

# IGBT MODULE

# GAE300BA60



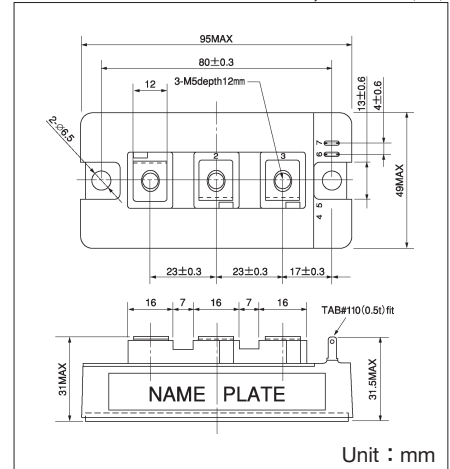
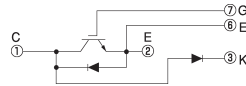
UL;E76102 (M)

**SanRex** IGBT Module **GAE300BA60** 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.

- $I_C=300A$   $V_{CES}=600V$
- $V_{CES(sat)}=2.4V$  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
				GAE300BA60		
$V_{CES}$	Collector-Emitter Voltage		with gate terminal shorted to emitter	600		V
$V_{GES}$	Gate-Emitter Voltage		with collector shorted to emitter	$\pm 20$		V
$I_C$	Collector Current	DC		300		A
$I_{CP}$		Pulse ( 1 ms)		600		
$-I_C$	Reverse Collector Current			300		A
$P_T$	Total Power Dissipation		$T_c=25^\circ C$	1100		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	225		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		$V_{CE}=600V, V_{GE}=0V$			1.0	mA
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage		$V_{GE}=0V, I_C=1mA$	600			V
$V_{GE(th)}$	Gate Threshold Voltage		$V_{CE}=10V, I_C=30mA$	3.0		7.0	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage		$I_C=300A, V_{GE}=15V$		2.4	2.8	V
$C_{ies}$	Input Capacitance		$V_{CE}=10V, V_{GE}=0V, f=1MHz$		20		nF
$t_r$	Switching Time	Rise Time	$I_C=300A, V_{GE}=+15V/-5V$ $V_{CC}=300V, R_G=2 \Omega$		0.10	0.20	$\mu s$
$t_{d(on)}$		Turn-on Delay Time			0.20	0.40	
$t_f$		Fall Time			0.10	0.20	
$t_{d(off)}$		Turn-off Delay Time			0.40	0.80	
$V_{ECS}$	Emitter-Collector Voltage		$-I_C=300A, V_{GE}=0V$		2.30	2.80	V
$t_{rr}$	Reverse Recovery Time		$-I_C=300A, V_{GE}=-10V, di/dt=600A/\mu s$		0.1		$\mu s$
$R_{th(j-c)}$	Thermal Resistance		IGBT-Case			0.11	$^\circ C/W$
			Diode-Case			0.40	
$V_{FM}$	Forward Voltage Drop		$I_F=300A, \text{Clamp Diode}$		2.30	2.80	V
$t_{rr}$	Reverse Recovery Time		$I_F=300A, di_F/dt=-600A/\mu s, \text{Clamp Diode}$		0.1	0.15	$\mu s$
$R_{th(j-c)}$	Thermal Impedance		Clamp Diode			0.40	$^\circ C/W$

