

IGBT MODULE

GAE75AA120



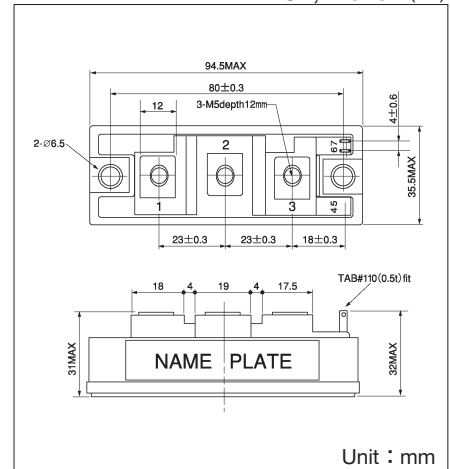
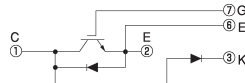
UL;E76102 (M)

SanRex IGBT Module **GAE75AA120** 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 ($t_{rr}=0.1\ \mu\text{s}$) reverse connected across IGBT.

- $I_C=75\text{A}$ $V_{CES}=1200\text{V}$
- $V_{CES(\text{sat})}=3.0\text{V Typ}$
- $t_f=0.10\ \mu\text{s Typ}$
- Soft recovery diode

(Applications)

Brake for motor control (VVF)



Unit : mm

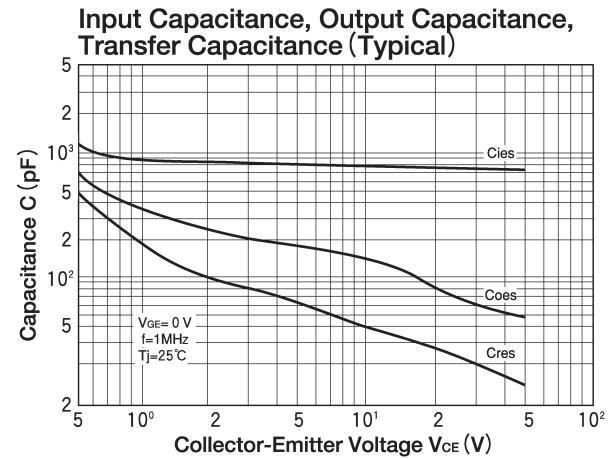
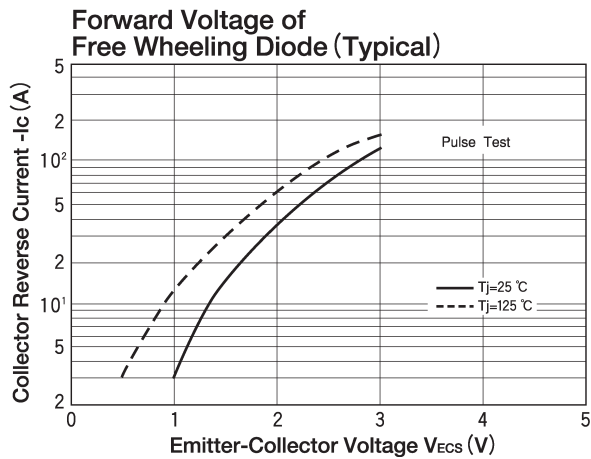
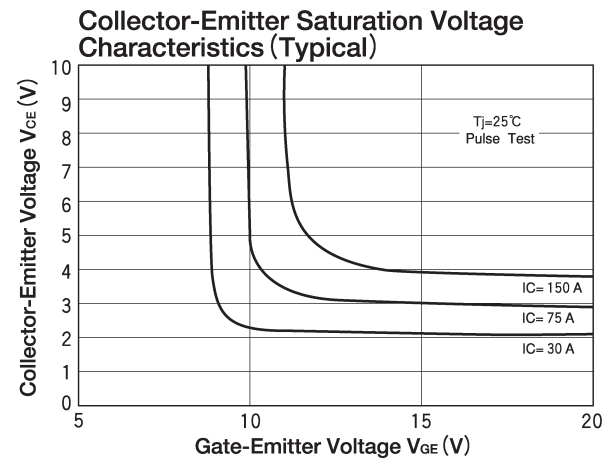
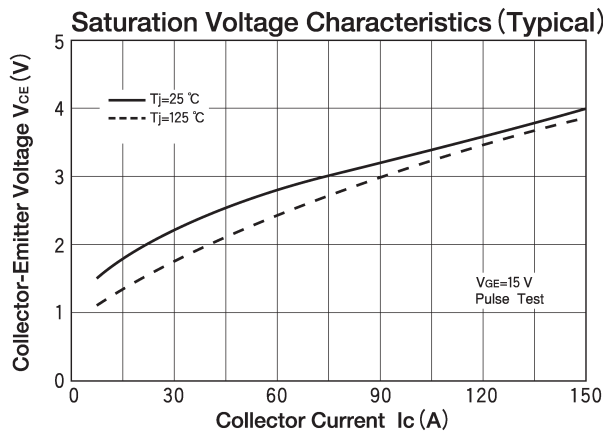
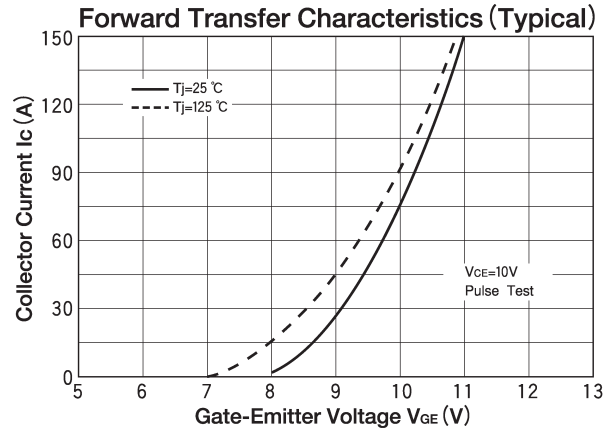
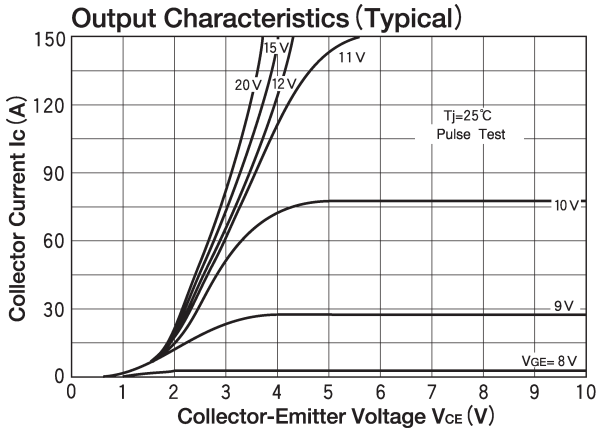
Maximum Ratings

(Unless otherwise $T_j=25^\circ\text{C}$)

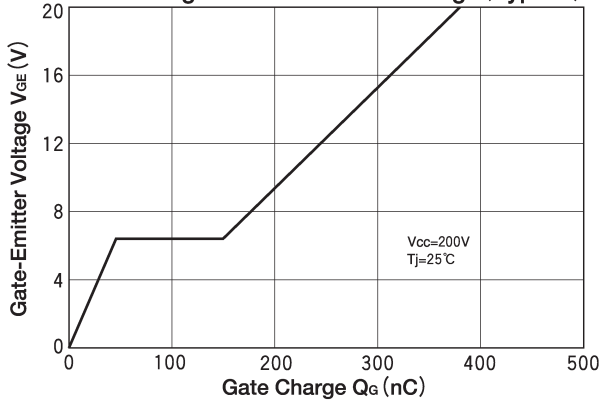
Symbol	Item		Conditions	Ratings		Unit
				GAE75AA120		
V_{CES}	Collector-Emitter Voltage		with gate terminal shorted to emitter	1200		V
V_{GES}	Gate-Emitter Voltage		with collector shorted to emitter	± 20		V
I_C	Collector Current	DC		75		A
I_{CP}		Pulse (1 ms)		150		
$-I_C$	Reverse Collector Current			75		A
P_T	Total Power Dissipation		$T_c=25^\circ\text{C}$	600		W
T_j	Junction Temperature			150		$^\circ\text{C}$
T_{stg}	Storage Temperature			$-40 \sim +125$		$^\circ\text{C}$
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	210		g

Electrical Characteristics

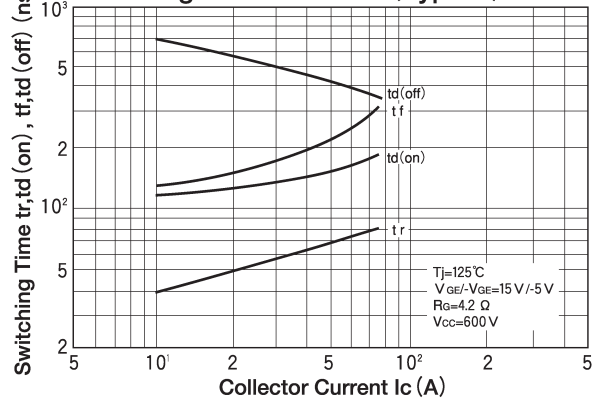
Symbol	Item		Conditions	Ratings			Unit
				Min.	Typ.	Max.	
I_{GES}	Gate Leakage Current		$V_{GE}=\pm 20\text{V}$, $V_{CE}=0\text{V}$			± 500	nA
I_{CES}	Collector Cut-Off Current		$V_{CE}=1200\text{V}$, $V_{GE}=0\text{V}$			1.0	mA
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage		$V_{GE}=0\text{V}$, $I_C=1\text{mA}$	1200			V
$V_{GE(th)}$	Gate Threshold Voltage		$V_{CE}=10\text{V}$, $I_C=7.5\text{mA}$	4.5		7.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage		$I_C=75\text{A}$, $V_{GE}=15\text{V}$		3.0	3.4	V
C_{ies}	Input Capacitance		$V_{CE}=10\text{V}$, $V_{GE}=0\text{V}$, $f=1\text{MHz}$		8	15	nF
t_r	Switching Time	Rise Time	$I_C=75\text{A}$, $V_{GE}=\pm 15\text{V}/-5\text{V}$ $V_{CC}=600\text{V}$, $R_G=4.2\ \Omega$		0.10	0.25	μs
$t_{d(on)}$		Turn-on Delay Time			0.20	0.35	
t_f		Fall Time			0.10	0.35	
$t_{d(off)}$		Turn-off Delay Time			0.25	0.30	
V_{ECS}	Emitter-Collector Voltage		$-I_C=75\text{A}$, $V_{GE}=0\text{V}$		2.50	3.50	V
t_{rr}	Reverse Recovery Time		$-I_C=75\text{A}$, $V_{GE}=-10\text{V}$, $di/dt=150\text{A}/\mu\text{s}$		0.15	0.25	μs
$R_{th(j-c)}$	Thermal Resistance		IGBT-Case			0.21	$^\circ\text{C}/\text{W}$
			Diode-Case			0.6	
V_{FM}	Forward Voltage Drop		$I_F=75\text{A}$, Clamp Diode		2.50	3.50	V
t_{rr}	Reverse Recovery Time		$I_F=75\text{A}$, $di_F/dt=-150\text{A}/\mu\text{s}$, Clamp Diode		0.15	0.25	μs
$R_{th(j-c)}$	Thermal Impedance		Clamp Diode			0.6	$^\circ\text{C}/\text{W}$



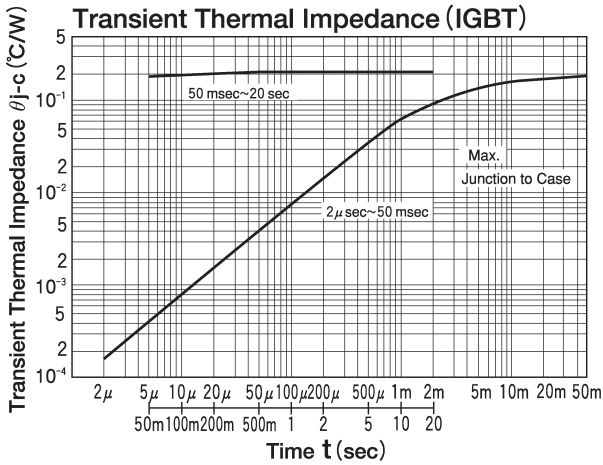
Gate Charge vs Gate-Emitter Voltage (Typical)



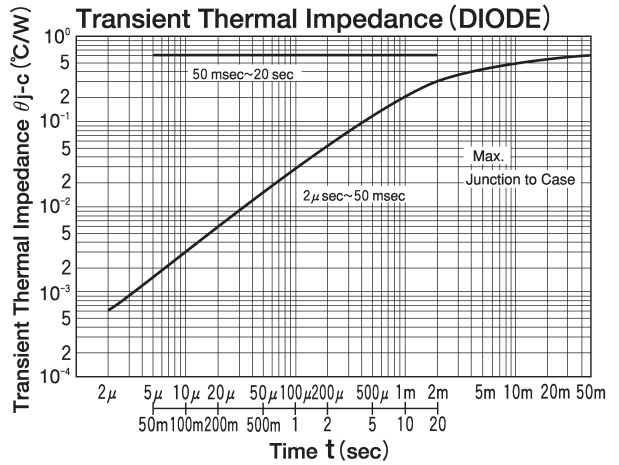
Switching Characteristics (Typical)



Transient Thermal Impedance (IGBT)



Transient Thermal Impedance (DIODE)



Reverse Recovery Characteristics of Free-Wheel Diode (Typical)

