

IGBT MODULE

GAE150BA60



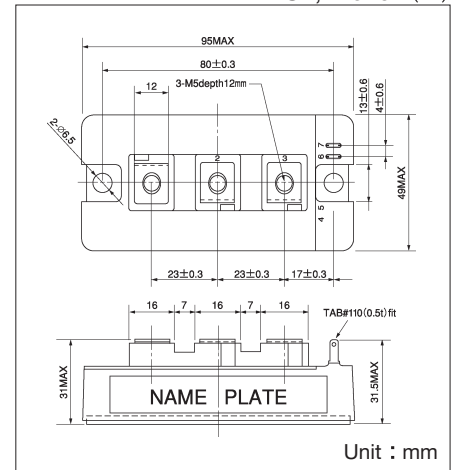
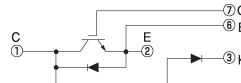
UL;E76102 (M)

SanRex IGBT Module **GAE150BA60** 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.

- $I_C=150A$ $V_{CES}=600V$
- $V_{CES(sat)}=2.3V$ Typ
- $t_f=0.10 \mu s$ Typ
- Soft recovery diode

(Applications)

Inverter for motor control (VVVF)



Maximum Ratings

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

| Symbol | Item | | Conditions | Ratings | | Unit |
|-----------|----------------------------|---------------|---------------------------------------|-----------------|--|-----------------|
| | | | | GAE150BA60 | | |
| V_{CES} | Collector-Emitter Voltage | | with gate terminal shorted to emitter | 600 | | V |
| V_{GES} | Gate-Emitter Voltage | | with collector shorted to emitter | ± 20 | | V |
| I_C | Collector Current | DC | | 150 | | A |
| I_{CP} | | Pulse (1 ms) | | 300 | | |
| $-I_C$ | Reverse Collector Current | | | 150 | | 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 | 225 | | g |

Electrical Characteristics

| Symbol | Item | | Conditions | Ratings | | | Unit |
|---------------|--------------------------------------|---------------------|------------------------------------------------------------|---------|------|-----------|--------------|
| | | | | Min. | Typ. | Max. | |
| I_{GES} | Gate Leakage Current | | $V_{GE}=\pm 20V, V_{CE}=0V$ | | | ± 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 | | $V_{CE}=10V, I_C=15mA$ | 3.0 | | 7.0 | V |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | | $I_C=150A, V_{GE}=15V$ | | 2.4 | 2.8 | V |
| C_{ies} | Input Capacitance | | $V_{CE}=10V, V_{GE}=0V, f=1MHz$ | | 9 | 15 | nF |
| t_r | Switching Time | Rise Time | $I_C=150A, V_{GE}=+15V/-5V$ $V_{CC}=300V, R_G=4 \Omega$ | | 0.10 | 0.20 | μs |
| $t_{d(on)}$ | | 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 | | $-I_C=150A, V_{GE}=0V$ | | 2.30 | 2.80 | V |
| t_{rr} | Reverse Recovery Time | | $-I_C=150A, V_{GE}=-10V, di/dt=300A/\mu s$ | | 0.1 | 0.15 | μs |
| $R_{th(j-c)}$ | Thermal Resistance | | IGBT-Case | | | 0.21 | $^\circ C/W$ |
| | | | Diode-Case | | | 0.50 | |
| V_{FM} | Forward Voltage Drop | | $I_F=150A, \text{Clamp Diode}$ | | 2.30 | 2.80 | V |
| t_{rr} | Reverse Recovery Time | | $I_F=150A, di_F/dt=-300A/\mu s, \text{Clamp Diode}$ | | 0.1 | 0.15 | μs |
| $R_{th(j-c)}$ | Thermal Impedance | | Clamp Diode | | | 0.50 | $^\circ C/W$ |

