

# TRANSISTOR MODULE

## QCA50B/QCB50A40/60



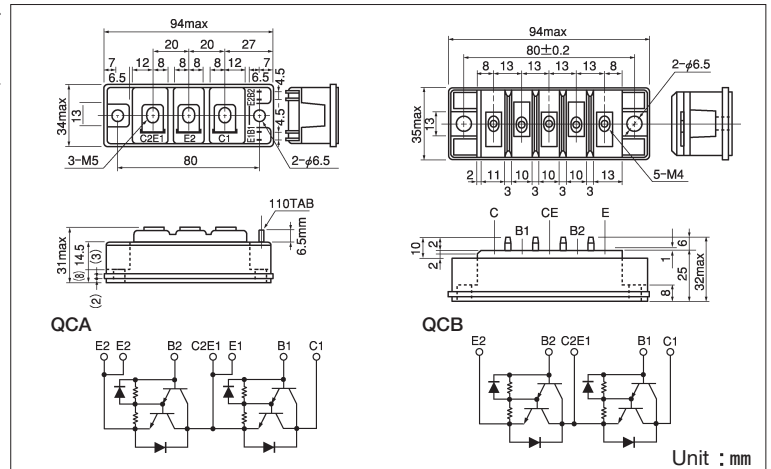
UL;E76102 (M)

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

( $T_j=25^\circ C$ )

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	( ) = $p_w \leq 1ms$	50 (100)		A	
$-I_C$	Reverse Collector Current		50		A	
$I_B$	Base Current		3		A	
$P_T$	Total power dissipation	$T_C = 25^\circ C$	300		W	
$T_j$	Junction Temperature		-40 ~ +150		$^\circ C$	
$T_{stg}$	Storage Temperature		-40 ~ +125		$^\circ C$	
$V_{iso}$	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	$I_C = 1A$	QCA50B40 QCB50A40	300	V
			QCA50B60 QCB50A60	450	
$V_{CEX(SUS)}$	Collector Emitter Sustaining Voltage	$I_C = 10A, I_{B2} = -5A$	QCA50B40 QCB50A40	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	$V_{CC} = 300V, I_C = 50A$ $I_{B1} = 1A, I_{B2} = -1A$		1.0	$\mu s$
$t_s$				12.0	
$t_f$				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	$^\circ C/W$

