

# TRANSISTOR MODULE

## QCA100AA100

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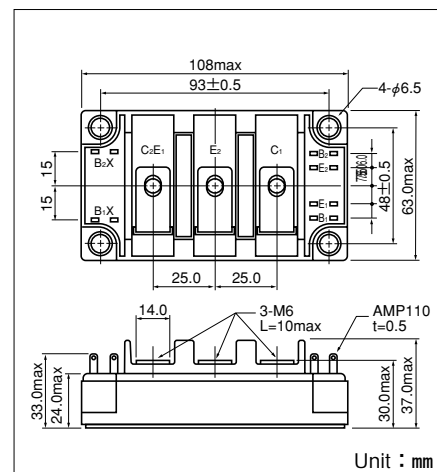
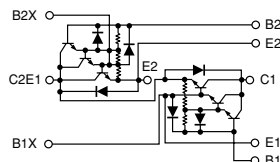
UL;E76102(M)

QCA100AA100 is a dual Darlington power transistor module which has series-connected high speed, high power Darlington transistors. Each transistor has a reverse paralleled fast recovery diode. The mounting base of the module is electrically isolated from semiconductor elements for simple heatsink construction,

- $I_C=100A$ ,  $V_{CEX}=1000V$
- Low saturation voltage for higher efficiency.
- High DC current gain  $h_{FE}$
- Isolated mounting base

### (Applications)

Motor Control (VVVF), AC/DC Servo, UPS,  
Switching Power Supply, Ultrasonic Application



### Maximum Ratings

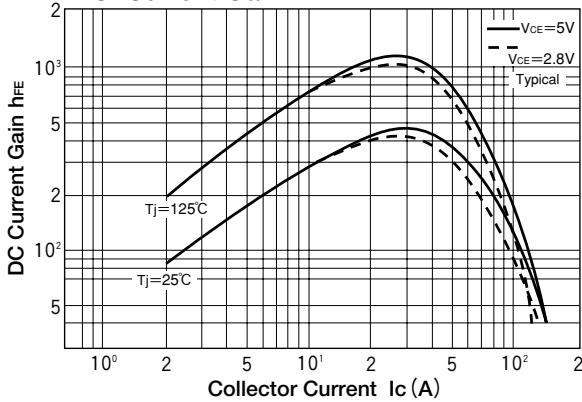
( $T_j=25^\circ C$  unless otherwise specified)

Symbol	Item	Conditions	Ratings		Unit
			QCA100AA100		
$V_{CBO}$	Collector-Base Voltage		1000		V
$V_{CEX}$	Collector-Emitter Voltage	$V_{BE}=-2V$	1000		V
$V_{EBO}$	Emitter-Base Voltage		7		V
$I_C$	Collector Current		100		A
$-I_C$	Reverse Collector Current		100		A
$I_B$	Base Current		5		A
$P_T$	Total power dissipation	$T_C=25^\circ C$	800		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 (M6)	Recommended Value 2.5-3.9 (25-40)	4.7 (48)	N·m (kgf·cm)
		Terminal (M6)	Recommended Value 2.5-3.9 (25-40)	4.7 (48)	
	Mass	Typical Value	470		g

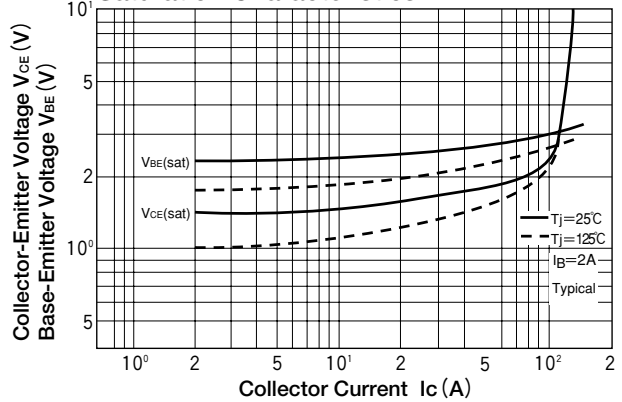
### Electrical Characteristics

Symbol	Item	Conditions	Ratings		Unit
			Min.	Max.	
$I_{CBO}$	Collector Cut-off Current	$V_{CB}=1000V$		2.0	mA
$I_{EBO}$	Emitter Cut-off Current	$V_{EB}=7V$		400	mA
$V_{CEX(SUS)}$	Collector Emitter Sustaining Voltage	$I_C=20A$ , $I_{B2}=-5A$	1000		V
$h_{FE}$	DC Current Gain	$I_C=100A$ , $V_{CE}=2.8V$	75		
		$I_C=100A$ , $V_{CE}=5V$	100		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=100A$ , $I_B=2A$		2.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=100A$ , $I_B=2A$		3.5	V
$t_{on}$	Switching Time	On Time		3.0	$\mu s$
$t_s$		Storage Time	$V_{CC}=600V$ , $I_C=100A$ $I_{B1}=2A$ , $I_{B2}=-2A$	15.0	
$t_f$		Fall Time		3.0	
$V_{ECO}$	Collector-Emitter Reverse Voltage	$-I_C=100A$		1.8	V
$R_{th(j-c)}$	Thermal Impedance (junction to case)	Transistor part		0.155	$^\circ C/W$
		Diode part		0.65	

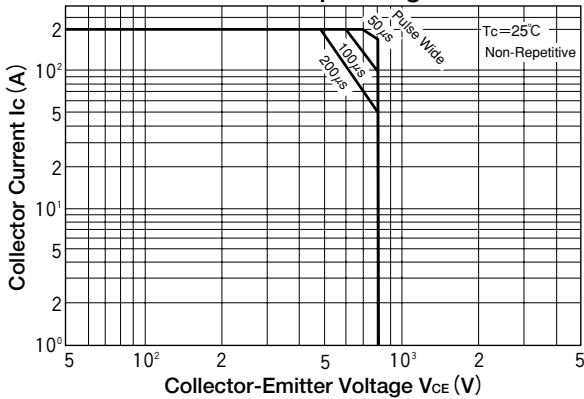
**D.C. Current Gain**



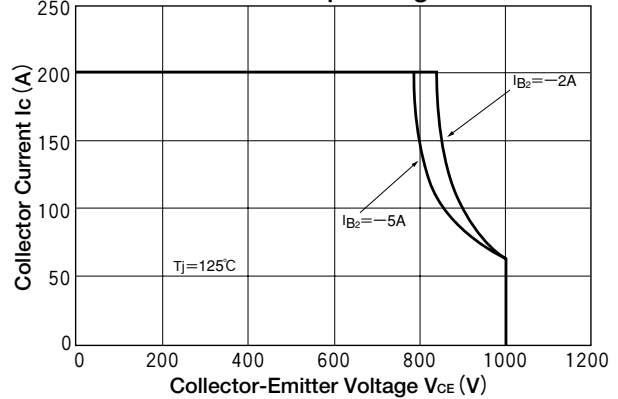
**Saturation Characteristics**



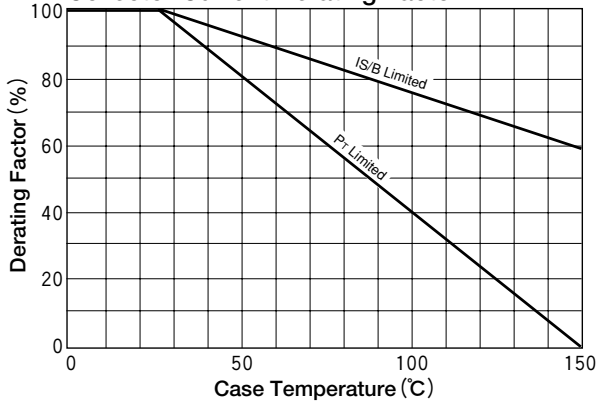
**Forward Bias Safe Operating Area**



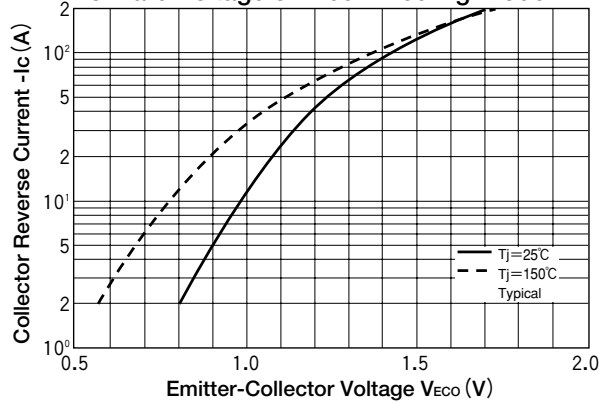
**Reverse Bias Safe Operating Area**



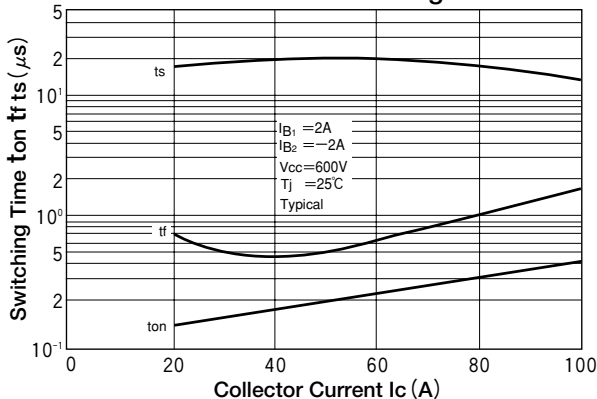
**Collector Current Derating Factor**



**Forward Voltage of Free Wheeling Diode**



**Collector Current Vs Switching Time**



**Maximum Transient Thermal Impedance Characteristics**

