

# TRANSISTOR MODULE

## QCA75AA120

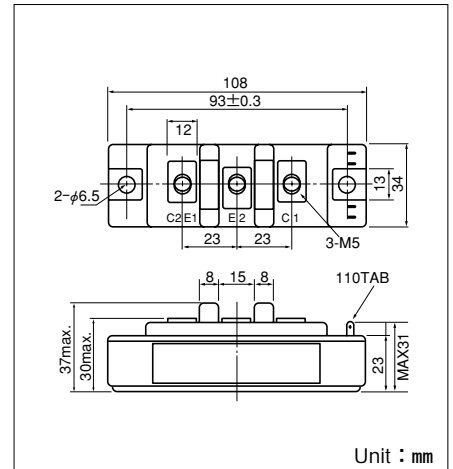
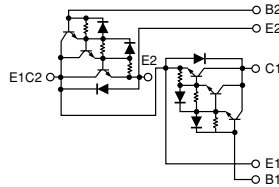
UL:E76102(M)

QCA75AA120 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,

- $I_C=75A$ ,  $V_{CEX}=1200V$
- 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



### Maximum Ratings

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

| Symbol    | Item                      | Conditions       | Ratings                           |          | Unit            |
|-----------|---------------------------|------------------|-----------------------------------|----------|-----------------|
|           |                           |                  | QCA75AA120                        |          |                 |
| $V_{CBO}$ | Collector-Base Voltage    |                  | 1200                              |          | V               |
| $V_{CEX}$ | Collector-Emitter Voltage | $V_{BE}=-2V$     | 1200                              |          | V               |
| $V_{EBO}$ | Emitter-Base Voltage      |                  | 10                                |          | V               |
| $I_C$     | Collector Current         |                  | 75                                |          | A               |
| $-I_C$    | Reverse Collector Current |                  | 75                                |          | A               |
| $I_B$     | Base Current              |                  | 4                                 |          | A               |
| $P_T$     | Total power dissipation   | $T_C=25^\circ C$ | 500                               |          | W               |
| $T_j$     | Junction Temperature      |                  | -40 to +150                       |          | $^\circ C$      |
| $T_{stg}$ | Storage Temperature       |                  | -40 to +125                       |          | $^\circ C$      |
| $V_{iso}$ | 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 (M5)    | Recommended Value 1.5-2.5 (15-25) | 2.7 (28) |                 |
|           | Mass                      | Typical Value    | 250                               |          | g               |

### Electrical Characteristics

| Symbol         | Item                                 | Conditions               | Ratings   |      | Unit         |
|----------------|--------------------------------------|--------------------------|---|------|--------------|
|                |                                      |                          | Min.  | Max. |              |
| $I_{CBO}$      | Collector Cut-off Current            | $V_{CB}=1200V$           |   | 1.0  | mA           |
| $I_{EBO}$      | Emitter Cut-off Current              | $V_{EB}=10V$             |   | 300  | mA           |
| $V_{CEX(SUS)}$ | Collector Emitter Sustaining Voltage | $I_C=15A$ , $I_{B2}=-3A$ | 1200  |      | V            |
| $h_{FE}$       | DC Current Gain                      | $I_C=75A$ , $V_{CE}=5V$  | 75  |      |              |
| $V_{CE(sat)}$  | Collector-Emitter Saturation Voltage | $I_C=75A$ , $I_B=1.5A$   |   | 3.0  | V            |
| $V_{BE(sat)}$  | Base-Emitter Saturation Voltage      | $I_C=75A$ , $I_B=1.5A$   |   | 3.5  | V            |
| $t_{on}$       | Switching Time                       | On Time                  |   | 2.5  | $\mu s$      |
| $t_s$          |                                      | Storage Time             | $V_{CC}=600V$ , $I_C=75A$<br>$I_{B1}=1.5A$ , $I_{B2}=-1.5A$ | 15.0 |              |
| $t_f$          |                                      | Fall Time                |   | 3.0  |              |
| $V_{ECO}$      | Collector-Emitter Reverse Voltage    | $-I_C=75A$               |   | 1.8  | V            |
| $R_{th(j-c)}$  | Thermal Impedance (junction to case) | Transistor part          |   | 0.25 | $^\circ C/W$ |
|                |                                      | Diode part               |   | 1.2  |              |

