

# TRANSISTOR MODULE

# SQD300AA100



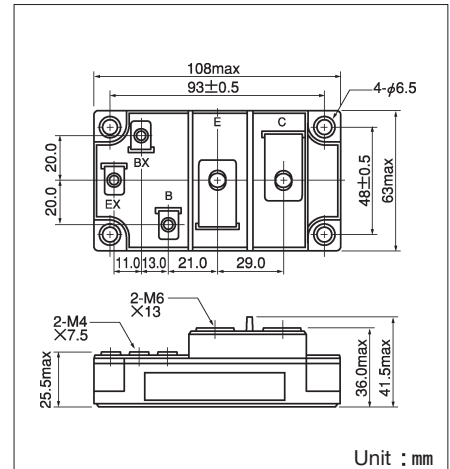
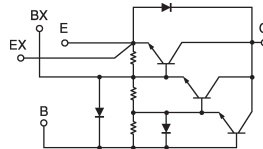
UL;E76102 (M)

SQD300AA100 is a Darlington power transistor module with a high speed, high power Darlington transistor. The transistor has a reverse paralalled fast recovery diode. The mounting base of the module is electrically isolated from semiconductor elements for simple heatsink construction.

- $I_C=300A$ ,  $V_{CEX}=1000V$
- Low saturation voltage for higher efficiency.
- High DC current gain  $h_{FE}$
- Isolated mounting base

### (Applications)

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



Unit : mm

### Maximum Ratings

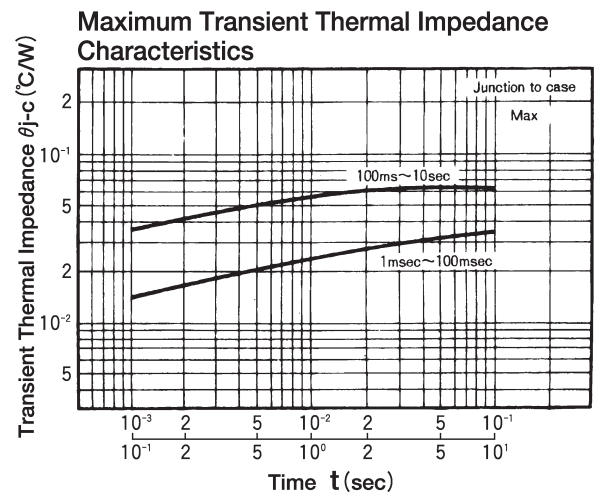
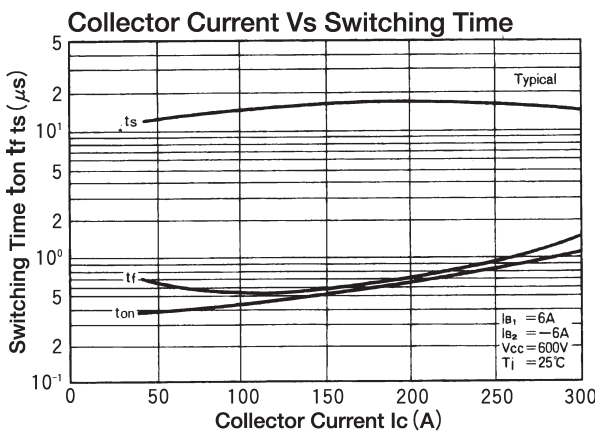
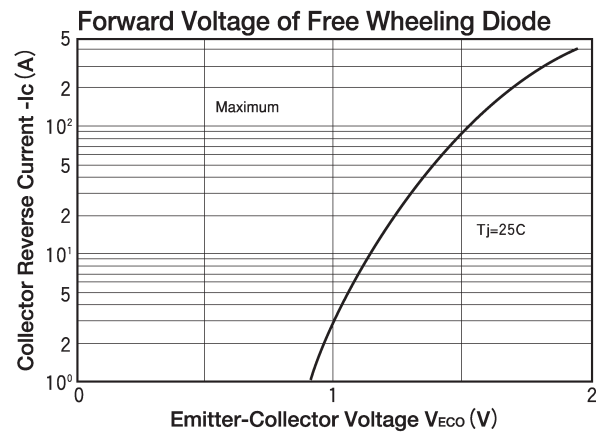
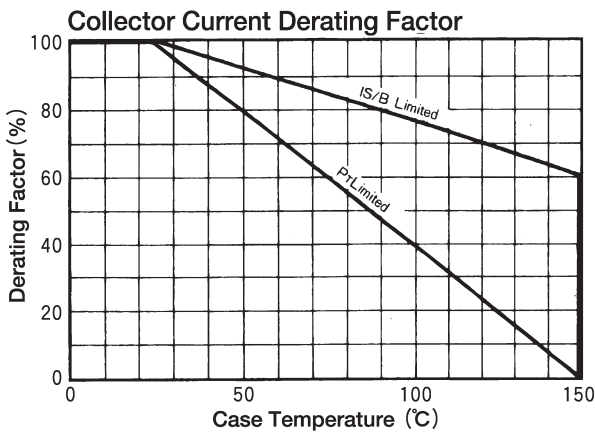
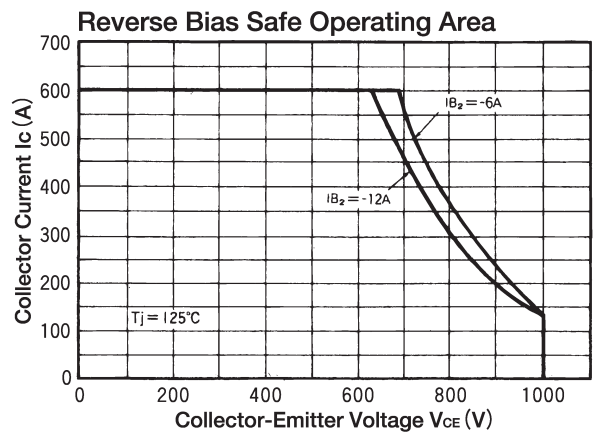
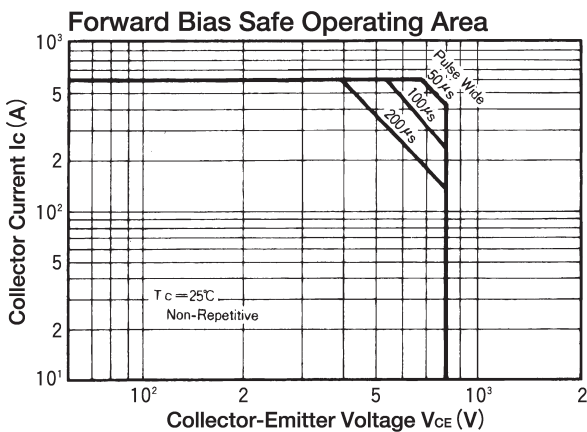
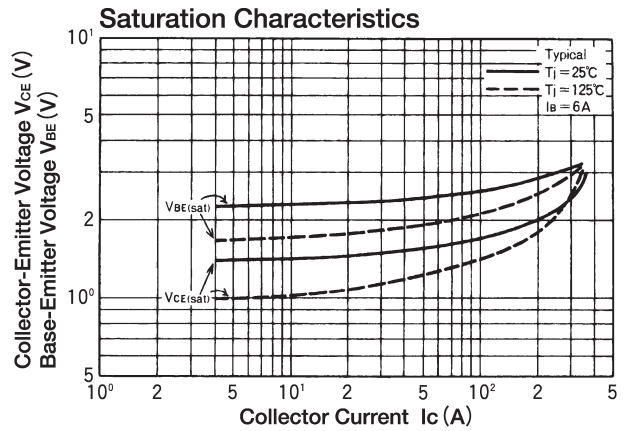
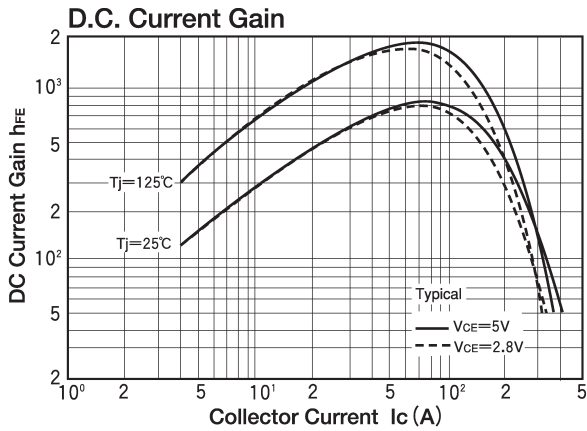
( $T_j=25^{\circ}C$ )

Symbol	Item	Conditions	Ratings		Unit
			SQD300AA100		
$V_{CBO}$	Collector-Base Voltage		1000		V
$V_{CEX}$	Collector-Emitter Voltage	$V_{BE} = -2V$	1000		V
$V_{EBO}$	Emitter-Base Voltage		7		V
$I_C$	Collector Current		300		A
$-I_C$	Reverse Collector Current		300		A
$I_B$	Base Current		16		A
$P_T$	Total power dissipation	$T_C=25^{\circ}C$	2000		W
$T_j$	Junction Temperature		-40 ~ +150		$^{\circ}C$
$T_{stg}$	Storage Temperature		-40 ~ +125		$^{\circ}C$
$V_{ISO}$	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	520		g

### Electrical Characteristics

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

Symbol	Item	Conditions	Ratings		Unit
			Min.	Max.	
$I_{CBO}$	Collector Cut-off Current	$V_{CB}=1000V$		2.0	mA
$I_{EBO}$	Emitter Cut-off Current	$V_{EB}=7V$		800	mA
$V_{CEX(SUS)}$	Collector Emitter Sustaning Voltage	$I_C=60A$ , $I_{B2}=-12A$	1000		V
$h_{FE}$	DC Current Gain	$I_C=300A$ , $V_{CE}=2.8V$	75		
		$I_C=300A$ , $V_{CE}=5V$	100		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=300A$ , $I_B=6A$		2.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=300A$ , $I_B=6A$		3.5	V
$t_{on}$	Switching Time	On Time		3.0	$\mu s$
$t_s$		Storage Time	$V_{CC}=600V$ , $I_C=300A$ $I_{B1}=6A$ , $I_{B2}=-6A$	15.0	
$t_f$		Fall Time		3.0	
$V_{ECO}$	Collector-Emitter Reverse Voltage	$I_C=-300A$		1.8	V
$R_{th(j-c)}$	Thermal Impedance (junction to case)	Transistor part		0.063	$^{\circ}C/W$
		Diode part		0.3	



# TRANSISTOR MODULE

# SQD300AA120



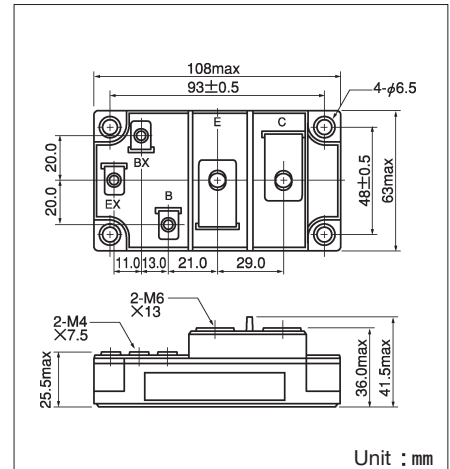
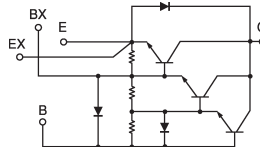
UL;E76102 (M)

SQD300AA120 is a Darlington power transistor module with 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.

- $I_C=300A$ ,  $V_{CEX}=1200V$
- Low saturation voltage for higher efficiency.
- High DC current gain  $h_{FE}$
- Isolated mounting base

### (Applications)

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



### Maximum Ratings

( $T_j=25^\circ C$ )

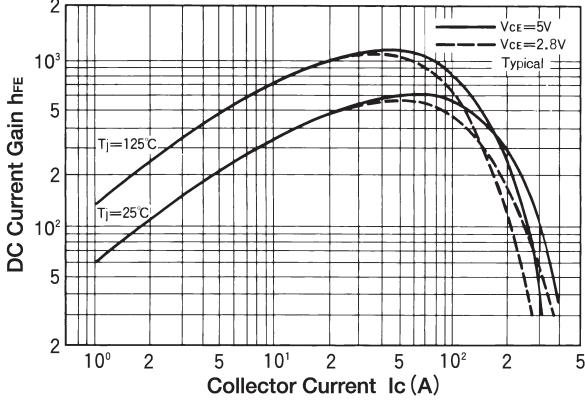
Symbol	Item	Conditions	Ratings		Unit
			SQD300AA120		
$V_{CBO}$	Collector-Base Voltage		1200		V
$V_{CEX}$	Collector-Emitter Voltage	$V_{BE} = -2V$	1200		V
$V_{EBO}$	Emitter-Base Voltage		10		V
$I_C$	Collector Current		300		A
$-I_C$	Reverse Collector Current		300		A
$I_B$	Base Current		16		A
$P_T$	Total power dissipation	$T_C=25^\circ C$	2000		W
$T_j$	Junction Temperature		-40~+150		$^\circ C$
$T_{stg}$	Storage Temperature		-40~+125		$^\circ C$
$V_{ISO}$	Isolation Voltage	A.C.1minute	2500		V
	Mounting Torque	(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	470		g

### Electrical Characteristics

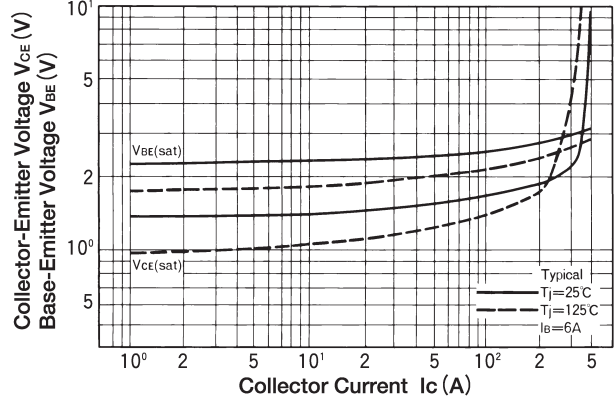
( $T_j=25^\circ C$ )

Symbol	Item	Conditions	Ratings		Unit
			Min.	Max.	
$I_{CBO}$	Collector Cut-off Current	$V_{CB}=1200V$		4.0	mA
$I_{EBO}$	Emitter Cut-off Current	$V_{EB}=10V$		1200	mA
$V_{CEX(SUS)}$	Collector Emitter Sustaning Voltage	$I_C=60A$ , $I_{B2}=-12A$	1200		V
$h_{FE}$	DC Current Gain	$I_C=300A$ , $V_{CE}=5V$	75		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=300A$ , $I_B=6A$		3.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=300A$ , $I_B=6A$		3.5	V
$t_{on}$	Switching Time	On Time		3.0	$\mu s$
$t_s$		Storage Time	$V_{CC}=600V$ , $I_C=300A$ $I_{B1}=6A$ , $I_{B2}=-6A$	15.0	
$t_f$		Fall Time		3.0	
$V_{ECO}$	Collector-Emitter Reverse Voltage	$I_C=-300A$		1.8	V
$R_{th(j-c)}$	Thermal Impedance (junction to case)	Transistor part		0.063	$^\circ C/W$
		Dioe part		0.3	

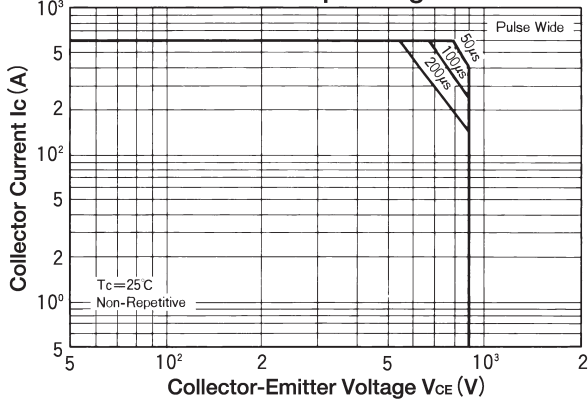
### D.C. Current Gain



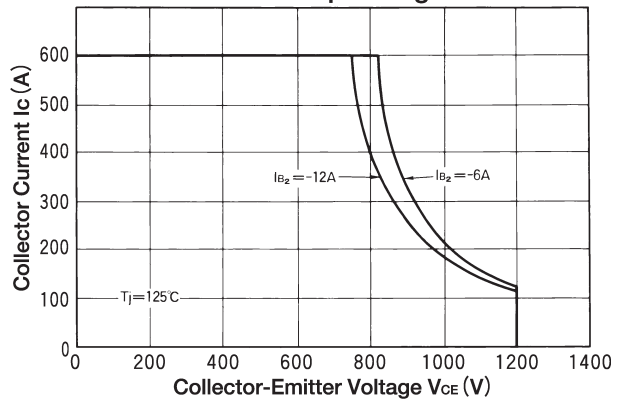
### Saturation Characteristics



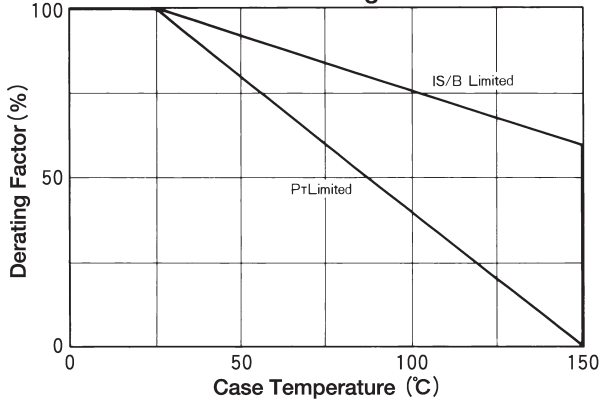
### Forward Bias Safe Operating Area



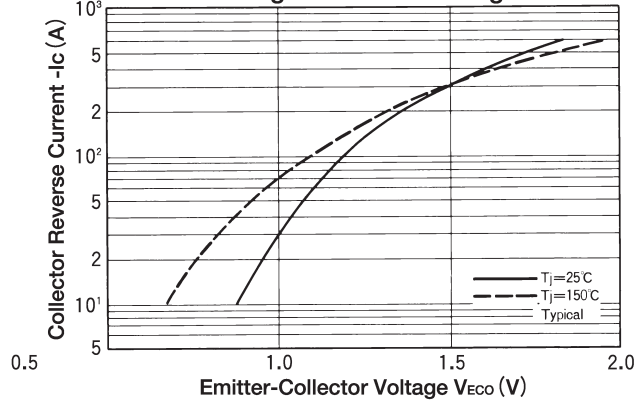
### Reverse Bias Safe Operating Area



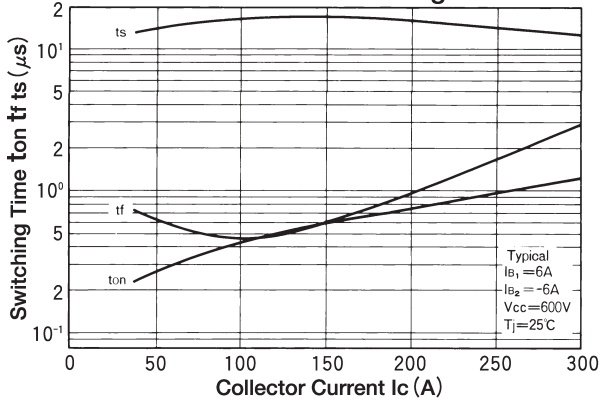
### Collector Current Derating Factor



### Forward Voltage of Free Wheeling Diode



### Collector Current Vs Switching Time



### Maximum Transient Thermal Impedance Characteristics

