

TOSHIBA INTEGRATED IGBT MODULE SILICON N CHANNEL IGBT

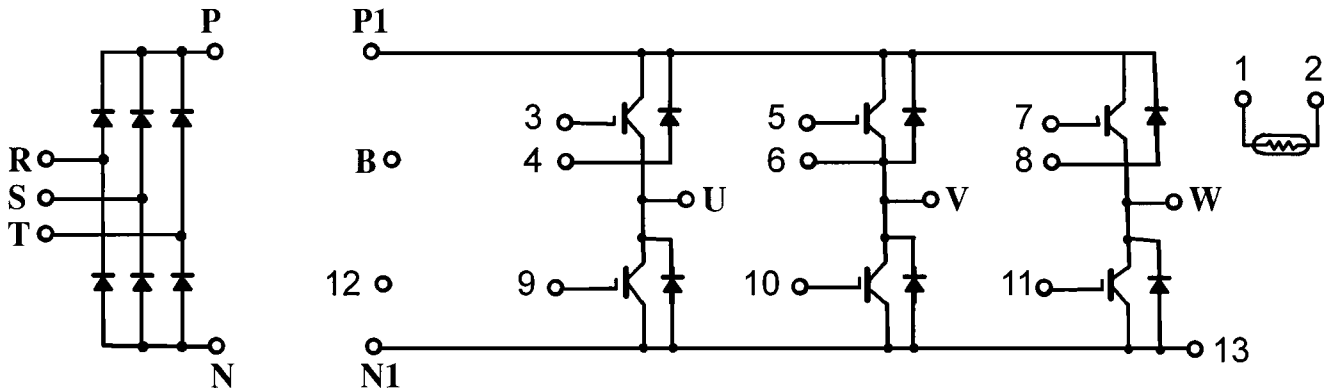
MIG10Q806H, MIG10Q806HA

HIGH POWER SWITCHING APPLICATIONS

MOTOR CONTROL APPLICATIONS

- Integrates Inverter Converter Power Circuits and Thermistor in One Package
- Output (Inverter Stage):
3 ϕ 10A/1200V IGBT
- Input (Converter Stage):
3 ϕ 15A/1600V Silicon Rectifier
- The Electrodes are Isolated from Case
- Outline:
MIG10Q806H : 2-108E3A
MIG10Q806HA : 2-108E4A
- Weight: 190g

EQUIVALENT CIRCUIT



961001EAA2

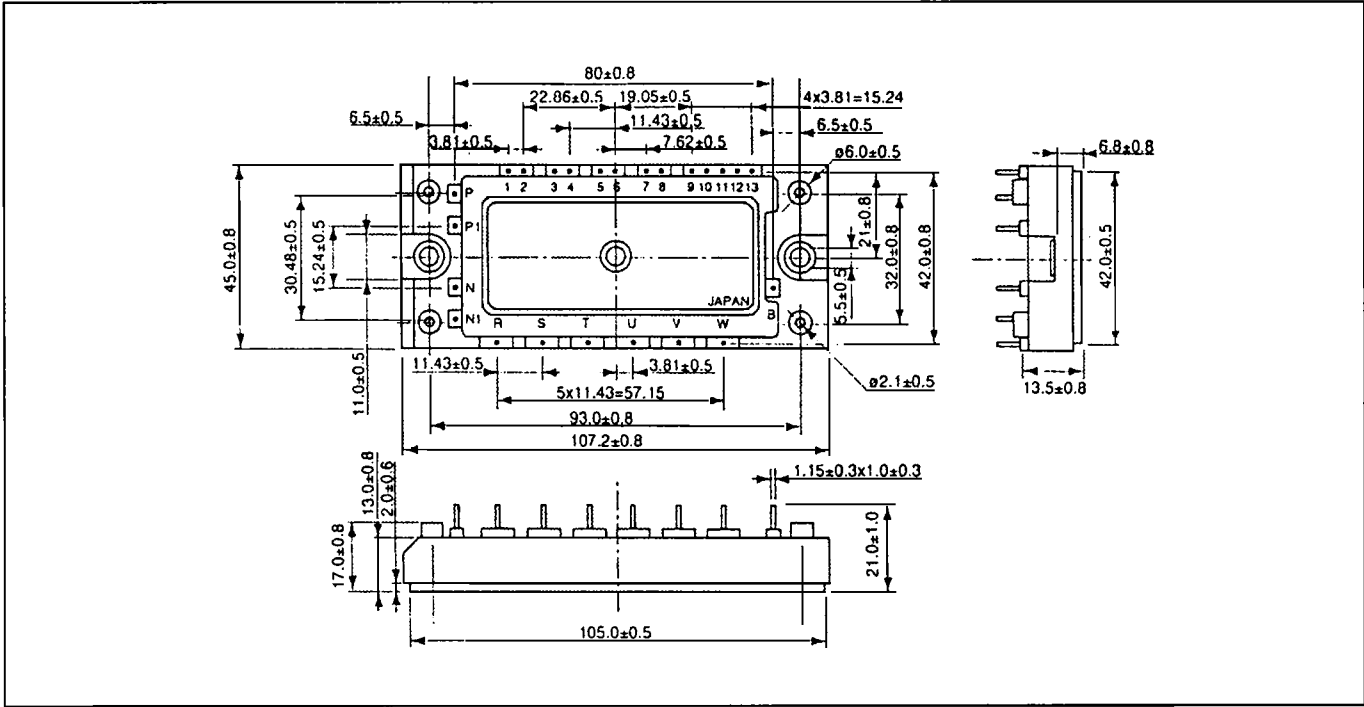
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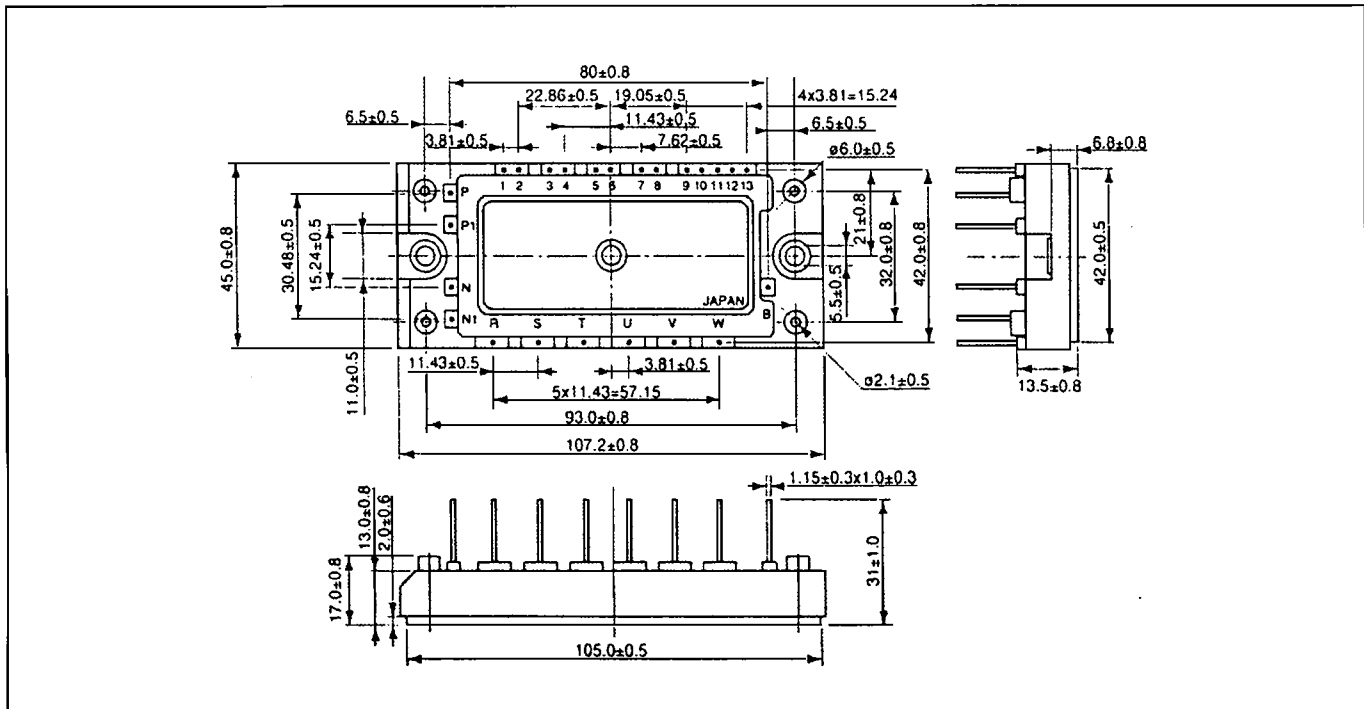
Package Dimensions

Units: mm



2-108E3A

Units: mm



2-108E4A

MAXIMUM RATINGS (Ta=25°C)

STAGE	CHARACTERISTIC	SYMBOL	RATING	UNIT	
Inverter	Collector-Emitter Voltage	V _{CES}	1200	V	
	Gate-Emitter Voltage	V _{GES}	±20	V	
	Collector Current	DC	I _C	15/10	A (25°C/80°C)
		1 ms	I _{CP}	30/20	A (25°C/80°C)
	Forward Current	DC	I _F	10	A
		1 ms	I _{FM}	20	A
Collector Power Dissipation (T _c =25°C)		P _C	82	W	
Converter	Repetitive Peak Reverse Voltage	V _{RRM}	1600	V	
	Average Output Rectified Current	I _O	15	A	
	Peak One Cycle Surge Forward Current (50Hz, Non-Repetitive)	I _{FSM}	250	A	
Module	Junction Temperature	T _j	150	°C	
	Storage Temperature Range	T _{stg}	-40 ~ 125	°C	
	Isolation Voltage	V _{Isol}	2500V (AC 1 min.)	V	
	Screw Torque	—	6	N·m	

ELECTRICAL CHARACTERISTICS (Ta=25°C)

a. Inverter stage

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	I _{GES}	V _{GE} =±20V, V _{CE} =0	—	—	±500	nA	
Collector Cut-Off Current	I _{CES}	V _{CE} =1200V, V _{GE} =0	—	—	0.5	mA	
Gate-Emitter Cut-Off Voltage	V _{GE (off)}	I _C =10mA, V _{CE} =5V	—	6.0	—	V	
Collector-Emitter Saturation Voltage	V _{CE (sat)}	I _C =10A V _{GE} =15V	—	2.8	3.2	V	
		T _j =25°C	—	3.1	3.7		
Input Capacitance	C _{ies}	V _{CE} =10V, V _{GE} =0, f=1MHz	—	1200	—	pF	
Switching Time	Rise Time	t _r	V _{CC} =600V I _C =10A V _{GE} =±15V R _G =120Ω T _j =125°C (Note 1)	—	0.07	0.15	μs
	Turn-On Time	t _{on}		—	0.15	0.30	
	Fall Time	t _f		—	0.07	0.10	
	Turn-Off Time	t _{off}		—	0.60	0.90	
Forward Voltage	V _F	I _F =10A, V _{GE} =0	—	2.0	2.8	V	
Reverse Recovery Time	t _{rr}	I _F =10A, V _{GE} =-10V di/dt=200A/μs	—	0.10	0.25	μs	
Thermal Resistance	R _{th(j-c)}	Transistor	—	—	1.52	°C/W	
		Diode	—	—	1.5		

b. Converter stage

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Repetitive Peak Reverse Current	I_{RRM}	$V_{RRM}=1600V$	—	—	50	μA
Peak Forward Voltage	V_{FM}	$I_{FM}=15A$	—	1.05	1.20	V
Peak One Cycle Surge Forward Current	I_{FSM}	50Hz sine-half-wave	250	—	—	A
Thermal Resistance	$R_{th(j-c)}$	—	—	—	1.90	$^{\circ}C/W$

c. Thermistor

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Zero-power Resistance	R_{25}	$I_{TM}=0.2mA, T_c=25^{\circ}C$	17.31	20	23.14	$k\Omega$
B Value	$B_{25/85}$	$T_c=25^{\circ}C/T_c=85^{\circ}C$	—	3760	—	K

(Note 1) Switching Time Test Circuit & Timing Chart

