TRANSISTOR MODULE

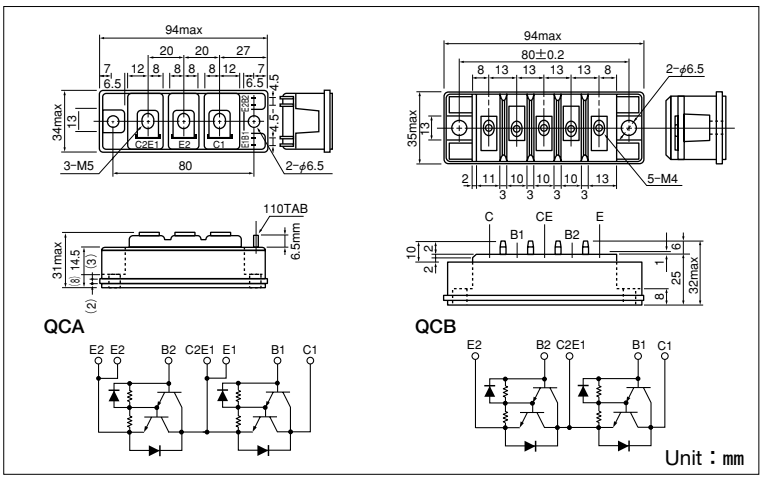
QCA50B/QCB50A40/60

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℃ unless otherwise specified)

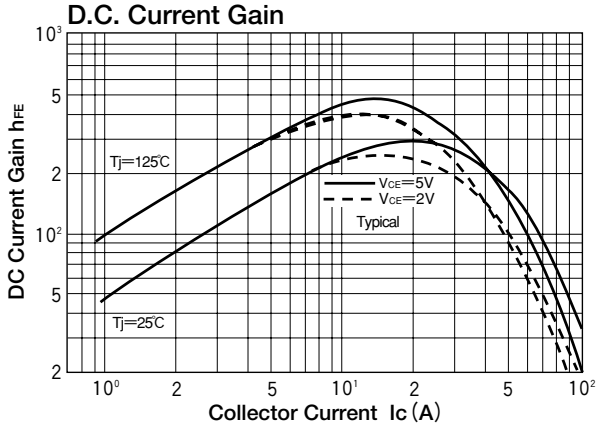
Symbol	Item			Conditions	Ratings QCA50B40 QCA50A40	Ratings QCA50B60 QCA50A60	Unit
V_{CBO}	Collector-Base Voltage				400	600	V
V_{CEX}	Collector-Emitter Voltage			V_{BE}=−2V	400	600	V
V_{EBO}	Emitter-Base Voltage				10		V
I_C	Collector Current			( ) pw≦1ms	50 (100)		A
−I_C	Reverse Collector Current				50		A
I_B	Base Current				3		A
P_T	Total power dissipation			T_C=25℃	300		W
T_j	Junction Temperature				−40 to +150		℃
Tstg	Storage Temperature				−40 to +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

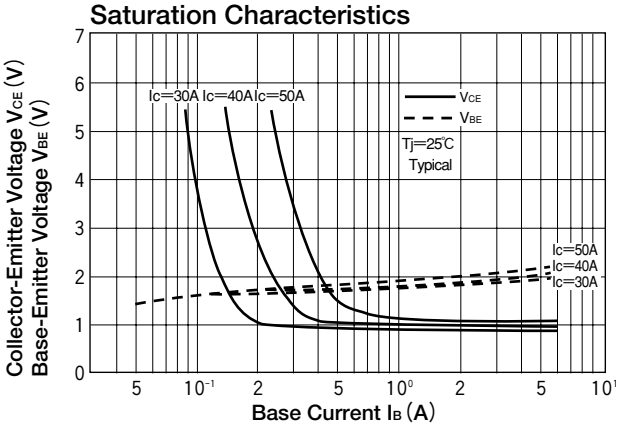
Symbol	Item		Conditions	Ratings Min.	Ratings Max.	Unit
I_{CBO}	Collector Cut-off Current		V_{CB}=V_{CBO}		1.0	mA
I_{EBO}	Emitter Cut-off Current		V_{EB}=V_{EBO}		300	mA
$V_{CEO(SUS)}$	Collector Emitter Sustaning Voltage	QCA50B40 QCB50A40	I_C=1A	300		V
		QCA50B60 QCB50A60		450		
$V_{CEX(SUS)}$		QCA50B40 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	Vcc=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

SanRex

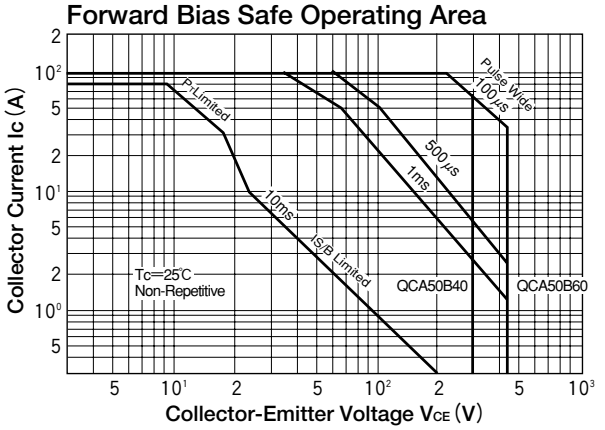
D.C. Current Gain



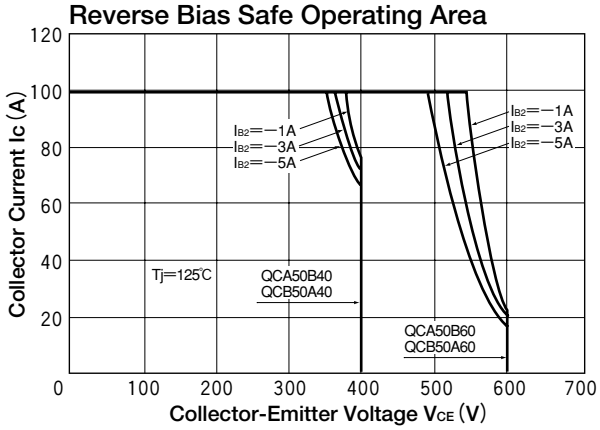
Saturation Characteristics



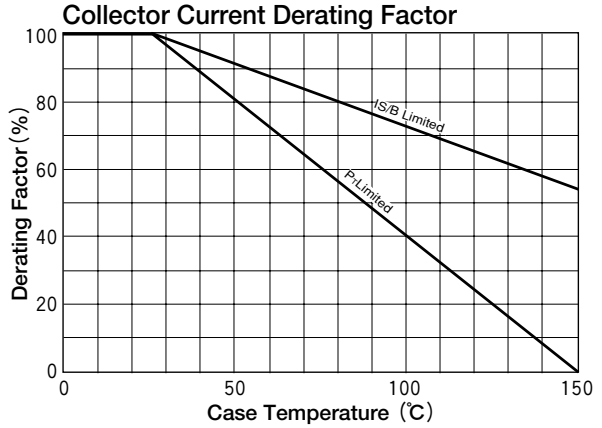
Forward Bias Safe Operating Area



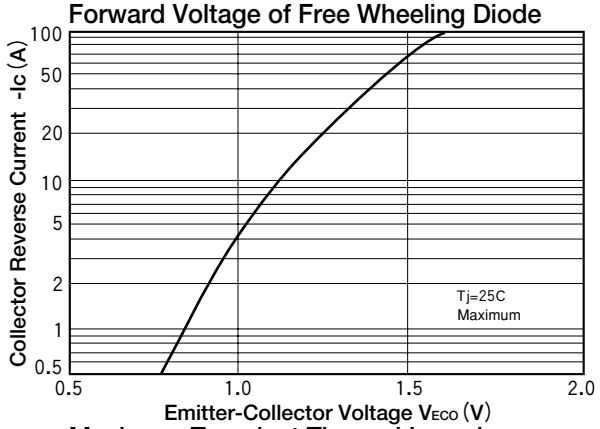
Reverse Bias Safe Operating Area



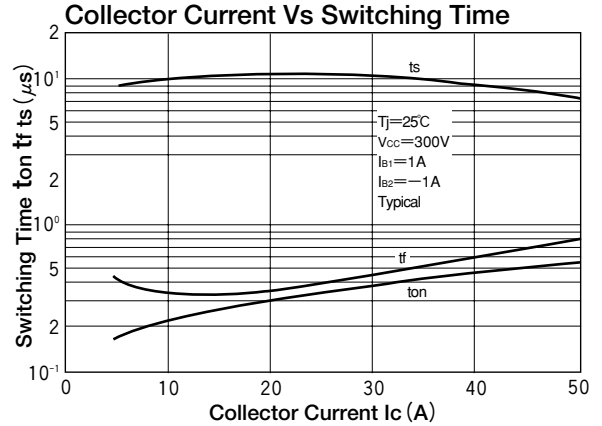
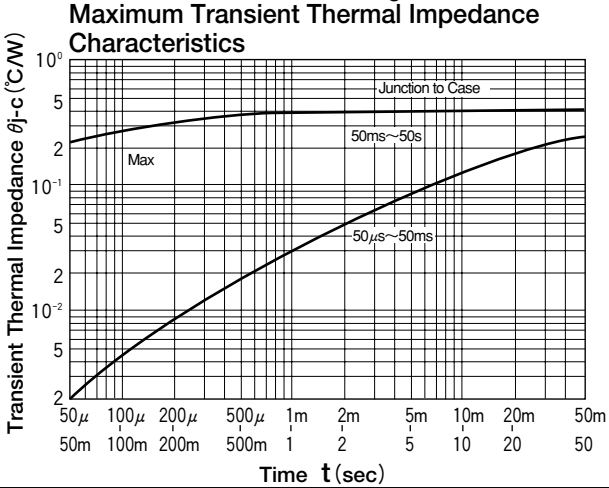
Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Collector Current Vs Switching Time



Maximum Transient Thermal Impedance Characteristics