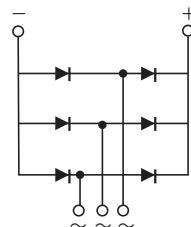


## 3-Phase Diode Bridge (DIP type)

DF 60 NB160 (60A / 1600V)

DF 75 NB160 (75A / 1600V)

DF 100 NB160 (100A / 1600V)



### Applications

- ▶ Packaged Air Conditioner
- ▶ Motor Drives
- ▶ Servo Controller
- ▶ Battery Charger
- ▶ Power Supply



### Features

- Reduced thermal resistance with unique internal structure and copper heat plate



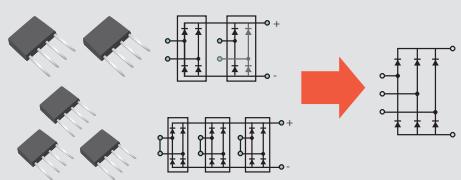
Volume ratio of 1/10

DF60LA/LB



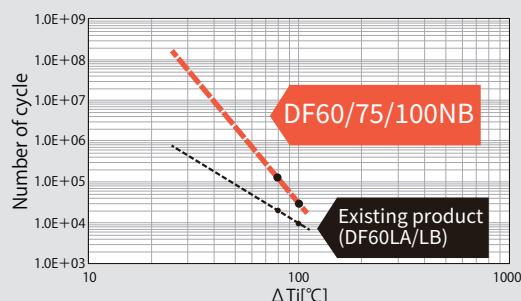
DF60/75/100NB

- Fewer components reduce assembly time and downsize overall circuit



- Power cycle capability (Long-term reliability) is 3 times better than before thanks to the use of "Transfer Molding Package"

(at  $\Delta T_j = 100^\circ\text{C}$ )



- Dual terminals for high capability and reliable solder contacts



- Part Number on both sides for easy identification even after board mounting



## Maximum Ratings

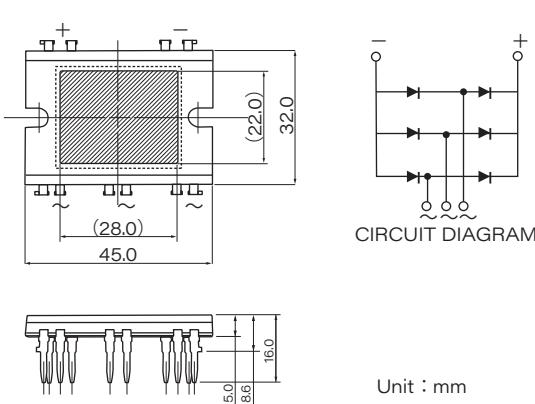
T<sub>j</sub>=25°C unless otherwise specified

| Item                                | Symbol           | Unit             | DF60NB160 / DF75NB160 / DF100NB160 |          |          |                                                       |                                   |                                   |                                   |  |
|-------------------------------------|------------------|------------------|------------------------------------|----------|----------|-------------------------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|--|
| Repetitive Peak Reverse Voltage     | V <sub>RRM</sub> | V                | 1600                               |          |          |                                                       |                                   |                                   |                                   |  |
| Non-Repetitive Peak Reverse Voltage | V <sub>RSM</sub> | V                | 1700                               |          |          |                                                       |                                   |                                   |                                   |  |
| Item                                | Symbol           | Unit             | Ratings                            |          |          | Conditions                                            |                                   |                                   |                                   |  |
|                                     |                  |                  | DF60NB                             | DF75NB   | DF100NB  |                                                       |                                   |                                   |                                   |  |
| Output Current(D.C.)                | I <sub>D</sub>   | A                | 60                                 | 75       | 100      | 3-phase full wave                                     | DF60NB160...T <sub>c</sub> =110°C | DF75NB160...T <sub>c</sub> =112°C | DF100NB160...T <sub>c</sub> =98°C |  |
| Surge Forward Current               | I <sub>FSM</sub> | A                | 730/800                            | 910/1000 | 910/1000 | 50/60HZ sine wave, Non-repetitive 1/2cycle peak value |                                   |                                   |                                   |  |
| I <sup>2</sup> t (for fusing)       | I <sup>2</sup> t | A <sup>2</sup> s | 2600                               | 4100     | 4100     | Value for one cycle of surge current                  |                                   |                                   |                                   |  |
| Operating Junction Temperature      | T <sub>j</sub>   | °C               | -40 to +150                        |          |          |                                                       |                                   |                                   |                                   |  |
| Storage Temperature                 | T <sub>Stg</sub> | °C               | -40 to +125                        |          |          |                                                       |                                   |                                   |                                   |  |
| Isolation Voltage                   | V <sub>iso</sub> | V                | 2500                               |          |          | Terminals to Case, AC RMS 1minute                     |                                   |                                   |                                   |  |
| Mounting Torque                     | M4               | N·m              | 1.5                                |          |          | Recommended Torque : 1.0 to 1.4N · m                  |                                   |                                   |                                   |  |
| Mass                                |                  | g                | 24                                 |          |          | Typical Value                                         |                                   |                                   |                                   |  |

## Electrical Characteristics

T<sub>j</sub>=25°C unless otherwise specified

| Item                            | Symbol               | Unit | Ratings |        |         |        |        |         |        |        | Conditions                                                                     |                                                                                            |                                                            |                                                             |
|---------------------------------|----------------------|------|---------|--------|---------|--------|--------|---------|--------|--------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------------|
|                                 |                      |      | Min.    |        |         | Typ.   |        | Max.    |        |        |                                                                                |                                                                                            |                                                            |                                                             |
|                                 |                      |      | DF60NB  | DF75NB | DF100NB | DF60NB | DF75NB | DF100NB | DF60NB | DF75NB | DF100NB                                                                        |                                                                                            |                                                            |                                                             |
| Repetitive Peak Reverse Current | I <sub>RRM</sub>     | mA   |         |        |         |        |        | 8.00    | 8.00   | 8.00   | T <sub>j</sub> =150°C, V <sub>R</sub> =1600V, V <sub>R</sub> =V <sub>RRM</sub> |                                                                                            |                                                            |                                                             |
| Forward Voltage Drop            | V <sub>FM</sub>      | V    |         |        |         | 1.08   | 1.09   | 1.16    | 1.30   | 1.30   | 1.35                                                                           | T <sub>j</sub> =25°C Inst. measurement I <sub>F</sub> =60A                                 | T <sub>j</sub> =25°C Inst. measurement I <sub>F</sub> =75A | T <sub>j</sub> =25°C Inst. measurement I <sub>F</sub> =100A |
| Threshold Voltage               | V <sub>(TO)</sub>    | V    |         |        |         |        |        |         | 0.91   | 0.80   | 0.90                                                                           | T <sub>j</sub> =150°C                                                                      |                                                            |                                                             |
| Slope Resistance                | r <sub>T</sub>       | mΩ   |         |        |         |        |        |         | 4.90   | 5.00   | 4.50                                                                           | T <sub>j</sub> =150°C                                                                      |                                                            |                                                             |
| Thermal Resistance              | R <sub>th(j-c)</sub> | °C/W |         |        |         |        |        |         | 0.25   | 0.20   | 0.20                                                                           | Junction to Case (per Module)                                                              |                                                            |                                                             |
| Interface Thermal Resistance    | R <sub>th(c-f)</sub> | °C/W |         |        |         |        |        |         | 0.20   | 0.14   | 0.14                                                                           | Case to Heat sink<br>Thermal conductivity(Silicon grease) ≈ 9×10 <sup>-3</sup> [W/cm · °C] |                                                            |                                                             |



## Other Products

|                           |                                              |  |
|---------------------------|----------------------------------------------|--|
| SIP*                      | <b>DF-NA series</b><br>20/30A                |  |
| <b>h =17mm</b><br>package | <b>DF-AC series</b><br>75/100A               |  |
| <b>h =22mm</b><br>package | <b>DF-AA/BA/CA series</b><br>75/100/150/200A |  |

\*Single Inline Package

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