TRANSISTOR MODULE (Hi- β)

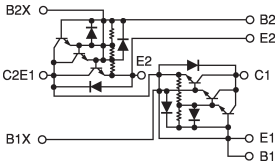
QCA100BA60

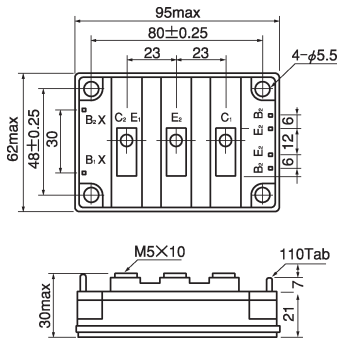
UL;E76102 (M)

QCA100BA60 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=100A, 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℃)

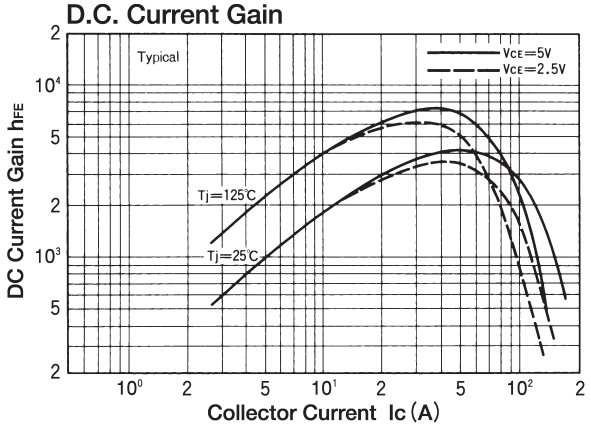
Symbol	Item		Conditions	Ratings	Unit
				QCA100BA60	
V_{CBO}	Collector-Base Voltage			600	V
V_{CEX}	Collector-Emitter Voltage		V_{BE}=−2V	600	V
V_{EBO}	Emitter-Base Voltage			10	V
I_C	Collector Current		( )=pw≦1ms	100 (200)	A
−I_C	Reverse Collector Current			100	A
I_B	Base Current			6	A
P_T	Total power dissipation		T_C=25℃	620	W
T_j	Junction Temperature			−40～+150	℃
Tstg	Storage Temperature			−40～+125	℃
V_{ISO}	Isolation Voltage		A.C.1minute	2500	V
	Mounting Torque	Mounting (M5)	Recommended Value 1.5～2.5 (15～25)	2.7 (28)	N·m (kgf·cm)
		Terminal (M5)	Recommended Value 1.5～2.5 (15～25)	2.7 (28)	
	Mass		Typical Value	360	g

■Electrical Characteristics

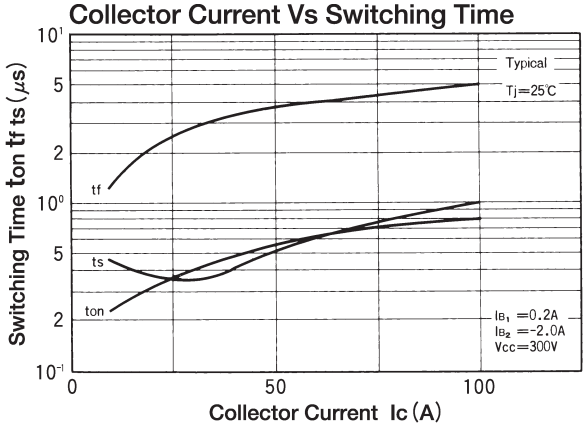
(Tj=25℃)

Symbol	Item		Conditions	Ratings			Unit
				最小	標準	最大	
I_{CBO}	Collector Cut-off Current		V_{CB}=V_{CBO}			1.0	mA
I_{EBO}	Emitter Cut-off Current		V_{EB}=V_{EBO}			400	mA
$V_{CEO(SUS)}$	Collector Emitter Sustaning Voltage		Ic=1A	450			V
$V_{CEX(SUS)}$			Ic=20A, I_{B2}=−5A	600			
h_{FE}	D.C. Current Gain		Ic=100A, V_{CE}=2.5V	750			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage		Ic=100A, I_B=130mA			2.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage		Ic=100A, I_B=130mA			3.0	V
ton	Switching Time	On Time	Vcc=300V, Ic=100A I_{B1}=0.2A, I_{B2}=−2A			2.0	μs
ts		Storage Time				8.0	
tf		Fall Time				2.0	
V_{ECO}	Collector-Emitter Reverse Voltage		Ic=−100A			1.8	V
trr	Reverse Recovery time		Vcc=300V, −Ic=100A, −di/dt=100/μs, V_{BE}=−5V		200		ns
Rth(j-c)	Thermal Impedance (junction to case)		Transistor part			0.2	℃/W
			Diode part			0.6	

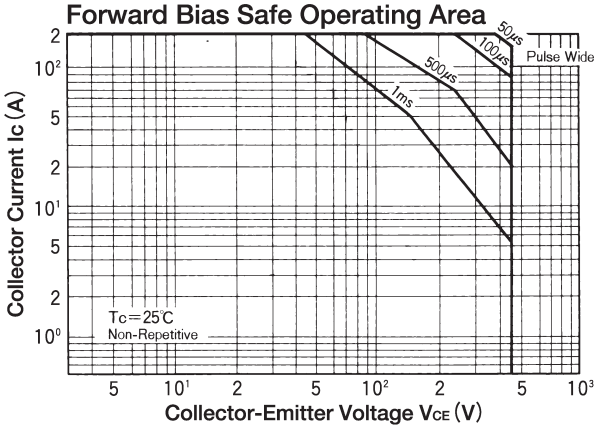
D.C. Current Gain



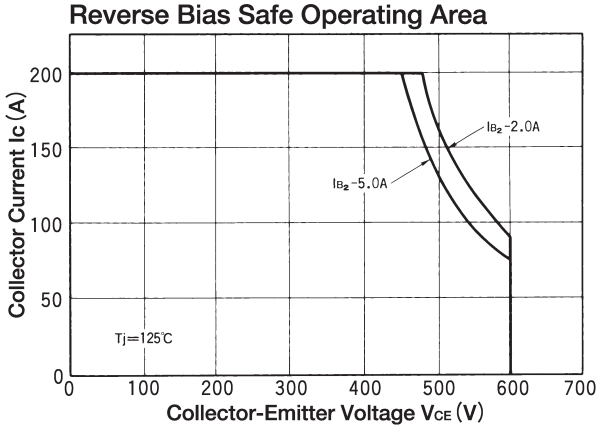
Collector Current Vs Switching Time



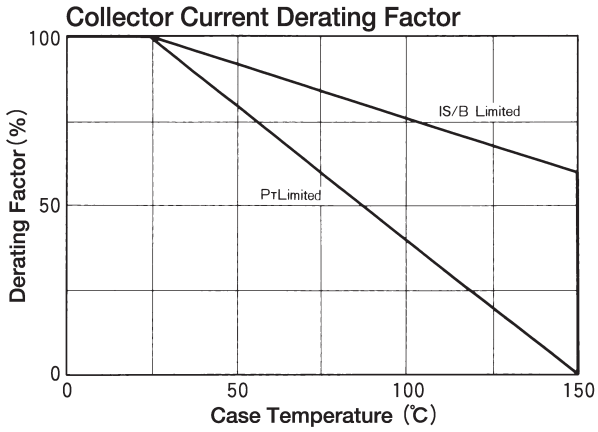
Forward Bias Safe Operating Area



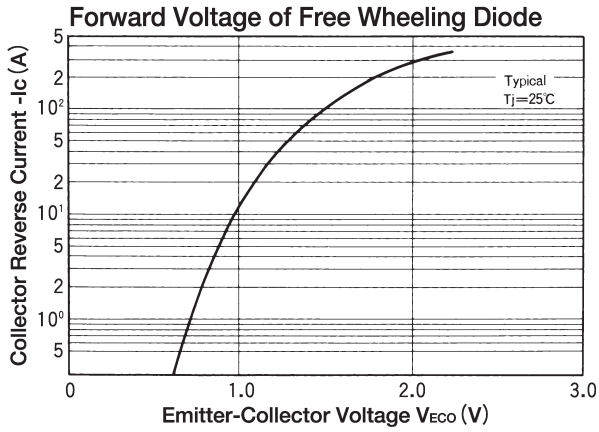
Reverse Bias Safe Operating Area



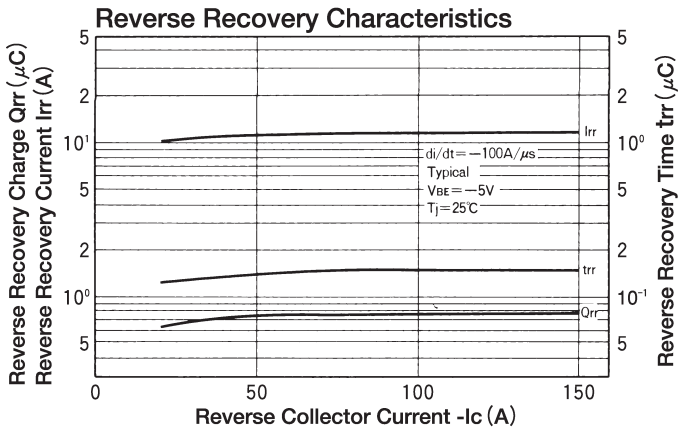
Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Reverse Recovery Characteristics



Maximum Transient Thermal Impedance Characteristics