

TRANSISTOR MODULE

QCA75A/QCB75A40/60

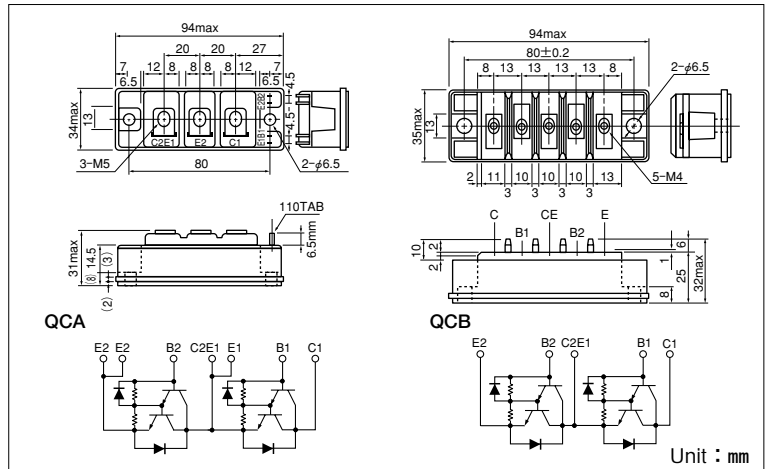
UL:E76102(M)

QCA75A and **QCB75A** are dual Darlington power transistor modules which have series-connected high speed, high power Darlington transistors. Each transistor has a reverse paralleled fast recovery diode.

- $I_C=75A$, $V_{CEX}=400/600V$
- 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

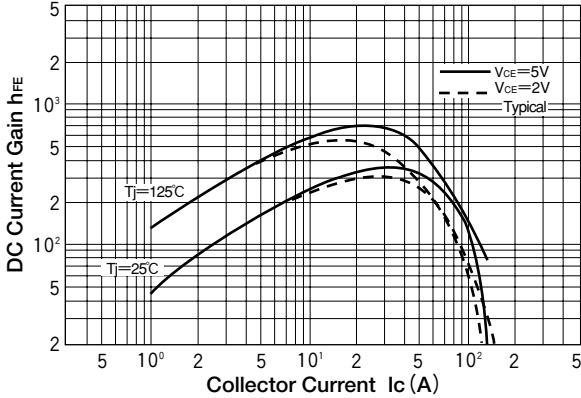
($T_j=25^{\circ}C$ unless otherwise specified)

| Symbol | Item | Conditions | Ratings | | Unit | |
|-----------|----------------------------|--------------------|----------------------|-----------------------------------|-------------|---------------|
| | | | QCA75A40 QCB75A40 | QCA75A60 QCB75A60 | | |
| 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 | () $p_w \leq 1ms$ | 75 (150) | | A | |
| $-I_C$ | Reverse Collector Current | | 75 | | A | |
| I_B | Base Current | | 4.5 | | A | |
| P_T | Total power dissipation | $T_C=25^{\circ}C$ | 350 | | 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 | QCA75A | 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) | |
| | | QCB75A | Mounting (M5) | Recommended Value 1.5-2.5 (15-25) | 2.7(28) | |
| | | | Terminal (M4) | Recommended Value 1.0-1.4 (10-14) | 1.5(15) | |
| Mass | QCA75A/QCB75A | Typical Value | 240/195 | | g | |

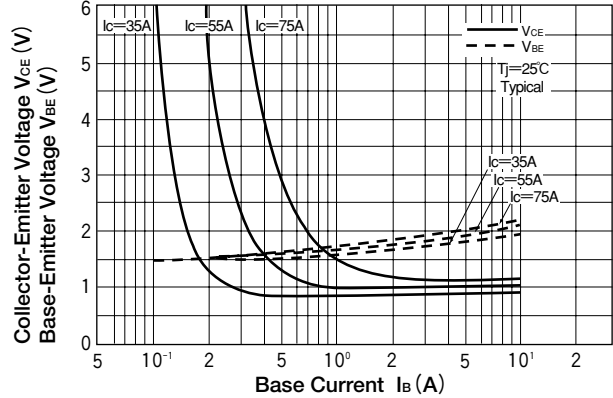
Electrical Characteristics

| 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 | $V_{EB}=V_{EBO}$ | | 300 | mA |
| $V_{CEO(SUS)}$ | Collector Emmitter Sustaning Voltage | $I_C=1A$ | QCA75A40 QCB75A40 | 300 | V |
| $V_{CEX(SUS)}$ | | | QCA75A60 QCB75A60 | 450 | |
| | | $I_C=15A, I_{B2}=-5A$ | QCA75A40 QCB75A40 | 400 | V |
| | | | QCA75A60 QCB75A60 | 600 | |
| h_{FE} | DC Current Gain | $I_C=75A, V_{CE}=2V/5V$ | 75/100 | | |
| $V_{CE(sat)}$ | Collector-Emmitter Saturation Voltage | $I_C=75A, I_B=1A$ | | 2.0 | V |
| $V_{BE(sat)}$ | Base-Emmitter Saturation Voltage | $I_C=75A, I_B=1A$ | | 2.5 | V |
| t_{on} | Switching Time | On Time | | 2.0 | μs |
| t_s | | Storage Time | $V_{CC}=300V, I_C=75A$ $I_{B1}=1A, I_{B2}=-1A$ | 12.0 | |
| t_f | | Fall Time | | 3.0 | |
| V_{ECO} | Collector-Emmitter Reverse Voltage | $-I_C=75A$ | | 1.4 | V |
| $R_{th(j-c)}$ | Thermal Impedance (junction to case) | Transistor part/Diode part | | 0.35/1.3 | $^{\circ}C/W$ |

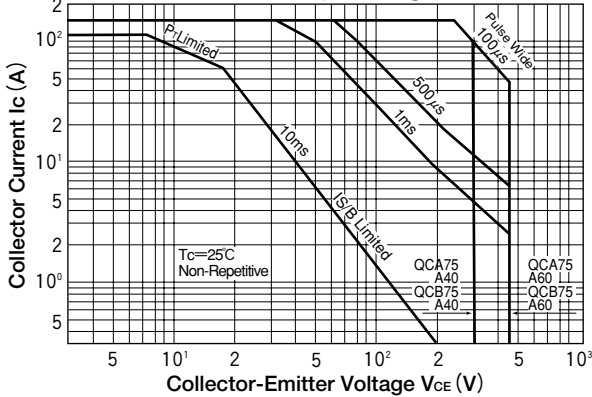
D.C. Current Gain



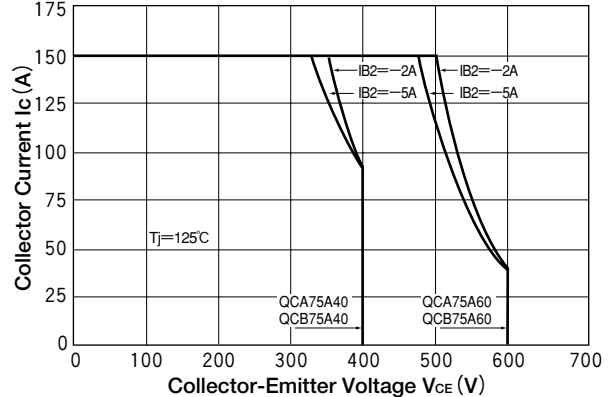
Saturation Characteristics



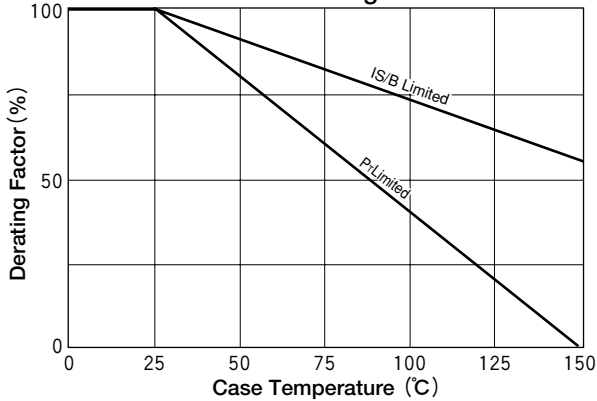
Forward Bias Safe Operating Area



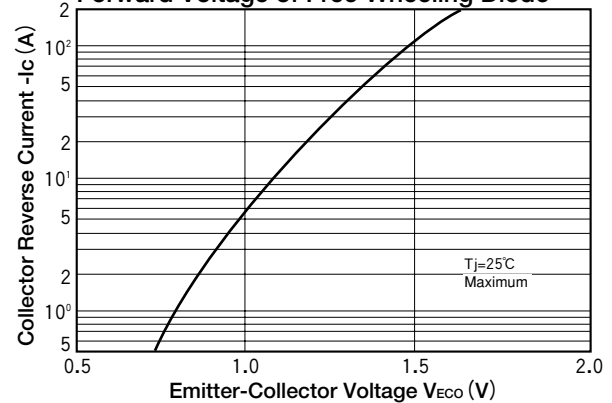
Reverse Bias Safe Operating Area



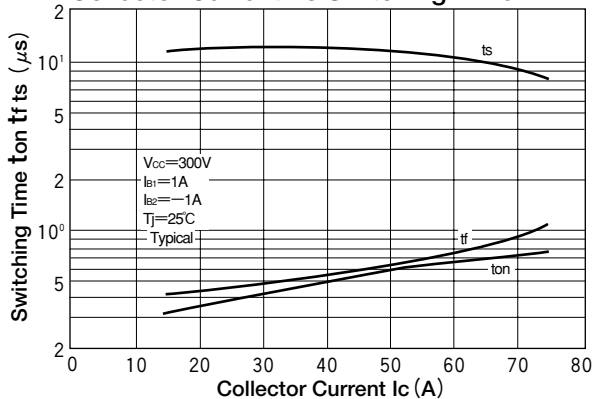
Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Collector Current Vs Switching Time



Maximum Transient Thermal Impedance Characteristics

