

# TRANSISTOR MODULE (Hi-β)

## QCA200BA60

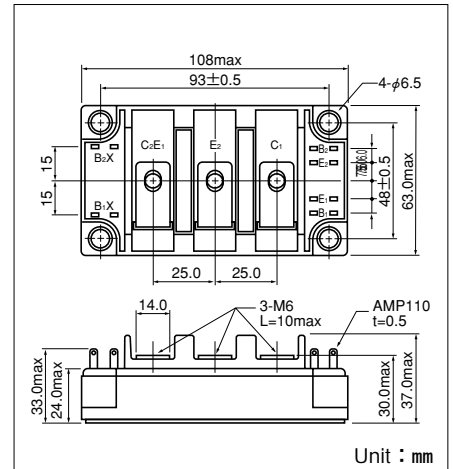
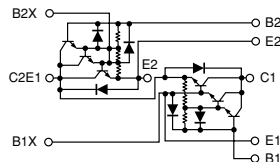
UL;E76102(M)

QCA200BA60 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 ( $t_{rr}$  : 200ns). The mounting base of the module is electrically isolated from Semiconductor elements for simple heatsink construction,

- $I_C=200A$ ,  $V_{CEX}=600V$
- Low saturation voltage for higher efficiency.
- **ULTRA HIGH** DC current gain  $h_{FE}$ .  $h_{FE} \geq 750$
- 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

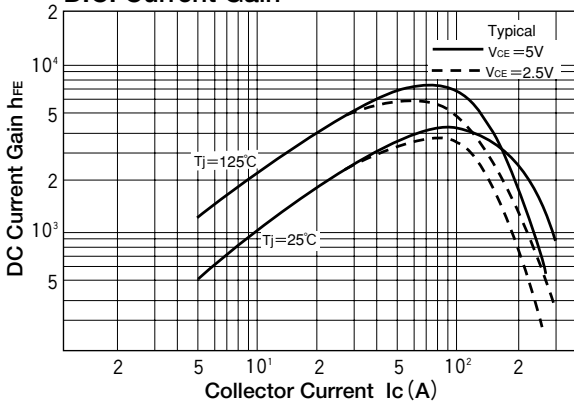
( $T_j=25^\circ\text{C}$  unless otherwise specified)

Symbol	Item	Conditions	Ratings		Unit
			QCA200BA60		
$V_{CBO}$	Collector-Base Voltage		600		V
$V_{CEX}$	Collector-Emmitter Voltage	$V_{BE}=-2V$	600		V
$V_{EBO}$	Emitter-Base Voltage		10		V
$I_C$	Collector Current	( ) $p_w \leq 1ms$	200 (400)		A
$-I_C$	Reverse Collector Current		200		A
$I_B$	Base Current		12		A
$P_T$	Total power dissipation	$T_C=25^\circ\text{C}$	1250		W
$T_j$	Junction Temperature		-40 to +150		$^\circ\text{C}$
$T_{stg}$	Storage Temperature		-40 to +125		$^\circ\text{C}$
$V_{iso}$	Isolation Voltage	A.C.1minute	2500		
	Mounting Torque	Mounting (M6)	Recommended Value 2.5-3.9 (25-40)		N·m (kgf·cm)
		Terminal (M6)	Recommended Value 2.5-3.9 (25-40)		
	Mass	Typical Value	470		g

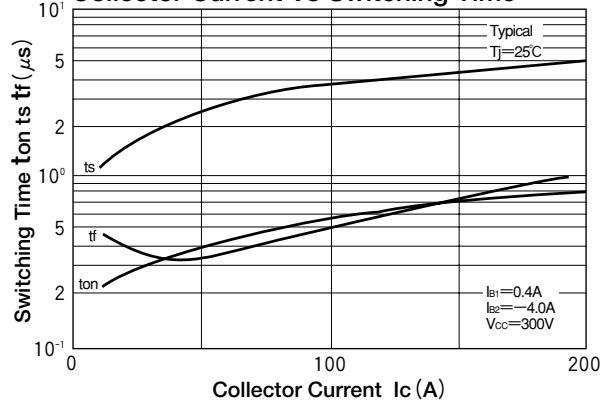
### Electrical Characteristics

Symbol	Item	Conditions	Ratings			Unit
			Min.	Typ.	Max.	
$I_{CBO}$	Collector Cut-off Current	$V_{CB}=V_{CBO}$			2.0	mA
$I_{EBO}$	Emitter Cut-off Current	$V_{EB}=V_{EBO}$			800	mA
$V_{CEO(SUS)}$	Collector Emmitter Sustaning Voltage	$I_C=1A$	450			V
$V_{CEX(SUS)}$		$I_C=40A, I_{B2}=-8A$	600			
$h_{FE}$	D.C. Current Gain	$I_C=200A, V_{CE}=2.5V$	750			
$V_{CE(sat)}$	Collector-Emmitter Saturation Voltage	$I_C=200A, I_B=0.26A$			2.5	V
$V_{BE(sat)}$	Base-Emmitter Saturation Voltage	$I_C=200A, I_B=0.26A$			3.0	V
$t_{on}$	Switching Time	On Time			2.0	$\mu s$
$t_s$		Storage Time	$V_{CC}=300V, I_C=200A$		8.0	
$t_f$		Fall Time	$I_{B1}=0.4A, I_{B2}=-4A$		2.0	
$V_{ECO}$	Collector-Emmitter Reverse Voltage	$I_C=-200A$			1.8	V
$t_{rr}$	Reverse Recovery time	$V_{CC}=300V, I_C=-200A, -di/dt=200A/\mu s, V_{BE}=-5V$		200		ns
$R_{th(j-c)}$	Thermal Impedance (junction to case)	Transistor part			0.1	$^\circ\text{C/W}$
		Diode part			0.3	

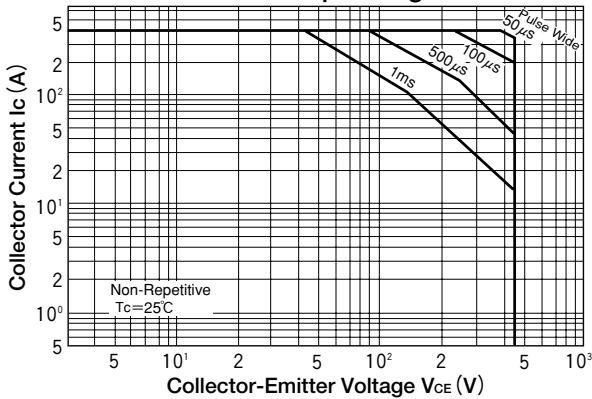
### D.C. Current Gain



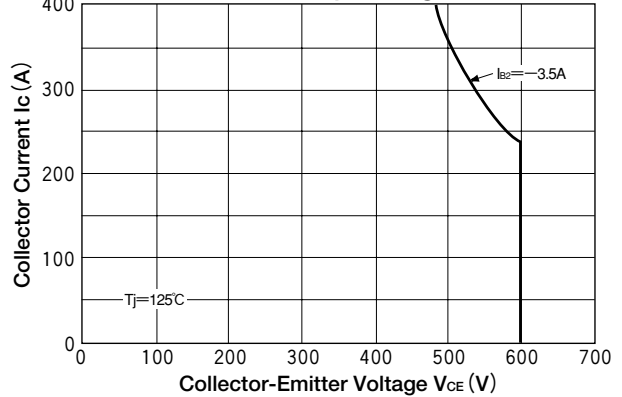
### Collector Current Vs Switching Time



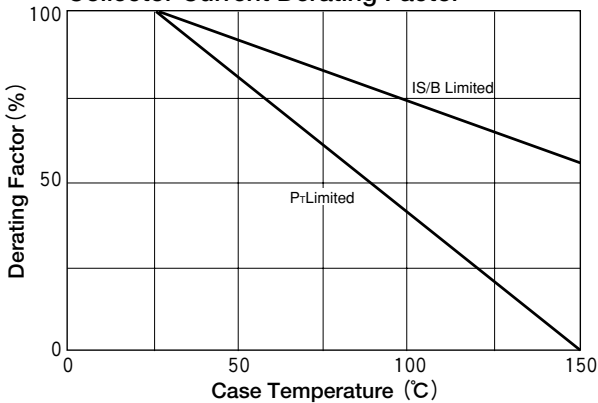
### Forward Bias Safe Operating Area



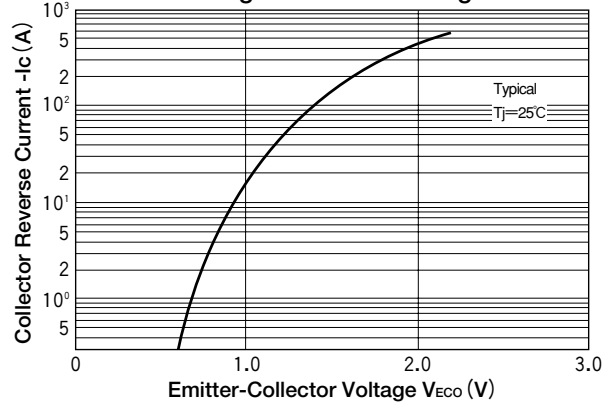
### Reverse Bias Safe Operating Area



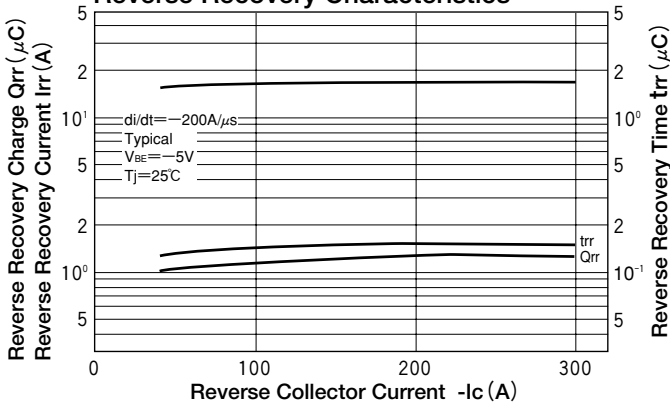
### Collector Current Derating Factor



### Forward Voltage of Free Wheeling Diode



### Reverse Recovery Characteristics



### Maximum Transient Thermal Impedance Characteristics

