V) | Analog Switch On Resistance | Channel | Bleed Resistor                      | PKG    | RoHS status | Status |
|-----|-----------|------------|---------|--------------------|-----------------------|-----------------------------|---------|-------------------------------------|--------|-------------|--------|
|     |           | VDD        | VPP-VNN |                    |                       |                             |         |                                     |        |             |        |
| 1   | ECN3290TF | 5          | 220     | 10                 | VNN+10~VPP-10         | 22Ω(typ.)                   | 8       | No                                  | TQFP48 | C           | M      |
| 2   | ECN3292TF | 5          | 220     | 10                 | VNN+10~VPP-10         | 19Ω(typ.)                   | 8       | No                                  | TQFP48 | C           | M      |
| 3   | ECN3293TF | 3.3/5      | 220     | 20                 | VNN+10~VPP-10         | 19Ω(typ.)                   | 8       | Yes<br>(Both side of SW)            | TQFP48 | C           | M      |
| 4   | ECN3294TF | 3.3/5      | 220     | 20                 | VNN+10~VPP-10         | 19Ω(typ.)                   | 8       | User selectable<br>(one side of SW) | TQFP48 | C           | M      |
| 5   | ECN3296TF | 3.3/5      | 220     | 30 @5V<br>20 @3.3V | VNN~VPP               | 19Ω(typ.)                   | 16      | No                                  | TQFP48 | C           | M      |
| 6   | ECN3297TF | 3.3/5      | 220     | 30 @5V<br>20 @3.3V | VNN~VPP               | 19Ω(typ.)                   | 16      | Yes<br>(Both side of SW)            | TQFP48 | C           | M      |
| 7   | ECN3298TF | 3.3/5      | 220     | 30 @5V<br>20 @3.3V | VNN~VPP               | 19Ω(typ.)                   | 16      | Yes<br>(SW_B side)                  | TQFP48 | C           | M      |

#### High Voltage Power Supply Less HVMUX

◆ Ultrasound Imaging System/NDT application

| No. | Type       | VDC (V) | Logic I/F(V) | Clock (MHz)        | Input Signal Range(V) | Analog Switch On Resistance | Channel | Bleed Resistor           | PKG    | RoHS status | Status |
|-----|------------|---------|--------------|--------------------|-----------------------|-----------------------------|---------|--------------------------|--------|-------------|--------|
| 8   | ECN32910TF | 10~15   | 3.3/5        | 30 @5V<br>20 @3.3V | -100~+100             | 18Ω(typ.)                   | 16      | No                       | TQFP48 | C           | M      |
| 9   | ECN32911TF | 10~15   | 3.3/5        | 30 @5V<br>20 @3.3V | -100~+100             | 18Ω(typ.)                   | 16      | Yes<br>(Both side of SW) | TQFP48 | C           | M      |

#### To be Obsolete

◆ Ultrasound Imaging System/NDT application

| No. | Type         | Voltage(V) |         | Clock (MHz) | Input Signal Range(V) | Analog Switch On Resistance | Channel | Bleed Resistor | PKG            | RoHS status | Status |
|-----|--------------|------------|---------|-------------|-----------------------|-----------------------------|---------|----------------|----------------|-------------|--------|
|     |              | VDD        | VPP-VNN |             |                       |                             |         |                |                |             |        |
| 10  | ECN3290PL/FN | 5          | 220     | 10          | VNN+10~VPP-10         | 22Ω(typ.)                   | 8       | No             | QFJ28<br>QFN28 | C           | A      |

## Notices

1. The information given herein, including the specifications and dimensions, is subject to change without prior notice to improve product characteristics. Before ordering, purchasers are advised to contact Hitachi Power Semiconductor Device (HPSD) sales department for the latest version of data sheets.
2. Please be sure to read the latest version of "Instructions for Use of Hitachi High-Voltage Monolithic ICs" in the individual brochure before use.
3. In cases where extremely high reliability is required (such as use in nuclear power control, aerospace and aviation, traffic equipment, life-support-related medical equipment, fuel control equipment and various kinds of safety equipment), safety should be ensured by using semiconductor devices that feature assured safety or by means of user's fail-safe precautions or other arrangement. Or consult HPSD's sales department staff.
4. In no event shall HPSD be liable for any damages that may result from an accident or any other cause during operation of the user's units according to this data sheets. HPSD assumes no responsibility for any intellectual property claims or any other problems that may result from applications of information, products or circuits described in this data sheets.
5. In no event shall HPSD be liable for any failure in a semiconductor device or any secondary damage resulting from use at a value exceeding the absolute maximum rating.
6. No license is granted by this data sheets under any patents or other rights of any third party or Hitachi Power Semiconductor Device, Ltd.
7. This data sheets may not be reproduced or duplicated, in any form, in whole or in part, without the expressed written permission of Hitachi Power Semiconductor Device, Ltd.
8. The products (technologies) described in this data sheets are not to be provided to any party whose purpose in their application will hinder maintenance of international peace and safety not are they to be applied to that purpose by their direct purchasers or any third party. When exporting these products (technologies), the necessary procedures are to be taken in accordance with related laws and regulations.

# HITACHI

## HITACHI POWER SEMICONDUCTOR DEVICE OVERSEAS REPRESENTATIVES

### United States of America

Hitachi America, Ltd. Power Systems Division  
50 Prospect Avenue Tarrytown, NY 10591  
Telephone: <1>(914) 631-0600  
Fax : <1>(914) 631-3672

### Taipei

Taiwan Hitachi Asia Pacific Co., Ltd.  
3rd Floor, No.167 Tun-Hwa N. Road  
Hung Kuo Building, Taipei (105)  
Telephone: <886>(2)2718-3666  
Fax : <886>(2)2718-8180

### United Kingdom

Hitachi Europe Ltd. Power Device Department  
Whitebrook Park, Lower Cookham Road, Maidenhead  
Berkshire SL6 8YA  
Telephone: <44>(1628) 585000  
Fax : <44>(1628) 585988

### Korea

Hitachi Korea Ltd.  
7th Floor, The Korea Chamber of Commerce & Industry 39  
Sejong-daero, Jung-gu, Seoul, 100-743, Korea  
Telephone: <82>(2) 6050-8565  
Fax : <82>(2) 6050-8569

### Beijing

Hitachi (China) Ltd.  
Beijing Fortune Bldg. 1209, 5 Dong San Huan Bei-Lu  
Chao Yang District, Beijing 100004, China  
Telephone: <86>(10) 6590-8122  
Fax : <86>(10) 6590-8110

### Thailand

Hitachi Asia (Thailand) Co., Ltd.  
18th Floor, Ramaland Building, 952 Rama IV Road, Bangrak  
Bangkok 10500  
Telephone: <66>(2) 632-9292  
Fax : <66>(2) 632-9299

### Shanghai

Hitachi (China) Ltd. Shanghai Branch  
18th Floor, Rui Jin Building, No.205, Maoming Road (S)  
Shanghai 200020, China  
Telephone: <86>(21) 6472-1002  
Fax : <86>(21) 6472-9080

### India

Hitachi India Pvt. Ltd.  
802 A & B, 8th Floor, Konnectus – Tower 2, Bhavbhuit Marg  
Near Minto Bridge, Connaught Place, New Delhi-110001, India  
Telephone: <91>(11) 3060-5252  
Fax : <91>(11) 3060-5253

### Hong Kong

Hitachi East Asia Ltd.  
6/F., North Tower, World Finance Centre  
Harbour City, Canton Road, Tsimshatsui, Kowloon  
Telephone: <852>2735-9218  
Fax : <852>2735-6793

### Australia

Hitachi Australia Pty. Ltd.  
Level 3, 82 Waterloo Road, North Ryde, NSW 2113  
Telephone: <61>(2) 9888-4100  
Fax : <61>(2) 9888-4952

■ For inquiries relating to the product, please contact above overseas representatives or below.

### Hitachi Power Semiconductor Device, Ltd.

Sales Promotion Department, Sales Division  
Akihabara Daibiru Building, 18-13 Soto-Kanda 1-chome  
Chiyoda-ku, Tokyo, 101-8608 Japan

TEL: <81>(3)4564-5147 FAX: <81>(3)4564-6251

URL: <http://www.hitachi-power-semiconductor-device.co.jp/en/>