

# IGBT MODULE

# GSA400AA120



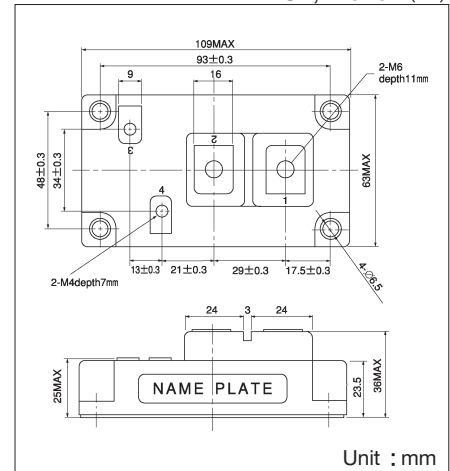
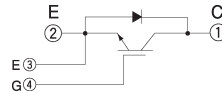
UL;E76102 (M)

**SanRex** IGBT Module **GSA400AA120** is designed for high speed, high current switching applications. This Module is electrically isolated and with a fast switching, soft recovery diode ( $t_{rr}=0.1 \mu s$ ) reverse connected across each IGBT.

- $I_c=400A$   $V_{CES}=1200V$
- $V_{CE(sat)}=3.0V$  Typ
- $t_f=0.10 \mu s$  Typ
- Soft recovery diode

**(Applications)**

- Inverter for motor control (VVF)
- UPS, AC servo
- DC power supply, Welder



**Maximum Ratings**

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

Symbol	Item		Conditions	Ratings			Unit
				GSA400AA120			
$V_{CES}$	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		400			A
$I_{CP}$		Pulse ( 1 ms)		800			
$-I_c$	Reverse Collector Current			400			A
$P_T$	Total Power Dissipation		$T_c=25^\circ C$	2800			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	4.7		N·m	
			Recommended Value 25~40	48		kgf·cm	
		Main Terminal (M6)	Recommended Value 2.5~3.9	4.7		N·m	
			Recommended Value 25~40	48		kgf·cm	
		Terminal (M4)	Recommended Value 1.0~1.4	1.5		N·m	
			Recommended Value 10~14	15		kgf·cm	
	Mass	Typical Value	400			g	

**Electrical Characteristics**

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

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		$V_{CE}=1200V, V_{GE}=0V$			2.0	mA
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage		$V_{GE}=0V, I_c=2mA$	1200			V
$V_{GE(th)}$	Gate Threshold Voltage		$V_{CE}=10V, I_c=40mA$	4.5		7.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage		$I_c=400A, V_{GE}=15V$		3.0	3.4	V
$C_{ies}$	Input Capacitance		$V_{CE}=10V, V_{GE}=0V, f=1MHz$		35	80	nF
$t_r$	Switching Time	Rise Time	$I_c=400A, V_{GE}=+15V/-5V$ $V_{CC}=600V, R_G=0.78 \Omega$		0.20	0.30	$\mu s$
$t_{d(on)}$		Turn-on Delay Time			0.25	0.35	
$t_f$		Fall Time			0.15	0.35	
$t_{d(off)}$		Turn-off Delay Time			0.50	0.70	
$V_{ECS}$	Emitter-Collector Voltage		$-I_c=400A, V_{GE}=0V$		2.40	3.50	V
$t_{rr}$	Reverse Recovery Time		$-I_c=400A, V_{GE}=-10V, di/dt=800A/\mu s$		0.15	0.25	$\mu s$
$R_{th(j-c)}$	Thermal Resistance		IGBT-Case			0.04	$^\circ C/W$
			Diode-Case			0.10	

