

TRANSISTOR MODULE

SQD300A40/60

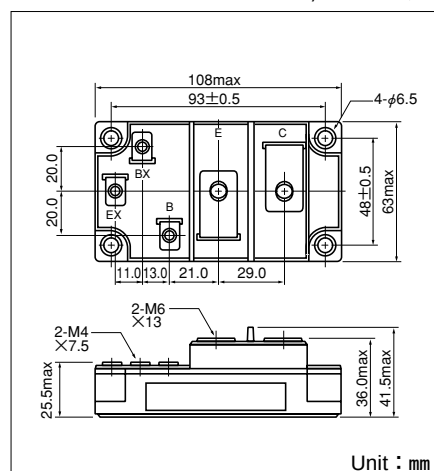
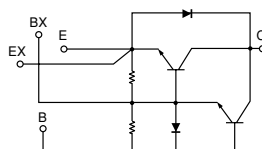
UL;E76102 (M)

SQD300A is a Darlington power transistor module which a high speed, high power Darlington transistor. The transistor has a reverse paralled fast recovery diode. The mounting base of the module is electrically isolated from semiconductor elements for simple heatsink construction,

- $I_C=300A$, $V_{CEX}=400/600V$
- Low saturation voltage for higher efficiency.
- High DC current gain h_{FE}
- Isolated mounting base
- V_{EBO} 10V for faster switching speed.

(Applications)

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



Maximum Ratings

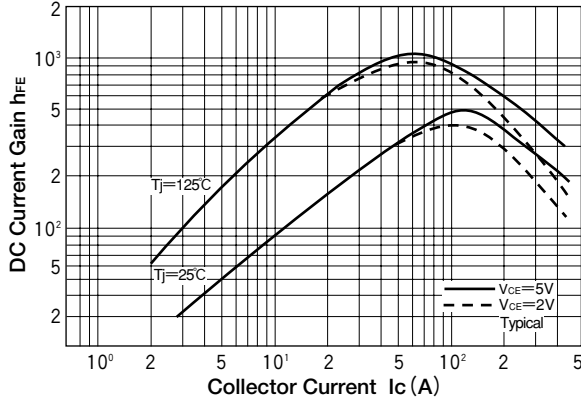
($T_j=25^{\circ}C$ unless otherwise specified)

Symbol	Item		Conditions	Ratings		Unit
				SQD300A40	SQD300A60	
V _{CBO}	Collector-Base Voltage			400	600	V
V _{CEX}	Collector-Emitter Voltage		V _{BE} =−2V	400	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		℃
T _{stg}	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)		
		Terminal (M4)	Recommended Value 1.0-1.4 (10-14)	1.5 (15)		
	Mass		Typical Value	460		g

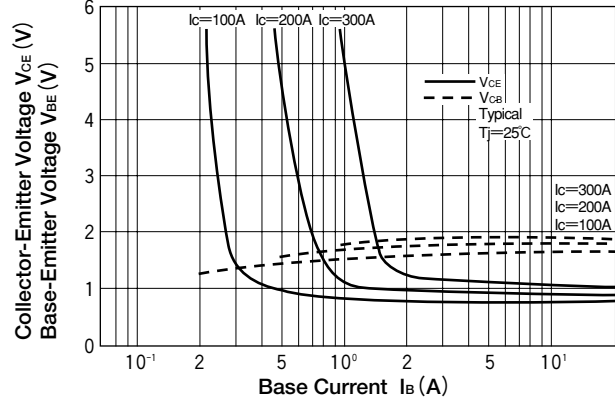
Electrical Characteristics

Symbol	Item		Conditions	Ratings		Unit
				Min.	Max.	
I_{CBO}	Collector Cut-off Current		$V_{CB}=V_{CBO}$		3.0	mA
I_{EBO}	Emitter Cut-off Current		$V_{EB}=V_{EBO}$		1000	mA
$V_{CEO(SUS)}$	Collector Emitter Sustaning Voltage	SQD300A40	$I_C=1A$	300		V
		SQD300A60		450		
$V_{CEX(SUS)}$		SQD300A40	$I_C=60A, I_{B2}=-10A$	400		V
		SQD300A60		600		
h_{FE}	DC Current Gain		$I_C=300A, V_{CE}=2V$	75		
			$I_C=300A, V_{CE}=5V$	100		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage		$I_C=300A, I_B=4.0A$		2.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage		$I_C=300A, I_B=4.0A$		2.5	V
t_{on}	Switching Time	On Time	$V_{CC}=300V, I_C=300A$ $I_{B1}=6A, I_{B2}=-6A$		2.0	μs
t_s		Storage Time			12.0	
t_f		Fall Time			3.0	
V_{ECO}	Collector-Emitter Reverse Voltage		$-I_C=300A$		1.4	V
$R_{th(j-c)}$	Thermal Impedance (junction to case)		Transistor part		0.09	$^{\circ}C/W$
			Diode part		0.3	

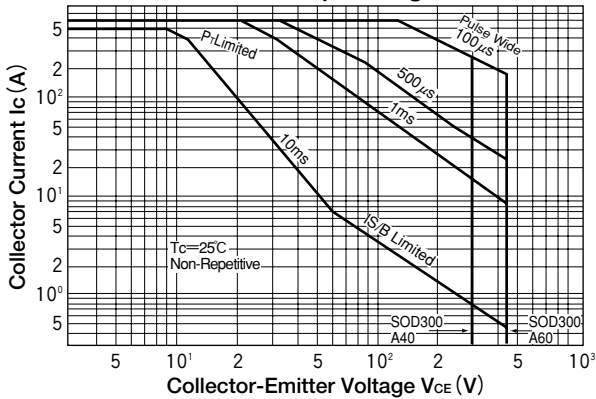
D.C. Current Gain



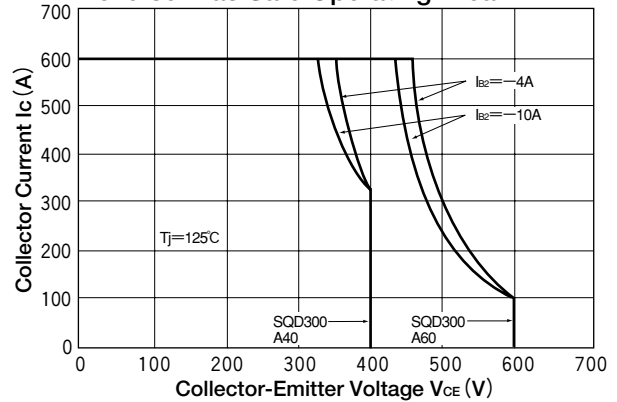
Saturation Characteristics



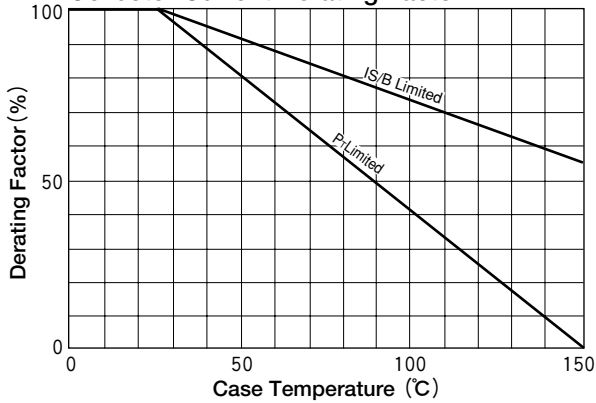
Forward Bias Safe Operating Area



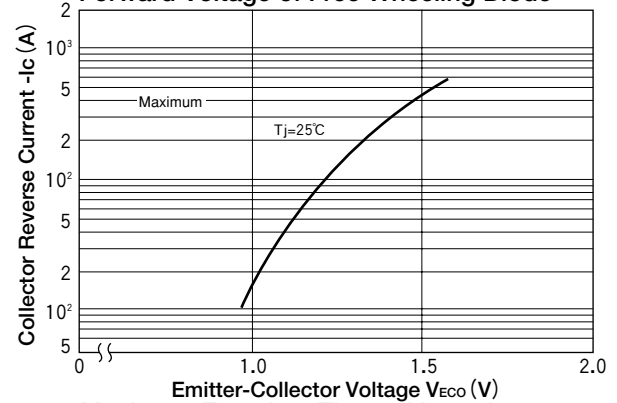
Reverse Bias Safe Operating Area



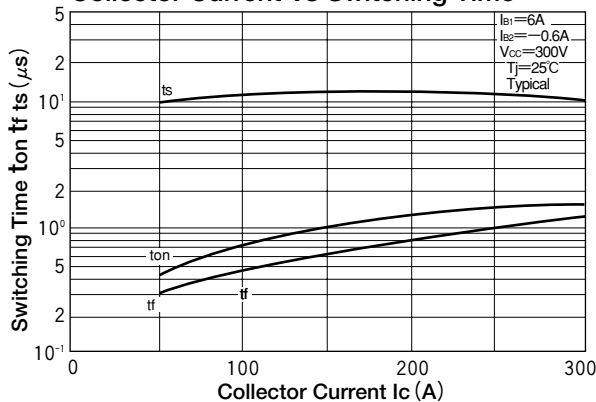
Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Collector Current Vs Switching Time



Maximum Transient Thermal Impedance Characteristics

