TRANSISTOR MODULE (Hi-β)

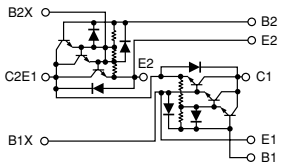
QCA300BA60

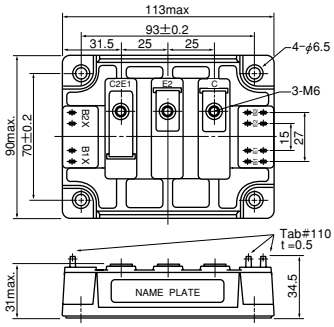
UL;E76102(M)

QCA300BA60 is a dual Darlington power transistor module which has series-connected **ULTRA HIGH** h_{FE}, high speed, high power Darlington transistor. Each transistor has a reverse paralleled fast recovery diode (**trr：200ns**). The mounting base of the module is electrically isolated from semiconductor elements for simple heatsink construction,

- I_C=300A, V_{CEX}=600V
- Low saturation voltage for higher efficiency.
- ULITRA HIGH DC current gain h_{FE}. h_{FE}≧750
- Isolated mounting base
- V_{EBO} 10V for faster switching speed.

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





Unit：mm

■Maximum Ratings

(Tj=25℃ unless otherwise specified)

Symbol	Item		Conditions	Ratings QCA300BA60	Unit
V_{CBO}	Collector-Base Voltage			600	V
V_{CEX}	Collector-Emitter Voltage		V_{BE}=−2V	600	V
$V_{CEX(sus)}$	Collector-Emitter sustaining voltage		I_C=60V I_{B2}=−5A	600	V
V_{EBO}	Emitter-Base Voltage			10	V
I_C	Collector Current		( ) pw≦1ms	300 (600)	A
−I_C	Reverse Collector Current			300	A
I_B	Base Current			18	A
P_T	Total power dissipation		T_C=25℃	1380	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	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	675	g

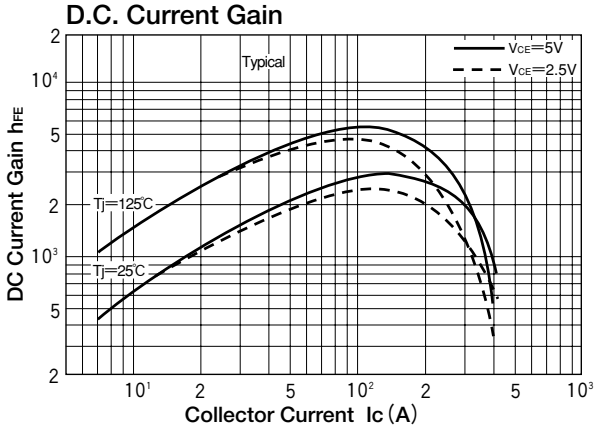
■Electrical Characteristics

Symbol	Item		Conditions	Ratings Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current		V_{CB}=V_{CBO}			4.0	mA
I_{EBO}	Emitter Cut-off Current		V_{EB}=V_{EBO}			500	mA
h_{FE}	D.C. Current Gain		Ic=300A, V_{CE}=2.5V	750			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage		Ic=300A, I_B=400mA			2.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage		Ic=300A, I_B=400mA			3.0	V
ton	Switching Time	On Time	Vcc=300V, Ic=300A I_{B1}=0.6A, I_{B2}=−6A			2.0	μs
ts		Storage Time				8.0	
tf		Fall Time				2.0	
V_{ECO}	Collector-Emitter Reverse Voltage		Ic=−300A			2.2	V
trr	Reverse Recovery time		Vcc=300V, Ic=−300A, −di/dt=300A/μs, V_{BE}=−5V		200		ns
Rth(j-c)	Thermal Impedance (junction to case)		Transistor part			0.08	℃/W
			Diode part			0.35	

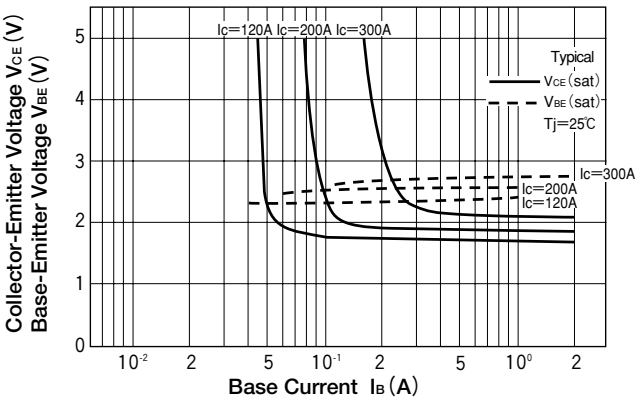
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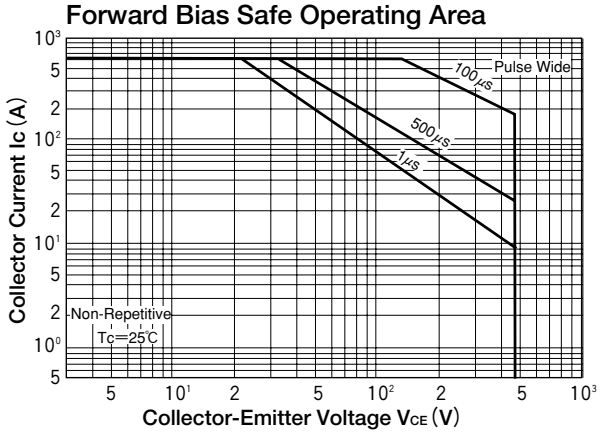
D.C. Current Gain



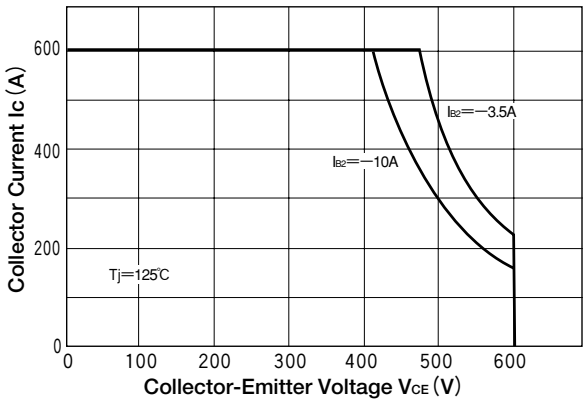
Saturation Characteristics



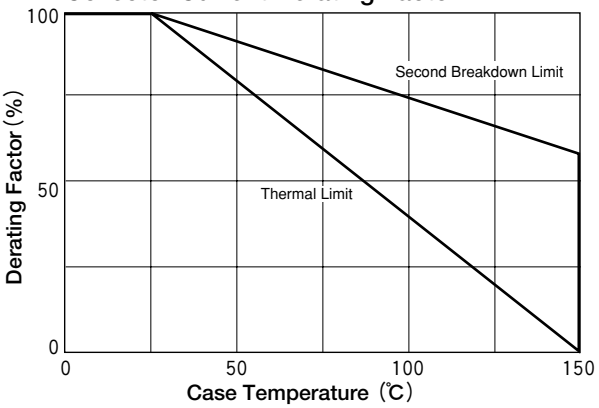
Forward Bias Safe Operating Area



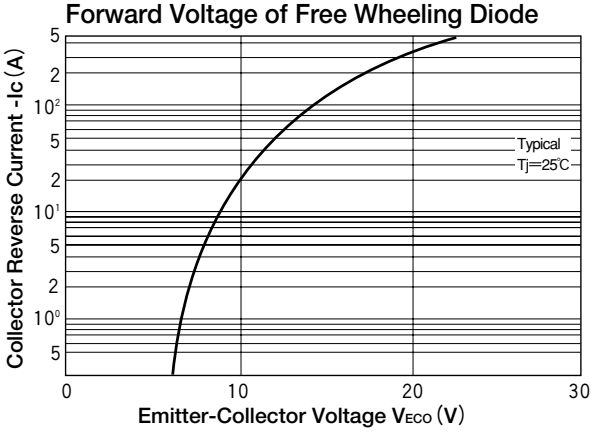
Reverse Bias Safe Operating Area



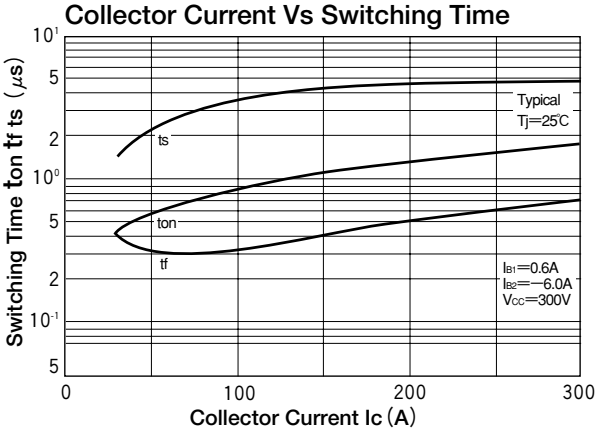
Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Collector Current Vs Switching Time



Transient Thermal Impedance

