TRANSISTOR MODULE

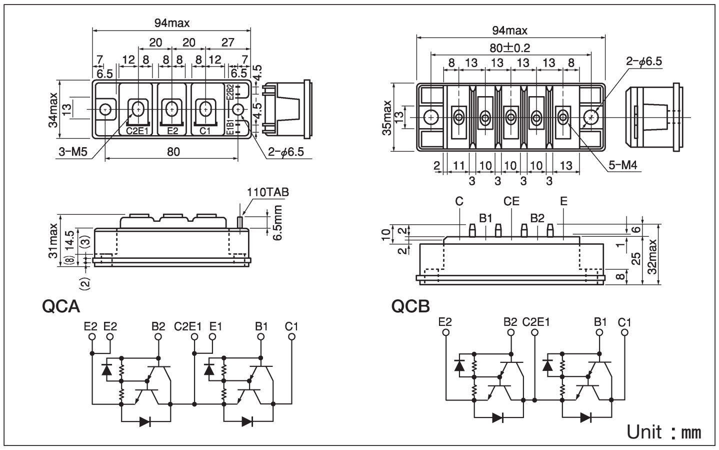
QCA50B/QCB50A40/60

UL;E76102（M）

QCA50B and **QCB50A** 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=50A, 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

（Tj=25℃）

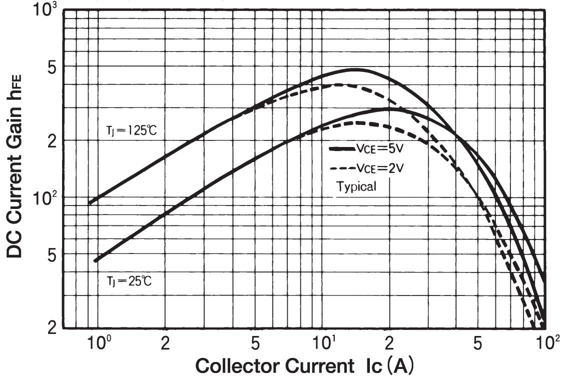
Symbol	Item			Conditions	Ratings		Unit
					QCA50B40 **QCA50A40**	**QCA50B60** **QCA50A60**	
V_{CBO}	Collector-Base Voltage				400	600	V
V_{CEX}	Collector-Emitter Voltage			$V_{BE}=-2V$	400	600	V
V_{EBO}	Emitter-Base Voltage				10		V
I_C	Collector Current			（ ）=pw≦1ms	50（100）		A
$-I_C$	Reverse Collector Current				50		A
I_B	Base Current				3		A
P_T	Total power dissipation			T_C=25℃	300		W
T_j	Junction Temperature				−40～+150		℃
Tstg	Storage Temperature				−40～+125		℃
V_{ISO}	Isolation Voltage			A.C.1minute	2500		V
	Mounting Torque	**QCA50B**	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）		
		QCA50A	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	**QCA50B/QCA50A**		Typical Value	240/195		g

■Electrical Characteristics

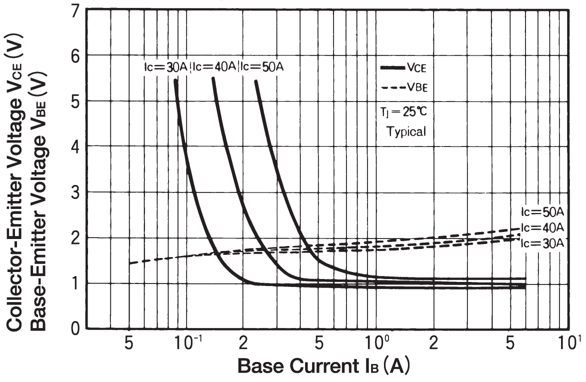
（Tj=25℃）

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 Emitter Sustaning Voltage	**QCA50B40** **QCB50A40**	I_C=1A	300		V
		QCA50B60 **QCB50A60**		450		
$V_{CEX(SUS)}$		**QCA50B40** **QCB50A40**	I_C=10A, $I_{B2}=-5A$	400		V
		QCA50B60 **QCB50A60**		600		
h_{FE}	DC Current Gain		I_C=50A, V_{CE}=2V/5V	75/100		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage		I_C=50A, I_B=0.67A		2.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage		I_C=50A, I_B=0.67A		2.5	V
ton	Switching Time	On Time	V_{CC}=300V, I_C=50A I_{B1}=1A, $I_{B2}=-1A$		1.0	μs
ts		Storage Time			12.0	
tf		Fall Time			2.0	
V_{ECO}	Collector-Emitter Reverse Voltage		$-I_C$=50A		1.4	V
Rth(j-c)	Thermal Impedance (junction to case)		Transistor part／Diode part		0.4/1.3	℃/W

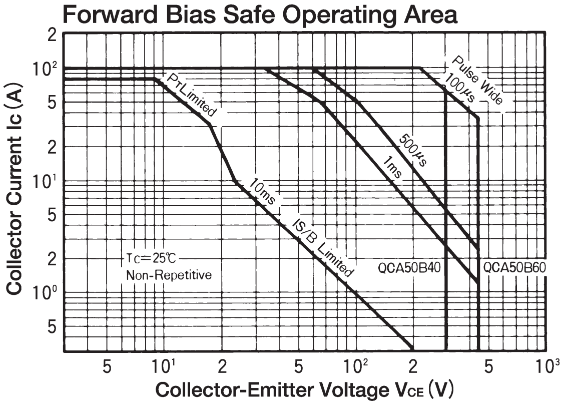
D.C. Current Gain



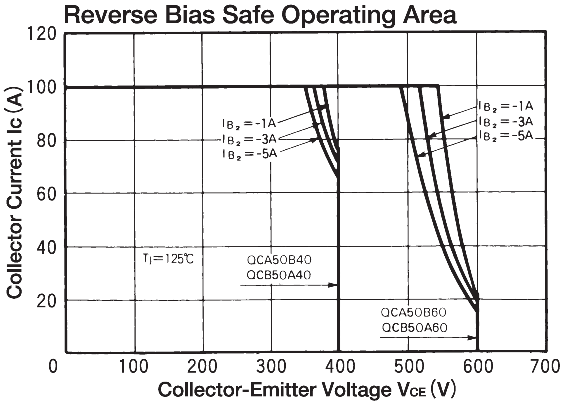
Saturation Characteristics



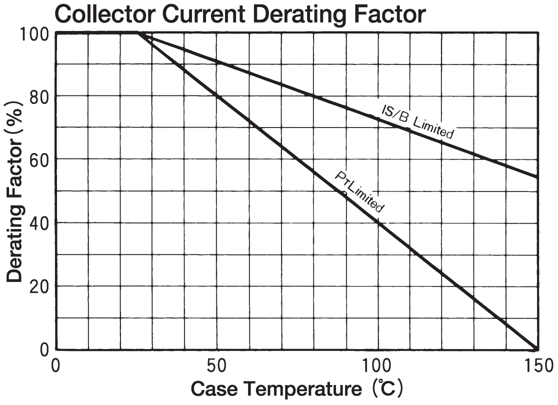
Forward Bias Safe Operating Area



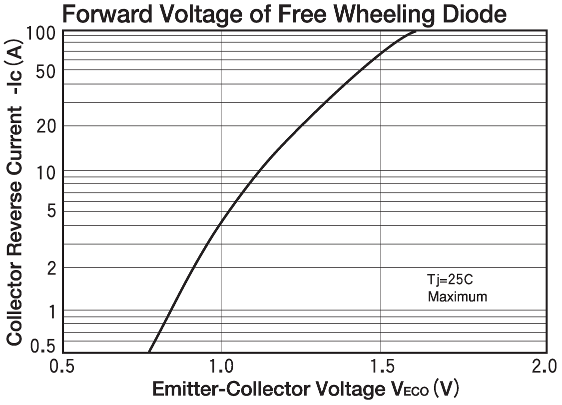
Reverse Bias Safe Operating Area



Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Collector Current Vs Switching Time

Maximum Transient Thermal Impedance Characteristics