

# TRANSISTOR MODULE

## QCA150A/QBB150A40/60

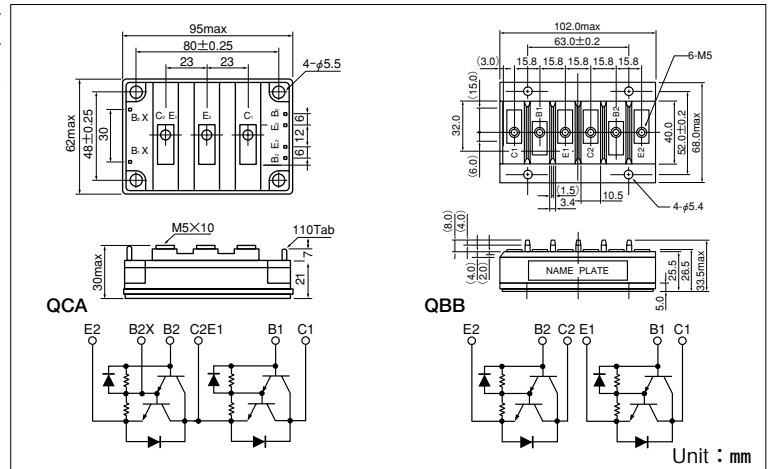
UL:E76102(M)

QCA150A and QBB150A is a dual Darlington power transistor module with two high speed, high power Darlington transistors. Each transistor has a reverse paralleled fast recovery diode.

- QCA150A...Series-connected type  
QBB150A...Separate Type
- $I_C=150A$ ,  $V_{CEX}=400/600V$
- 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

( $T_j=25^\circ C$  unless otherwise specified)

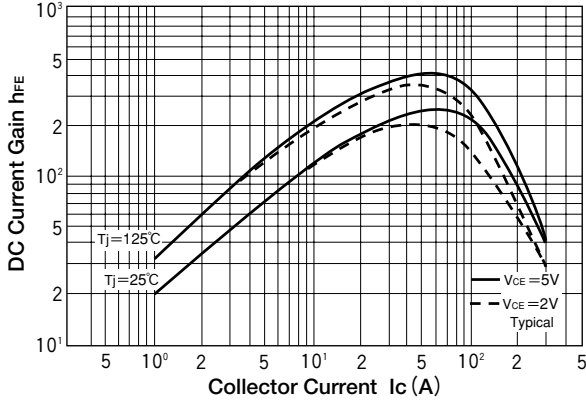
Symbol	Item	Conditions	Ratings		Unit
			QCA150A40 QBB150A40	QCA150A60 QBB150A60	
$V_{CBO}$	Collector-Base Voltage		400	600	V
$V_{CEX}$	Collector-Emmitter Voltage	$V_{BE}=-2V$	400	600	V
$V_{EBO}$	Emitter-Base Voltage		10		V
$I_C$	Collector Current	( ) $p_w \leq 1ms$	150 (300)		A
$-I_C$	Reverse Collector Current		150		A
$I_B$	Base Current		9		A
$P_T$	Total power dissipation	$T_C=25^\circ C$	690		W
$T_j$	Junction Temperature		-40 to +150		$^\circ C$
$T_{stg}$	Storage Temperature		-40 to +125		$^\circ C$
$V_{iso}$	Isolation Voltage	A.C.1minute	2500		V
	Mounting Torque	Mounting (M5)	Recommended Value 1.5-2.5 (15-25)		N·m (kgf·cm)
		Terminal (M5)	Recommended Value 1.5-2.5 (15-25)		
	Mass	QCA150A/QBB150A Typical Value	370/340		g

### Electrical Characteristics

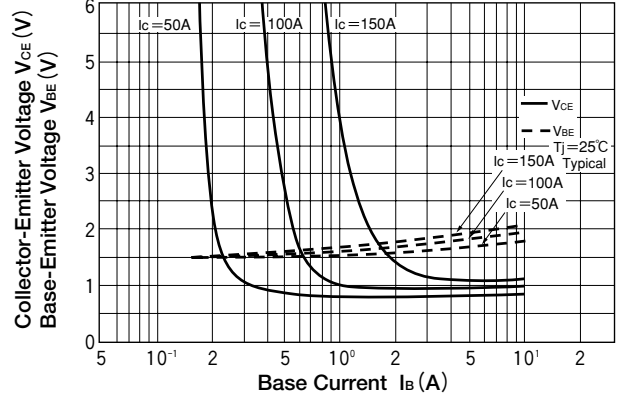
Symbol	Item	Conditions	Ratings		Unit
			Min.	Max.	
$I_{CBO}$	Collector Cut-off Current	$V_{CB}=V_{CBO}$		1.0	mA
$I_{EBO}$	Emitter Cut-off Current	$V_{EB}=V_{EBO}$		500	mA
$V_{CEO(SUS)}$	Collector Emmitter Sustaning Voltage	$I_C=1A$	QCA150A40 QBB150A40	300	V
			QCA150A60 QBB150A60	450	
$V_{CEX(SUS)}$		$I_C=30A, I_{B2}=-5A$	QCA150A40 QBB150A40	400	V
			QCA150A60 QBB150A60	600	
$h_{FE}$	DC Current Gain	$I_C=150A, V_{CE}=2V/5V$	75/100		
$V_{CE(sat)}$	Collector-Emmitter Saturation Voltage	$I_C=150A, I_B=2.0A$	2.0		V
$V_{BE(sat)}$	Base-Emmitter Saturation Voltage	$I_C=150A, I_B=2.0A$	2.5		V
$t_{on}$	Switching Time	$V_{CC}=300V, I_C=150A$ $I_{B1}=2A, I_{B2}=-2A$	On Time		$\mu s$
$t_s$			Storage Time		
$t_f$			Fall Time		
$V_{ECO}$	Collector-Emmitter Reverse Voltage	$-I_C=150A$	1.4		V
$R_{th(j-c)}$	Thermal Impedance (junction to case)	Transistor part/Diode part	0.18/0.6		$^\circ C/W$

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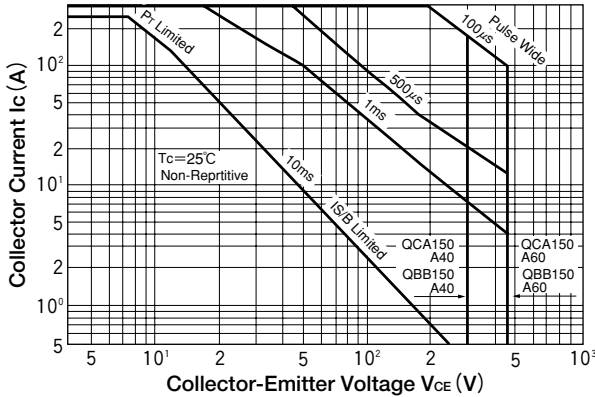
### D.C. Current Gain



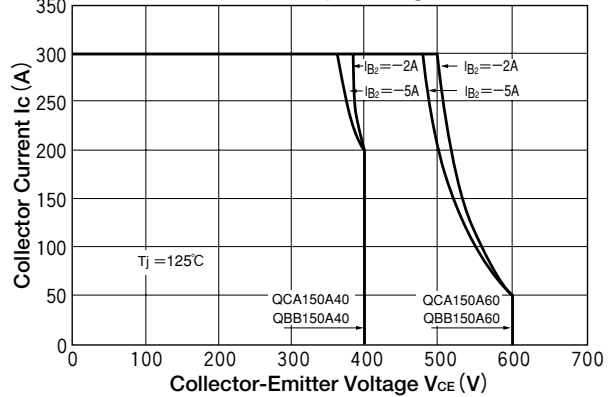
### Saturation Characteristics



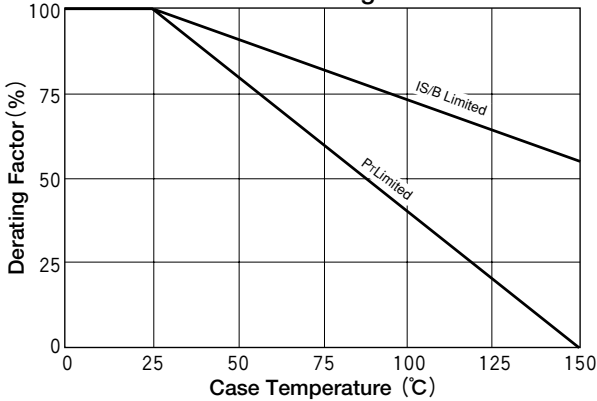
### Forward Bias Safe Operating Area



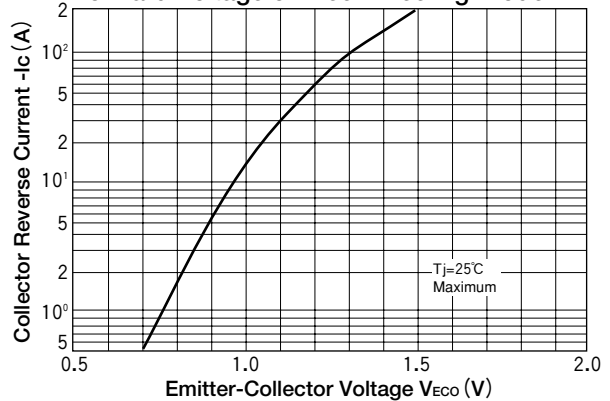
### Reverse Bias Safe Operating Area



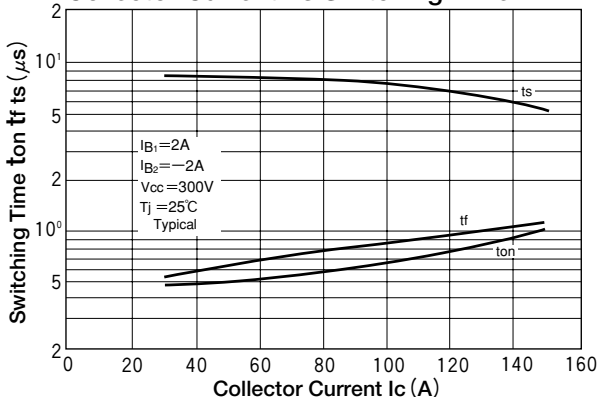
### Collector Current Derating Factor



### Forward Voltage of Free Wheeling Diode



### Collector Current Vs Switching Time



### Maximum Transient Thermal Impedance Characteristics

