

TRANSISTOR MODULE (Hi- β)

QCA300BA60



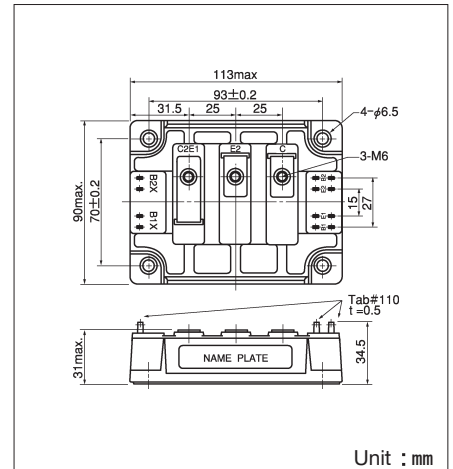
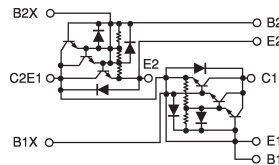
UL;E76102 (M)

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 (VVF), AC/DC Servo, UPS,
Switching Power Supply, Ultrasonic Application



Maximum Ratings

($T_j=25^\circ C$)

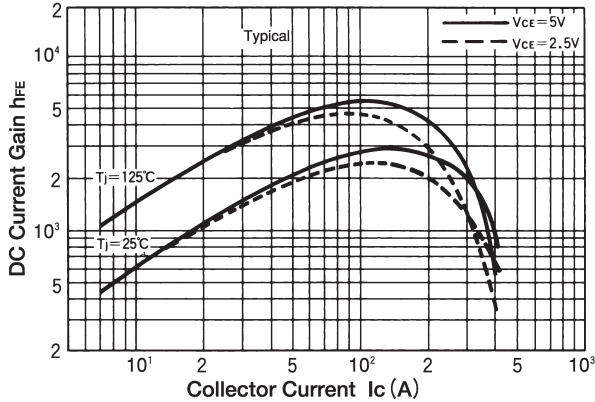
Symbol	Item		Conditions	Ratings	Unit
				QCA300BA60	
V_{CBO}	Collector-Base Voltage			600	V
V_{CEX}	Collector-Emitter Voltage		$V_{BE} = -2V$	600	V
$V_{CEX (sus)}$	Collector-Emitter sustaining voltage		$I_C=60V$ $I_{B2} = -5A$	600	V
V_{EBO}	Emitter-Base Voltage			10	V
I_C	Collector Current		() = $p_w \leq 1ms$	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			$-40 \sim +150$	$^\circ C$
T_{stg}	Storage Temperature			$-40 \sim +125$	$^\circ C$
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	675	g

Electrical Characteristics

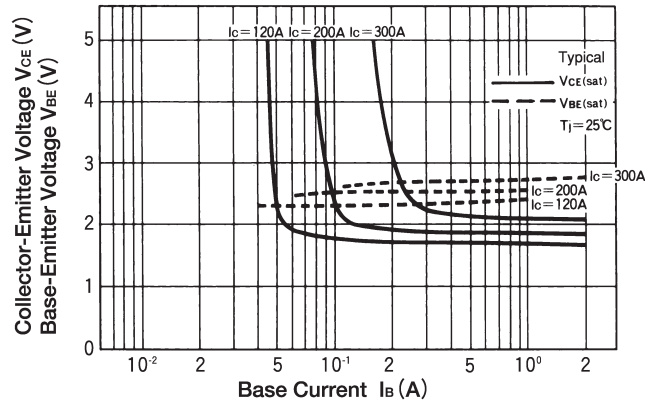
($T_j=25^\circ C$)

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	$V_{CC}=300V$, $I_C=300A$ $I_{B1}=0.6A$, $I_{B2}=-6A$			2.0	μs
t_s		Storage Time				8.0	
t_f		Fall Time				2.0	
V_{ECO}	Collector-Emitter Reverse Voltage		$I_C=-300A$			2.2	V
t_{rr}	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	

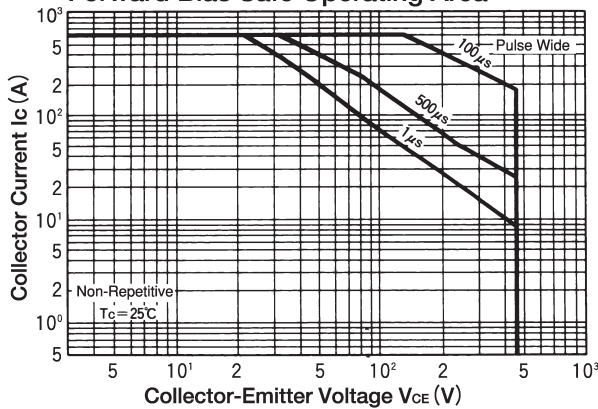
D.C. Current Gain



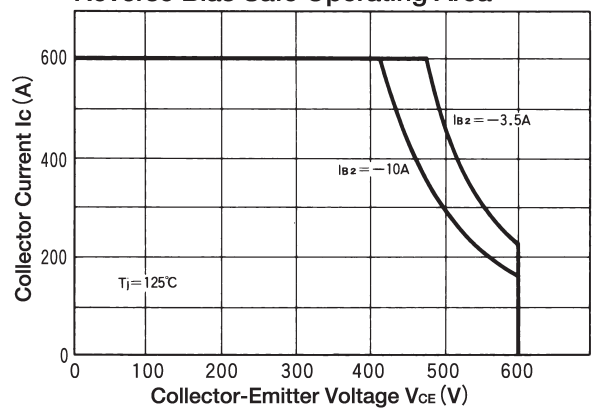
Saturation Characteristics



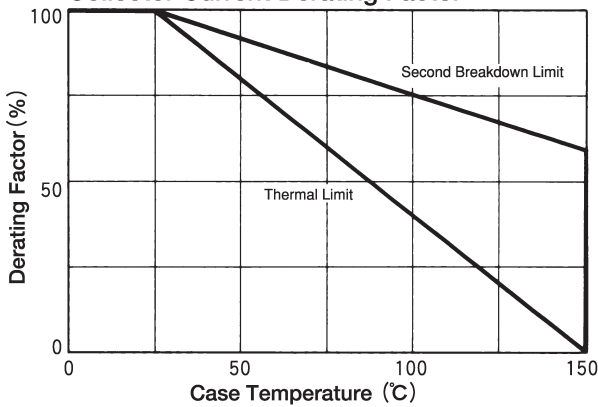
Forward Bias Safe Operating Area



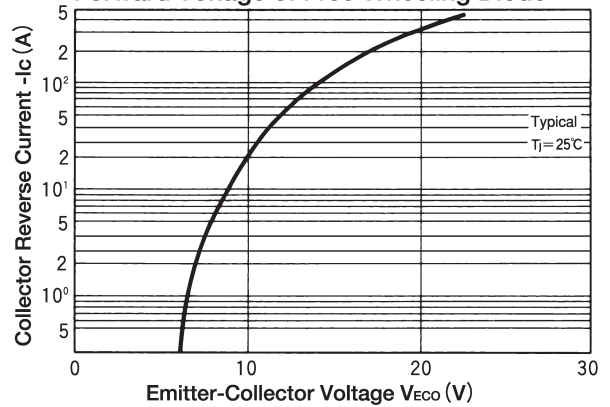
Reverse Bias Safe Operating Area



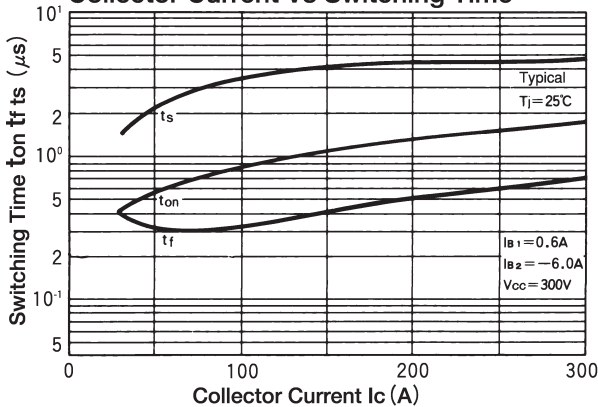
Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Collector Current Vs Switching Time



Transient Thermal Impedance

