

## N Series, 1 in one (Low-noise, High-speed switching)

Device Type	Features	Page	VCES	IC	Package
<a href="#">1MBI150NH-060</a>	600V/150A Chopper Module	4	600V max	150A max	
<a href="#">1MBI150NK-060</a>	600V/150A Chopper Module	4	600V max	150A max	
<a href="#">1MBI200N-120</a>	1200V/200A 1 in one-package	4	1200V max	200A max	M127
<a href="#">1MBI200NH-060</a>	600V/200A Chopper Module	4	600V max	200A max	
<a href="#">1MBI200NK-060</a>	600V/200A Chopper Module	4	600V max	200A max	
<a href="#">1MBI300N-120</a>	1200V/300A 1 in one-package	4	1200V max	300A max	M127
<a href="#">1MBI300NN-120</a>	1200V/300A 1 in one-package	4	1200V max	300A max	M129
<a href="#">1MBI300NP-120</a>	1200V/300A 1 in one-package	4	1200V max	300A max	M128
<a href="#">1MBI400N-120</a>	1200V/400A 1 in one-package	4	1200V max	400A max	M127
<a href="#">1MBI400NN-120</a>	1200V/400A 1 in one-package	4	1200V max	400A max	M129
<a href="#">1MBI400NP-120</a>	1200V/400A 1 in one-package	4	1200V max	400A max	M128
<a href="#">1MBI600NN-060</a>	600V/600A 1 in one-package	4	600V max	600A max	M129
<a href="#">1MBI600NP-060</a>	600V/600A 1 in one-package	4	600V max	600A max	M128

# 1MBI300NP-120 1MBI300NN-120

IGBT Module

## 1200V / 300A 1 in one-package

### ■ Features

- High speed switching
- Voltage drive
- Low inductance module structure

### ■ Applications

- Inverter for Motor drive
- AC and DC Servo drive amplifier
- Uninterruptible power supply
- Industrial machines, such as Welding machines



### ■ Maximum ratings and characteristics

#### ● Absolute maximum ratings (at Tc=25°C unless otherwise specified)

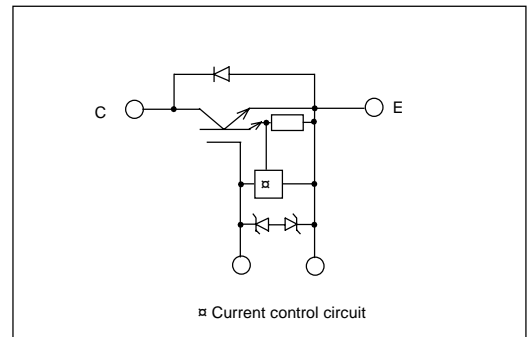
Item	Symbol	Rating	Unit
Collector-Emitter voltage	V <sub>CEs</sub>	1200	V
Gate-Emitter voltage	V <sub>GES</sub>	±20	V
Collector current	Continuous	I <sub>c</sub>	300 A
	1ms	I <sub>c</sub> pulse	600 A
	Continuous	-I <sub>c</sub>	300 A
	1ms	-I <sub>c</sub> pulse	600 A
Max. power dissipation	P <sub>c</sub>	2100	W
Operating temperature	T <sub>j</sub>	+150	°C
Storage temperature	T <sub>stg</sub>	-40 to +125	°C
Isolation voltage	V <sub>is</sub>	AC 2500 (1min.)	V
Screw torque	Mounting *1	3.5	N·m
	Terminals *2	4.5	N·m
	Terminals *3	1.7	N·m

\*1 : Recommendable value : 2.5 to 3.5 N·m(M5) or (M6)

\*2 : Recommendable value : 3.5 to 4.5 N·m(M6)

\*3 : Recommendable value : 1.3 to 1.7 N·m(M4)

#### ■ Equivalent Circuit Schematic



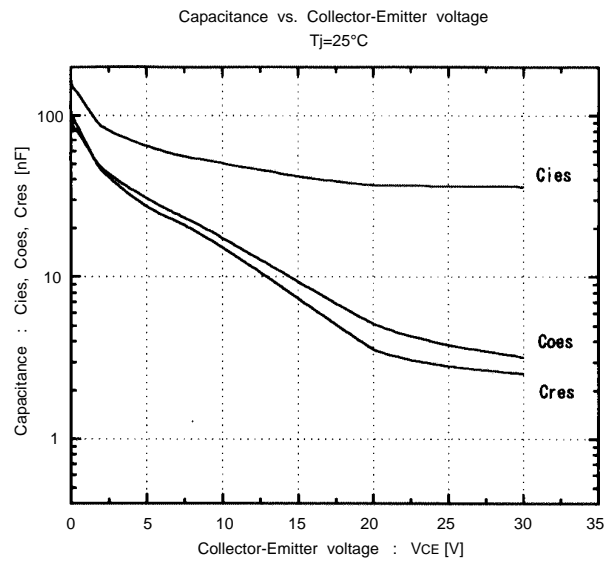
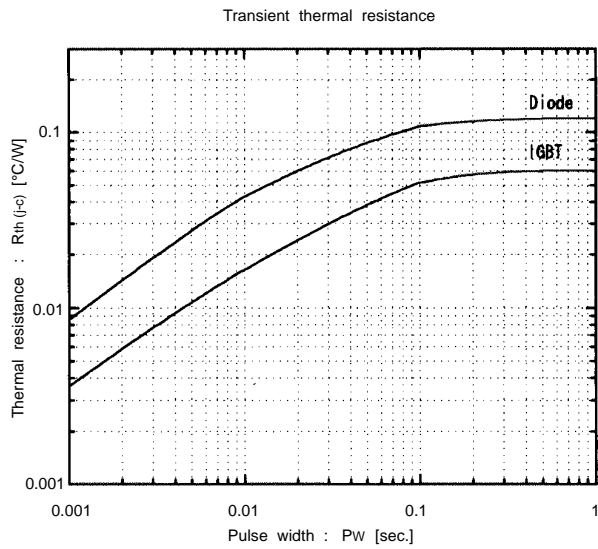
#### ● Electrical characteristics (at Tj=25°C unless otherwise specified)

Item	Symbol	Characteristics			Conditions	Unit
		Min.	Typ.	Max.		
Zero gate voltage collector current	I <sub>CEs</sub>	—	—	4.0	V <sub>GE</sub> =0V, V <sub>CE</sub> =1200V	mA
Gate-Emitter leakage current	I <sub>GES</sub>	—	—	60	V <sub>CE</sub> =0V, V <sub>GE</sub> =±20V	μA
Gate-Emitter threshold voltage	V <sub>GE(th)</sub>	4.5	—	7.5	V <sub>CE</sub> =20V, I <sub>c</sub> =300mA	V
Collector-Emitter saturation voltage	V <sub>CE(sat)</sub>	—	—	3.3	V <sub>GE</sub> =15V, I <sub>c</sub> =300A	V
Input capacitance	C <sub>ies</sub>	—	48000	—	V <sub>GE</sub> =0V	pF
Output capacitance	C <sub>oes</sub>	—	17400	—	V <sub>CE</sub> =10V	
Reverse transfer capacitance	C <sub>res</sub>	—	15480	—	f=1MHz	
Turn-on time	t <sub>on</sub>	—	0.65	1.2	V <sub>CC</sub> =600V	μs
	t <sub>r</sub>	—	0.25	0.6	I <sub>c</sub> =300A	
Turn-off time	t <sub>off</sub>	—	0.95	1.5	V <sub>GE</sub> =±15V	μs
	t <sub>f</sub>	—	0.35	0.5	R <sub>G</sub> =2.7 ohm	
Diode forward on voltage	V <sub>F</sub>	—	—	3.0	I <sub>F</sub> =300A, V <sub>GE</sub> =0V	V
Reverse recovery time	t <sub>rr</sub>	—	—	0.35	I <sub>F</sub> =300A	μs

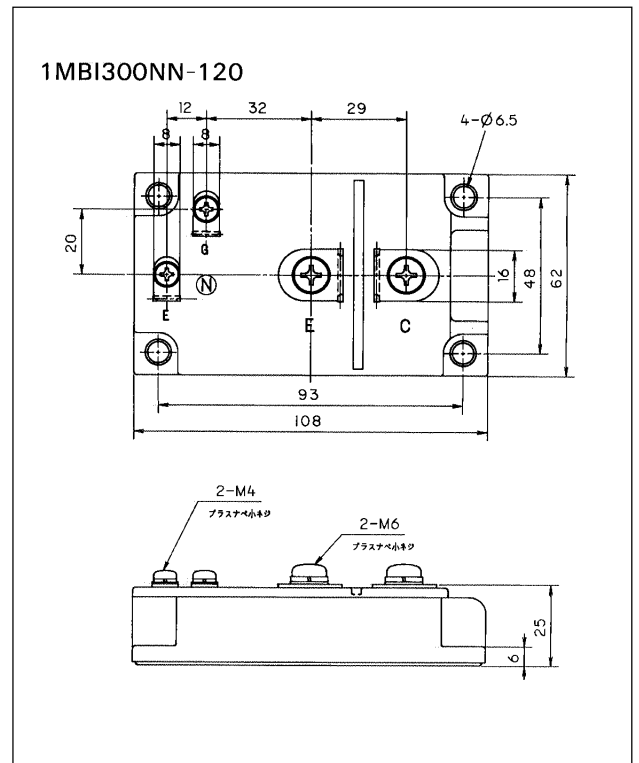
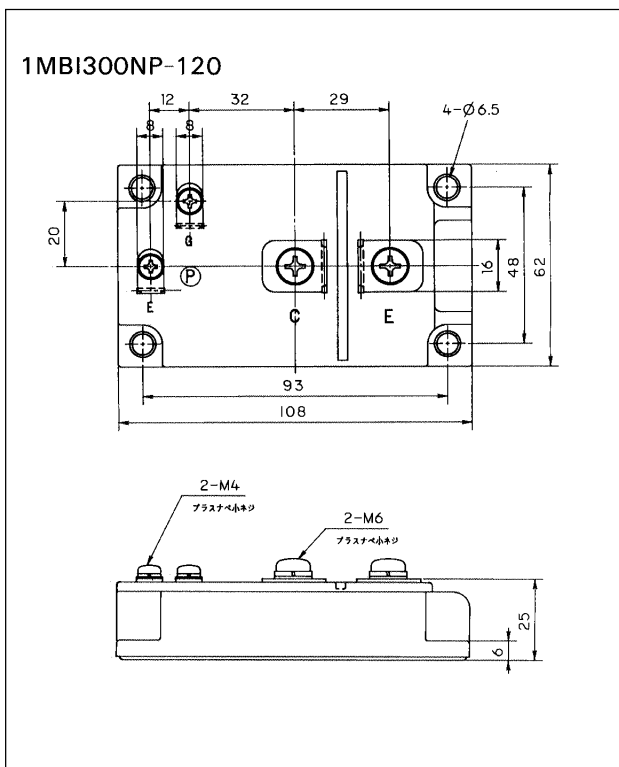
#### ● Thermal resistance characteristics

Item	Symbol	Characteristics			Conditions	Unit
		Min.	Typ.	Max.		
Thermal resistance	R <sub>th(j-c)</sub>	—	—	0.06	IGBT	°C/W
	R <sub>th(j-c)</sub>	—	—	0.12	Diode	°C/W
	R <sub>th(c-f)*4</sub>	—	0.0125	—	the base to cooling fin	°C/W

\*4 : This is the value which is defined mounting on the additional cooling fin with thermal compound



■ Outline Drawings, mm



mass : 370g