

# TRANSISTOR MODULE

## SQD300A40/60

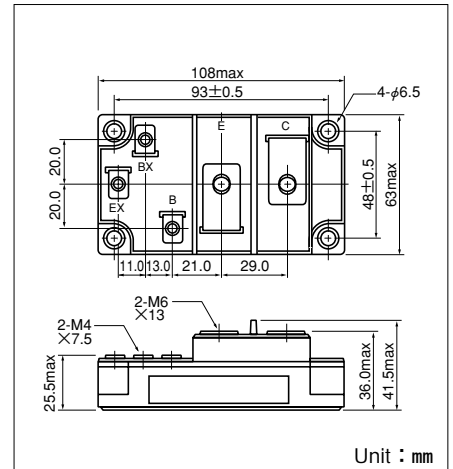
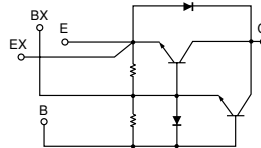
UL:E76102(M)

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

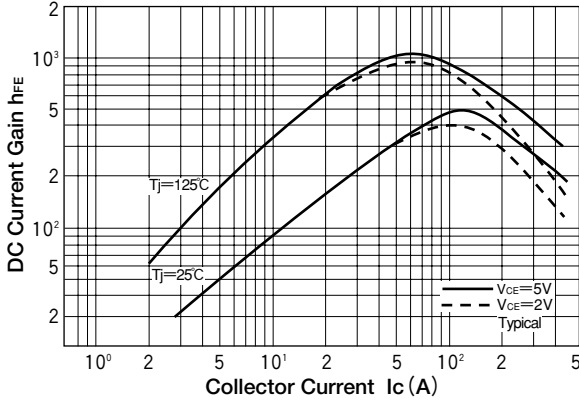
( $T_j=25^{\circ}C$  unless otherwise specified)

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

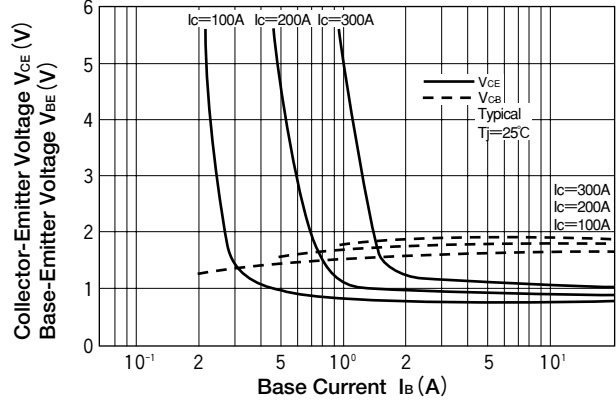
### Electrical Characteristics

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
$V_{CEO(SUS)}$	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	$\mu s$
$t_s$		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	

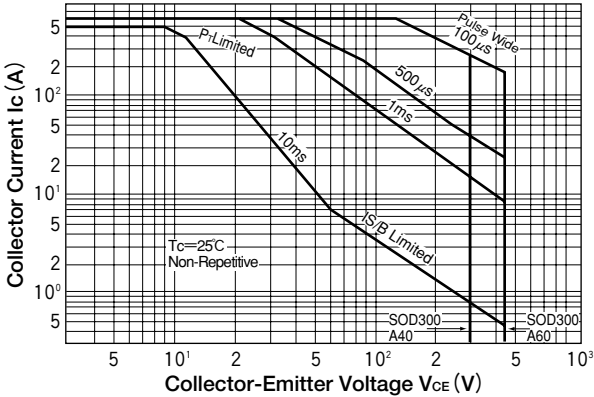
### D.C. Current Gain



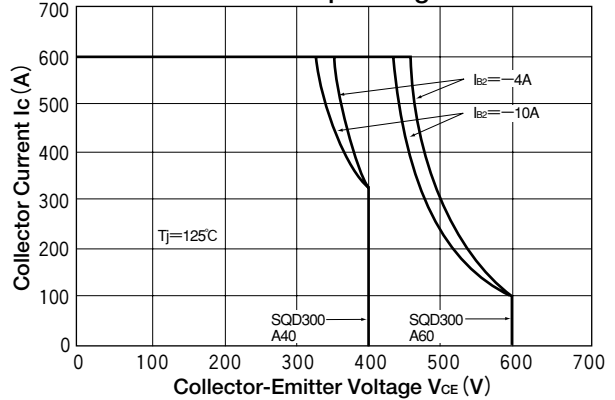
### Saturation Characteristics



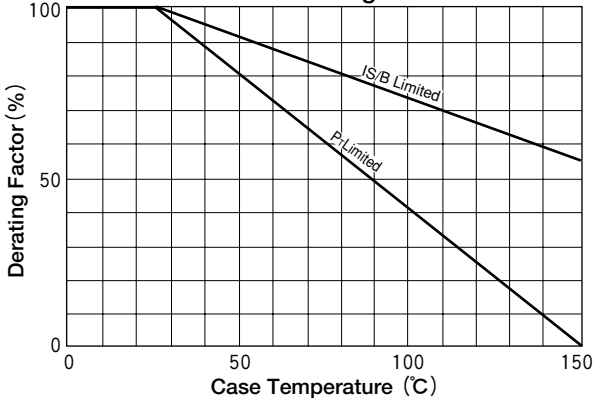
### Forward Bias Safe Operating Area



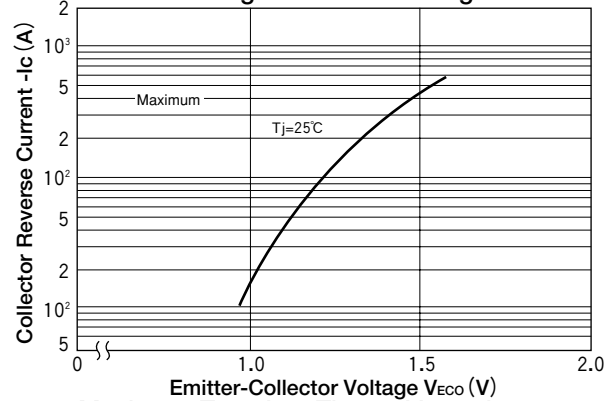
### Reverse Bias Safe Operating Area



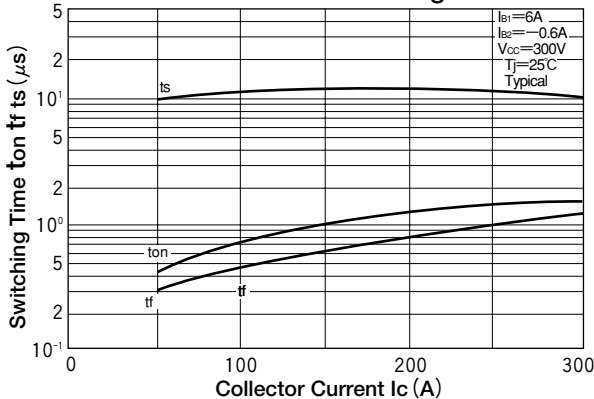
### Collector Current Derating Factor



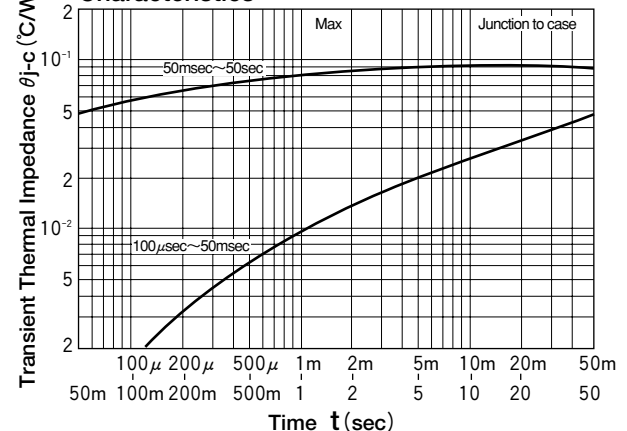
### Forward Voltage of Free Wheeling Diode



### Collector Current Vs Switching Time



### Maximum Transient Thermal Impedance Characteristics



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Datasheets for electronics components.