

## 变频器中使用模块的电压、电流选择

### 电压规格选择

$$V_{ces} \geq V_{cep}, V_{cesp}$$

例:  $V(\text{Input})_{\text{nom}} = 220\text{V}_{\text{rms}}$

$$\textcircled{1} E_d = 220 \times \sqrt{2} \times 1.1 \times \alpha = 377\text{V}$$

注: 1.1: 线路电压波动因数

$\alpha$ : 安全因数

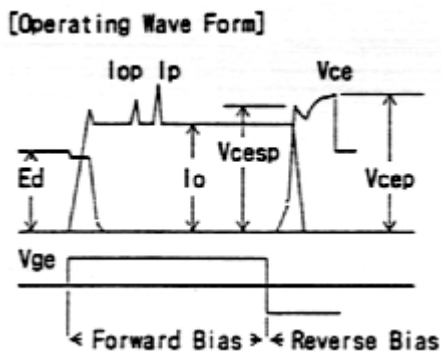
$$\textcircled{2} V_{cesp} = (377 \times 1.15 + 100) \times \alpha = 587\text{V}$$

注: 1.15: 过压保护水平(115%)

$\alpha$ : 安全因数 (通常 1.1)

100: 线路电感产生的尖峰电压( $L \times di/dt$ )

$$\textcircled{3} V_{ces} = 600\text{V} \text{ (IGBT 电压规格)}$$



### 电流规格选择

$$I_c \geq I_o$$

例:  $V(\text{Input})_{\text{nom}} = 220\text{V}_{\text{rms}}$

电机输出=3.7kW

变频器容量: 6.0kVA

$$P = \sqrt{3} \times V_o \times I_o$$

$$V_o = 0.9 \times V_{in}$$

$$I_o = I_c / (\sqrt{2} \times 1.5 \times 1.4)$$

注: P: 变频器容量

0.9: 低于额定电压 10%

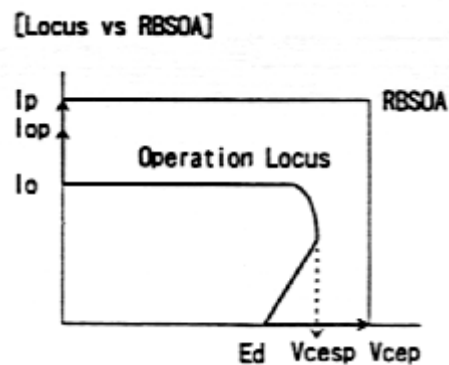
1.5: 容量过载 (150%, 1min)

1.4:  $I_c$  降额因数 (1/1.4  $\rightarrow$  70%)

$$\textcircled{1} \cos\phi = 0.62 \text{ (电机容量/变频器容量)}$$

$$\textcircled{2} I_o = 50\text{A}$$

$$\textcircled{3} I_c = 50\text{A} \text{ (IGBT 电流规格)}$$



### 变频调速器设计模块选择参考表

#### 220V AC 输入时

| Motor output (kW) | Inverter capacity (kVA) | IGBT module |           |           | Diode module |
|-------------------|-------------------------|-------------|-----------|-----------|--------------|
|                   |                         | N 系列 IGBT   | S 系列 IGBT | U 系列 IGBT |              |
|                   |                         |             |           |           |              |

|      |      |              |               |               |               |
|------|------|--------------|---------------|---------------|---------------|
| 1.5  | 3.0  | -            | 7MBR30SA-060  | 6MBI20UE060   | -             |
| 2.2  | 4.0  | -            | 7MBR30SA-060  | 6MBI30UE060   | 6RI30E-080    |
| 3.7  | 6.0  | -            | 7MBR50SA-060  | 6MBI50UE060   | 6RI30E-080    |
| 5.5  | 9.0  | 7MBI75N-060  | 7MBR75SB-060  | 6MBI75UF060   | 6RI50E-080    |
| 7.5  | 13.0 | 7MBI100N-060 | 7MBR100SB-060 | 6MBI100U2A060 | 6RI75E-080    |
| 11.0 | 17.0 | 2MBI150N-060 | -             | 2MBI150U2A060 | 6RI100E-080   |
| 15.0 | 22.0 | 2MBI150N-060 | -             | 2MBI150U2A060 | 2RI60E-080x3  |
| 18.5 | 28.0 | 2MBI200N-060 | -             | 2MBI200U2A060 | 2RI100E-080x3 |
| 22.0 | 33.0 | 2MBI200N-060 | -             | 2MBI200U2A060 | 2RI100E-080x3 |
| 30.0 | 44.0 | 2MBI300N-060 | 2MBI300S-060  | 2MBI300U2B060 | -             |
| 37.0 | 55.0 | -            | -             | 2MBI400U2B060 | -             |
| 45.0 | 67.0 | -            | -             | 2MBI400U2B060 | -             |

注：本表数据只供参考

### 440V AC 输入时

| Motor output capacity (kW) | Inverter capacity (kVA) | IGBT module  |              |               | Diode module     |
|----------------------------|-------------------------|--------------|--------------|---------------|------------------|
|                            |                         | N 系列 IGBT    | S 系列 IGBT    | U 系列 IGBT     |                  |
| 0.75                       | 2.0                     | -            | 7MBR10SA120  | 6MBI10UF-120  | -                |
| 1.5                        | 3.0                     | -            | 7MBR10SA120  | 6MBI10UF-120  | -                |
| 2.2                        | 4.0                     | -            | 7MBR15SA120  | 6MBI15UF-120  | -                |
| 3.7                        | 6.0                     | -            | 7MBR25SA120  | 6MBI25UF-120  | 6RI30G-160       |
| 5.5                        | 9.0                     | 7MBI50N-120  | 7MBR50SB120  | 6MBI50UA-120  | 6RI30G-160       |
| 7.5                        | 13.0                    | 7MBI50N-120  | 7MBR50SB120  | 6MBI50UA-120  | 6RI30G-160       |
| 11.0                       | 17.0                    | 2MBI75N-120  | 6MBI75S-120  | 6MBI75UB-120  | 6RI75G-160       |
| 15.0                       | 22.0                    | 2MBI75N-120  | 6MBI75S-120  | 6MBI75UB-120  | 6RI75G-160       |
| 18.5                       | 28.0                    | 2MBI100N-120 | 6MBI100S-120 | 6MBI100UB-120 | 6RI100G-160      |
| 22.0                       | 33.0                    | 2MBI100N-120 | 6MBI100S-120 | 6MBI100UB-120 | 6RI100G-160      |
| 30.0                       | 44.0                    | 2MBI150N-120 | 2MBI150S-120 | 6MBI150UB-120 | 2RI60G-160x3     |
| 37.0                       | 55.0                    | 2MBI200N-120 | 2MBI200S-120 | 6MBI225U-120  | 2RI100G-160x3    |
| 45.0                       | 67.0                    | 2MBI200N-120 | 2MBI200S-120 | 6MBI225U-120  | 2RI100G-160x3    |
| 55.0                       | 84.0                    | 2MBI300N-120 | 2MBI300S-120 | 6MBI300U-120  | 2RI100G-160x2Px3 |