

2.2 Product Matrix : Discretes Modules

The full Hitachi IGBT line up is carefully designed to meet a wide range of user needs.

(There are future plans for a further expansion of this line up.)

Table 15 : Total IGBT Product Range

Ratings								
Voltage (V)	Current (A)	10	15	20	30	50	60	75

DISCRETES

450				GN4530C				
600	GN6010A	GN6015A	GN6020C	GN6030C	GN6050E		GN6075E	
900						GN9060E		
1200		GN12015C		GN12030E	GN12050E			
1700			* GN17020E					

Ratings

Voltage (V)	Current (A)	50	60	75	100	150	200	300	400

SINGLE-ARM

600							MBN300A6	MBN400A6	
1200						MBN200F12	MBN300F12		

SINGLE-PHASE (DUAL PACK)

600	MBM50A6		MBM75A6	MBM100A6	MBM150A6	MBM200A6	MBM300A6		
1200	MBM50F12		MBM75F12	MBM100F12	MBM150F12				

THREE-PHASE (SIX PACK)

600	MBB50A6		MBB75A6	MBB100A6					
1200	MBB50F12								

* Under Development

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, t_r
- Low loss ... small reverse-peak current, I_{rp}
- Low noise ... small rate of charge of recovery current, di/dt

Ultimately reducing your energy losses, Q_{rr} .

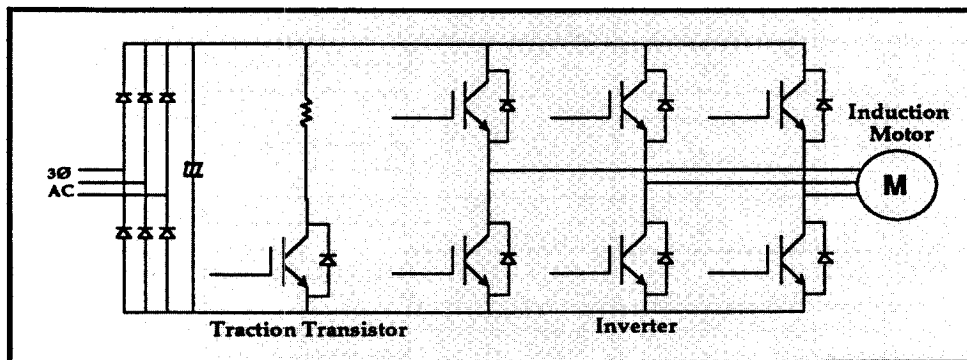
2.7 IGBT Modules Electrical Characteristics

Voltage Series	Type Number	Absolute Maximum Ratings					Typical Electrical Characteristics							
		Package	V _{CES} (V)	V _{GES} (V)	I _C (A)	P _C (W)	V _{CE(sat)} (V)	C _{ies} (pF)	t _r (μs)	t _{on} (μs)	t _f (μs)	t _{off} (μs)	t _{rr} (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						
	MBM100A6				100	400		4500						
	MBM150A6				150	600		7400	0.4	0.45		0.3		0.7
	MBM200A6				200	730		9000						
	MBM300A6				300	1000		17000	0.35					
	MBB50A6				Three Phase (Six Pack)	600		± 20	50	250		3		2700
	MBB75A6	75	300	3700										
	MBB100A6	100	400	4500			0.15							
	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	-	-	-	-	-	-	-	-	

5. Applications

5.1 Industrial (1)

AC Drive - Induction Motor



Recommended IGBT Discrete Range

200V AC Input ($V_{CES} = 600V$)									
Power output	KVA	1.5	2.5	3.5	5.5	8.0	11.0	16.0	22.0
	KW	0.75	1.5	2.2	3.7	5.5	7.5	11.0	15.0
Inverter		GN6015A	GN6020C	GN6030C	GN6050E	GN6075E	GN6050E x2	GN6075E x2	GN6050E x4
Traction		GN6010A	GN6010A	GN6015A	GN6020C	GN6030C	GN6050E	GN6075E	GN6050E x2

400V AC Input ($V_{CES} = 1200V$)							
Power output	KVA	5.5	8.0	11.0	16.0	22.0	33.0
	KW	3.7	5.5	7.5	11.0	15.0	22.0
Inverter		GN6030C	GN6050E	GN6050E	GN6075E	GN6050E x2	GN6075E x2
Traction		GN6015A	GN6020C	GN6030C	GN6050E	GN6050E	GN6075E

Recommended IGBT Module Range

3Ø 200V AC Input

Motor (kW)	Inverter (kVA)	Inverter Trs
3.7	5.5	MBB50A6
5.5	7.5	MBB75A6
7.5	11	MBB100A6
11	16	MBM150A6 x 3
15	22	MBM200A6 x 3
18.5	25	MBM300A6 x 3
22	33	MBM300A6 x 3
30	40	MBN400A6 x 6
37	50	MBN300A6 x 12
45	60	MBN300A6 x 12

3Ø 400V AC Input

Motor (kW)	Inverter (kVA)	Inverter Trs
5.5	7.5	MBB50F12
7.5	11	MBB50F12
11	16	MBM75F12 x 3
15	22	MBM100F12 x 3
18.5	25	MBM150F12 x 3
22	33	MBM150F12 x 3
30	40	MBN200F12 x 6
37	50	MBN300F12 x 6
45	60	MBN300F12 x 6
55	75	MBN200F12 x 12
75	100	MBN300F12 x 12