

TRANSISTOR MODULE (Hi-β)

SQD400BA60



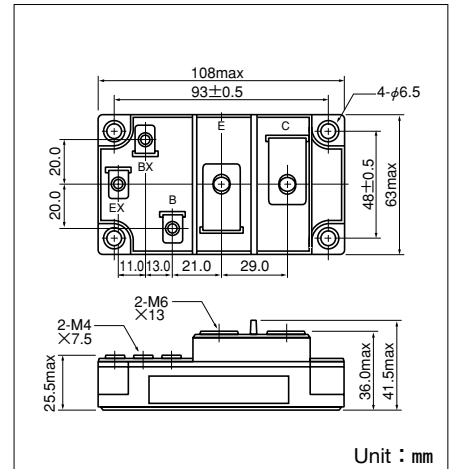
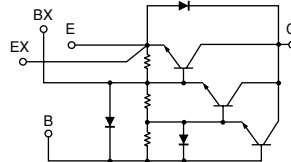
UL;E76102 (M)

SQD400BA60 is a Darlington power transistor module with a **ULTRA HIGH** h_{FE} , high speed, high power Darlington transistor. The transistor has a reverse paralleled fast recovery diode (t_{rr} : 200ns). The mounting base of the module is electrically isolated from semiconductor elements for simple heatsink construction,

- $I_C=400A$, $V_{CEX}=600V$
- 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



Maximum Ratings

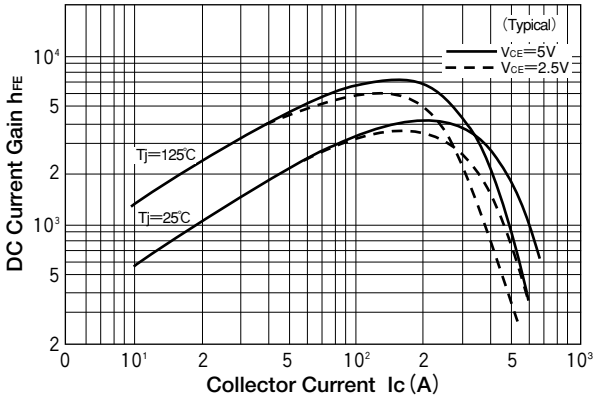
($T_j=25^\circ C$ unless otherwise specified)

Symbol	Item	Conditions	Ratings		Unit
			SQD400BA60		
V_{CBO}	Collector-Base Voltage		600		V
V_{CEX}	Collector-Emitter Voltage	$V_{BE}=-2V$	600		V
V_{EBO}	Emitter-Base Voltage		10		V
I_C	Collector Current	() = $p_w \leq 1ms$	400 (800)		A
$-I_C$	Reverse Collector Current		400		A
I_B	Base Current		24		A
P_T	Total power dissipation	$T_C=25^\circ C$	1500		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 43kgf·cm	4.7 (48)	N·m (kgf·cm)
		Terminal (M6)	Recommended Value 43kgf·cm	4.7 (48)	
		Terminal (M4)	Recommended Value 12.5kgf·cm	1.5 (15)	
	Mass	Typical Value	460		g

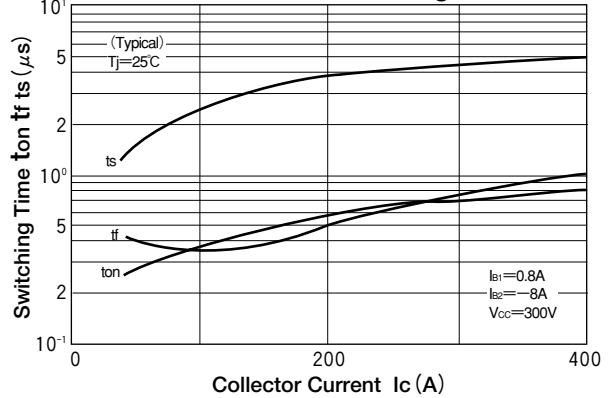
Electrical Characteristics

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	$V_{EB}=V_{EBO}$			1600	mA
$V_{CEO(SUS)}$	Collector Emitter Sustaining Voltage	$I_C=1A$	450			V
$V_{CEX(SUS)}$		$I_C=80A, I_{B2}=-8A$	600			
h_{FE}	DC Current Gain	$I_C=400A, V_{CE}=2.5V$	750			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=400A, I_B=530mA$			2.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=400A, I_B=530mA$			3.0	V
t_{on}	Switching Time	On Time			2.0	μs
t_s		Storage Time	$V_{CC}=300V, I_C=400A$		8.0	
t_f		Fall Time	$I_{B1}=0.8A, I_{B2}=-8A$		2.0	
V_{ECO}	Collector-Emitter Reverse Voltage	$-I_C=400A$			1.8	V
t_{rr}	Reverse Recovery time	$V_{CC}=300V, I_C=-400A, -di/dt=300A/\mu s, V_{BE}=-5V$		200		ns
$R_{th(j-c)}$	Thermal Impedance (junction to case)	Transistor part			0.083	$^\circ C/W$
		Diode part			0.25	

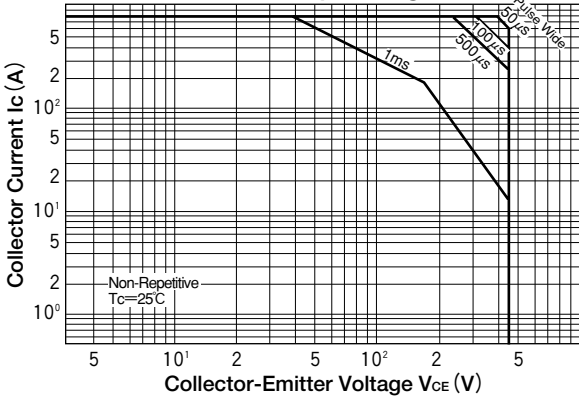
D.C. Current Gain



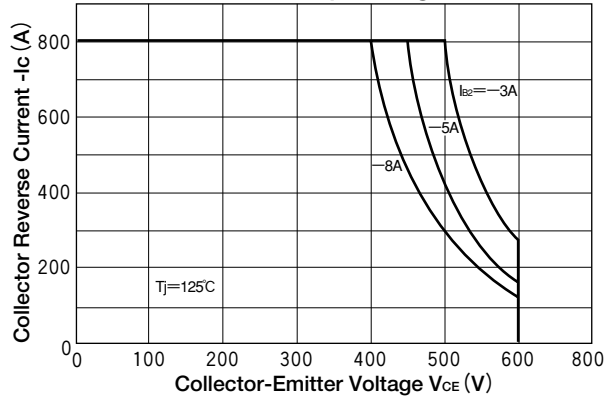
Collector Current Vs Switching Time



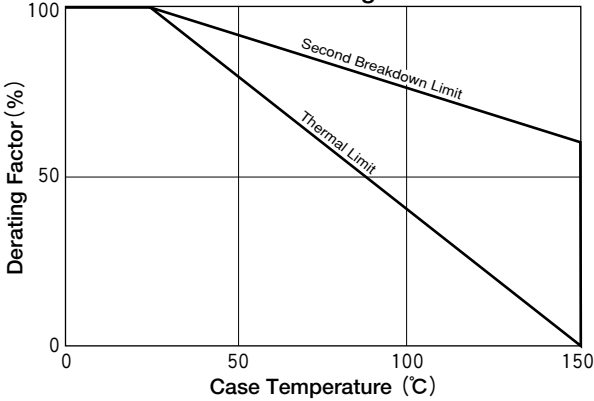
Forward Bias Safe Operating Area



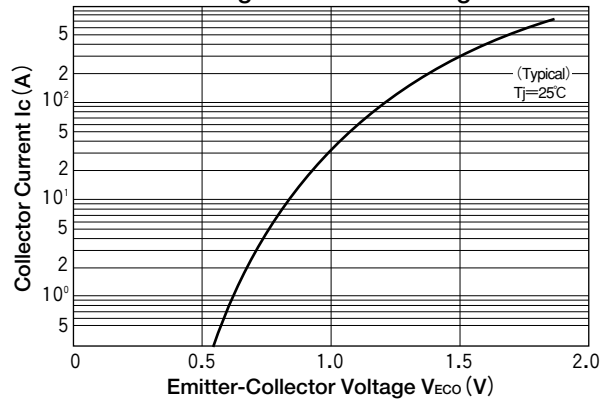
Reverse Bias Safe Operating Area



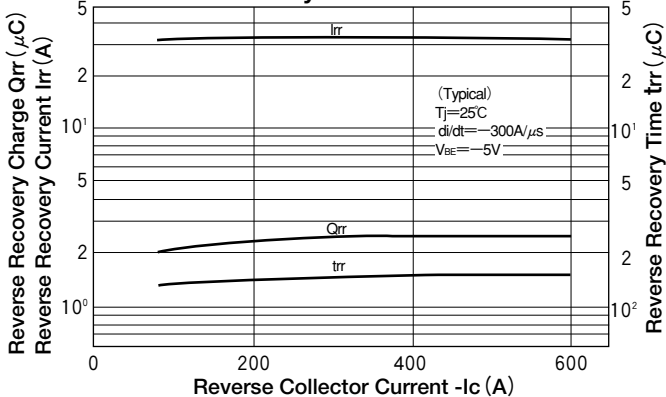
Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Reverse Recovery Characteristics



Transient Thermal Impedance

