

# IGBT MODULE

# GAE75AA120



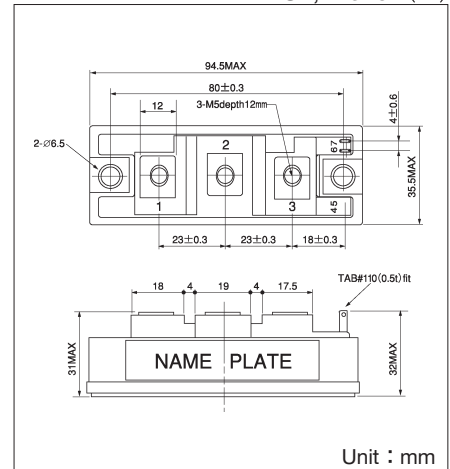
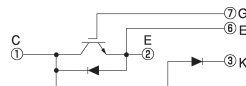
UL;E76102 (M)

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

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

(Applications)

Brake for motor control (VVVF)



Unit : mm

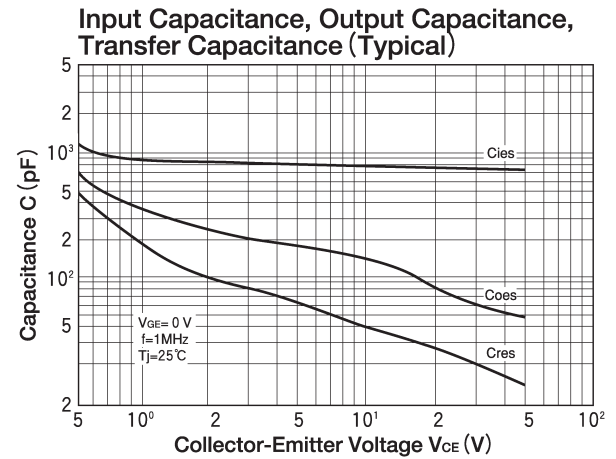
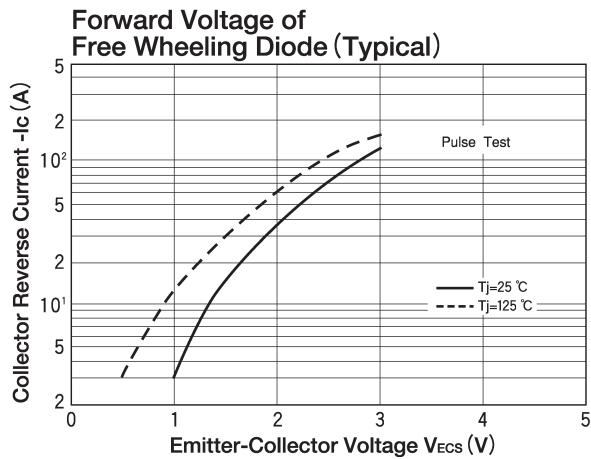
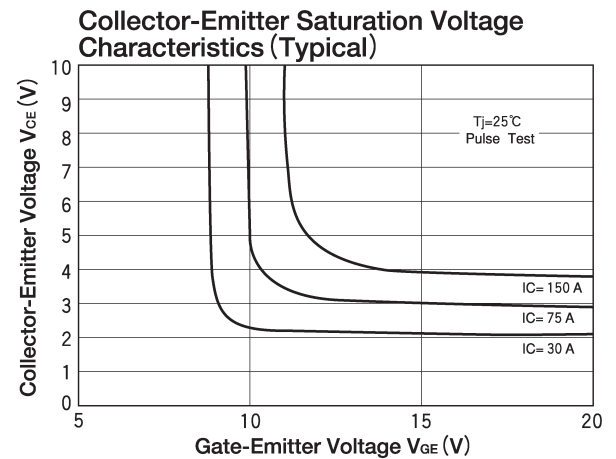
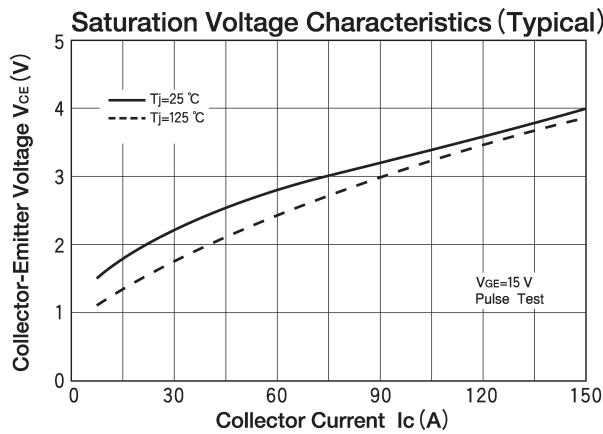
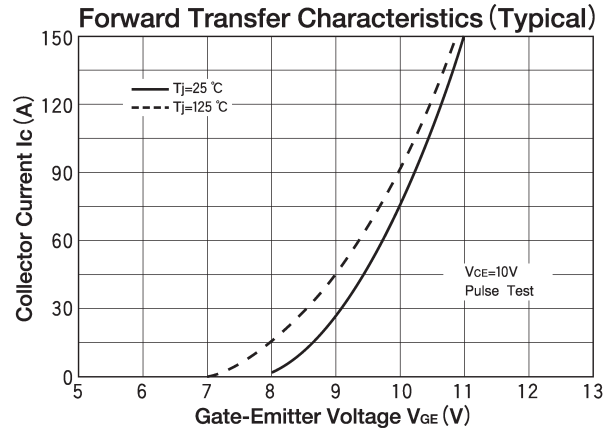
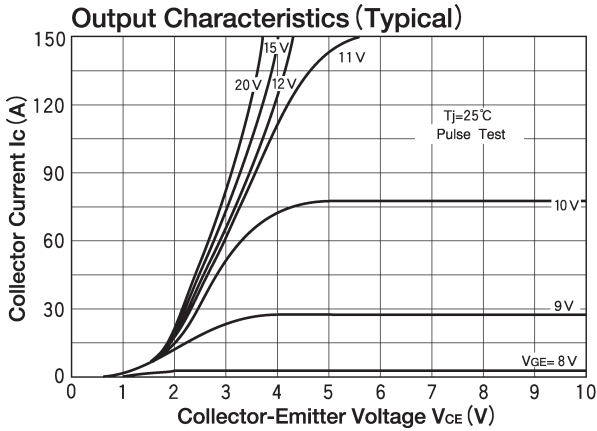
## Maximum Ratings

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

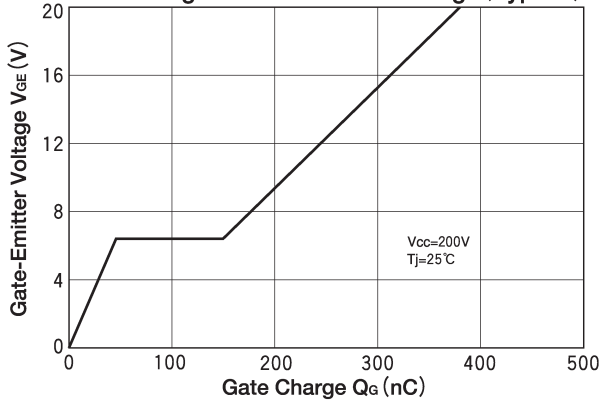
Symbol	Item		Conditions	Ratings		Unit
				GAE75AA120		
$V_{CES}$	Collector-Emitter Voltage		with gate terminal shorted to emitter	1200		V
$V_{GES}$	Gate-Emitter Voltage		with collector shorted to emitter	$\pm 20$		V
$I_C$	Collector Current	DC		75		A
$I_{CP}$		Pulse ( 1 ms)		150		
$-I_C$	Reverse Collector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

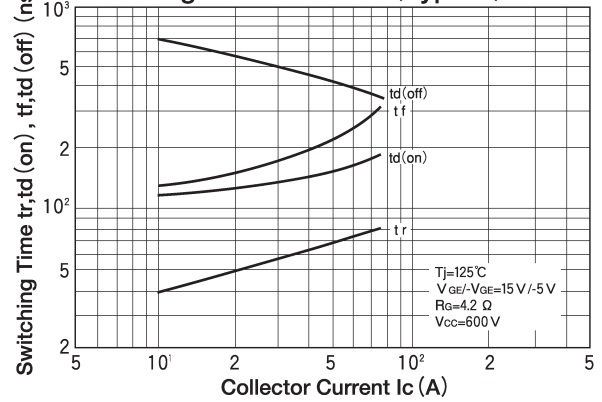
Symbol	Item		Conditions	Ratings			Unit
				Min.	Typ.	Max.	
$I_{GES}$	Gate Leakage Current		$V_{GE}=\pm 20V, V_{CE}=0V$			$\pm 500$	nA
$I_{CES}$	Collector Cut-Off Current		$V_{CE}=1200V, V_{GE}=0V$			1.0	mA
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage		$V_{GE}=0V, I_C=1mA$	1200			V
$V_{GE(th)}$	Gate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



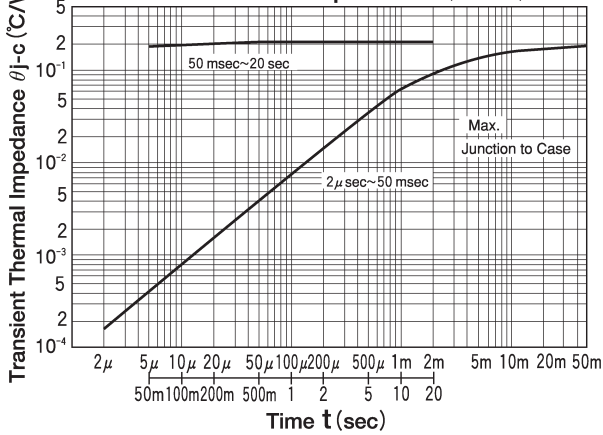
Gate Charge vs Gate-Emitter Voltage (Typical)



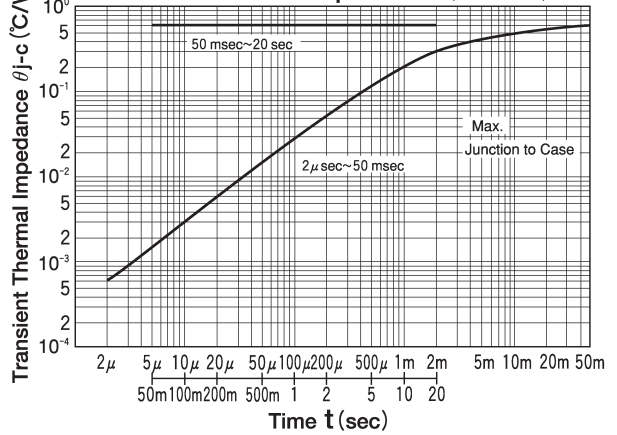
Switching Characteristics (Typical)



Transient Thermal Impedance (IGBT)



Transient Thermal Impedance (DIODE)



Reverse Recovery Characteristics of Free-Wheel Diode (Typical)

