

# TRANSISTOR MODULE

# QCA200A40/60

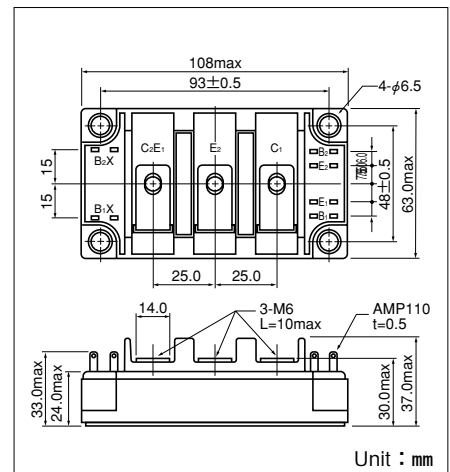
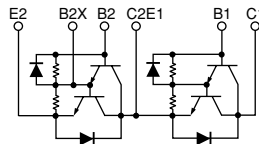
UL:E76102(M)

**QCA200** 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,

- $I_C=200A$ ,  $V_{CEX}=400/600V$
- Low saturation voltage for higher efficiency.
- High DC current gain  $h_{FE}$
- 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

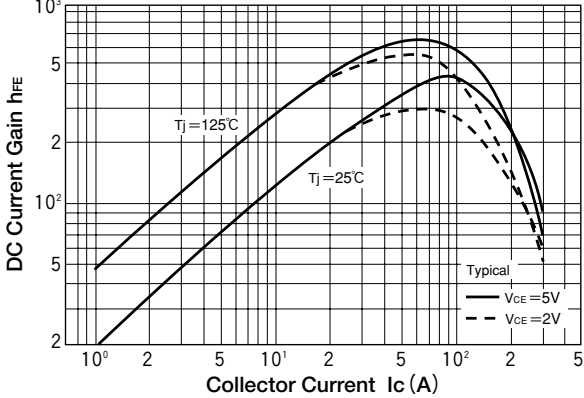
( $T_j=25^\circ C$  unless otherwise specified)

Symbol	Item	Conditions	Ratings		Unit
			QCA200A40	QCA200A60	
$V_{CB0}$	Collector-Base Voltage		400	600	V
$V_{CEX}$	Collector-Emitter Voltage	$V_{BE}=-2V$	400	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	$T_C=25^\circ C$	1250		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)		N·m (kgf·cm)
		Terminal (M6)	Recommended Value 2.5-3.9 (25-40)		
	Mass	Typical Value	470		g

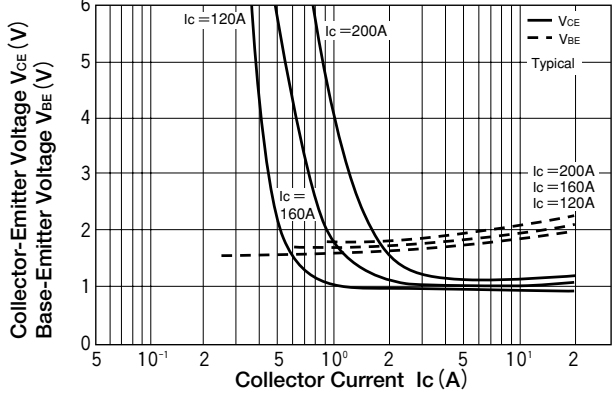
### Electrical Characteristics

Symbol	Item	Conditions	Ratings		Unit
			Min.	Max.	
$I_{CBO}$	Collector Cut-off Current	$V_{CB}=V_{CB0}$		2.0	mA
$I_{EBO}$	Emitter Cut-off Current	$V_{EB}=V_{EBO}$		800	mA
$V_{CE0(SUS)}$	Collector Emitter Sustaining Voltage	$I_C=1A$	QCA200A40	300	V
$V_{CEX(SUS)}$			QCA200A60	450	
		$I_C=40A, I_{B2}=-8A$	QCA200A40	400	V
			QCA200A60	600	
$h_{FE}$	DC Current Gain	$I_C=200A, V_{CE}=2V$	75		
		$I_C=200A, V_{CE}=5V$	100		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=200A, I_B=2.7A$		2.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=200A, I_B=2.7A$		2.5	V
$t_{on}$	Switching Time	$V_{CC}=300V, I_C=200A$ $I_{B1}=4A, I_{B2}=-4A$	On Time		$\mu s$
$t_s$			Storage Time		
$t_f$			Fall Time		
$V_{ECO}$	Collector-Emitter Reverse Voltage	$-I_C=200A$		1.4	V
$R_{th(j-c)}$	Thermal Impedance (junction to case)	Transistor part		0.1	$^\circ C/W$
		Diode part		0.3	

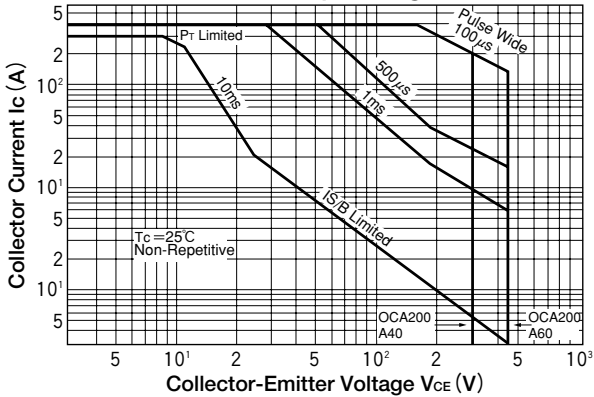
**D.C. Current Gain**



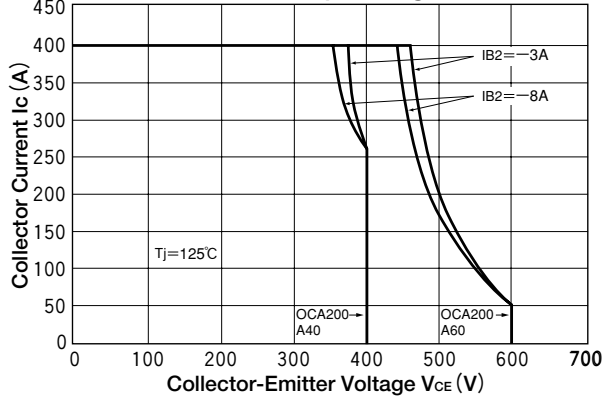
**Saturation Characteristics**



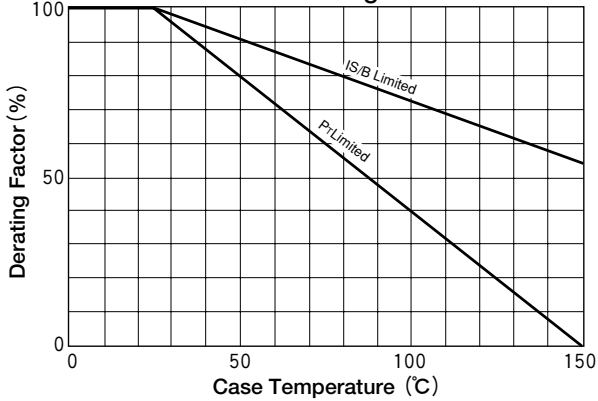
**Forward Bias Safe Operating Area**



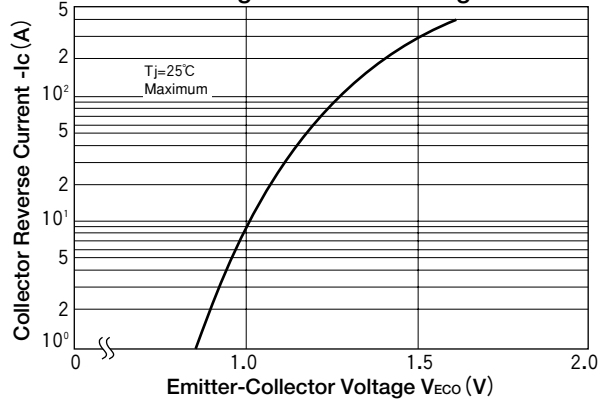
**Reverse Bias Safe Operating Area**



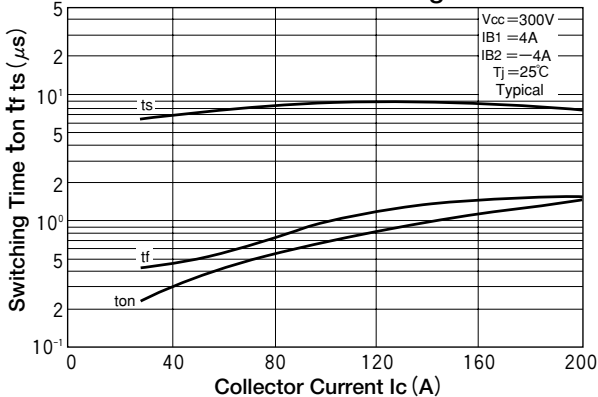
**Collector Current Derating Factor**



**Forward Voltage of Free Wheeling Diode**



**Collector Current Vs Switching Time**



**Maximum Transient Thermal Impedance Characteristics**

