

TRANSISTOR MODULE

QCA50B/QCB50A40/60



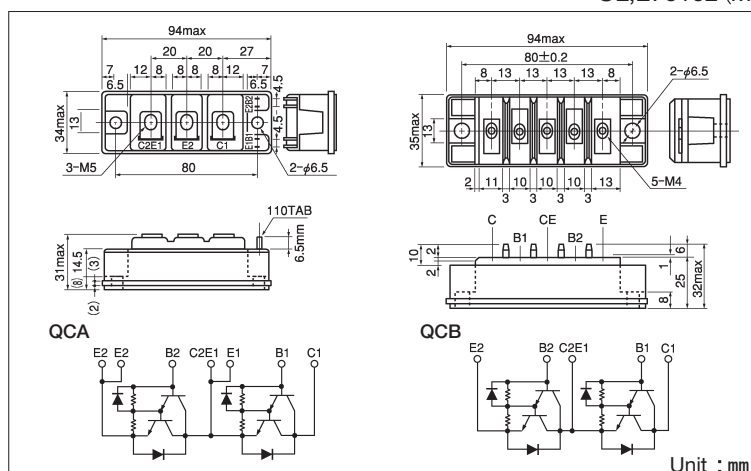
UL;E76102 (M)

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



Unit : mm

Maximum Ratings

($T_j=25^\circ C$)

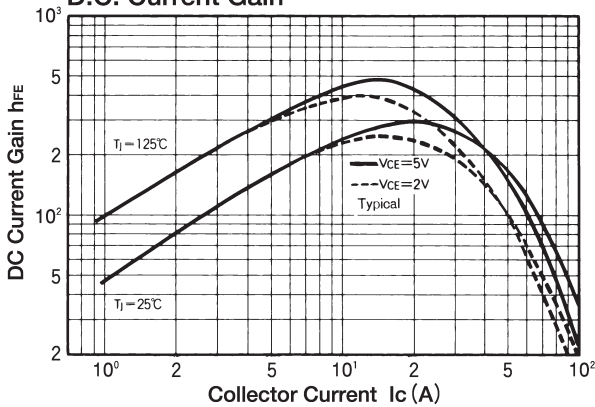
Symbol				Item	Conditions	Ratings		Unit
						QCA50B40 QCA50A40	QCA50B60 QCA50A60	
V _{CBO}				Collector-Base Voltage		400	600	V
V _{CEX}				Collector-Emitter Voltage	V _{BE} = −2V	400	600	V
V _{EBO}				Emitter-Base Voltage		10		V
I _C				Collector Current	() =pw≤1ms	50 (100)		A
−I _C				Reverse Collector 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		℃
T _{stg}				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

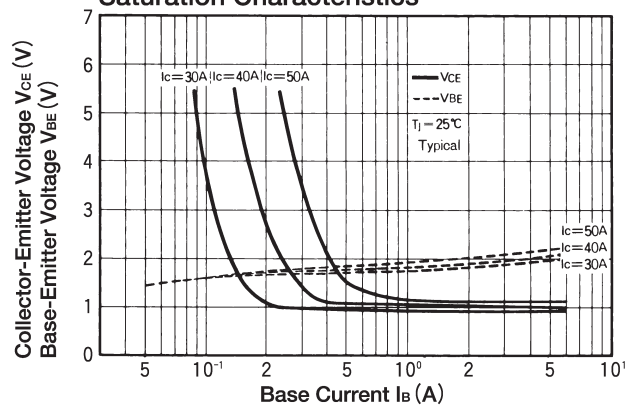
($T_j=25^\circ C$)

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 Sustaining 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
t_{on}	Switching Time	On Time	$V_{CC}=300V$, $I_C=50A$ $I_{B1}=1A$, $I_{B2}=-1A$		1.0	μs
t_s		Storage Time			12.0	
t_f		Fall Time			2.0	
V_{ECO}	Collector-Emitter Reverse Voltage		$-I_C=50A$		1.4	V
$R_{th(j-c)}$	Thermal Impedance (junction to case)		Transistor part/Diode part		0.4/1.3	$^\circ C/W$

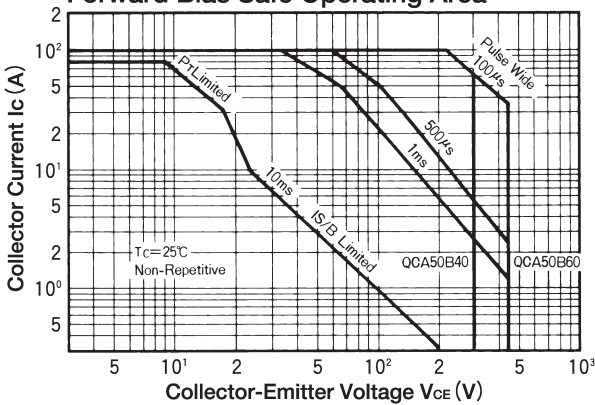
D.C. Current Gain



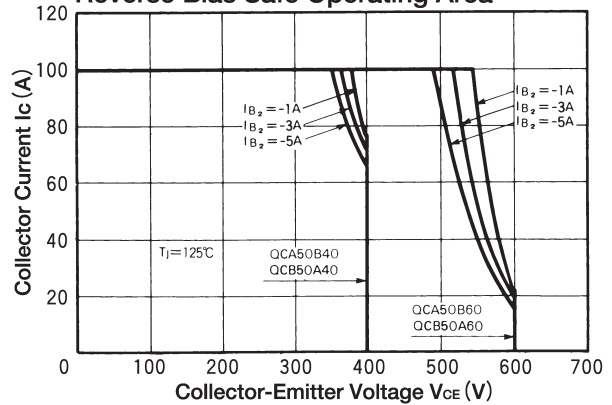
Saturation Characteristics



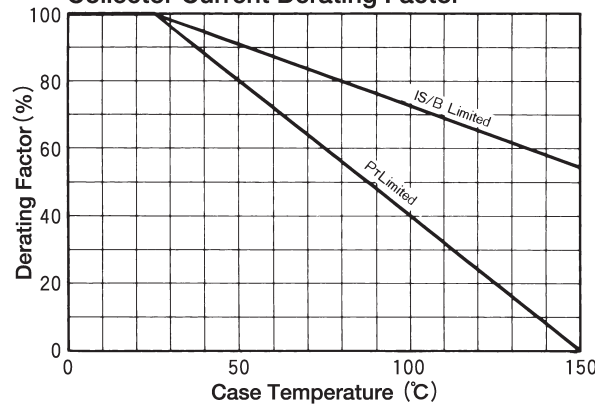
Forward Bias Safe Operating Area



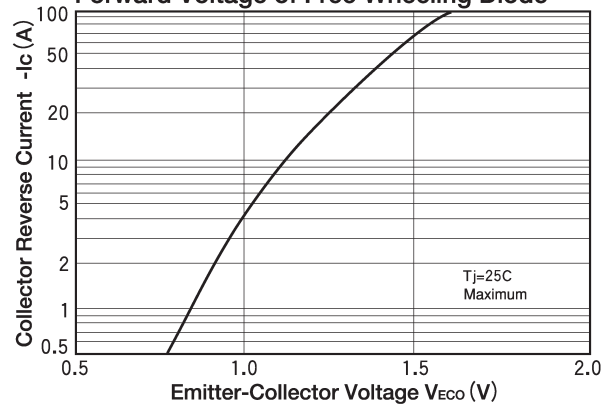
Reverse Bias Safe Operating Area



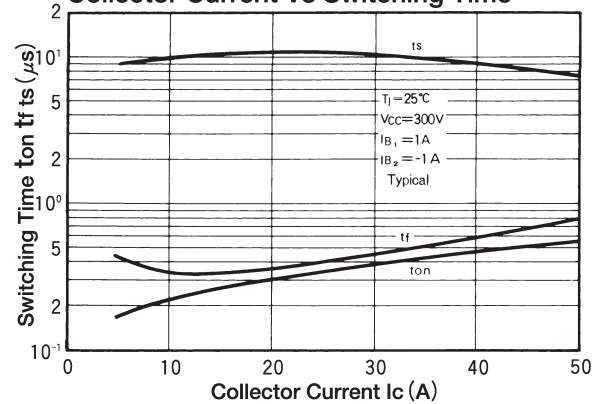
Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Collector Current Vs Switching Time



Maximum Transient Thermal Impedance Characteristics

