

# TRANSISTOR MODULE

# QCA100AA120

TOP



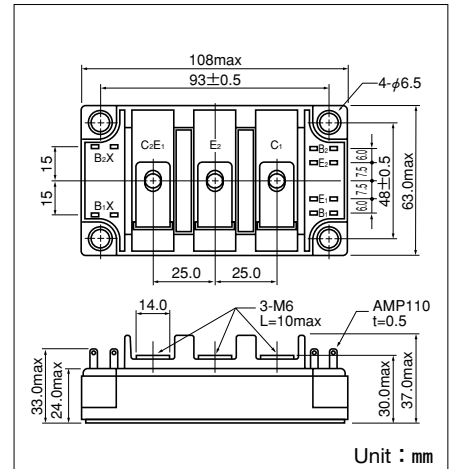
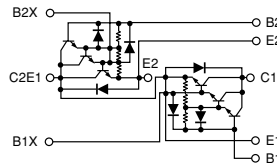
UL;E76102 (M)

QCA100AA120 is a dual Darlington power transistor module which has series-connected high speed, high power Darlington transistors. Each transistor has a reverse paralleled fast recovery diode. The mounting base of the module is electrically isolated from semiconductor elements for simple heatsink construction,

- $I_C=100A$ ,  $V_{CEX}=1200V$
- Low saturation voltage for higher efficiency.
- High DC current gain  $h_{FE}$
- Isolated mounting base

**(Applications)**

Motor Control (VVVF), AC/DC Servo, UPS, Switching Power Supply, Ultrasonic Application



Unit : mm

**Maximum Ratings**

( $T_j=25^\circ C$  unless otherwise specified)

| Symbol           | Item                      | Conditions       | Ratings                           |          | Unit            |
|------------------|---------------------------|------------------|-----------------------------------|----------|-----------------|
|                  |                           |                  | QCA100AA120                       |          |                 |
| V <sub>CB0</sub> | Collector-Base Voltage    |                  | 1200                              |          | V               |
| V <sub>CEX</sub> | Collector-Emitter Voltage | $V_{BE}=-2V$     | 1200                              |          | V               |
| V <sub>EBO</sub> | Emitter-Base Voltage      |                  | 10                                |          | V               |
| I <sub>C</sub>   | Collector Current         |                  | 100                               |          | A               |
| -I <sub>C</sub>  | Reverse Collector Current |                  | 100                               |          | A               |
| I <sub>B</sub>   | Base Current              |                  | 5                                 |          | A               |
| P <sub>T</sub>   | Total power dissipation   | $T_C=25^\circ C$ | 800                               |          | W               |
| T <sub>j</sub>   | Junction Temperature      |                  | -40 to +150                       |          | °C              |
| T <sub>stg</sub> | Storage Temperature       |                  | -40 to +125                       |          | °C              |
| V <sub>ISO</sub> | Isolation Voltage         | A.C.1minute      | 2500                              |          | V               |
|                  | Mounting Torque           | Mounting (M6)    | Recommended Value 2.5-3.9 (25-40) | 4.7 (48) | N·m<br>(kgf·cm) |
|                  |                           | Terminal (M6)    | Recommended Value 2.5-3.9 (25-40) | 4.7 (48) |                 |
|                  | Mass                      | Typical Value    | 470                               |          | g               |

**Electrical Characteristics**

| Symbol                | Item                                 | Conditions            | Ratings  |       | Unit |
|-----------------------|--------------------------------------|-----------------------|--|-------|------|
|                       |                                      |                       | Min.   | Max.  |      |
| I <sub>CB0</sub>      | Collector Cut-off Current            | $V_{CB}=1200V$        |  | 2.0   | mA   |
| I <sub>EBO</sub>      | Emitter Cut-off Current              | $V_{EB}=10V$          |  | 600   | mA   |
| V <sub>CEX(SUS)</sub> | Collector Emitter Sustaning Voltage  | $I_C=20A, I_{B2}=-4A$ | 1200   |       | V    |
| h <sub>FE</sub>       | DC Current Gain                      | $I_C=100A, V_{CE}=5V$ | 75   |       |      |
| V <sub>CE(sat)</sub>  | Collector-Emitter Saturation Voltage | $I_C=100A, I_B=2A$    |  | 3.0   | V    |
| V <sub>BE(sat)</sub>  | Base-Emitter Saturation Voltage      | $I_C=100A, I_B=2A$    |  | 3.5   | V    |
| ton                   | Switching Time                       | On Time               |  | 3.0   | μs   |
| ts                    |                                      | Storage Time          | $V_{CC}=600V, I_C=100A$<br>$I_{B1}=2A, I_{B2}=-2A$ | 15.0  |      |
| tf                    |                                      | Fall Time             |  | 3.0   |      |
| V <sub>ECO</sub>      | Collector-Emitter Reverse Voltage    | $-I_C=100A$           |  | 1.8   | V    |
| R <sub>th(j-c)</sub>  | Thermal Impedance (junction to case) | Transistor part       |  | 0.155 | °C/W |
|                       |                                      | Diode part            |  | 0.65  |      |

