

TOSHIBA INTEGRATED IGBT MODULE SILICON N CHANNEL IGBT

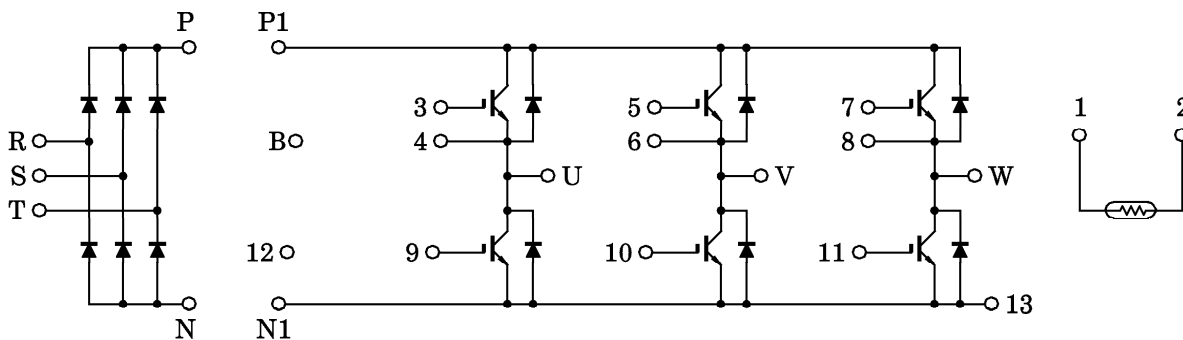
MIG15Q806H, MIG15Q806HA

HIGH POWER SWITCHING APPLICATIONS

MOTOR CONTROL APPLICATIONS

- Integrates Inverter, Converter Power Circuits and Thermistor in One Package.
- Output (Inverter Stage) : 3 ϕ 15 A / 1200 V IGBT
- Input (Converter Stage) : 3 ϕ 15 A / 1600 V Silicon Rectifier
- The Electrodes are Isolated from Case.
- Weight : 190 g
- Outline
 - MIG15Q806H : 2-108E5A
 - MIG15Q806HA : 2-108E6A

EQUIVALENT CIRCUIT



961001EAA2

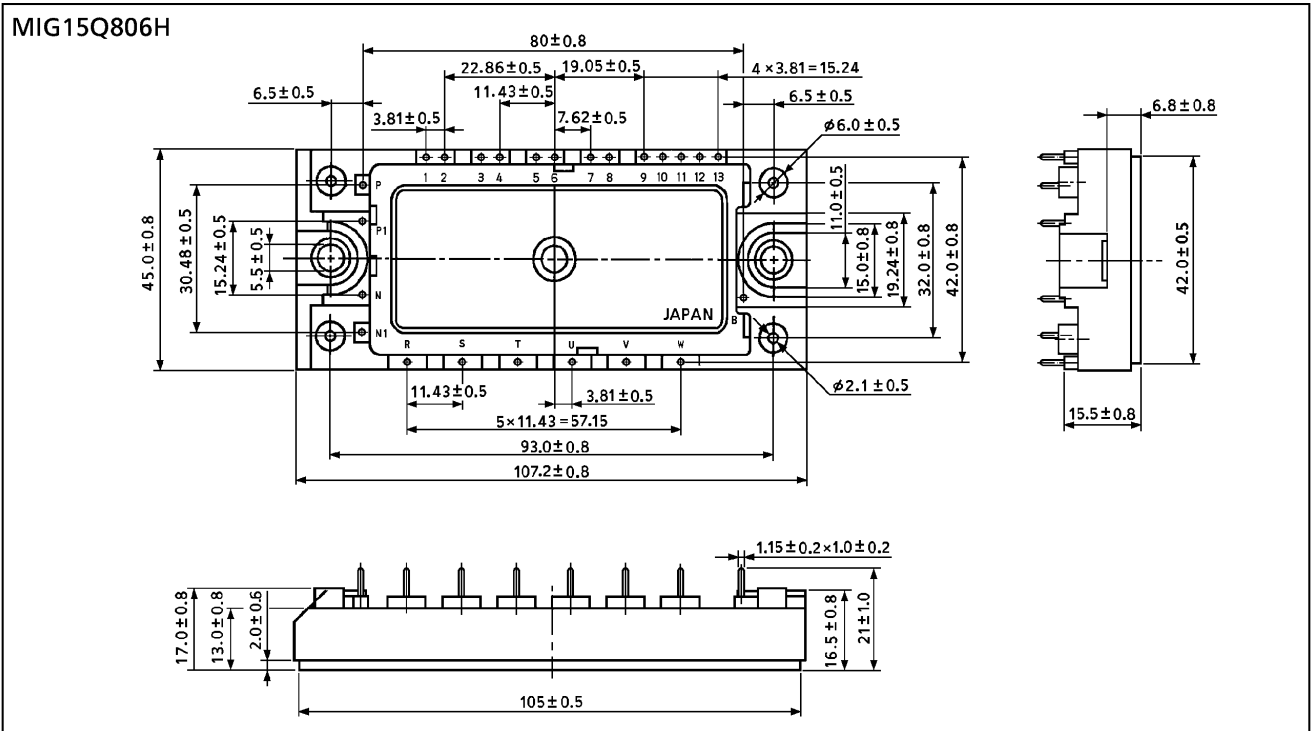
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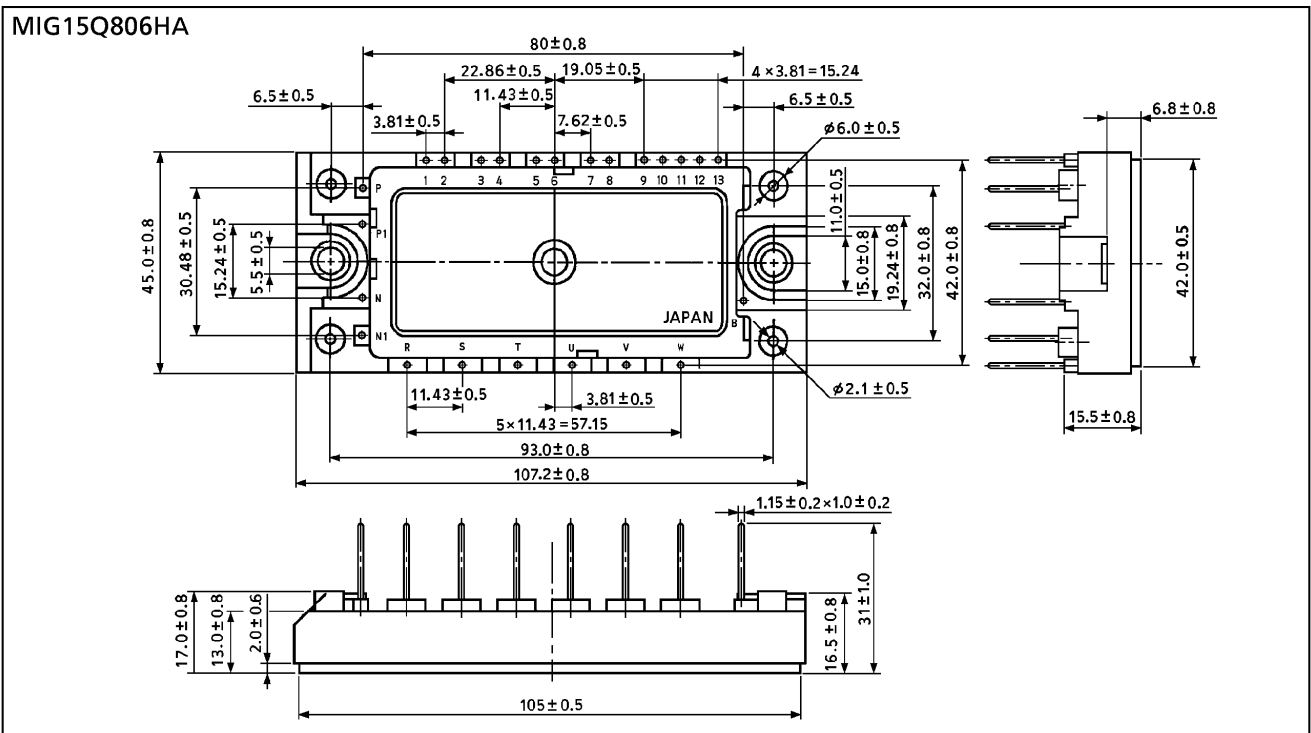
Package Dimension

Unit : mm



2-108E5A

Unit : mm



2-108E6A

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	25 / 15	A
		1 ms	I _{CP}	50 / 30	A
	Forward Current	DC	I _F	15	A
		1 ms	I _{FM}	30	A
Collector Power Dissipation (T _c = 25°C)		P _C	145	W	
Converter	Repetitive Peak Reverse Voltage	V _{RRM}	1600	V	
	Average Output Rectified Current	I _O	15	A	
	Peak One Cycle Surge Forward Current (50 Hz, 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}	2500 (AC 1 minute)	V	
	Screw Torque	—	6	N·m	

(25°C / 80°C)
(25°C / 80°C)

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

a. Inverter stage

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	I _{GES}	V _{GE} = ±20 V, V _{CE} = 0	—	—	±500	nA	
Collector Cut-Off Current	I _{CES}	V _{CE} = 1200 V, V _{GE} = 0	—	—	0.5	mA	
Gate-Emitter Cut-Off Voltage	V _{GE (off)}	I _C = 15 mA, V _{CE} = 5 V	—	6.0	—	V	
Collector-Emitter Saturation Voltage	V _{CE (sat)}	I _C = 15 A, T _j = 25°C	—	2.8	3.2	V	
		V _{GE} = 15 V, T _j = 125°C	—	3.1	3.7		
Input Capacitance	C _{ies}	V _{CE} = 10 V, V _{GE} = 0, f = 1 MHz	—	1850	—	pF	
Switching Time	Rise Time	t _r	V _{CC} = 600 V I _C = 15 A V _{GE} = ±15 V R _G = 82 Ω 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 = 15 A, V _{GE} = 0	—	2.0	2.8	V	
Reverse Recovery Time	t _{rr}	I _F = 15 A, V _{GE} = -10 V, di/dt = 200 A/μs	—	0.10	0.25	μs	
Thermal Resistance	R _{th (j-e)}	Transistor	—	—	0.86	°C/W	
		Diode	—	—	1.5		

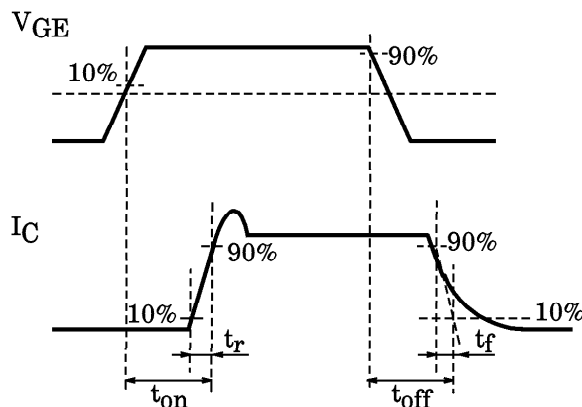
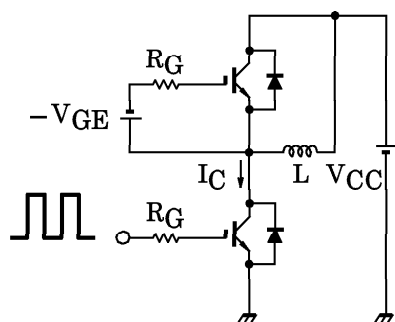
b. Converter stage

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

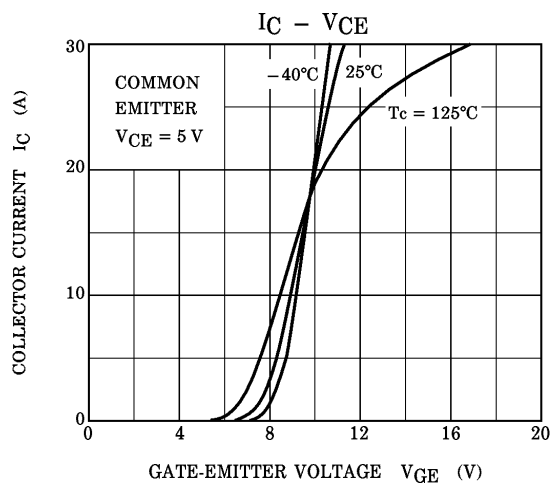
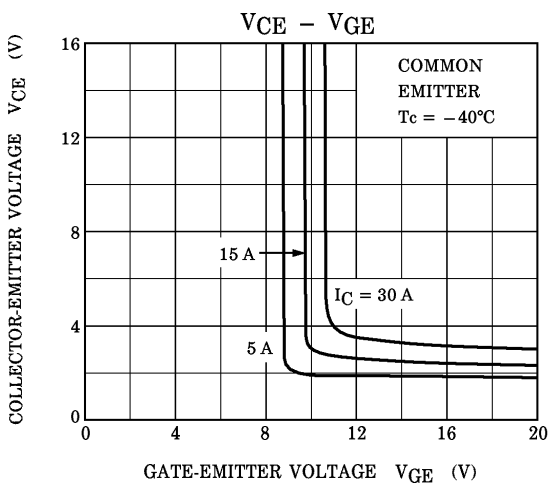
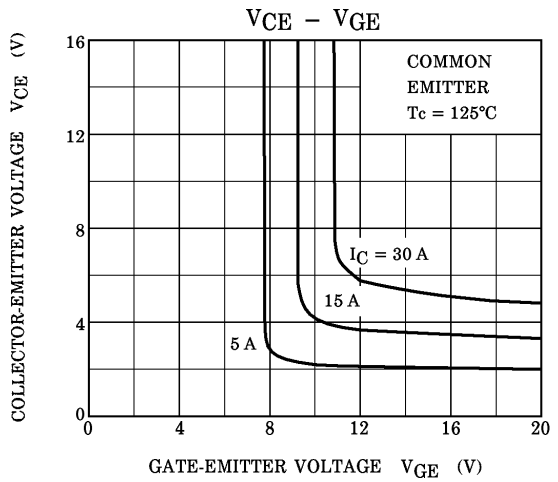
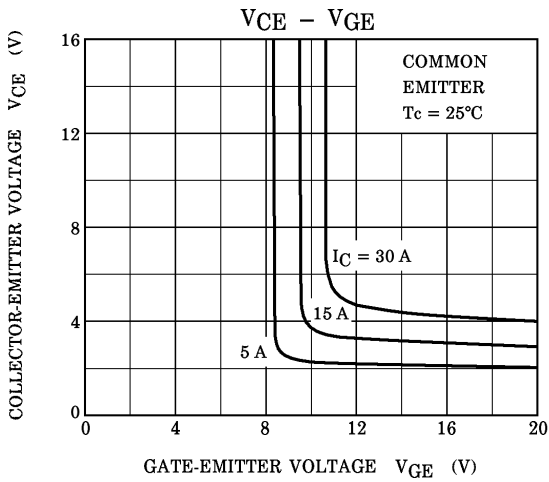
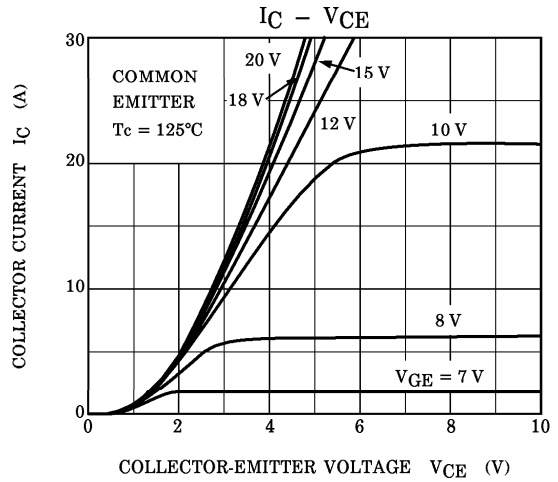
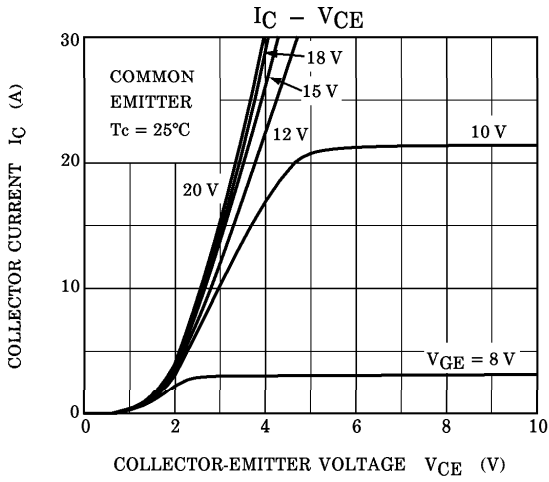
c. Thermistor

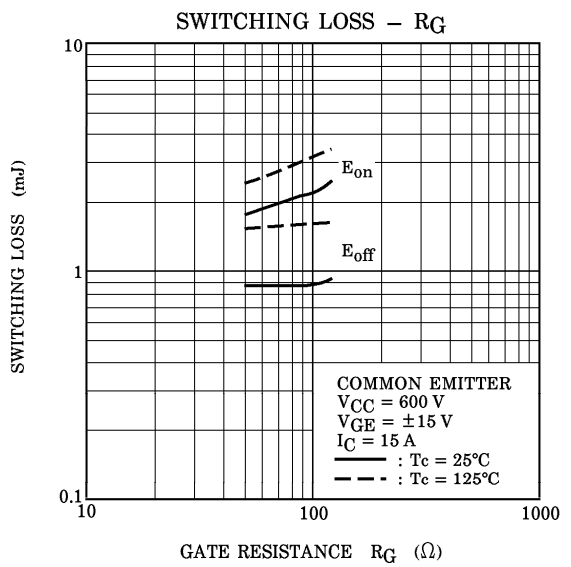
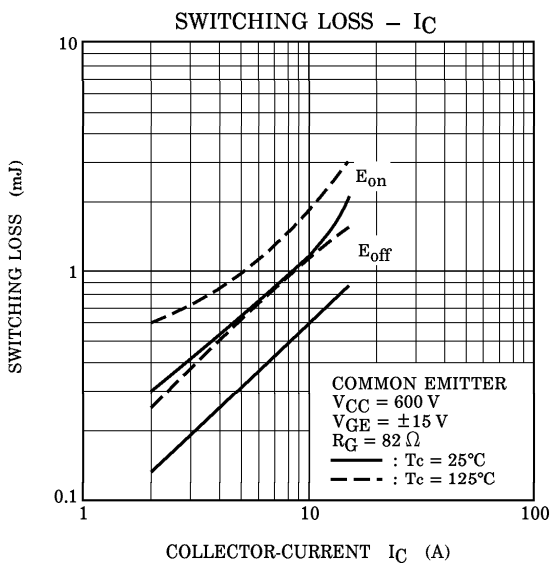
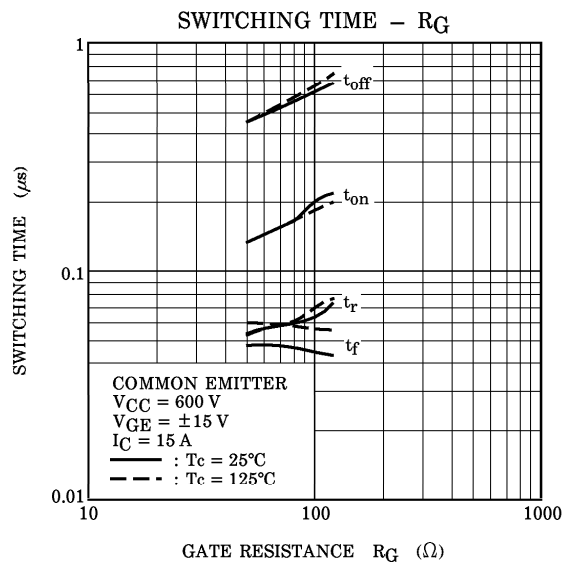
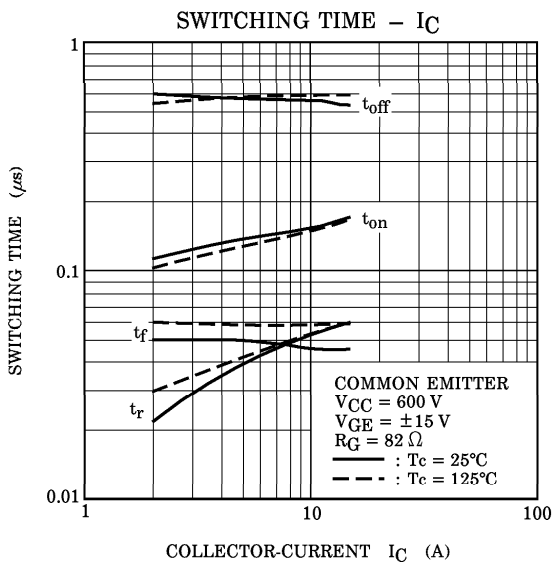
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Zero-Power Resistance	R_{25}	$I_{TM} = 0.2\text{ mA}$, $T_c = 25^{\circ}\text{C}$	17.31	20	23.14	$\text{k}\Omega$
B Value	$B_{25/85}$	$T_c = 25^{\circ}\text{C} / T_c = 85^{\circ}\text{C}$	—	3760	—	K

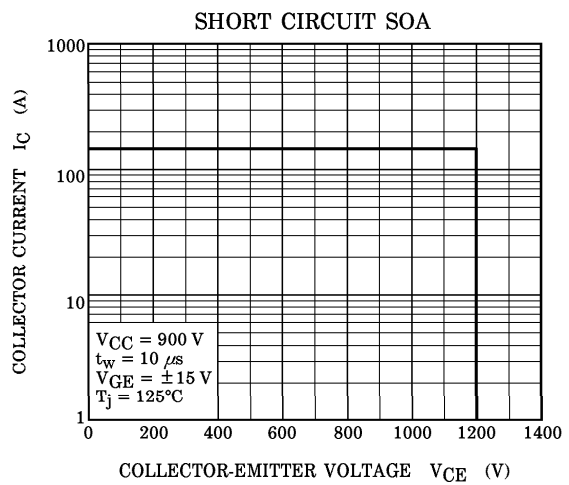
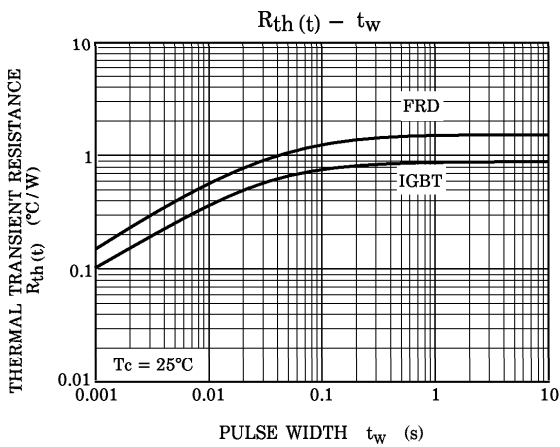
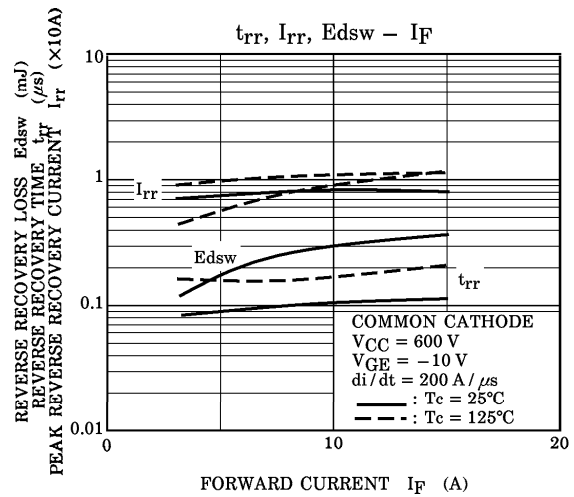
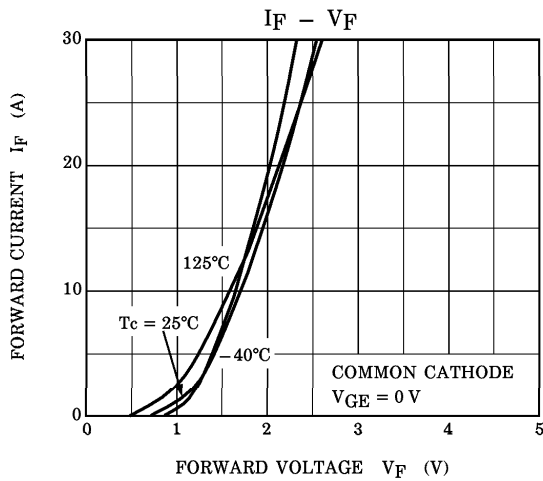
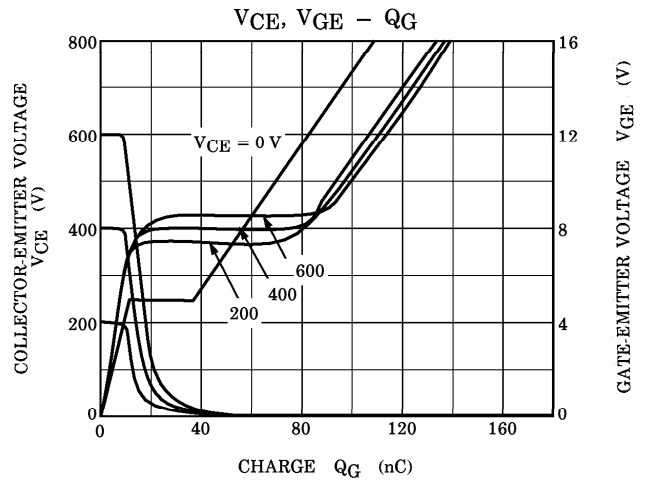
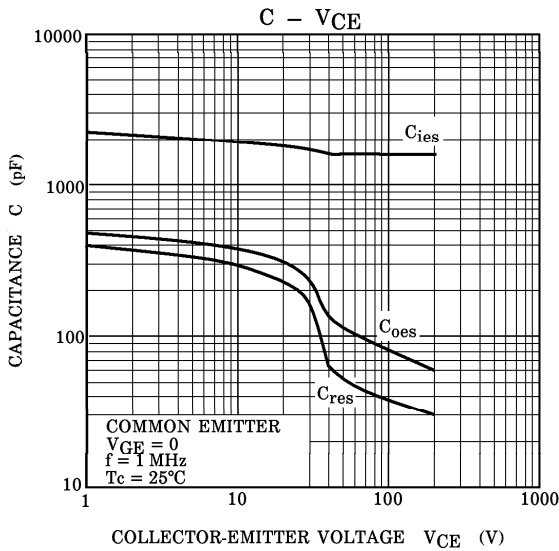
(Note 1) : Switching Time Test Circuit & Timing Chart

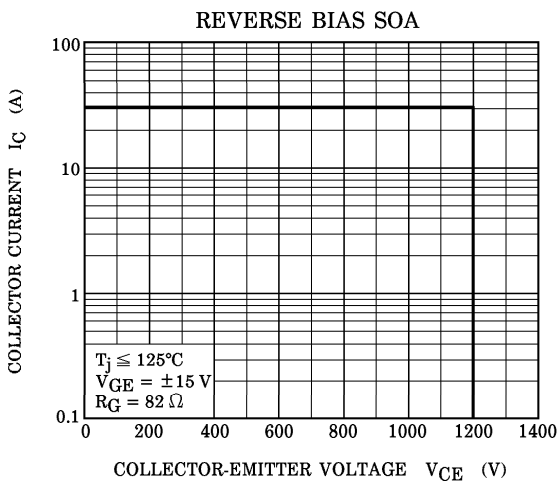


a. Inverter stage









b. Converter stage

