## 20 High-speed switching 1400 volts class power transistor modules

- Suited for motor control applications with 575V AC input.
- Power transistors and free wheels are built into one package.
- Wide SOA with high-speed switching

| Device type | $V_{CBO}$ Volts | $V_{CEO}$ Volts | $V_{CEX}$ (sus) Volts | $I_C$ cont. Amps. | $P_C$ Watts | $h_{FE}$ min. | (Tj=125°C) $I_C$ Amps. | $V_{CE}$ Volts | Switching time (Max.) $t_{on}$ µsec. | $t_{stg}$ µsec. | $t_f$ µsec. | Package | Net mass Grams | Equivalent circuit Page 32, 33 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2DI50Z-140 | 1400 | 1400 | 1200 | 50 | 400 | 75 | 50 | 2.8 | 3.0 | 15 | 2 | M204 | 175 | Fig. E4 |
| 2DI75Z-140 | 1400 | 1400 | 1200 | 75 | 500 | 75 | 75 | 2.8 | 3.0 | 15 | 2 | M209 | 230 | Fig. E4 |
| 2DI100Z-140 | 1400 | 1400 | 1200 | 100 | 800 | 75 | 100 | 2.8 | 3.0 | 15 | 2 | M210 | 470 | Fig. E5 |
| 2DI150Z-140 | 1400 | 1400 | 1200 | 150 | 1000 | 75 | 150 | 2.8 | 3.0 | 15 | 2 | M210 | 470 | Fig. E5 |
| 1DI300Z-140 | 1400 | 1400 | 1200 | 300 | 2000 | 75 | 300 | 2.8 | 3.0 | 15 | 2 | M106 | 460 | Fig. D2 |

## 21 Power transistor modules with zener diode for snubber circuit

- Built-in zener diode permits wiring connections in the snubber circuit to be simplified merely by connecting a power transistor module to an external capacitor.
- Two types of packages for the positive (P type) and negative (N type) legs allow the wiring distance between two power transistors to be shortened.
- Suited for parallel connection in the large capacity inverters

| Device type | $V_{CBO}$ Volts | $V_{CEO}$ Volts | $V_{CEO}$ (sus) Volts | $I_C$ cont. Amps. | $P_C$ Watts | $h_{FE}$ min. | (Tj=125°C) $I_C$ Amps. | $V_{CE}$ Volts | Switching time (Max.) $t_{on}$ µsec. | $t_{stg}$ µsec. | $t_f$ µsec. | Package | Net mass Grams | Equivalent circuit Page 33, 34 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1DI300MN-050 | 600 | 600 | 450 | 300 | 1380 | 3000 | 300 | 2.5 | 5.5 | 8.0 | 2.0 | M115 | 430 | Fig. D8 |
| 1DI300MP-050 | 600 | 600 | 450 | 300 | 1380 | 3000 | 300 | 2.5 | 5.5 | 8.0 | 2.0 | M114 | 430 | Fig. D8 |
| 1DI400MN-050 | 600 | 600 | 450 | 400 | 1500 | 2000 | 400 | 2.5 | 8.5 | 8.0 | 2.0 | M115 | 430 | Fig. D8 |
| 1DI400MP-050 | 600 | 600 | 450 | 400 | 1500 | 2000 | 400 | 2.5 | 8.5 | 8.0 | 2.0 | M114 | 430 | Fig. D8 |
| 1DI300MN-120 | 1200 | 1200 | 900 | 300 | 2000 | 1500 | 300 | 4 | 7.0 | 15.0 | 3.0 | M118 | 430 | Fig. F2 |
| 1DI300MP-120 | 1200 | 1200 | 900 | 300 | 2000 | 1500 | 300 | 4 | 7.0 | 15.0 | 3.0 | M117 | 430 | Fig. F2 |
| 1DI400MN-120 | 1200 | 1200 | 900 | 400 | 3000 | 2000 | 400 | 4 | 3.0 | 15.0 | 3.0 | M118 | 430 | Fig. F2 |
| 1DI400MP-120 | 1200 | 1200 | 900 | 400 | 3000 | 2000 | 400 | 4 | 3.0 | 15.0 | 3.0 | M117 | 430 | Fig. F2 |
| 1DI200ZN-120 | 1200 | 1200 | 1200 * | 200 | 1400 | 100 | 200 | 5.0 | 3.0 | 15.0 | 2.0 | M115 | 430 | Fig. D9 |
| 1DI200ZP-120 | 1200 | 1200 | 1200 * | 200 | 1400 | 100 | 200 | 5.0 | 3.0 | 15.0 | 2.0 | M114 | 430 | Fig. D9 |
| 1DI300ZN-120 | 1200 | 1200 | 1200 * | 300 | 2000 | 100 | 300 | 5.0 | 3.0 | 15.0 | 2.0 | M115 | 430 | Fig. D9 |
| 1DI300ZP-120 | 1200 | 1200 | 1200 * | 300 | 2000 | 100 | 300 | 5.0 | 3.0 | 15.0 | 2.0 | M114 | 430 | Fig. D9 |

* $V_{CEX}$ (sus)

## 22 Single in-line package/6 in one-package power transistor modules

- Allows devices to be reduced in size by high packaging density.
- High $h_{FE}$ transistors are built into MS type.

| Device type | $V_{CBO}$ Volts | $V_{CEO}$ Volts | $V_{CEO}$ (sus) Volts | $I_C$ cont. Amps. | $P_C$ Watts | $h_{FE}$ min. | (Tj=125°C) * $I_C$ Amps. | $V_{CE}$ Volts | Switching time (Max.) $t_{on}$ µsec. | $t_{stg}$ µsec. | $t_f$ µsec. | Package | Net mass Grams | Equivalent circuit Page 34, 36 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6DI10MS-050 | 600 | 600 | 450 | 10 | 50 | 100 | 10 | 2 | 2.0 | 8 | 2 | M615 | 65 | Fig. H5 |
| 6DI15S-050 | 600 | 600 | 450 | 15 | 60 | 100 | 15 | 5 | 1.0 | 12 | 2 | M614 | 40 | Fig. H4 |
| 6DI15MS-050 | 600 | 600 | 450 | 15 | 60 | 150 | 15 | 2.5 | 2.0 | 8 | 2 | M615 | 65 | Fig. J7 |
| 6DI20MS-050 | 600 | 600 | 450 | 20 | 80 | 200 | 20 | 2.5 | 2.0 | 8 | 2 | M615 | 65 | Fig. J7 |

* For 6DI15S-050 Tj = 25°C.