# TRANSISTOR MODULE (Hi-β)

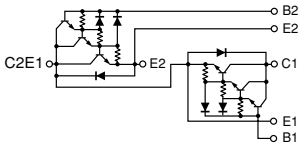
# QCA75BA60

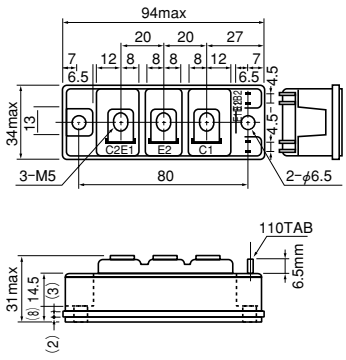
UL;E76102(M)

**QCA75BA60** is a dual Darlington power transistor module which has series-connected **ULTRA HIGH** $h_{FE}$, high speed, high power Darlington transistors. Each transistor has a reverse paralleled fast recovery diode (**trr：200ns**). The mounting base of the module is electrically isolated from Semiconductor elements for simple heatsink construction,

- $I_C$=75A, $V_{CEX}$=600V
- Low saturation voltage for higher efficiency.
- ULTRA HIGH DC current gain $h_{FE}$. $h_{FE}$≧750
- Isolated mounting base
- $V_{EBO}$ 10V for faster switching speed.

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




Unit：mm

## ■Maximum Ratings

(Tj=25℃ unless otherwise specified)

| Symbol | Item | | Conditions | Ratings | Unit |
|---|---|---|---|---|---|
| | | | | QCA75BA60 | |
| $V_{CBO}$ | Collector-Base Voltage | | | 600 | V |
| $V_{CEX}$ | Collector-Emitter Voltage | | $V_{BE}$=−2V | 600 | V |
| $V_{EBO}$ | Emitter-Base Voltage | | | 10 | V |
| $I_C$ | Collector Current | | ( ) pw≦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℃ | 350 | W |
| $T_j$ | Junction Temperature | | | −40 to +150 | ℃ |
| Tstg | Storage Temperature | | | −40 to +125 | ℃ |
| $V_{ISO}$ | Isolation Voltage | | A.C.1minute | 2500 | V |
| | Mounting Torque | Mounting (M6) | Recommended Value 2.5-3.9 (25-40) | 4.7 (48) | N·m kgf·cm |
| | | Termnal (M5) | Recommended Value 1.5-2.5 (15-25) | 2.7 (28) | |
| | Mass | | Typical Value | 240 | g |

## ■Electrical Characteristics

| Symbol | Item | | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | 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 Emitter Sustaning Voltage | | Ic=1A | 450 | | | V |
| $V_{CEX(SUS)}$ | | | Ic=15A, $I_{B2}$=−5A | 600 | | | |
| $h_{FE}$ | D.C. Current Gain | | Ic=75A, $V_{CE}$=2.5V | 750 | | | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | | Ic=75A, $I_B$=100mA | | | 2.5 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | | Ic=75A, $I_B$=100mA | | | 3.0 | V |
| ton | Switching Time | On Time | Vcc=300V, Ic=75A<br>$I_{B1}$=150mA, $I_{B2}$=−1.5A | | | 2.0 | μs |
| ts | | Storage Time | | | | 8.0 | |
| tf | | Fall Time | | | | 2.0 | |
| $V_{ECO}$ | Collector-Emitter Reverse Voltage | | Ic=−75A | | | 1.8 | V |
| trr | Reverse Recovery time | | Vcc=300V, −Ic=75A, −di/dt=75Aμs, $V_{BE}$=−5V | | 200 | | ns |
| Rth(j-c) | Thermal Impedance (junction to case) | | transistor part | | | 0.35 | ℃/W |
| | | | Diode part | | | 1.3 | |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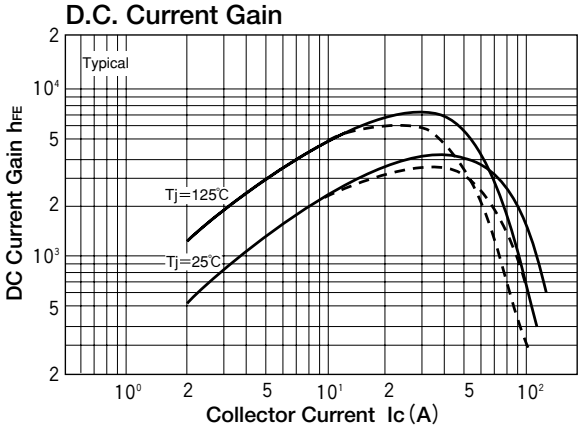
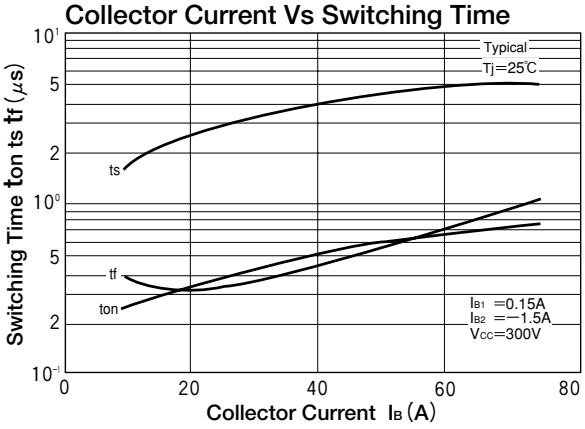
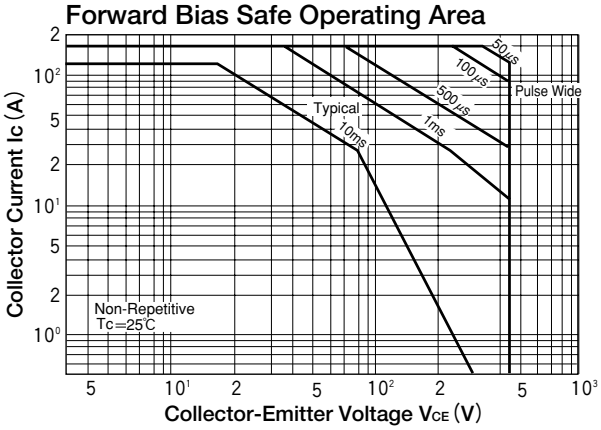
## D.C. Current Gain



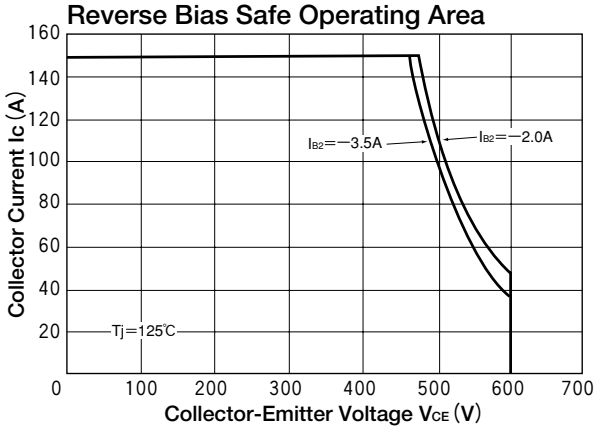

## Collector Current Vs Switching Time



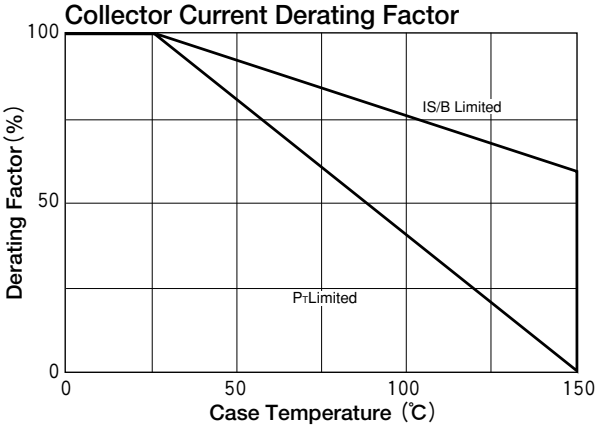

## Forward Bias Safe Operating Area



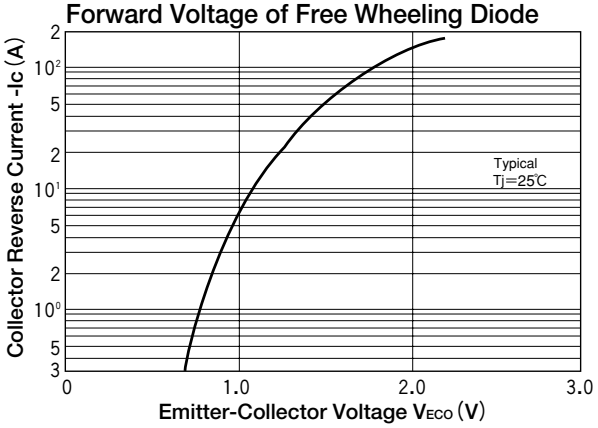

## Reverse Bias Safe Operating Area



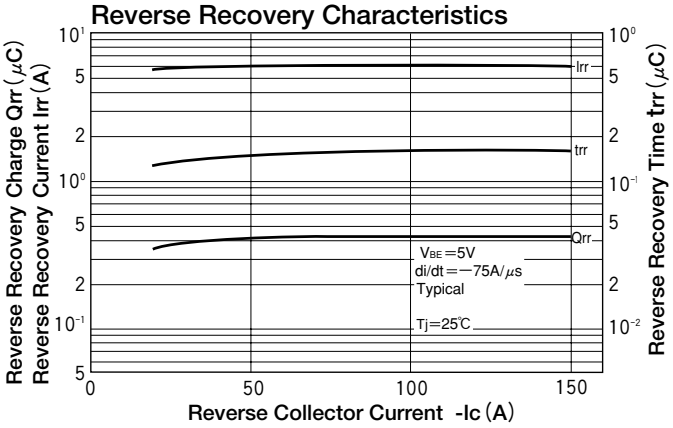

## Collector Current Derating Factor




## Forward Voltage of Free Wheeling Diode




## Reverse Recovery Characteristics




## Maximum Transient Thermal Impedance Characteristics