TRANSISTOR MODULE

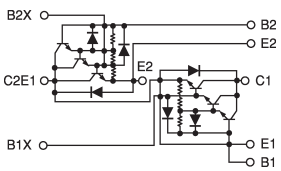
QCA100AA100

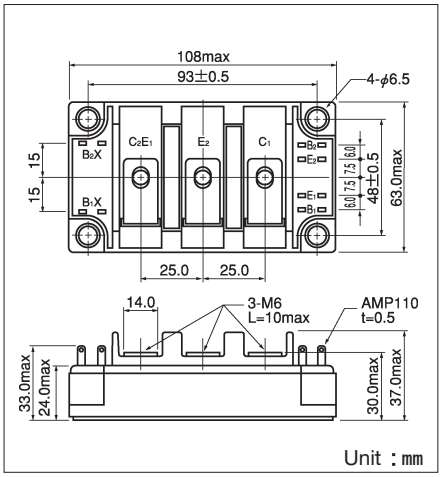
UL;E76102 (M)

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

(Tj=25℃)

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℃	800	W
T_j	Junction Temperature			−40～+150	℃
Tstg	Storage Temperature			−40～+125	℃
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

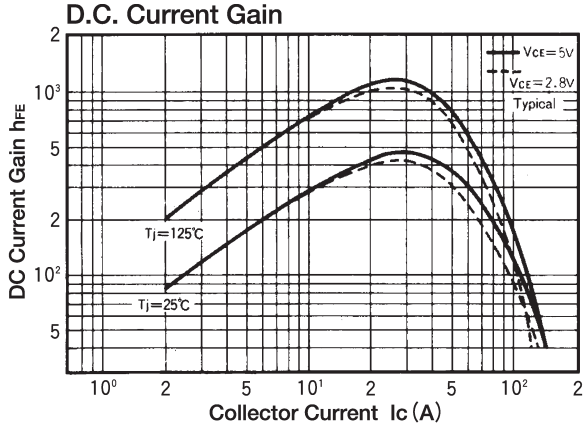
■Electrical Characteristics

(Tj=25℃)

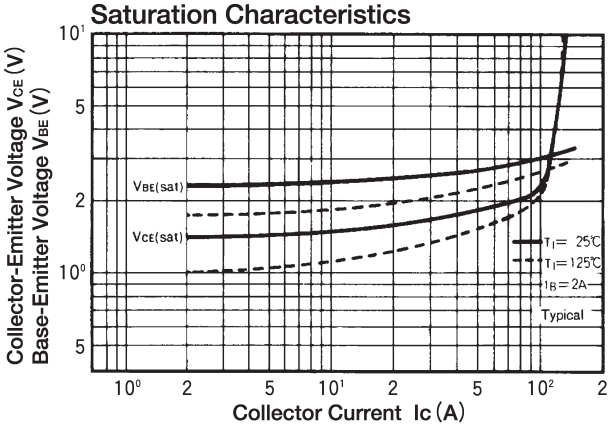
Symbol	Item		Conditions	Ratings		Unit
				Min.	Max.	
I_{CBO}	Collector Cut-off Current		V_{CB}=1000V		2.0	mA
I_{EBO}	Emitter Cut-off Current		V_{EB}=7V		400	mA
$V_{CEX(SUS)}$	Collector Emitter Sustaning Voltage		Ic=20A, I_{B2}=−5A	1000		V
h_{FE}	DC Current Gain		Ic=100A, V_{CE}=2.8V	75		
			Ic=100A, V_{CE}=5V	100		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage		Ic=100A, I_B=2A		2.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage		Ic=100A, I_B=2A		3.5	V
ton	Switching Time	On Time	Vcc=600V, Ic=100A I_{B1}=2A, I_{B2}=−2A		3.0	μs
ts		Storage Time			15.0	
tf		Fall Time			3.0	
V_{ECO}	Collector-Emitter Reverse Voltage		−Ic=100A		1.8	V
Rth(j-c)	Thermal Impedance (junction to case)		Transistor part		0.155	℃/W
			Diode part		0.65	

SanRex

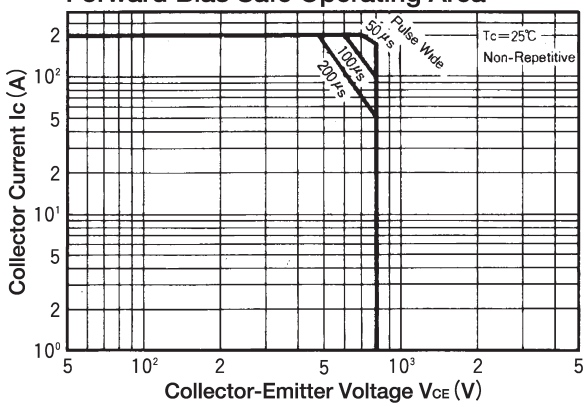
D.C. Current Gain



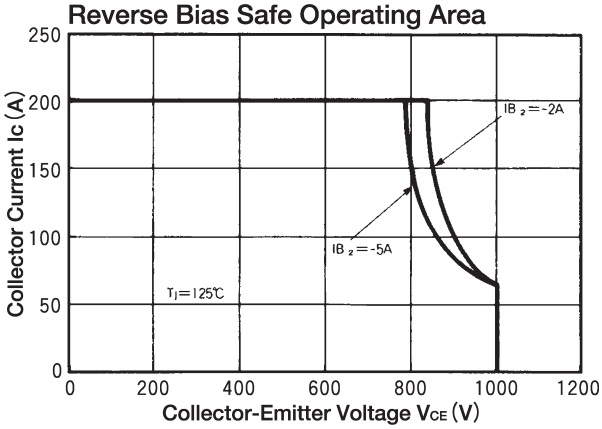
Saturation Characteristics



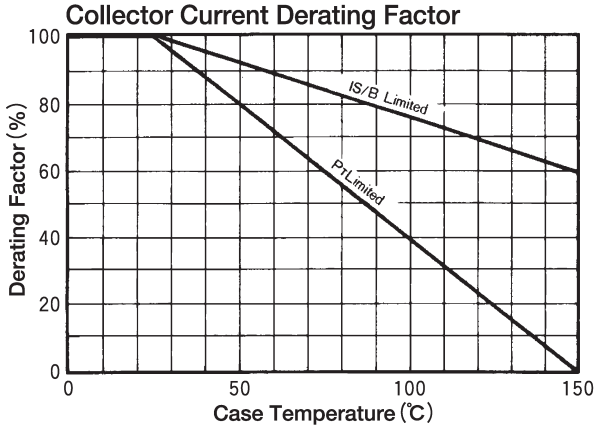
Forward Bias Safe Operating Area



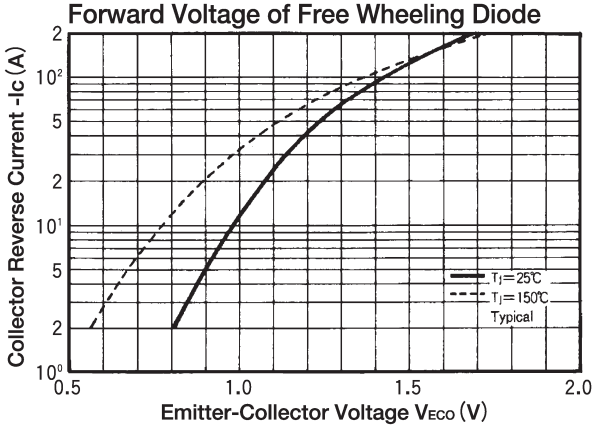
Reverse Bias Safe Operating Area



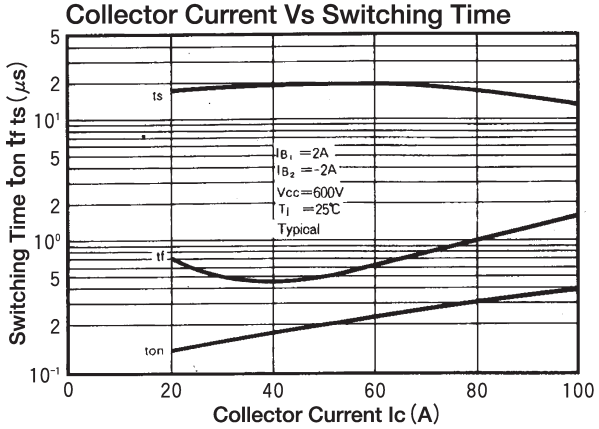
Collector Current Derating Factor



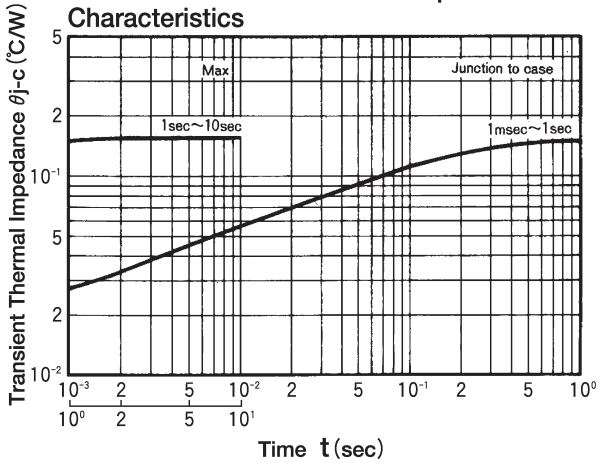
Forward Voltage of Free Wheeling Diode



Collector Current Vs Switching Time



Maximum Transient Thermal Impedance Characteristics



TRANSISTOR MODULE

QCA100AA120

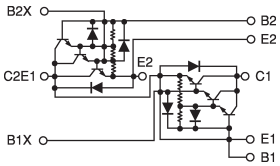
UL;E76102 (M)

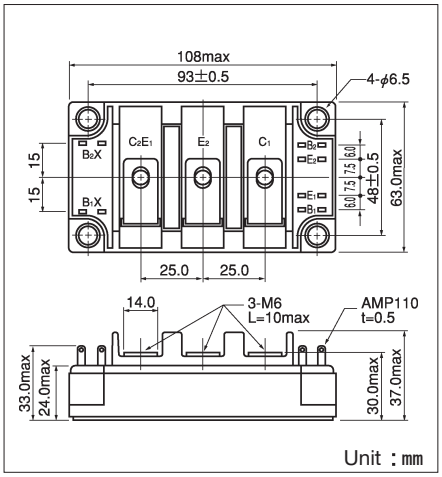
QCA100AA120 is a dual Darlington power transistor module which has series-connected high speed, high power Darlington transistors. Each transistor has a reverse paralleled fast recovery diode. The mounting base of the module is electrically isolated from semiconductor elements for simple heatsink construction,

- I_C=100A, V_{CEX}=1200V
- 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

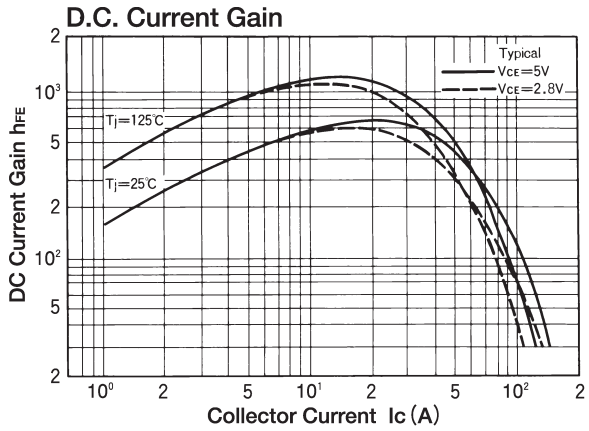
(Tj=25℃)

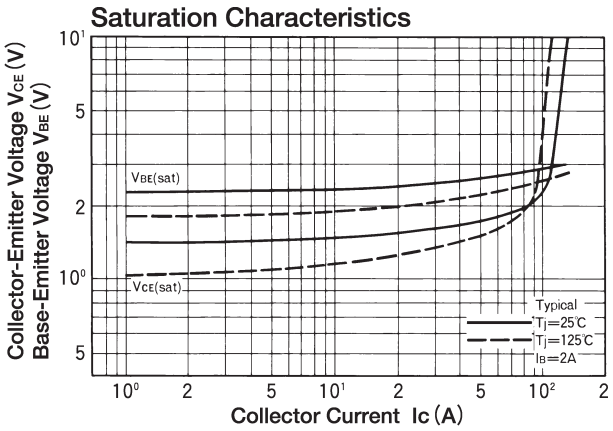
Symbol	Item		Conditions	Ratings	Unit
				QCA100AA120	
V_{CBO}	Collector-Base Voltage			1200	V
V_{CEX}	Collector-Emitter Voltage		V_{BE}=−2V	1200	V
V_{EBO}	Emitter-Base Voltage			10	V
I_C	Collector Current			100	A
−I_C	Reverse Collector Current			100	A
I_B	Base Current			5	A
P_T	Total power dissipation		T_C=25℃	800	W
T_j	Junction Temperature			−40～+150	℃
Tstg	Storage Temperature			−40～+125	℃
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

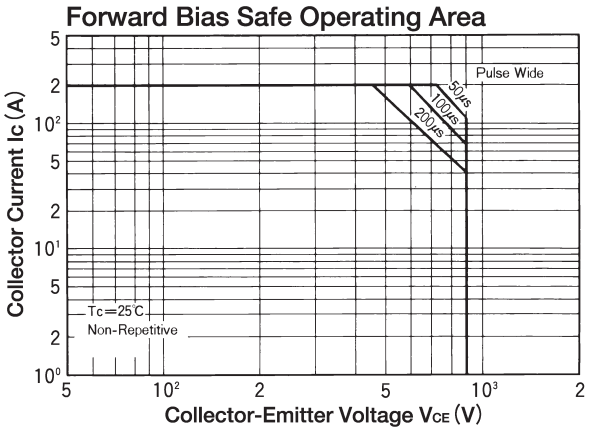
■Electrical Characteristics

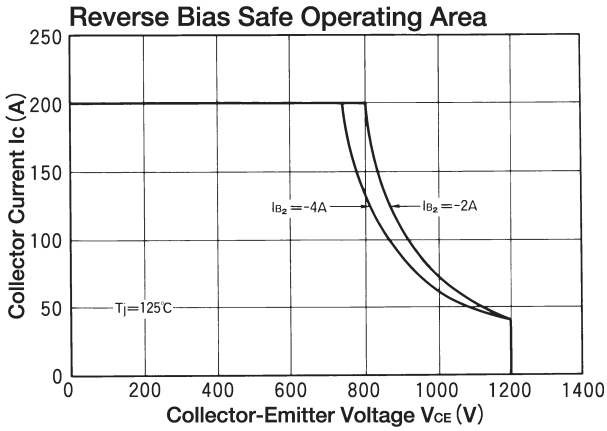
(Tj=25℃)

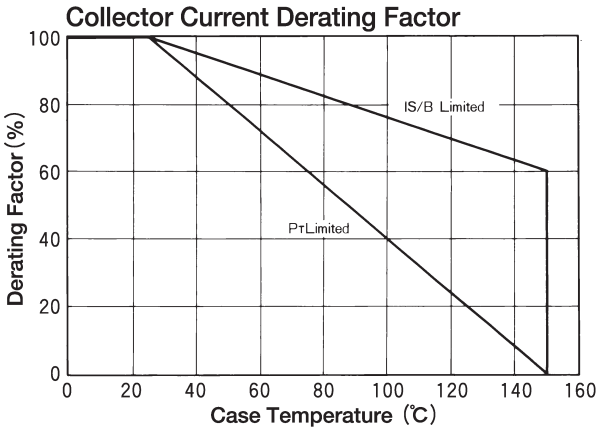
Symbol	Item		Conditions	Ratings		Unit
				Min.	Max.	
I_{CBO}	Collector Cut-off Current		V_{CB}=1200V		2.0	mA
I_{EBO}	Emitter Cut-off Current		V_{EB}=10V		600	mA
$V_{CEX(SUS)}$	Collector Emitter Sustaning Voltage		Ic=20A, I_{B2}=−4A	1200		V
h_{FE}	DC Current Gain		Ic=100A, V_{CE}=5V	75		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage		Ic=100A, I_B=2A		3.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage		Ic=100A, I_B=2A		3.5	V
ton	Switching Time	On Time	Vcc=600V, Ic=100A I_{B1}=2A, I_{B2}=−2A		3.0	μs
ts		Storage Time			15.0	
tf		Fall Time			3.0	
V_{ECO}	Collector-Emitter Reverse Voltage		−Ic=100A		1.8	V
Rth(j-c)	Thermal Impedance (junction to case)		Transistor part		0.155	℃/W
			Diode part		0.65	

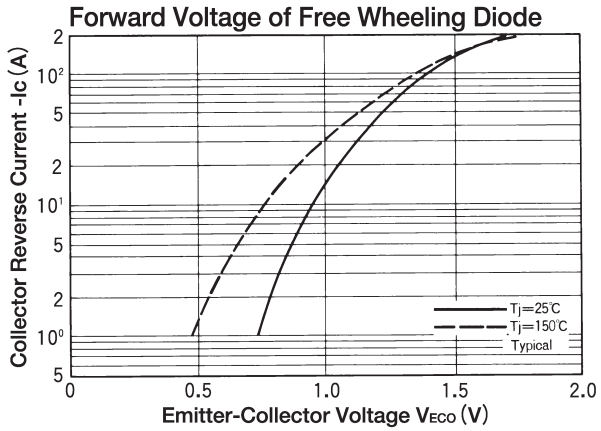

D.C. Current Gain
DC Current Gain hFE
Collector Current Ic (A)
Typical
VCE=5V
VCE=2.8V
Tj=125℃
Tj=25℃

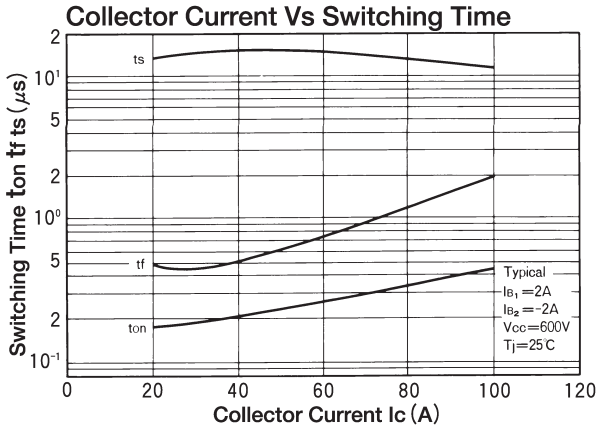

Saturation Characteristics
Collector-Emitter Voltage VCE (V)
Base-Emitter Voltage VBE (V)
Collector Current Ic (A)
VBE(sat)
VCE(sat)
Typical
Tj=25℃
Tj=125℃
IB=2A

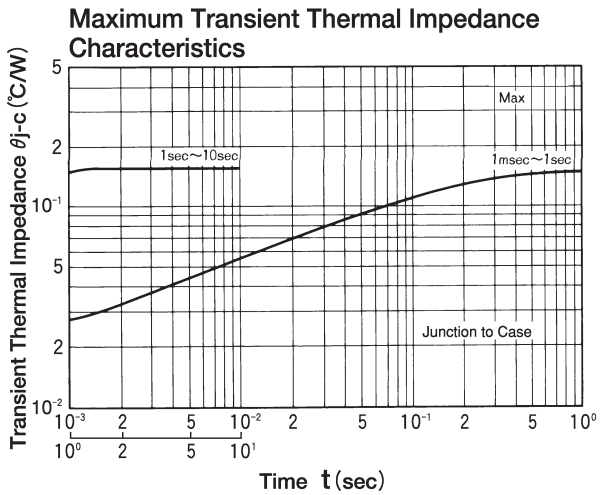

Forward Bias Safe Operating Area
Collector Current Ic (A)
Collector-Emitter Voltage VCE (V)
Pulse Wide
50μs
100μs
200μs
Tc=25℃
Non-Repetitive


Reverse Bias Safe Operating Area
Collector Current Ic (A)
Collector-Emitter Voltage VCE (V)
IB2=-4A
IB2=-2A
Tj=125℃


Collector Current Derating Factor
Derating Factor (%)
Case Temperature (℃)
IS/B Limited
PT Limited


Forward Voltage of Free Wheeling Diode
Collector Reverse Current -Ic (A)
Emitter-Collector Voltage VECO (V)
Tj=25℃
Tj=150℃
Typical


Collector Current Vs Switching Time
Switching Time ton tf ts (μs)
Collector Current Ic (A)
ts
tf
ton
Typical
IB1=2A
IB2=-2A
Vcc=600V
Tj=25℃


Maximum Transient Thermal Impedance Characteristics
Transient Thermal Impedance θj-c (℃/W)
Time t (sec)
Max
1sec~10sec
1msec~1sec
Junction to Case