IGBT MODULE

GAE200BA60

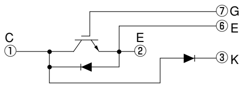
UL;E76102（M）

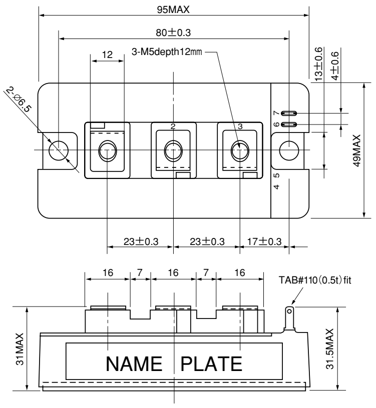
SanRex IGBT Module **GAE200BA60** is designed for high speed, high current switching applications. This Module is electrically isolated and contains IGBT connected with clamp diode in series, soft recovery diode (trr=0.1 μs) reverse connected across IGBT.

- ●Ic＝200A　V_{CES}＝600V
- ●$V_{CE(sat)}$ ＝2.3V Typ
- ●tf＝0.10μs Typ
- ●Soft recovery diode

（Applications）

Brake for motor control (chopper)





Unit：mm

■Maximum Ratings

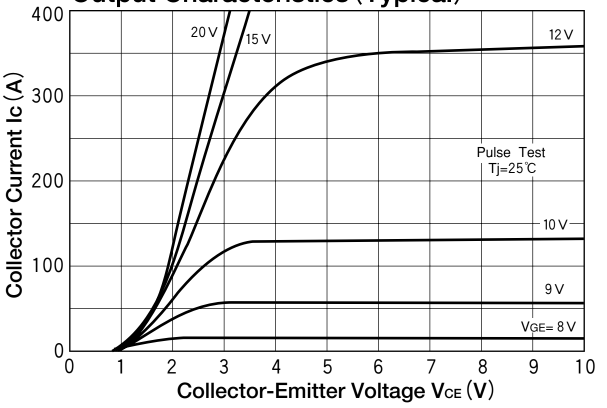
（Tj＝25℃ unless otherwise specified）

Symbol	Item		Conditions	Ratings GAE200BA60	Unit
V_{CES}	Collector-Emitter Voltage		with gate terminal shorted to emitter	600	V
V_{GES}	Gate-Emitter Voltage		with collector shorted to emitter	±20	V
Ic	Collector Current	DC		200	A
I_{CP}		Pulse（1 ms）		400	
－Ic	Reverse Collector Current			200	A
Pc	Total Power Dissipation		Tc＝25℃	780	W
Tj	Junction Temperature			150	℃
Tstg	Storage Temperature			－40 to ＋125	℃
V_{ISO}	Isolation Voltage（R.M.S.）		A.C. 1 minute	2500	V
	Mounting Torque	Mounting（M6）	Recommended Value 2.5-3.9（25-40）	4.7（48）	N･m (kgf･cm)
		Terminal（M5）	Recommended Value 1.5-2.5（15-25）	2.7（28）	
	Mass		Typical Value	225	g

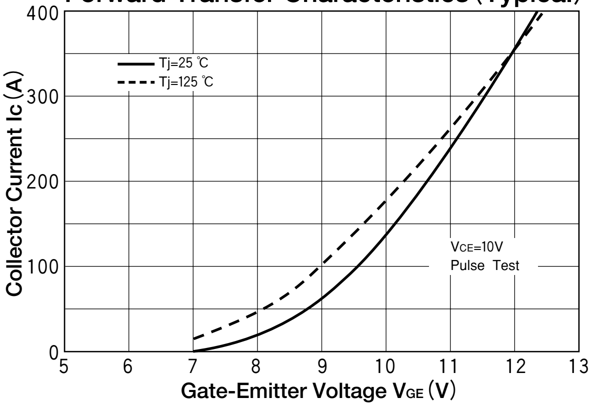
■Electrical Characteristics

Symbol	Item		Conditions	Ratings			Unit
				Min.	Typ.	Max.	
I_{GES}	Gate Leakage Current		V_{GE}＝±20V，V_{CE}＝0V			±500	nA
I_{CES}	Collector Cut-Off Current		V_{CE}＝600V，V_{GE}＝0V			1.0	mA
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage		V_{GE}＝0V，Ic＝1 mA	600			V
$V_{GE(th)}$	Gate Threshold Voltage		V_{CE}＝10V，Ic＝20mA	3.0		7.0	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage		Ic＝200A，V_{GE}＝15V		2.3	2.8	V
Cies	Input Capacitance		V_{CE}＝10V，V_{GE}＝0V，f＝1MHz		15	20	nF
tr	Switching Time	Rise Time	Ic＝200A，V_{GE}＝＋15V/－5V Vcc＝300V，R_G＝3Ω		0.10	0.20	μs
td(on)		Turn-on Delay Time			0.20	0.40	
tf		Fall Time			0.10	0.20	
td(off)		Turn-off Delay Time			0.40	0.80	
V_{ECS}	Emitter-Collector Voltage		－Ic＝200A，V_{GE}＝0V		2.30	2.80	V
trr	Reverse Recovery Time		－Ic＝200A，V_{GE}＝－10V，di/dt＝400A/μs		0.1	0.15	μs
Rth(j-c)	Thermal Resistance		IGBT-Case			0.16	℃/W
			Diode-Case			0.40	
V_{FM}	Forward Voltage Drop		IF＝200A, At Clamp Diode		2.30	2.80	V
trr	Reverse Recovery Time		IF＝200A, diF/dt＝－400A/μs, At Clamp Diode		0.1	0.15	μs
Rth(j-c)	Thermal Resistance		Junction-Case, At Clamp Diode			0.40	℃/W

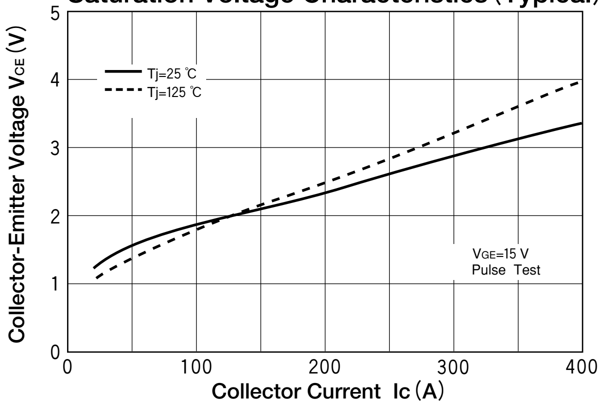
Output Characteristics (Typical)



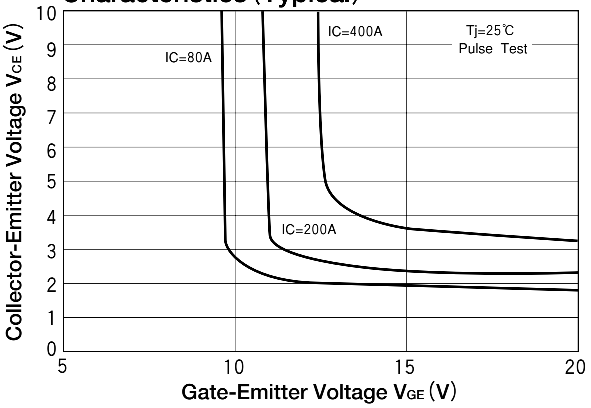
Forward Transfer Characteristics (Typical)



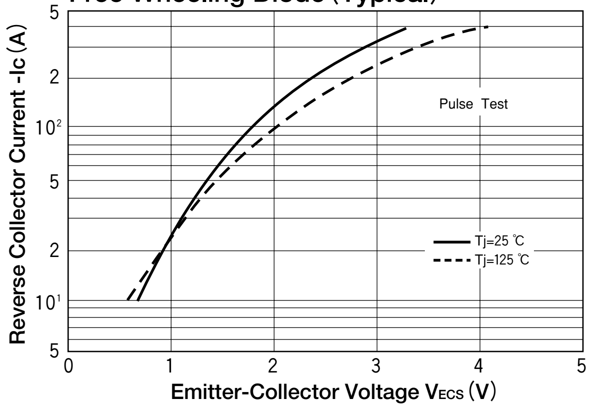
Saturation Voltage Characteristics (Typical)



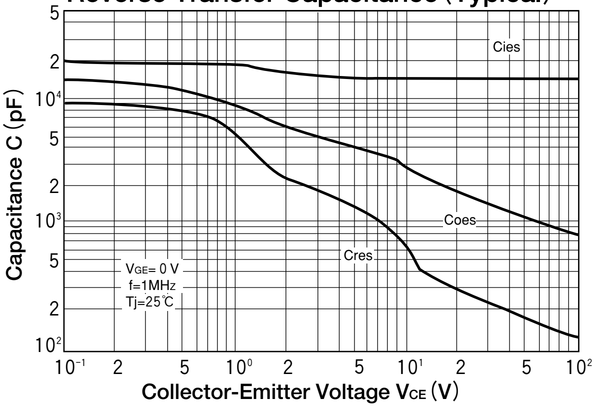
Collector-Emitter Saturation Voltage Characteristics (Typical)

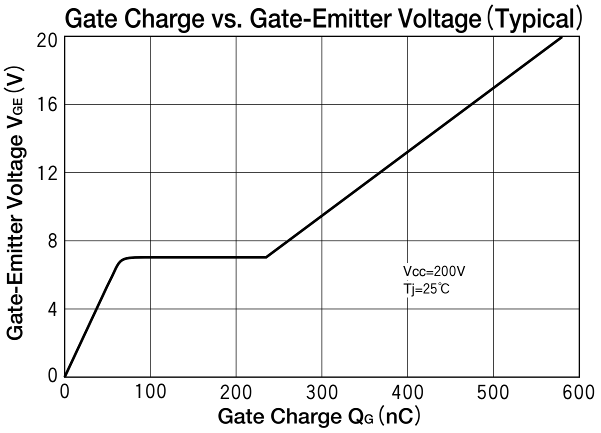


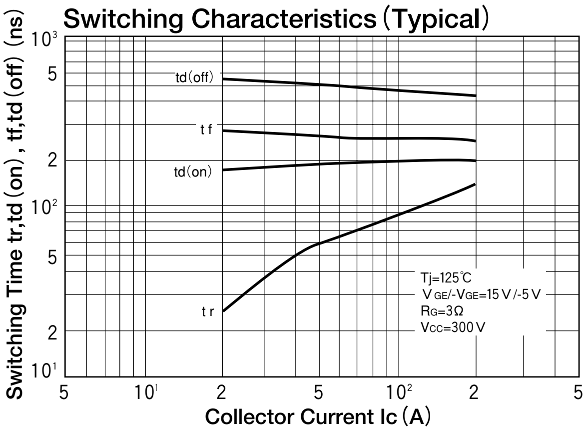
Forward Voltage of Free Wheeling Diode (Typical)

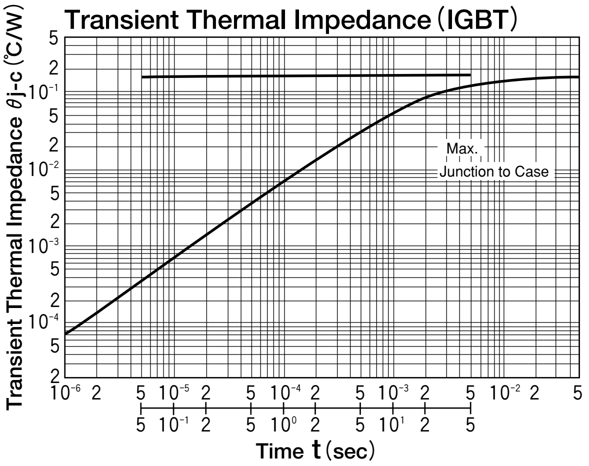


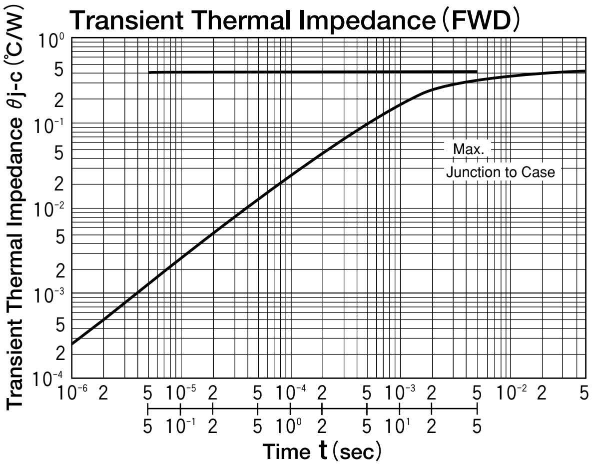
Input Capacitance, Output Capacitance, Reverse Transfer Capacitance (Typical)

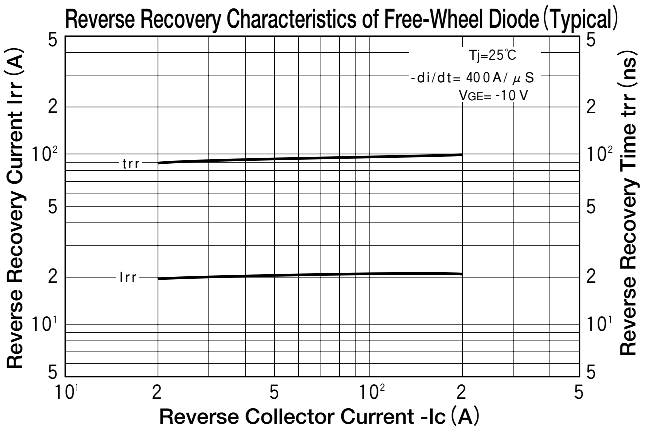



Gate Charge vs. Gate-Emitter Voltage (Typical)


Switching Characteristics (Typical)


Transient Thermal Impedance (IGBT)


Transient Thermal Impedance (FWD)


Reverse Recovery Characteristics of Free-Wheel Diode (Typical)