T-39-31

## 2.6 IGBT Module Range with Soft and Fast (SFD) Free-Wheeling Diodes

In order to maintain switching losses to minimal, improving Free Wheeling Diodes, (FWD), is essential and Hitachi's version of this is the Soft and Fast Recovery (SFD) Free Wheeling Diode. Basically, improvements have been achieved in the following key requirements.

- High speed ... small recovery time, tr
- Low loss ... small reverse-peak current, Irp
- Low noise ... small rate of charge of recovery current, di/dt

Ultimately reducing your energy losses, Qrr.

## 2.7 IGBT Modules Electrical Characteristics

| Voltage Series | Type Number | Absolute Maximum Ratings | | | | | Typical Electrical Characteristics | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Package | VCES (V) | VGES (V) | IC (A) | PC (W) | VCE(sat) (V) | Cies (pF) | tr (µs) | ton (µs) | tf (µs) | toff (µs) | trr (µs) |
| 600V | MBN200A6 | Single Arm | 600 | ±20 | 300 | 1200 | 2.5 | 18000 | 0.35 | 0.45 | 0.3 | 0.85 | 0.3 |
| | MBN400A6 | | | | 400 | 1300 | | | | | 0.35 | | |
| | MBM50A6 | Single Phase (Dual Pack) | 600 | ±20 | 50 | 250 | 3 | 2400 | 0.3 | 0.35 | 0.3 | 0.55 | 0.1 |
| | MBM75A6 | | | | 75 | 325 | | 3700 | | | | | 0.15 |
| | MBM100A6 | | | | 100 | 400 | | 4500 | | | | | |
| | MBM150A6 | | | | 150 | 600 | | 7400 | 0.4 | 0.45 | | 0.7 | |
| | MBM200A6 | | | | 200 | 730 | | 9000 | | | | | |
| | MBM300A6 | | | | 300 | 1000 | | 17000 | 0.35 | | | 0.85 | |
| | MBB50A6 | Three Phase (Six Pack) | 600 | ±20 | 50 | 250 | 3 | 2700 | 0.3 | 0.35 | 0.3 | 0.55 | 0.1 |
| | MBB75A6 | | | | 75 | 300 | | 3700 | | | | | 0.15 |
| | MBB100A6 | | | | 100 | 400 | | 4500 | | | | | |
| 1200V | MBN200F12 | Single Arm | 1200 | ±20 | 200 | 1200 | 3 | 19000 | 0.4 | 0.5 | 0.4 | 1 | 0.3 |
| | MBN300F12 | | | | 300 | 1700 | | 33000 | | | | | |
| | MBM50F12 | Single Phase (Dual Pack) | 1200 | ±20 | 50 | 400 | 3 | 4800 | 0.4 | 0.5 | 0.4 | 0.75 | 0.25 |
| | MBM75F12 | | | | 75 | | | 8900 | | | | 1 | 0.3 |
| | MBM100F12 | | | | 100 | 700 | | 9300 | | | | | |
| | MBM150F12 | | | | 150 | 800 | | 18000 | | | | | |
| | MBB50F12 | Three Phase (Six Pack) | 1200 | ±20 | 50 | - | - | - | - | - | - | - | - |