

# HYBRID IC VLA127-02R

## IPM INTERFACE MODULE WITH DC-DC CONVERTER

### DISCRIPTIONS

The VLA127-02R is an interface module with 4 isolated power supplies for IPM drive.

### FEATURES

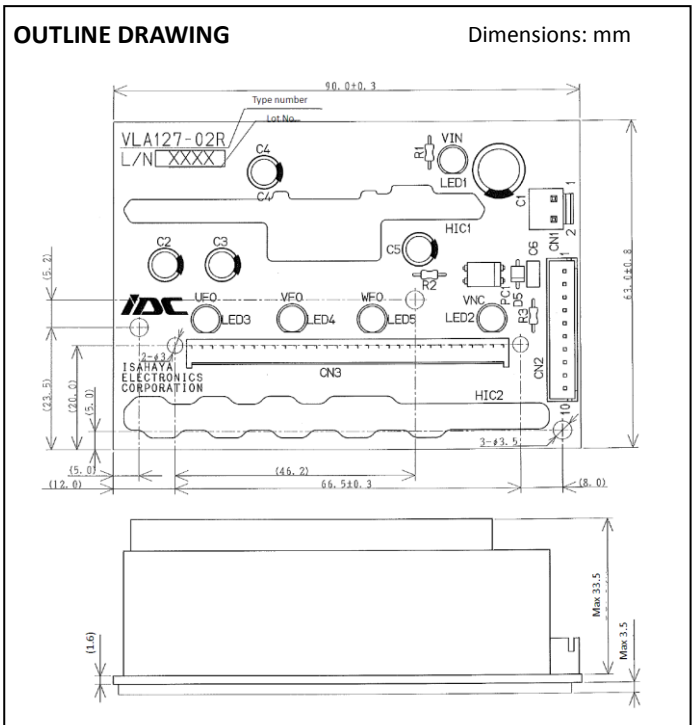
- Containing 6 optical coupler for IPM drive and 4 optical couplers for fault signal for 3 phase inverter.
- Input voltage -----+24V (for power supply)  
+ 5V (for signal)
- Attachable to MITSUBISHI L1 series IPM easily
- RoHS compliance

### APPLICATIONS

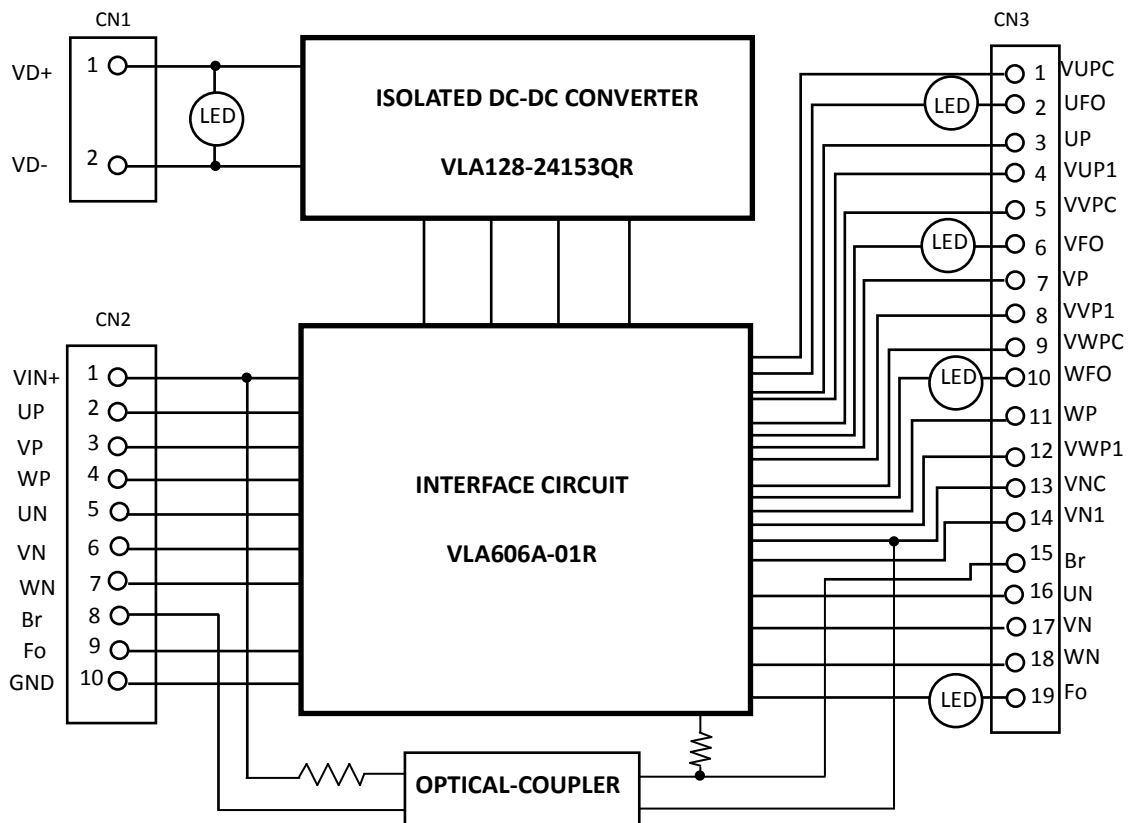
Interface for 3 phase IPM

### RECOMMENDED IPM

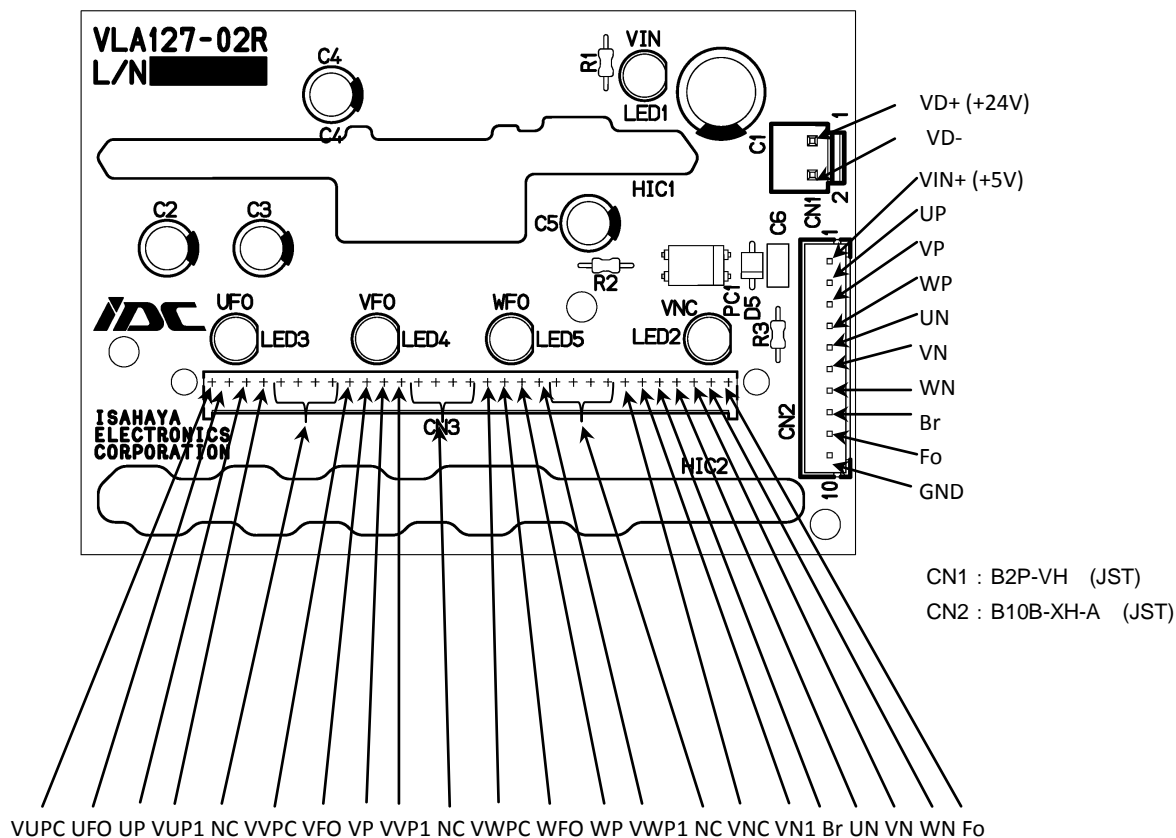
MITSUBISHI L1 series



### BLOCK DIAGRAM



IPM INTERFACE MODULE WITH DC-DC CONVERTER



**MAXIMUM RATINGS** (unless otherwise noted,  $V_{IN}=24V, T_a=25^{\circ}C$ )

| Symbol | Parameter                                      | Conditions                                   | Ratings   | Unit |
|--------|--|--|-----------|------|
| VD     | supply voltage                                 | CN1 Between pins 1 and 2                     | 26        | V    |
| VCC    | supply voltage                                 | CN2 Between pins 9 and 10                    | 40        | V    |
| VIN    | Input voltage                                  | CN2 Between pins 1 and 10                    | 6         | V    |
| IF     | Input current                                  | CN2 Between pins 1-2,1-3,1-4,1-5,1-6,1-7.1-8 | 20        | mA   |
| VR     | reverse voltage                                | CN2 Between pins 1-2,1-3,1-4,1-5,1-6,1-7.1-8 | 5         | V    |
| Topr   | Operating temperature                          | No condensation                              | -10 ~ +70 | °C   |
| Tstg   | Storage temperature                            | No condensation                              | -20 ~ +85 | °C   |
| Viso   | Isolation voltage between primary to secondary | Sine wave voltage, 60Hz, 1min                | 2500      | Vrms |

\*Other maximum ratings apply to individual Hic.

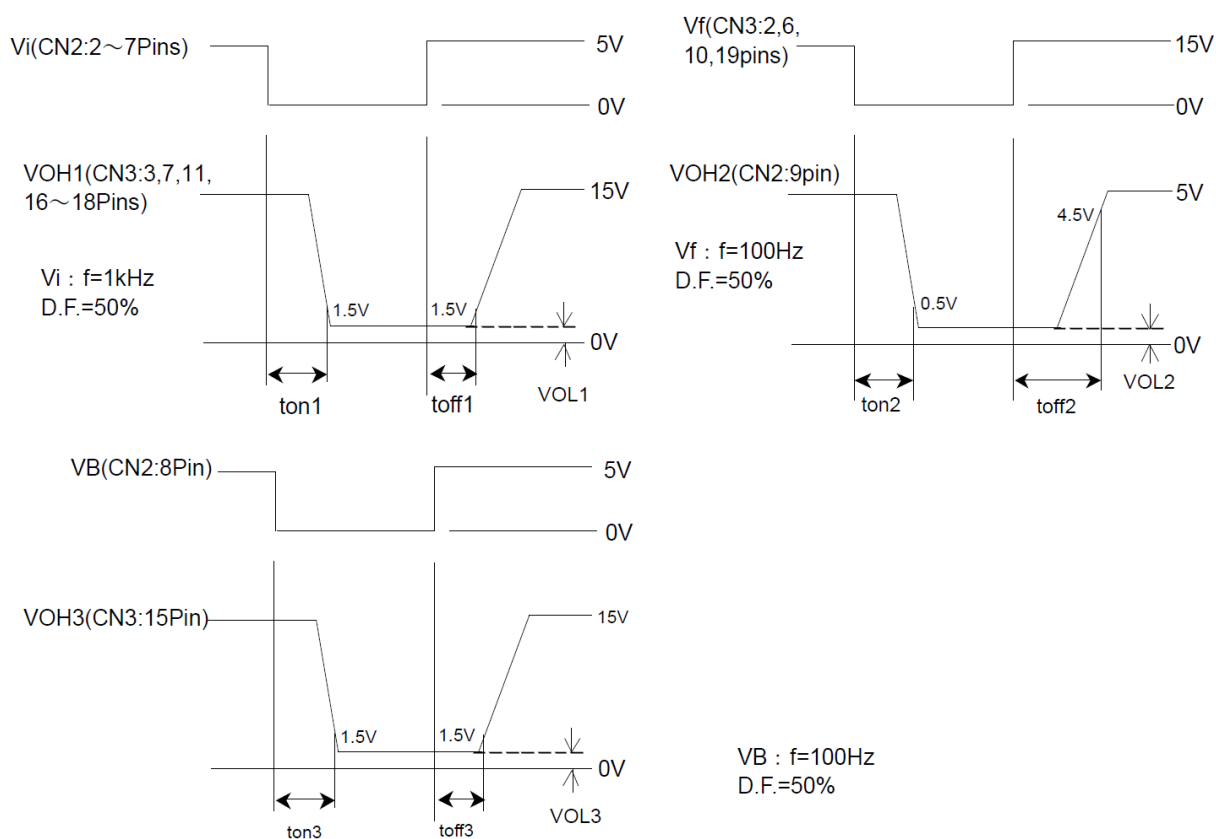
IPM INTERFACE MODULE WITH DC-DC CONVERTER

ELECTRICAL CHARACTERISTICS (unless otherwise noted, Ta=25°C)

| Symbol         | Parameter            | Test conditions                             | Limits |      |      | Unit |
|----------------|----------------------|---|--------|------|------|------|
|                |                      |   | MIN.   | TYP. | MAX. |      |
| VD             | supply voltage       | Recommended range                           | 22.8   | 24   | 25.2 | V    |
| I <sub>F</sub> | Input current        | Recommended range                           | 10     | -    | 20   | mA   |
| VG1~4          | output voltage       | CN3 Between pins 4-1,8-5,12-9,14-13 No Load | 14     | 15   | 16   | V    |
| VOH1           | output High voltage1 | (Note 1) Vi=H                               | 13.7   | 15.0 | 16.3 | V    |
| VOL1           | output Low voltage1  | (Note 1) Vi=L                               | -      | -    | 0.5  | V    |
| ton1           | turn-on time1        | (Note 1)                                    | -      | -    | 1.0  | μs   |
| toff1          | turn-off time1       | (Note 1)                                    | -      | -    | 1.0  | μs   |
| VOH2           | output High voltage2 | (Note 1) Vf=H                               | 4.9    | 5.0  | 5.1  | V    |
| VOL2           | output Low voltage2  | (Note 1) Vf=L                               | -      | -    | 0.5  | V    |
| ton2           | turn-on time2        | (Note 1)                                    | -      | 2.0  | -    | μs   |
| toff2          | turn-off time2       | (Note 1)                                    | -      | 40   | -    | μs   |
| VOH3           | output High voltage3 | (Note 1) Vf=H                               | 13.7   | 15.0 | 16.3 | V    |
| VOL3           | output Low voltage3  | (Note 1) Vf=L                               | -      | -    | 0.5  | V    |
| ton3           | turn-on time3        | (Note 1)                                    | -      | 2.0  | -    | μs   |
| toff3          | turn-off time3       | (Note 1)                                    | -      | 50   | -    | μs   |

\*Characteristic of Hic unit apply to individual Hic.

(Note 1) Please refer to the following test conditions.



IPM INTERFACE MODULE WITH DC-DC CONVERTER

**FOR SAFETY USING**

Great detail and careful attention are given to the production activity of products, such as the development, the quality of production, and in its reliability. However the reliability of products depends not only on their own factors but also in their condition of usage. When handling products, please note the following cautions.

| CAUTIONS         |  |
|------------------|--|
| Packing          | The materials used in packing products can only withstand normal external conditions. When exposed to outside shocks, rain and certain environmental contaminants, the packing materials will deteriorate. Please take care in handling.   |
| Carrying         | <ol style="list-style-type: none"> <li>1) Don't stack boxes too high. Avoid placing heavy materials on boxes.</li> <li>2) Boxes must be positioned correctly during transportation to avoid breakage.</li> <li>3) Don't throw or drop boxes.</li> <li>4) Keep boxes dry. Avoid rain or snow.</li> <li>5) Minimal vibration and shock during transportation is desirable.</li> </ol>  |
| Storage          | <p>When storing products, please observe the following notices or possible deterioration of their electrical characteristics, risk of solderability, and external damage may occur.</p> <ol style="list-style-type: none"> <li>1) Devices must be stored where fluctuation of temperature and humidity is minimal, and must not be exposed to direct sunlight. Store at the normal temperature of 5 to 30 degrees Celsius with humidity at 40 to 60%.</li> <li>2) Avoid locations where corrosive gasses are generated or where much dust accumulates.</li> <li>3) Storage cases must be static proof.</li> <li>4) Avoid putting weight on boxes.</li> </ol> |
| Extended storage | When extended storage is necessary, products must be kept non-processed. When using products which have been stored for more than one year or under severe conditions, be sure to check that the exterior is free from flaw and other damages.   |
| Maximum ratings  | To prevent any electrical damages, use products within the maximum ratings. The temperature, current, voltage, etc. must not exceed these conditions.  |
| Polarity         | To protect products from destruction and deterioration due to wrong insertion, make sure of polarity in inserting leads into the board holes, conforming to the external view for the terminal arrangement.  |

**Keep safety first in your circuit designs!**

- ISAHAYA Electronics Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (1)placement of substitutive, auxiliary circuits, (2)use of non-flammable material or (3)prevention against any malfunction or mishap.

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