

# TRANSISTOR MODULE

## QCA150A/QBB150A40/60

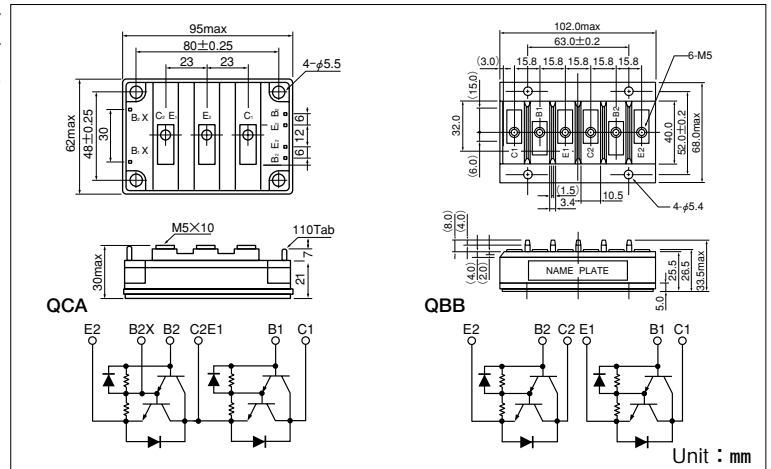
UL;E76102(M)

QCA150A and QBB150A is a dual Darlington power transistor module with two high speed, high power Darlington transistors. Each transistor has a reverse paralleled fast recovery diode.

- QCA150A...Series-connected type
- QBB150A...Separate Type
- $I_C=150A$ ,  $V_{CEX}=400/600V$
- Low saturation voltage for higher efficiency.
- Isolated mounting base
- $V_{EBO} 10V$  for faster switching speed.

### (Applications)

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



### Maximum Ratings

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

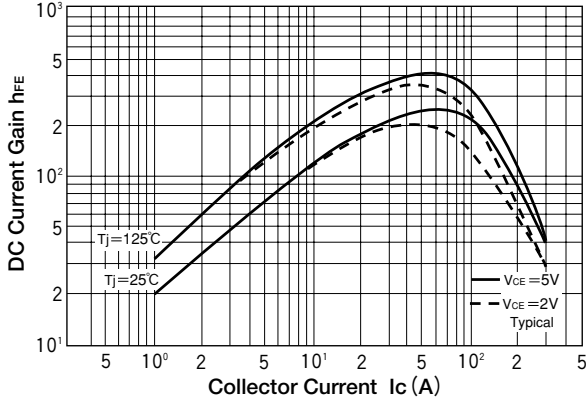
| Symbol    | Item                       | Conditions         | Ratings                           |                        | Unit            |
|-----------|----------------------------|--------------------|-----------------------------------|------------------------|-----------------|
|           |                            |                    | QCA150A40<br>QBB150A40            | QCA150A60<br>QBB150A60 |                 |
| $V_{CBO}$ | Collector-Base Voltage     |                    | 400                               | 600                    | V               |
| $V_{CEX}$ | Collector-Emmitter Voltage | $V_{BE}=-2V$       | 400                               | 600                    | V               |
| $V_{EBO}$ | Emitter-Base Voltage       |                    | 10                                |                        | V               |
| $I_C$     | Collector Current          | ( ) $p_w \leq 1ms$ | 150 (300)                         |                        | A               |
| $-I_C$    | Reverse Collector Current  |                    | 150                               |                        | A               |
| $I_B$     | Base Current               |                    | 9                                 |                        | A               |
| $P_T$     | Total power dissipation    | $T_C=25^\circ C$   | 690                               |                        | 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 (M5)      | Recommended Value 1.5-2.5 (15-25) |                        | N·m<br>(kgf·cm) |
|           |                            | Terminal (M5)      | Recommended Value 1.5-2.5 (15-25) |                        |                 |
|           | Mass                       | QCA150A/QBB150A    | Typical Value                     |                        | 370/340         |

### Electrical Characteristics

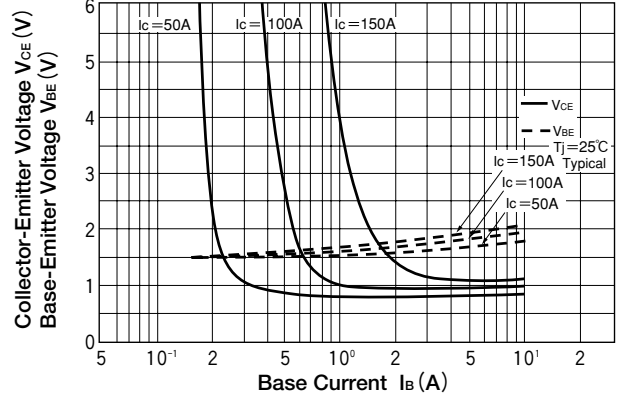
| Symbol         | Item                                  | Conditions   | Ratings                |      | Unit         |
|----------------|---------------------------------------|--|------------------------|------|--------------|
|                |                                       |  | Min.                   | Max. |              |
| $I_{CBO}$      | Collector Cut-off Current             | $V_{CB}=V_{CBO}$                                   |                        | 1.0  | mA           |
| $I_{EBO}$      | Emitter Cut-off Current               | $V_{EB}=V_{EBO}$                                   |                        | 500  | mA           |
| $V_{CEO(SUS)}$ | Collector Emmitter Sustaining Voltage | $I_C=1A$   | QCA150A40<br>QBB150A40 | 300  | V            |
|                |                                       |  | QCA150A60<br>QBB150A60 | 450  |              |
| $V_{CEX(SUS)}$ |                                       | $I_C=30A, I_{B2}=-5A$                              | QCA150A40<br>QBB150A40 | 400  | V            |
|                |                                       |  | QCA150A60<br>QBB150A60 | 600  |              |
| $h_{FE}$       | DC Current Gain                       | $I_C=150A, V_{CE}=2V/5V$                           | 75/100                 |      |              |
| $V_{CE(sat)}$  | Collector-Emmitter Saturation Voltage | $I_C=150A, I_B=2.0A$                               | 2.0                    |      | V            |
| $V_{BE(sat)}$  | Base-Emmitter Saturation Voltage      | $I_C=150A, I_B=2.0A$                               | 2.5                    |      | V            |
| $t_{on}$       | Switching Time                        | $V_{CC}=300V, I_C=150A$<br>$I_{B1}=2A, I_{B2}=-2A$ | On Time                |      | $\mu s$      |
| $t_s$          |                                       |  | Storage Time           |      |              |
| $t_f$          |                                       |  | Fall Time              |      |              |
| $V_{ECO}$      | Collector-Emmitter Reverse Voltage    | $-I_C=150A$  | 1.4                    |      | V            |
| $R_{th(j-c)}$  | Thermal Impedance (junction to case)  | Transistor part/Diode part                         | 0.18/0.6               |      | $^\circ C/W$ |

**SanRex**

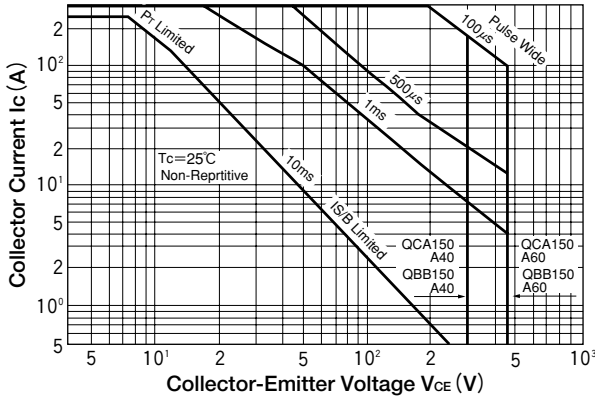
### D.C. Current Gain



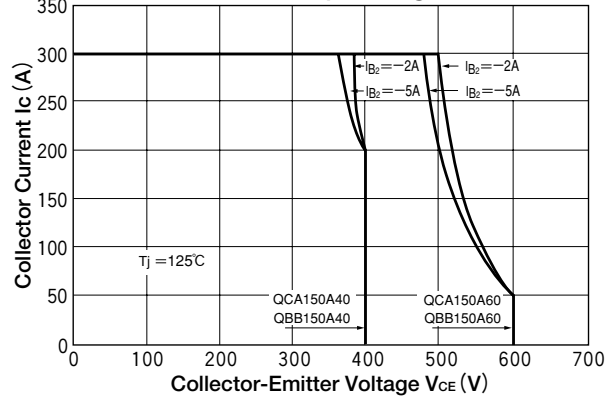
### Saturation Characteristics



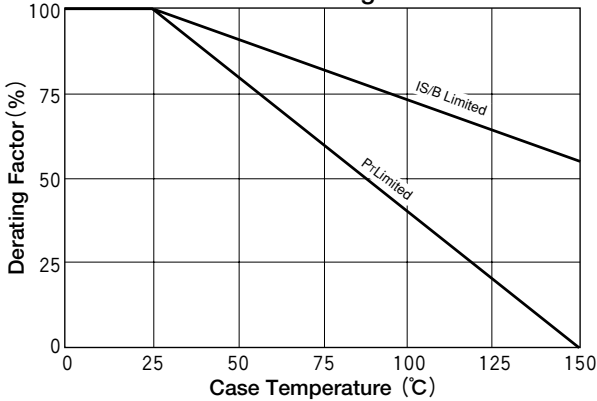
### Forward Bias Safe Operating Area



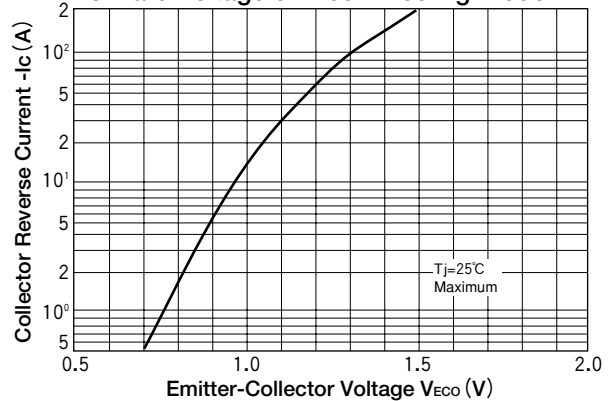
### Reverse Bias Safe Operating Area



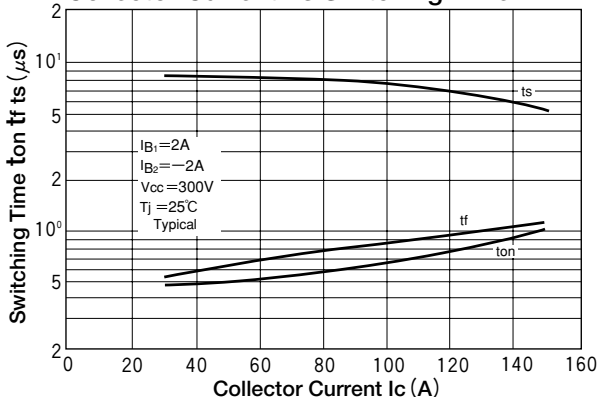
### Collector Current Derating Factor



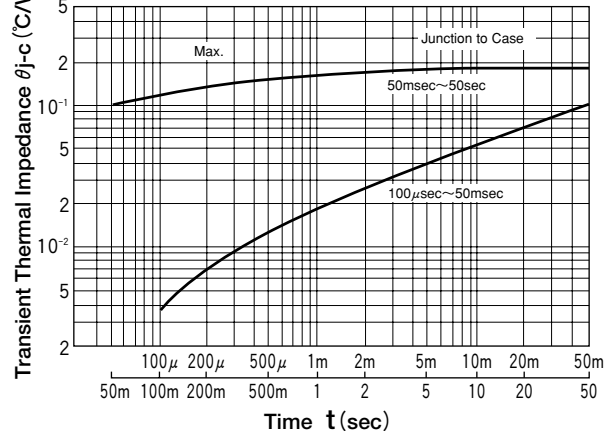
### Forward Voltage of Free Wheeling Diode



### Collector Current Vs Switching Time



### Maximum Transient Thermal Impedance Characteristics



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Datasheets for electronics components.