

TOSHIBA

MIG20J806H/HA

TENTATIVE TOSHIBA INTEGRATED IGBT MODULE SILICON N CHANNEL IGBT

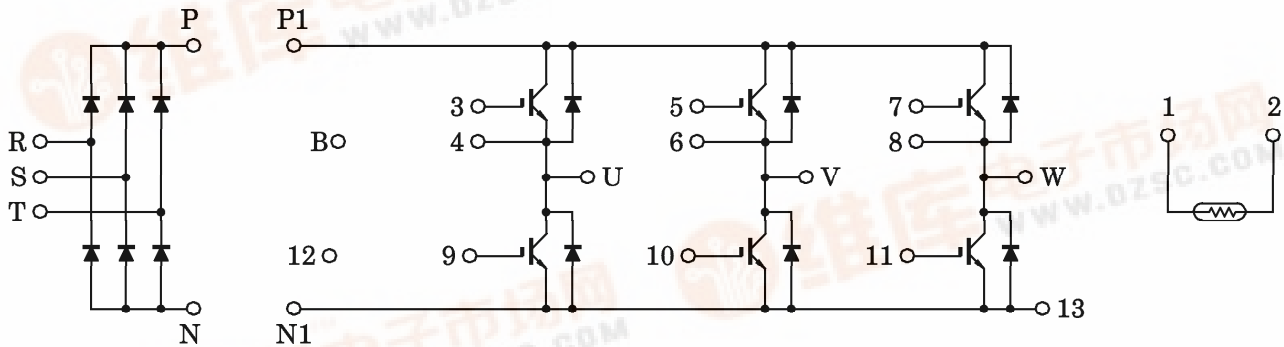
MIG20J806H, MIG20J806HA

HIGH POWER SWITCHING APPLICATIONS

MOTOR CONTROL APPLICATIONS

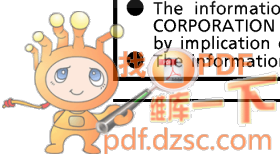
- Integrates Inverter, Converter Power Circuits and Thermistor in One Package.
- Output (Inverter Stage)
: 3 ϕ 20A/600V IGBT
- Input (Converter Stage)
: 3 ϕ 30A/800V Silicon Rectifier
- The Electrodes are Isolated from Case.
- Outline
MIG20J806H : 2-108E5A
MIG20J806HA : 2-108E6A
- Weight : 190g

EQUIVALENT CIRCUIT



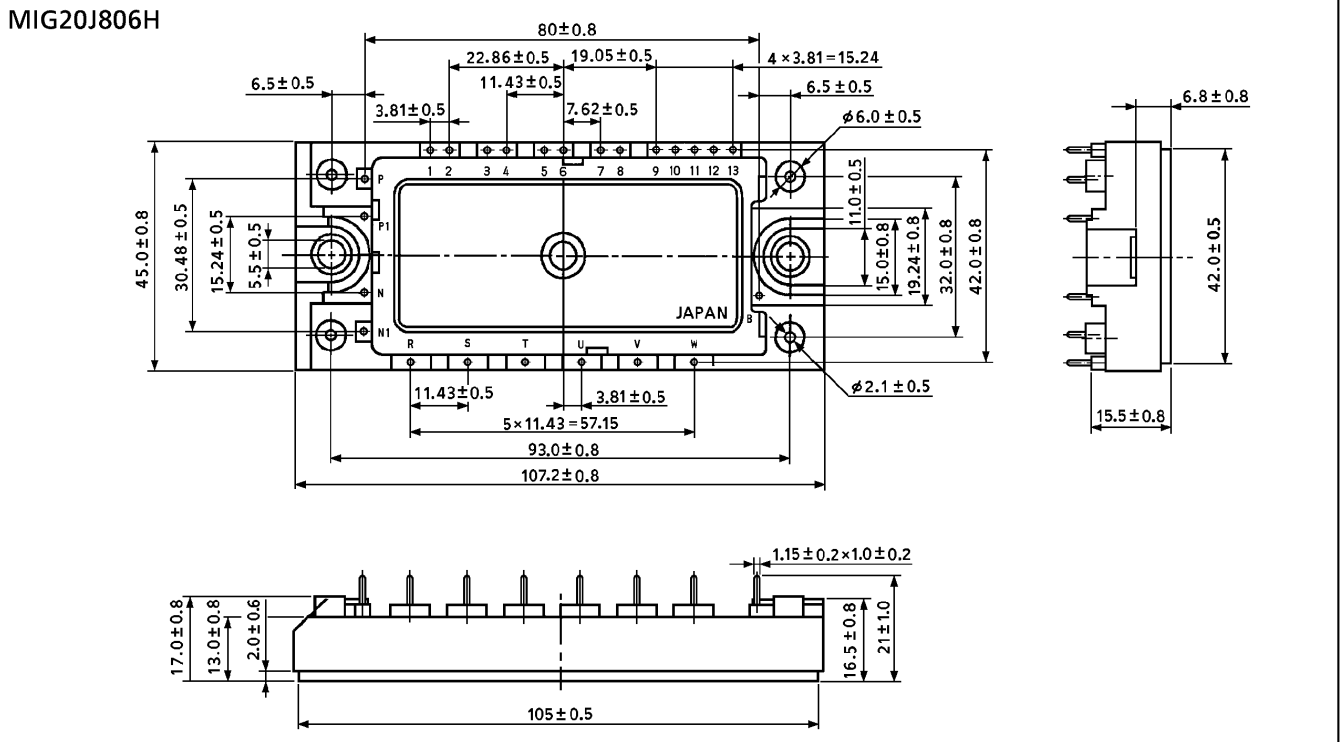
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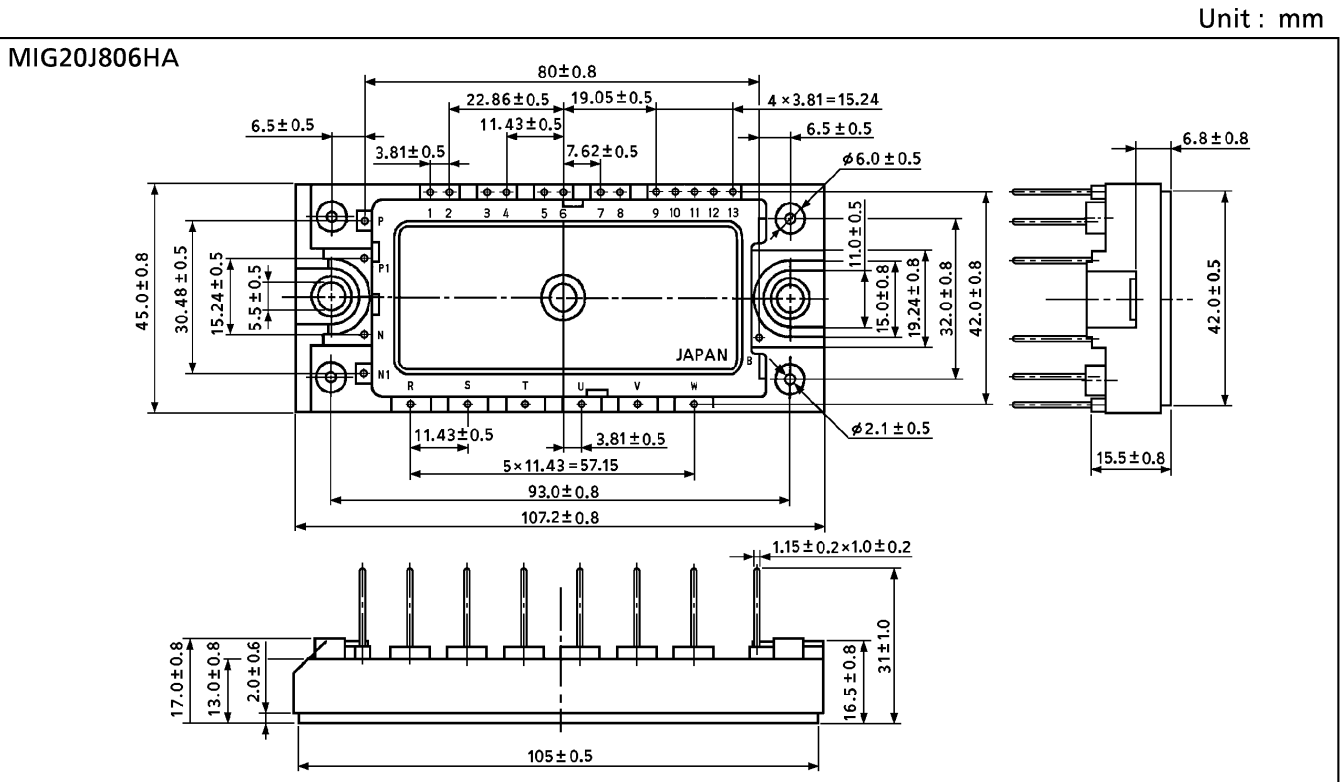


Package Dimension

Unit : mm



2-108E5A



2-108E6A

MAXIMUM RATINGS (Ta = 25°C)

STAGE	CHARACTERISTIC		SYMBOL	RATING	UNIT	
Inverter	Collector-Emitter Voltage		V _{CES}	600	V	
	Gate-Emitter Voltage		V _{GES}	± 20	V	
	Collector Current	DC	I _C	25 / 20	A	(25°C / 40°C)
		1ms	I _{CP}	50 / 40	A	(25°C / 40°C)
	Forward Current	DC	I _F	20	A	
		1ms	I _{FM}	40	A	
Collector Power Dissipation (T _c =25°C)			P _C	90	W	
Converter	Repetitive Peak Reverse Voltage		V _{RRM}	800	V	
	Average Output Rectified Current		I _O	30	A	
	Peak One Cycle Surge Forward Current (50Hz, Non-Repetitive)		I _{FSM}	400	A	
Module	Junction Temperature		T _j	150	°C	
	Storage Temperature Range		T _{stg}	-40~125	°C	
	Isolation Voltage		V _{Isol}	2500 (AC 1 minute)	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		IGES	VGE = ±20V, VCE = 0	—	—	±500	nA
Collector Cut-Off Current		ICES	VCE = 600V, VGE = 0	—	—	1.0	mA
Gate-Emitter Cut-Off Voltage		VGE (off)	IC = 2mA, VCE = 5V	5.0	—	8.0	V
Collector-Emitter Saturation Voltage		VCE (sat)	IC = 20A	—	Tj = 25°C	2.1	V
			VGE = 15V		Tj = 125°C	2.2	
Input Capacitance		Cies	VCE = 10V, VGE = 0, f = 1MHz	—	1850	—	pF
Switching Time	Rise Time	tr	VCC = 300V IC = 20A VGE = ±15V RG = 62Ω (Note 1)	—	0.10	0.20	μs
	Turn-On Time	ton		—	0.25	0.50	
	Fall Time	tf		—	0.15	0.30	
	Turn-Off Time	t _{off}		—	0.50	0.80	
Forward Voltage		VF	IF = 20A, VGE = 0	—	2.0	2.8	V
Reverse Recovery Time		trr	IF = 20A, VGE = -10V di / dt = 100A / μs	—	0.08	0.15	μs
Thermal Resistance		Rth (j-c)	Transistor	—	—	1.39	°C / W
			Diode	—	—	2.6	

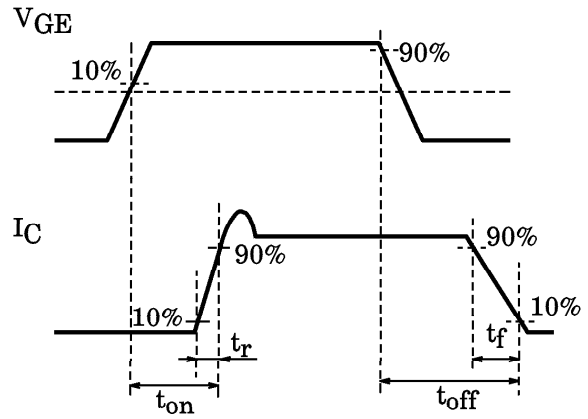
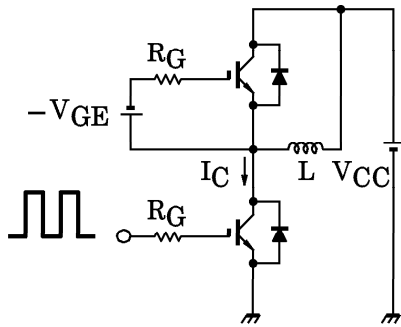
b. Converter stage

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Repetitive Peak Reverse Current		I _{RRM}	V _{RRM} = 800V	—	—	50	μA
Peak Forward Voltage		V _{FM}	I _{FM} = 30A	—	1.05	1.20	V
Peak One Cycle Surge Forward Current		I _{FSM}	50Hz sine-half-wave	400	—	—	A
Thermal Resistance		R _{th (j-c)}	—	—	—	1.56	°C / W

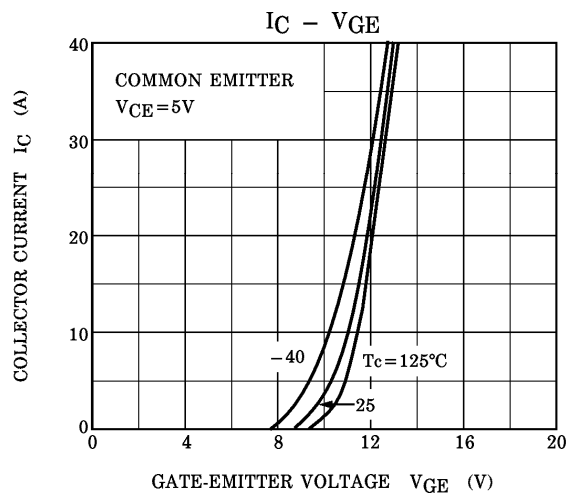
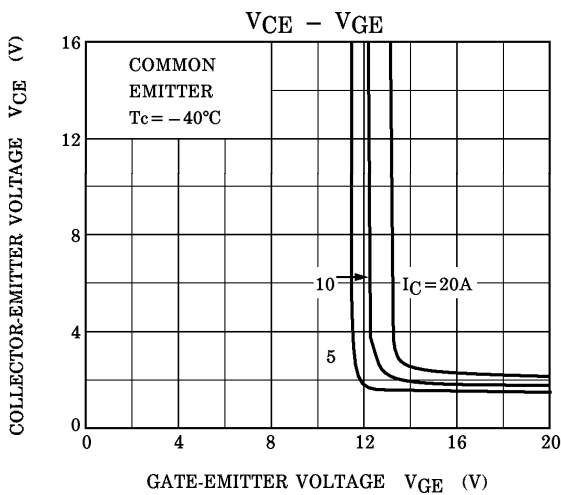
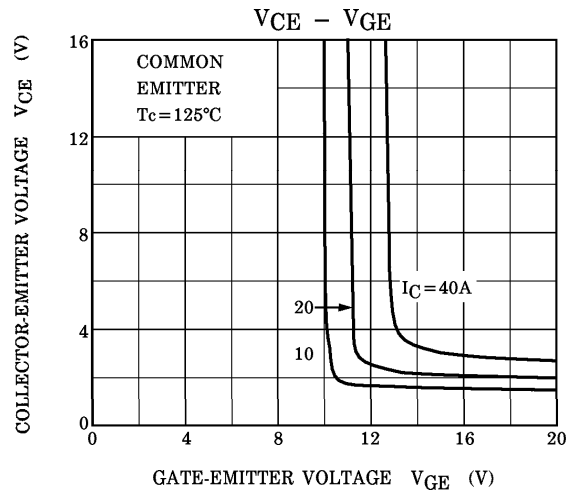
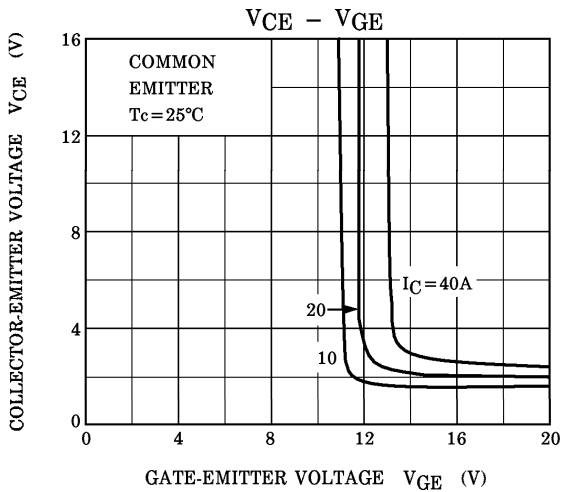
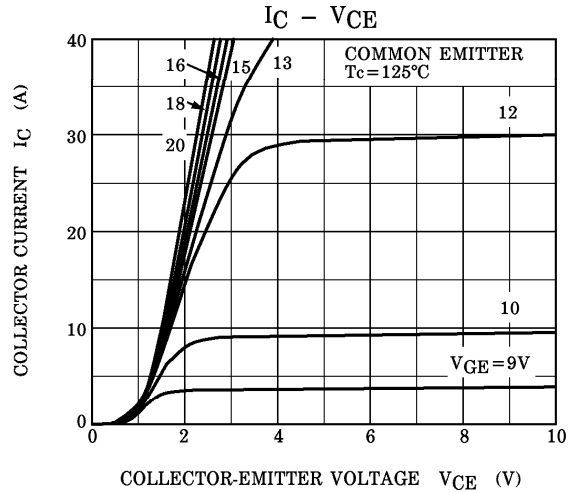
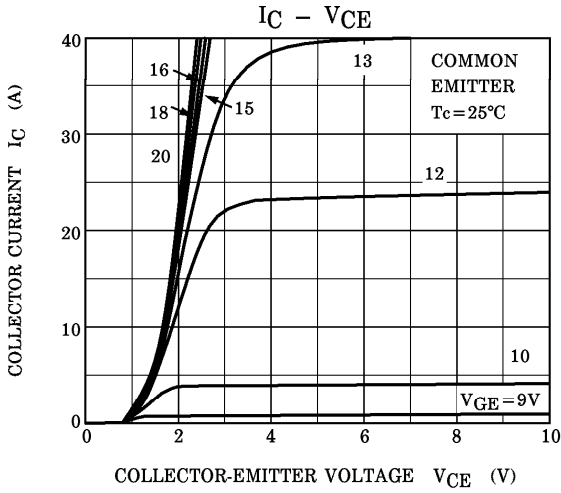
c. Thermistor

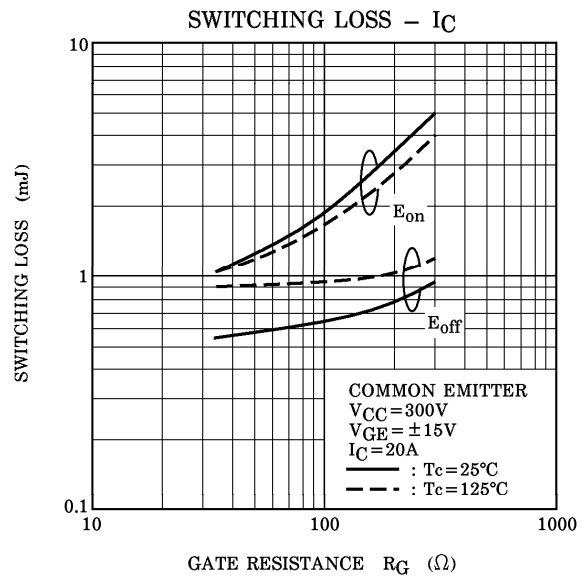
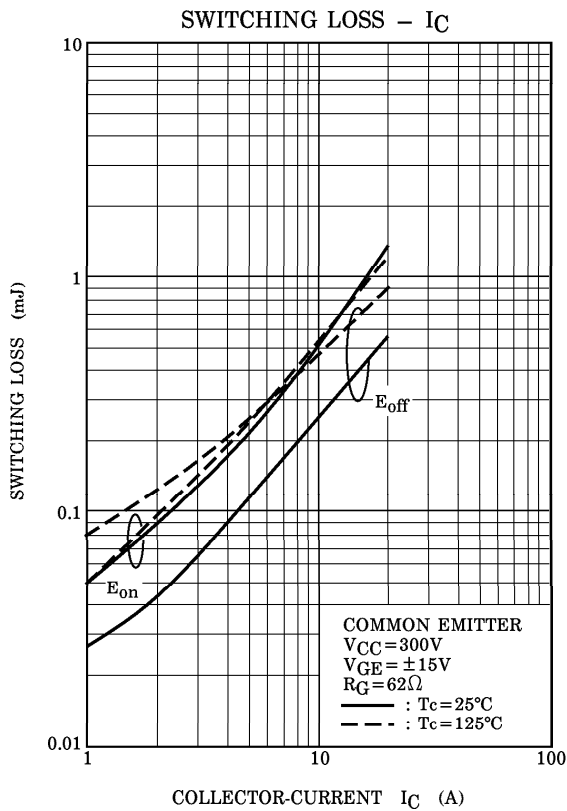
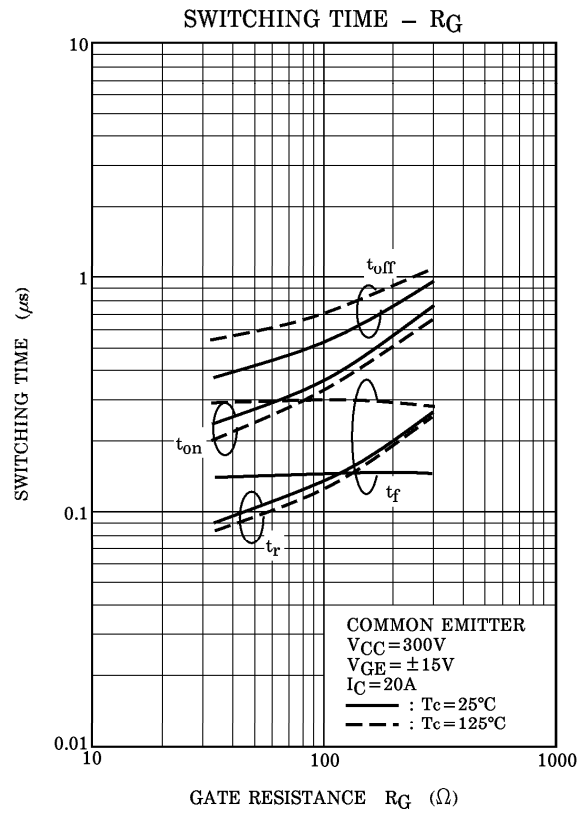
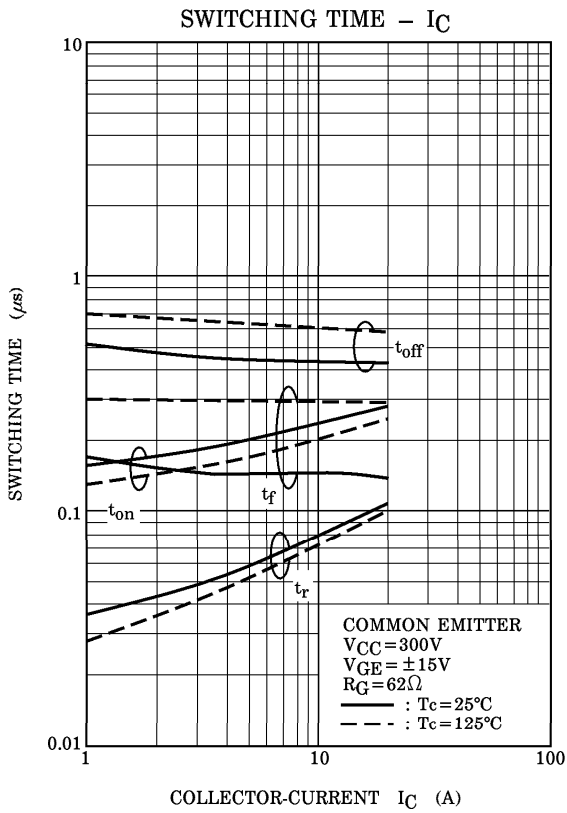
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Zero-power Resistance		R ₂₅	ITM = 0.2mA, Tc = 25°C	17.31	20	23.14	kΩ
B Value		B _{25 / 85}	Tc = 25°C / Tc = 85°C	—	3760	—	K

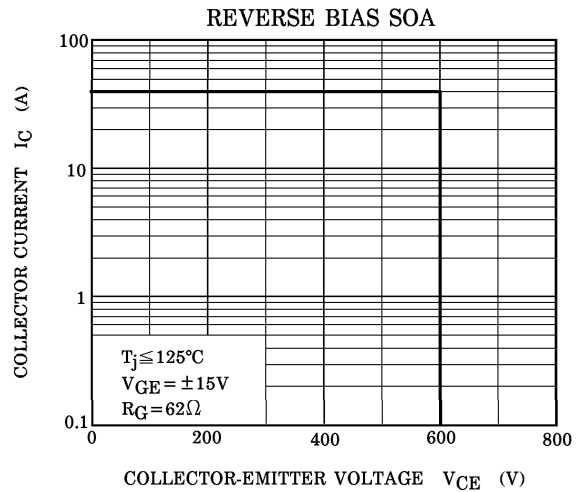
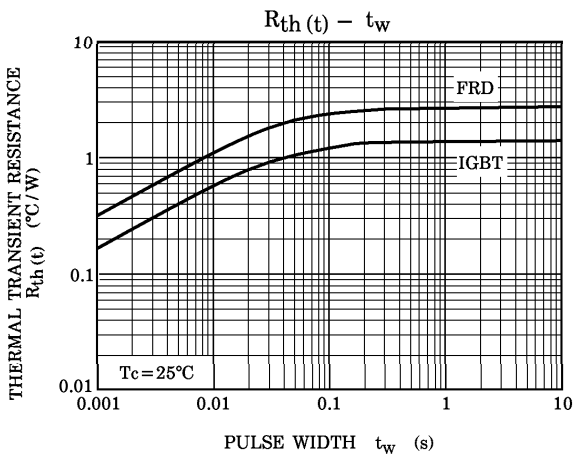
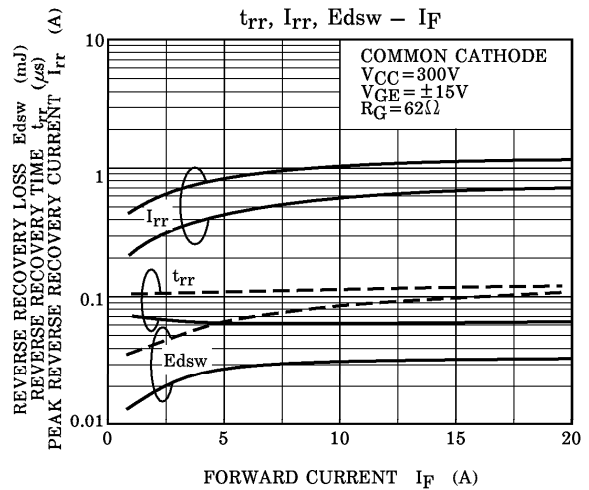
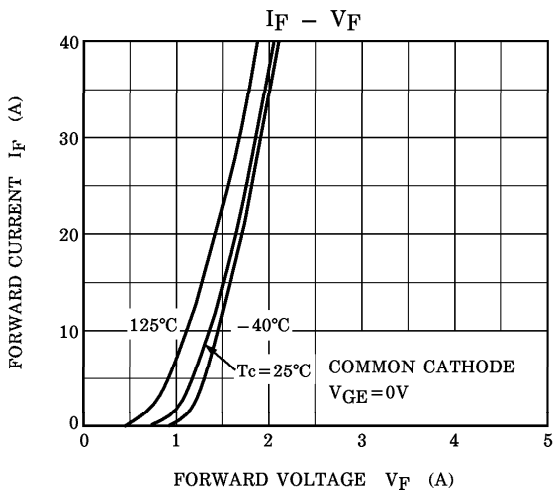
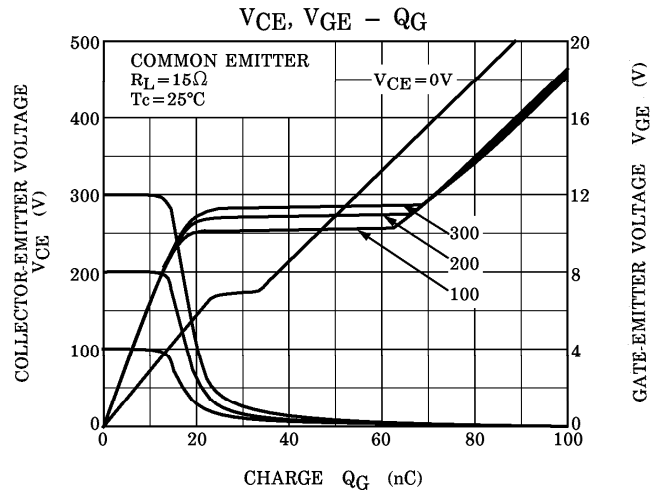
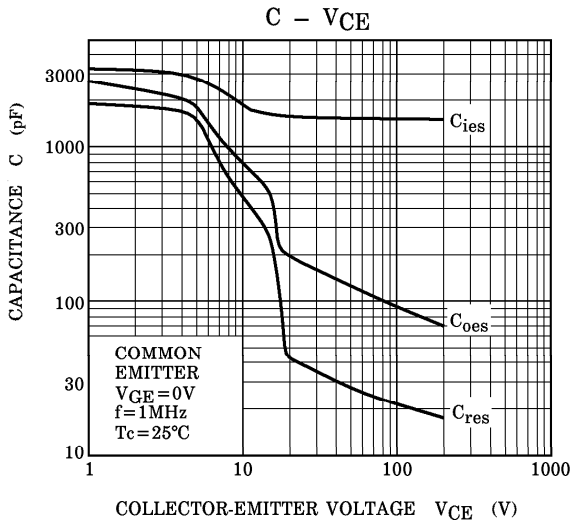
(Note 1) Switching Time Test Circuit & Timing Chart



a. Inverter stage







b. Converter stage

