

TRANSISTOR MODULE

SQD300A40/60

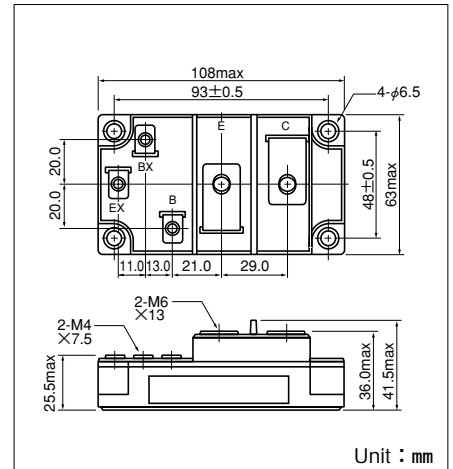
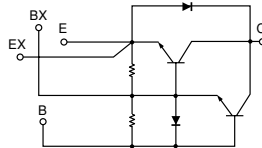
UL:E76102(M)

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

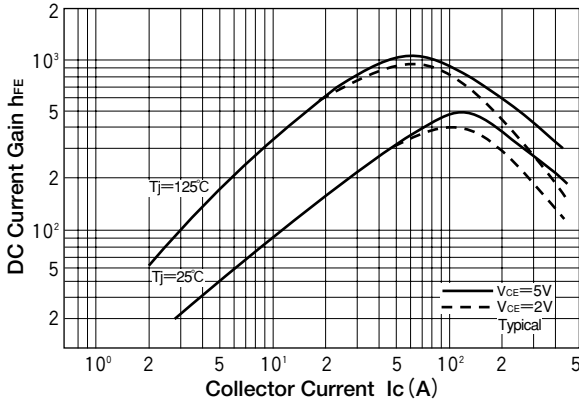
($T_j=25^{\circ}C$ unless otherwise specified)

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 $\leq 1ms$	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)		
		Terminal (M4)	Recommended Value 1.0-1.4 (10-14)		
	Mass	Typical Value	460		g

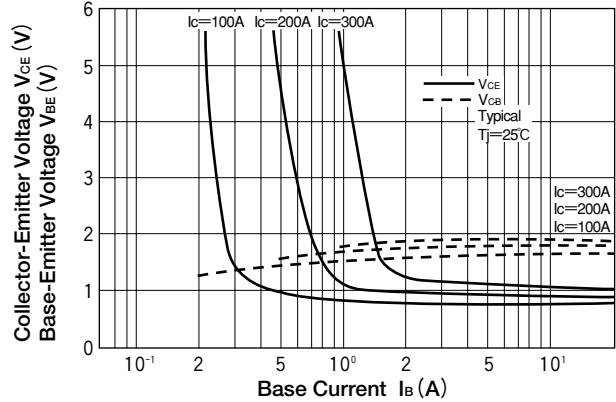
Electrical Characteristics

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
$V_{CE0(SUS)}$	Collector Emitter Sustaning Voltage	SQD300A40 SQD300A60	$I_C=1A$	300	V
$V_{CEX(SUS)}$		SQD300A40 SQD300A60	$I_C=60A, I_{B2}=-10A$	400 600	V
h_{FE}	DC Current Gain	$I_C=300A, V_{CE}=2V$ $I_C=300A, V_{CE}=5V$	75 100		
$V_{CE(sat)}$	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		2.0	μs
t_s		Storage Time	$V_{CC}=300V, I_C=300A$ $I_{B1}=6A, I_{B2}=-6A$	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	

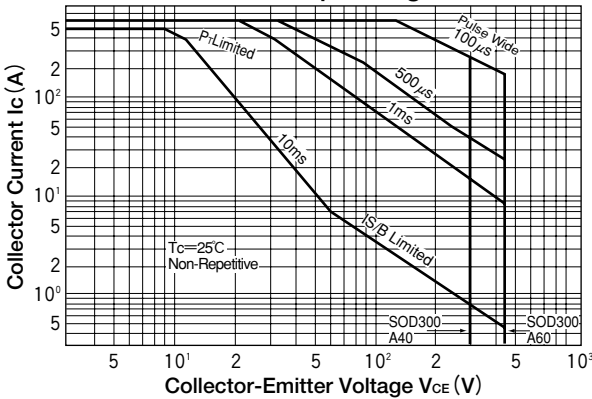
D.C. Current Gain



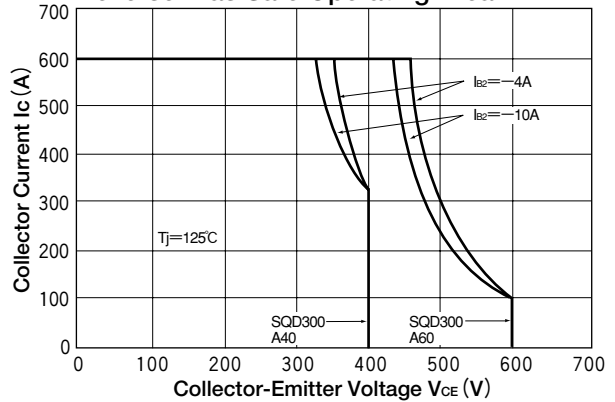
Saturation Characteristics



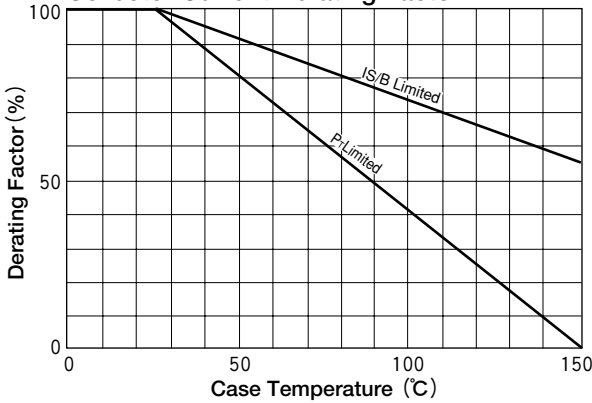
Forward Bias Safe Operating Area



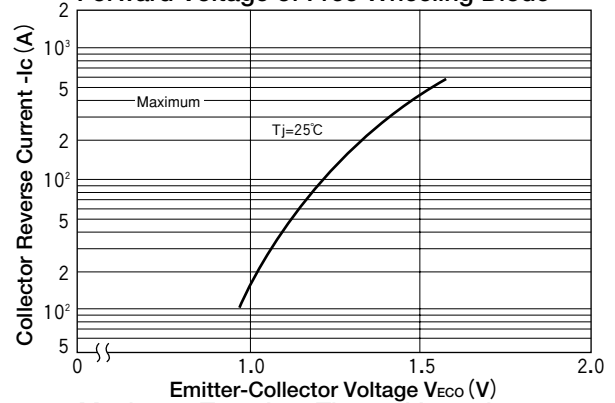
Reverse Bias Safe Operating Area



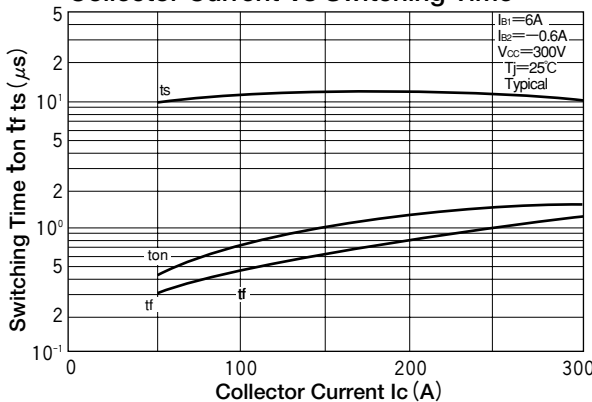
Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Collector Current Vs Switching Time



Maximum Transient Thermal Impedance Characteristics

