

TRANSISTOR MODULE (Hi-β)

QCA300BA60



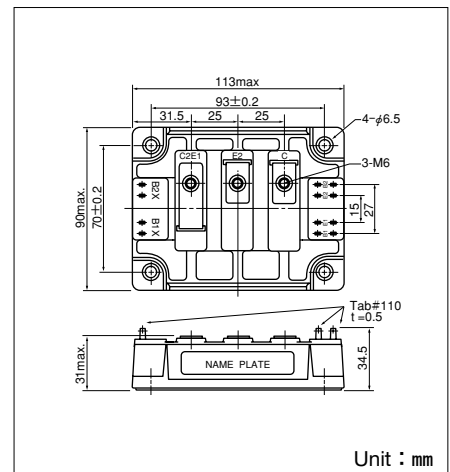
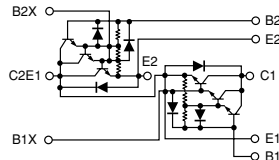
UL;E76102 (M)

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.
- **ULTRA HIGH** DC current gain h_{FE} . $h_{FE} \geq 750$
- Isolated mounting base
- $V_{EBO} 10V$ for faster switching speed.

(Applications)

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



Unit : mm

Maximum Ratings

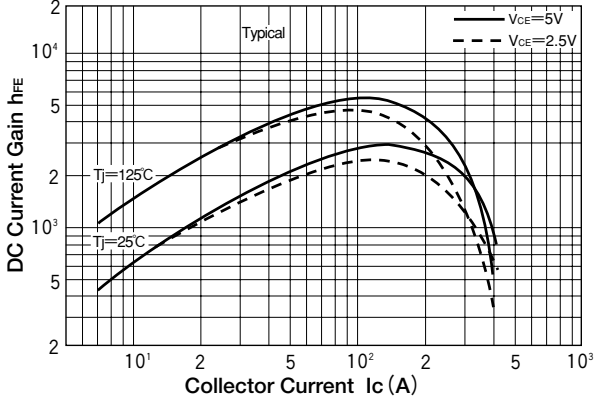
($T_j=25^\circ C$ unless otherwise specified)

Symbol	Item	Conditions	Ratings		Unit
			QCA300BA60		
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	() $pw \leq 1ms$	300 (600)		A
$-I_C$	Reverse Collector Current		300		A
I_B	Base Current		18		A
P_T	Total power dissipation	$T_C=25^\circ C$	1380		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)		N·m (kgf·cm)
		Terminal (M6)	Recommended Value 2.5-3.9 (25-40)		
	Mass	Typical Value	675		g

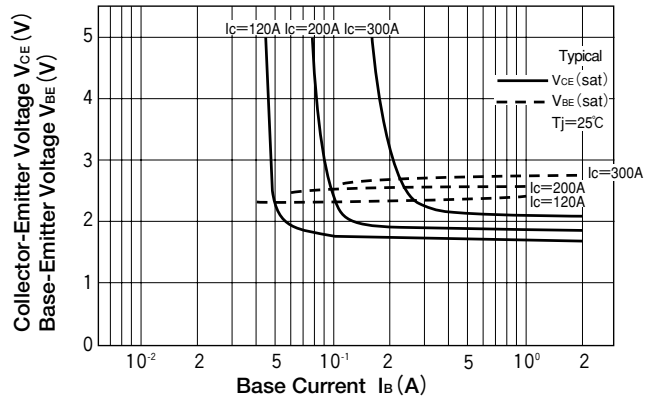
Electrical Characteristics

Symbol	Item	Conditions	Ratings			Unit
			Min.	Typ.	Max.	
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	$I_C=300A$, $V_{CE}=2.5V$	750			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=300A$, $I_B=400mA$			2.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=300A$, $I_B=400mA$			3.0	V
t_{on}	Switching Time	On Time			2.0	μs
t_s		Storage Time	$V_{CC}=300V$, $I_C=300A$ $I_{B1}=0.6A$, $I_{B2}=-6A$		8.0	
t_f		Fall Time			2.0	
V_{ECO}	Collector-Emitter Reverse Voltage	$I_C=-300A$			2.2	V
trr	Reverse Recovery time	$V_{CC}=300V$, $I_C=-300A$, $-di/dt=300A/\mu s$, $V_{BE}=-5V$		200		ns
$R_{th(j-c)}$	Thermal Impedance (junction to case)	Transistor part			0.08	$^\circ C/W$
		Diode part			0.35	

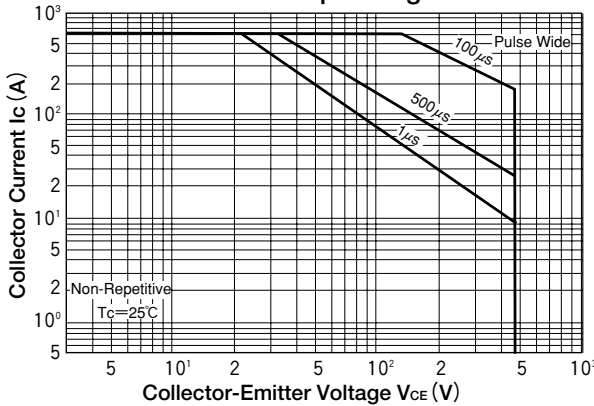
D.C. Current Gain



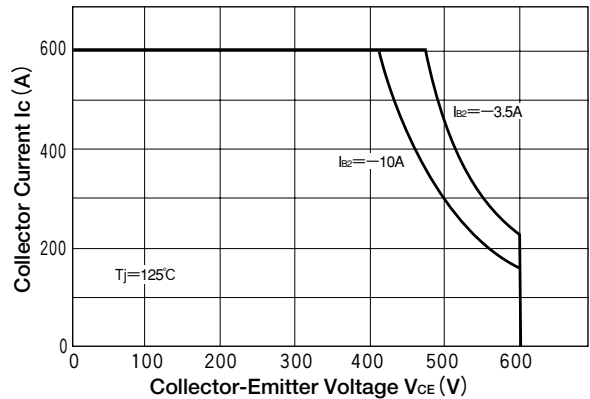
Saturation Characteristics



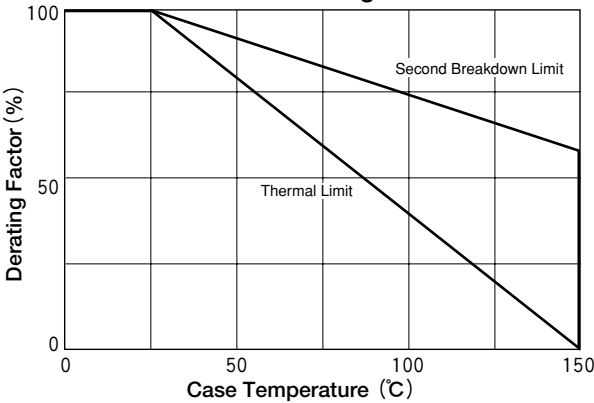
Forward Bias Safe Operating Area



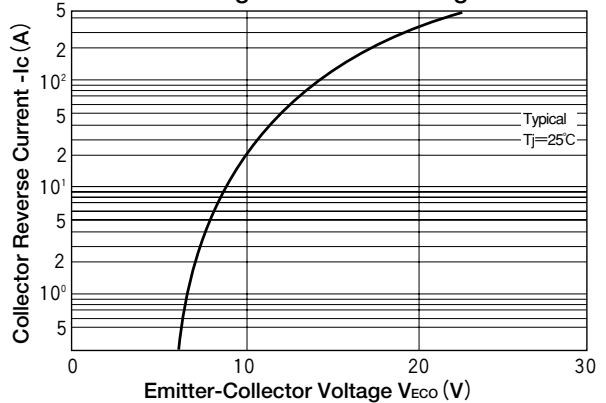
Reverse Bias Safe Operating Area



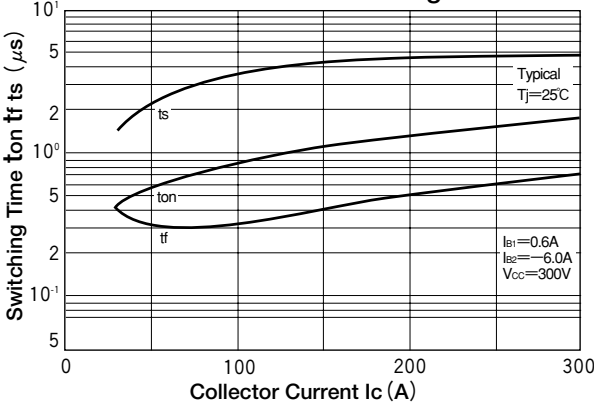
Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Collector Current Vs Switching Time



Transient Thermal Impedance

