IGBT MODULE

GCA150AA120

UL;E76102 (M)

SanRex IGBT Module **GCA150AA120** is designed for high speed, high current switching applications. This Module is electrically isolated and contains two IGBTs connected in series with a fast switching, soft recovery diode (trr=0.1 μs) reverse connected across each IGBT.

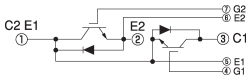
- Ic＝150A　VCES＝1200V
- VCE(sat)＝3.0V Typ
- tf＝0.10 μs Typ
- Soft recovery diode

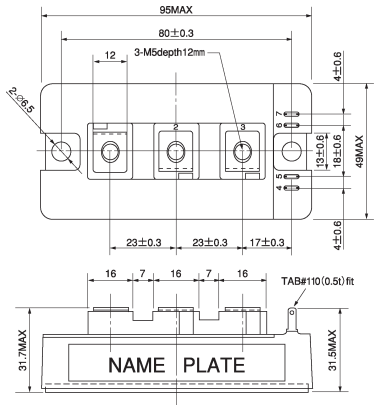
(Applications)

Inverter for motor control (VVVF)

UPS, AC servo

DC power supply, Welder





Unit：mm

■Maximum Ratings

(Unless otherwise Tj＝25℃)

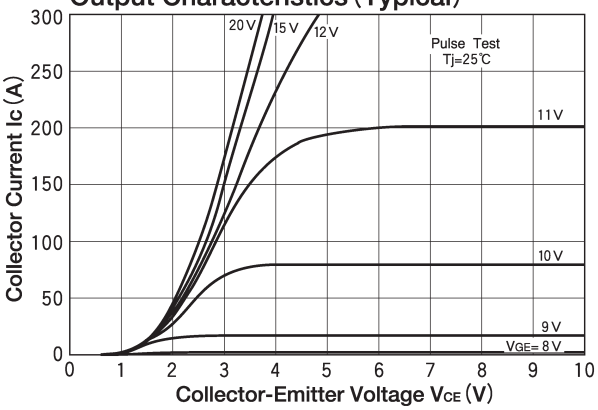
Symbol	Item		Conditions	Ratings	Unit
				GCA150AA120	
VCES	Collector-Emitter Voltage		with gate terminal shorted to emitter	1200	V
VGES	Gate-Emitter Voltage		with collector shorted to emitter	±20	V
Ic	Collector Current	DC		150	A
ICP		Pulse（1 ms）		300	
−Ic	Reverse Collector Current			150	A
PT	Total Power Dissipation		Tc＝25℃	1100	W
Tj	Junction Temperature			150	℃
Tstg	Storage Temperature			−40～+125	℃
VISO	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

■Eiectrical Characteristics

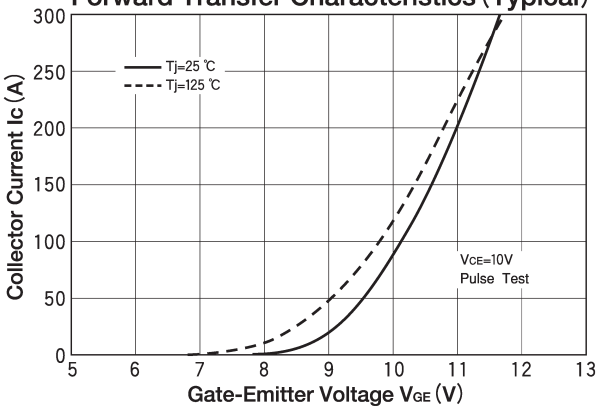
(Unless otherwise Tj＝25℃)

Symbol	Item		Conditions	Ratings			Unit
				Min.	Typ.	Max.	
IGES	Gate Leakage Current		VGE＝±20V，VCE＝0V			±500	nA
ICES	Collector Cut-Off Current		VCE＝1200V，VGE＝0V			1.0	mA
V (BR)CES	Collector-Emitter Breakdown Voltage		VGE＝0V，Ic＝1 mA	1200			V
VGE (th)	Gate Threshold Voltage		VCE＝10V，Ic＝15mA	4.5		7.5	V
VCE (sat)	Collector-Emitter Saturation Voltage		Ic＝150A，VGE＝15V		3.0	3.4	V
Cies	Input Capacitance		VCE＝10V，VGE＝0V，f＝1MHz		17	30	nF
tr	Switching Time	Rise Time	Ic＝150A，VGE＝+15V/−5V Vcc＝600V，RG＝2.1Ω		0.10	0.25	μs
td (on)		Turn-on Delay Time			0.15	0.35	
tf		Fall Time			0.10	0.35	
td (off)		Turn-off Delay Time			0.25	0.50	
VECS	Emitter-Collector Voltage		−Ic＝150A，VGE＝0V		2.40	3.50	V
trr	Reverse Recovery Time		−Ic＝150A，VGE＝−10V，di/dt＝300A/μs		0.15	0.25	μs
Rth (j-c)	Thermal Resistance		IGBT-Case			0.11	℃/W
			Diode-Case			0.3	

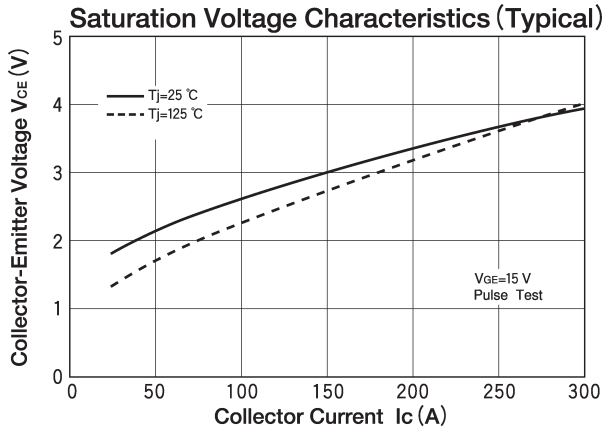
Output Characteristics (Typical)



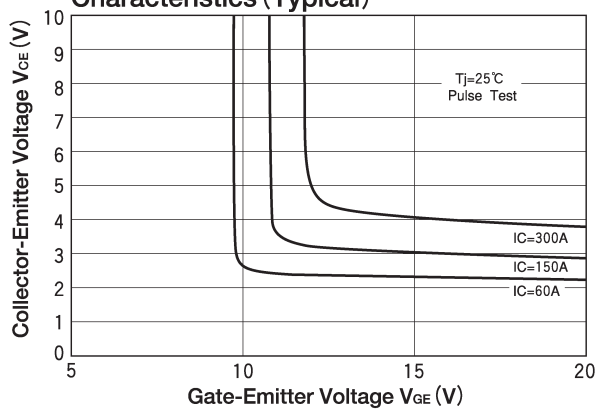
Forward Transfer Characteristics (Typical)



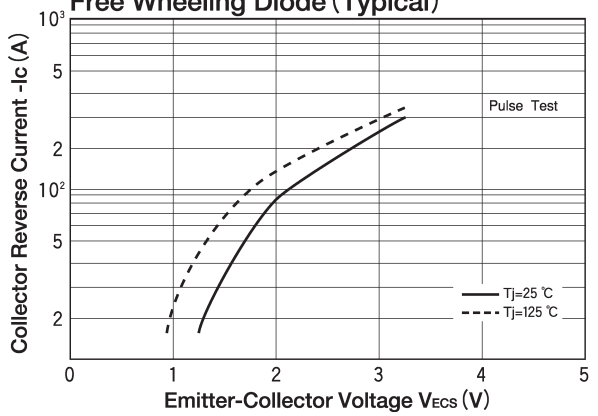
Saturation Voltage Characteristics (Typical)



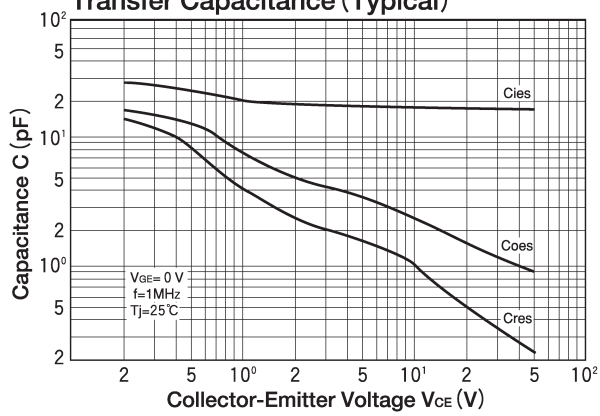
Collector-Emitter Saturation Voltage Characteristics (Typical)

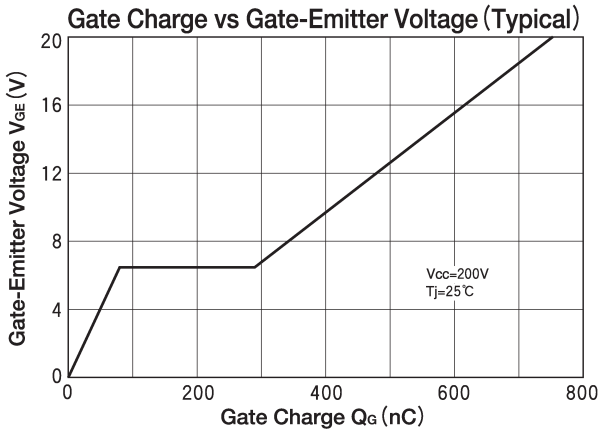


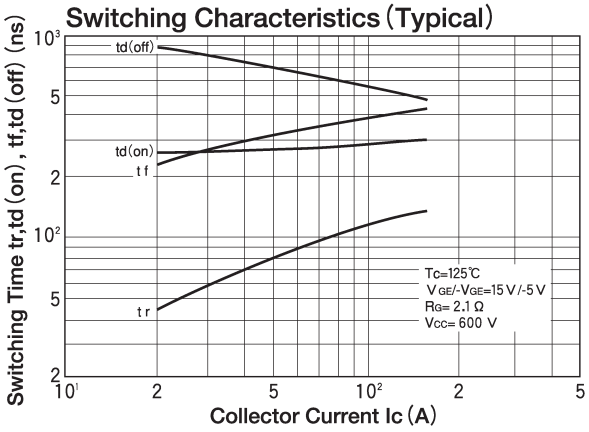
Forward Voltage of Free Wheeling Diode (Typical)

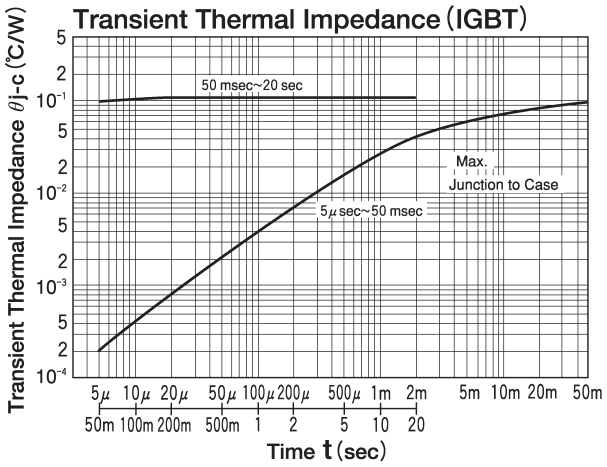


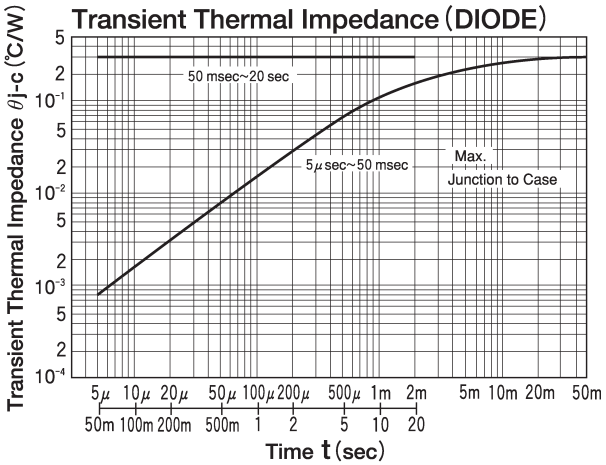
Input Capacitance, Output Capacitance, Transfer Capacitance (Typical)

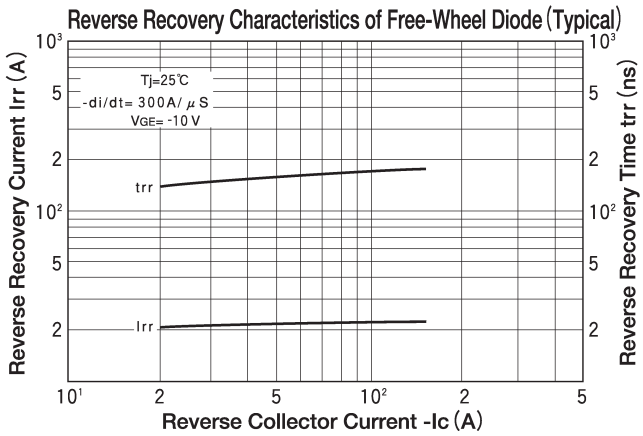



Gate Charge vs Gate-Emitter Voltage (Typical)
Gate-Emitter Voltage VGE (V)
Gate Charge QG (nC)
Vcc=200V
Tj=25℃


Switching Characteristics (Typical)
Switching Time tr,td(on), tf,td(off) (ns)
Collector Current Ic (A)
td(off)
td(on)
tf
tr
Tc=125℃
VGE/-VGE=15V/-5V
RG= 2.1Ω
Vcc= 600 V


Transient Thermal Impedance (IGBT)
Transient Thermal Impedance θj-c (℃/W)
50 msec~20 sec
Max.
Junction to Case
5μsec~50 msec
Time t (sec)


Transient Thermal Impedance (DIODE)
Transient Thermal Impedance θj-c (℃/W)
50 msec~20 sec
5μsec~50 msec
Max.
Junction to Case
Time t (sec)


Reverse Recovery Characteristics of Free-Wheel Diode (Typical)
Reverse Recovery Current Irr (A)
Reverse Recovery Time trr (ns)
Tj=25℃
-di/dt= 300A/μS
VGE= -10V
trr
Irr
Reverse Collector Current -Ic (A)