TRANSISTOR MODULE (Hi-β)

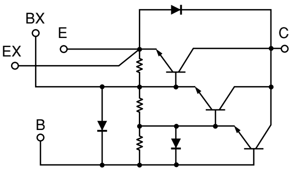
SQD400BA60

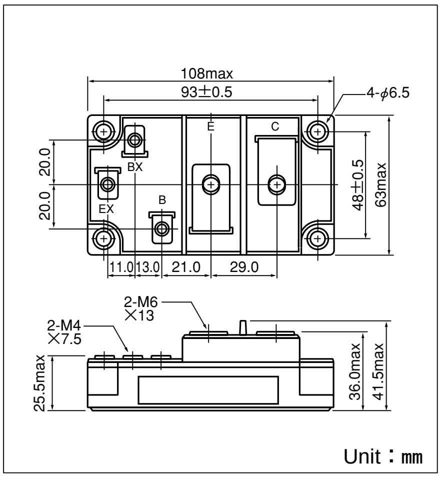
UL;E76102（M）

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 (**trr：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.
- ●ULITRA HIGH DC current gain h_{FE}. h_{FE}≧750
- ●Isolated mounting base
- ●IV_{EBO} 10V for faster switching speed.

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





■Maximum Ratings

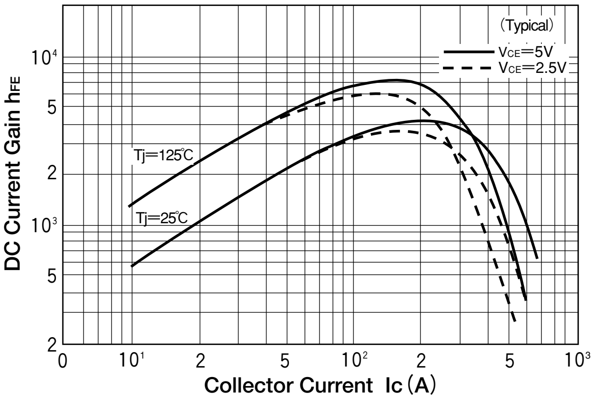
（Tj=25℃ unless otherwise specified）

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		（ ）=pw≦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℃	1500	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 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

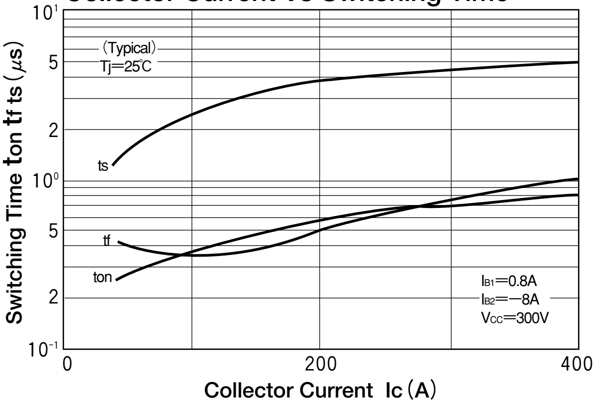
■Electrical Characteristics

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 Sustaning 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
ton	Switching Time	On Time	Vcc=300V, I_C=400A I_{B1}=0.8A, I_{B2}=−8A			2.0	μs
ts		Storage Time				8.0	
tf		Fall Time				2.0	
V_{ECO}	Collector-Emitter Reverse Voltage		−I_C=400A			1.8	V
trr	Reverse Recovery time		Vcc=300V, I_C=−400A, −di/dt=300A/μs, V_{BE}=−5V		200		ns
Rth(j-c)	Thermal Impedance (junction to case)		Transistor part			0.083	℃/W
			Diode part			0.25	

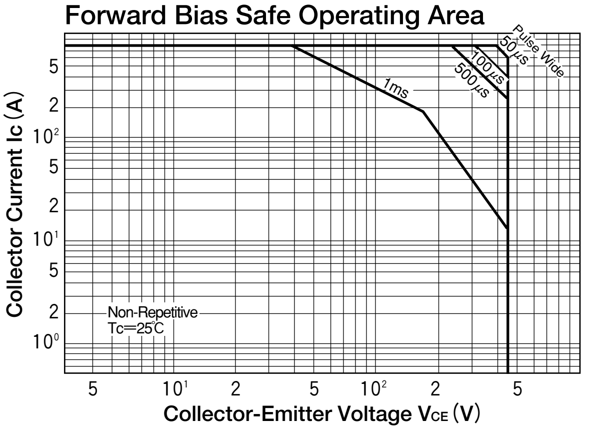
D.C. Current Gain



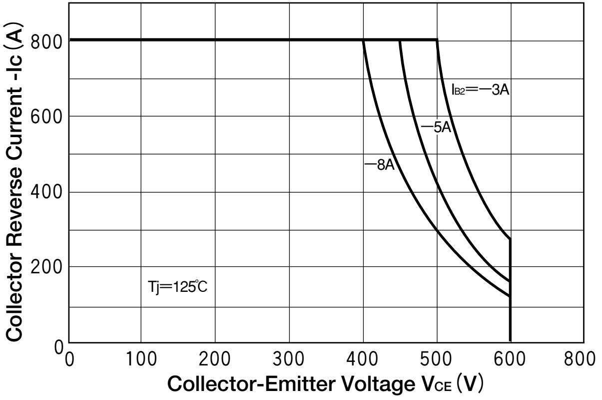
Collector Current Vs Switching Time



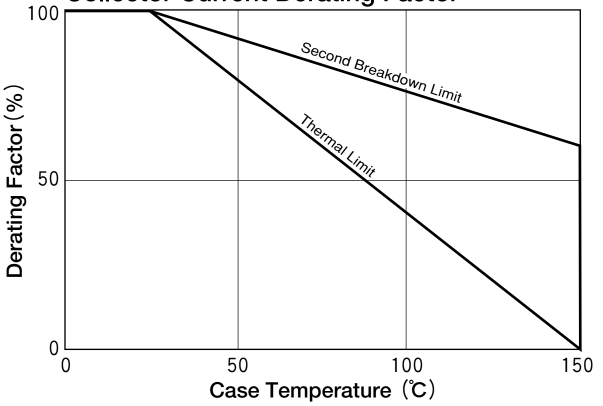
Forward Bias Safe Operating Area



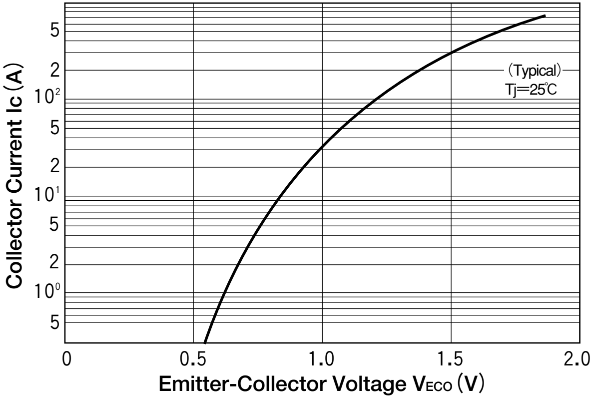
Reverse Bias Safe Operating Area



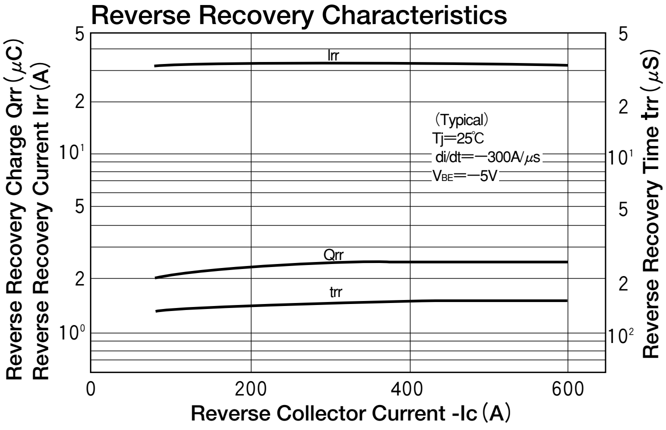
Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Reverse Recovery Characteristics



Transient Thermal Impedance