

# IGBT MODULE

## GCA75AA60

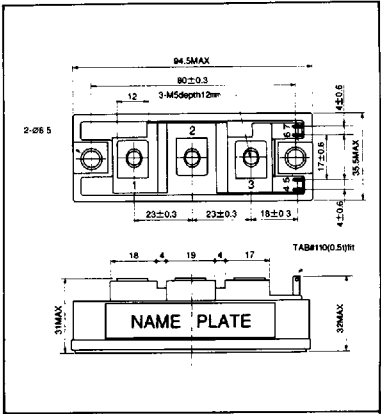
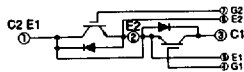
UL; E 76102 (M)

**SanRex** IGBT Module GCA75AA60 is designed for high speed, high current switching applications. This Module is electrically isolated and contains two IGBTs connected in series with a fast switching, soft recovery diode ( $t_{rr}=0.1\mu s$ ) reverse connected across each IGBT.

- $I_c = 75A$   $V_{CES} = 600V$
- $V_{CE(sat)} = 2.8V$  Max
- Soft recovery diode

### (Applications)

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



### Maximum Ratings

( $T_j = 25^\circ C$ )

| Symbol           | Item                      |                    | Conditions                            | Ratings    | Unit   |
|------------------|---------------------------|--------------------|---------------------------------------|------------|--------|
|                  |                           |                    |                                       | GCA75AA60  |        |
| V <sub>CES</sub> | Collector-Emitter Voltage |                    | with gate terminal shorted to emitter | 600        | V      |
| V <sub>GES</sub> | Gate-Emitter Voltage      |                    | with collector shorted to emitter     | ± 20       | V      |
| I <sub>C</sub>   | Collector Current         | DC                 |                                       | 75         | A      |
| I <sub>CP</sub>  |                           | Pulse (1ms)        |                                       | 150        |        |
| −I <sub>C</sub>  | Reverse Collector Current |                    |                                       | 75         | A      |
| P <sub>T</sub>   | Total Power Dissipation   |                    | T <sub>c</sub> = 25°C                 | 315        | W      |
| T <sub>J</sub>   | Junction Temperature      |                    |                                       | 150        | °C     |
| T <sub>stg</sub> | Storage Temperature       |                    |                                       | − 40~+ 125 | °C     |
| V <sub>iso</sub> | Isolation Voltage (RMS)   |                    | A.C. 1 minute                         | 2500       | V      |
|                  | Mounting Torque           | Mounting Base (M6) | Recommended Value 2.5~3.9             | 4.7        | N·m    |
|                  |                           |                    | Recommended Value 25~40               | 48         | kgf·cm |
|                  |                           | Terminals (M5)     | Recommended Value 1.5~2.5             | 2.7        | N·m    |
|                  |                           |                    | Recommended Value 15~25               | 28         | kgf·cm |
|                  | Mass                      |                    | Typical value                         | 210        | g      |

### Electrical Characteristics

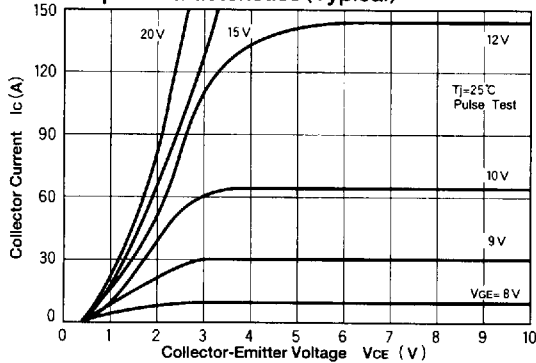
( $T_j = 25^\circ C$ )

| 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            |                     | $V_{CE} = 600V$ , $V_{GE} = 0V$                                        |         |      | 1.0       | mA           |
| $V_{(BR)CES}$ | Collector-Emitter Breakdown Voltage  |                     | $V_{GE} = 0V$ , $I_c = 1mA$                                            | 600     |      |           | V            |
| $V_{GE(th)}$  | Gate Threshold Voltage               |                     | $V_{CE} = 5V$ , $I_c = 7.5mA$                                          | 3.0     |      | 7.0       | V            |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage |                     | $I_c = 75A$ , $V_{GE} = 15V$                                           |         | 2.2  | 2.8       | V            |
| $C_{ies}$     | Input Capacitance                    |                     | $V_{CE} = 10V$ , $V_{GE} = 0V$ , $f = 1MHz$                            |         | 4000 | 7500      | pF           |
| $t_r$         | Switching Time                       | Rise Time           | $I_c = 75A$ , $V_{GE} = +15V/-5V$<br>$V_{CC} = 300V$ , $R_g = 8\Omega$ |         | 0.10 | 0.20      | $\mu s$      |
| $t_{d(on)}$   |                                      | Turn-on Delay Time  |                                                                        |         | 0.20 | 0.40      |              |
| $t_f$         |                                      | Fall Time           |                                                                        |         | 0.20 | 0.30      |              |
| $t_{d(off)}$  |                                      | Turn-off Delay Time |                                                                        |         | 0.40 | 0.80      |              |
| $V_{ECS}$     | Emitter-Collector Voltage            |                     | $-I_c = 75A$ , $V_{GE} = 0V$                                           |         | 1.8  | 2.80      | V            |
| $t_{rr}$      | Reverse Recovery Time                |                     | $-I_c = 75A$ , $V_{GE} = -10V$ , $di/dt = 150A/\mu s$                  |         | 0.1  |           | $\mu s$      |
| $R_{th(j-c)}$ | Thermal Resistance                   |                     | IGBT-Case                                                              |         |      | 0.40      | $^\circ C/W$ |
|               |                                      |                     | Diode-Case                                                             |         |      | 0.83      |              |

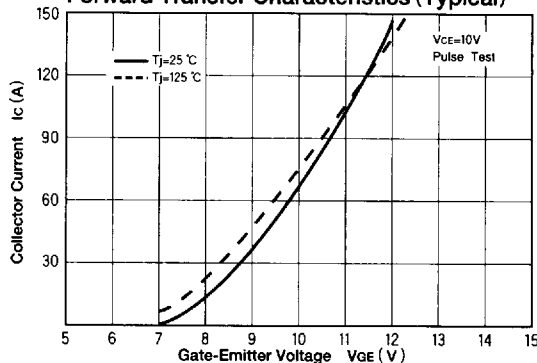
7991243 0001965 T75

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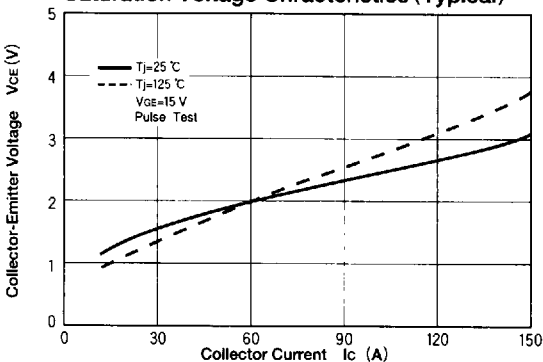
Output Characteristics (Typical)



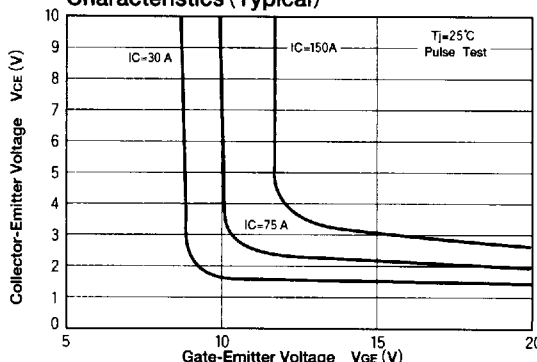
Forward Transfer Characteristics (Typical)



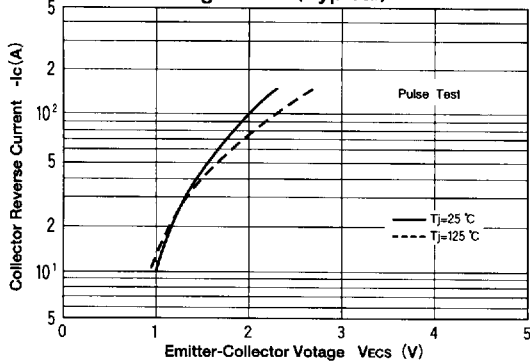
Saturation Voltage Characteristics (Typical)



Collector-Emitter Saturation Voltage Characteristics (Typical)



Forward Voltage of Free Wheeling Diode (Typical)



Input Capacitance, Output Capacitance, Transfer Capacitance (Typical)

