

TRANSISTOR MODULE

SQD300AA100

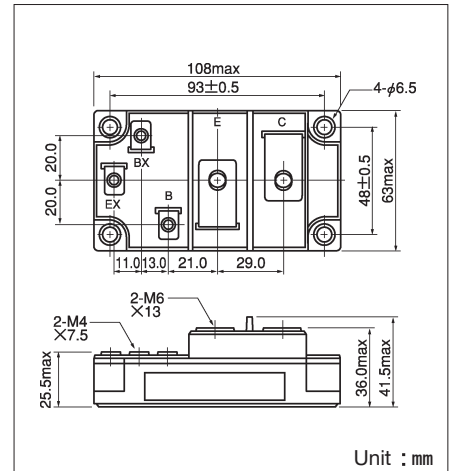
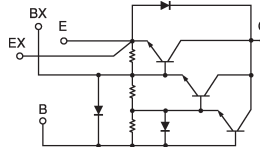
UL;E76102 (M)

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

- $I_C=300A$, $V_{CEX}=1000V$
- 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

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

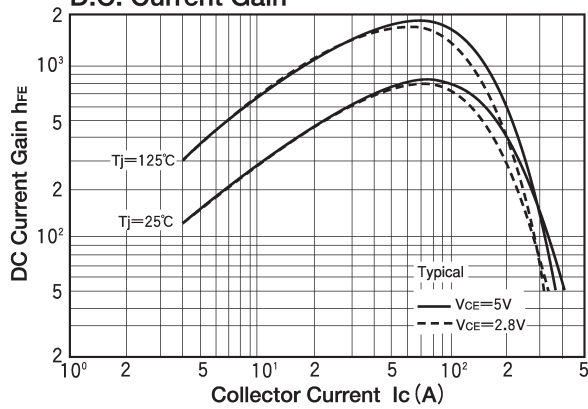
Symbol	Item		Conditions	Ratings	Unit
				SQD300AA100	
V_{CBO}	Collector-Base Voltage			1000	V
V_{CEX}	Collector-Emitter Voltage		$V_{BE} = -2V$	1000	V
V_{EBO}	Emitter-Base Voltage			7	V
I_C	Collector Current			300	A
$-I_C$	Reverse Collector Current			300	A
I_B	Base Current			16	A
P_T	Total power dissipation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

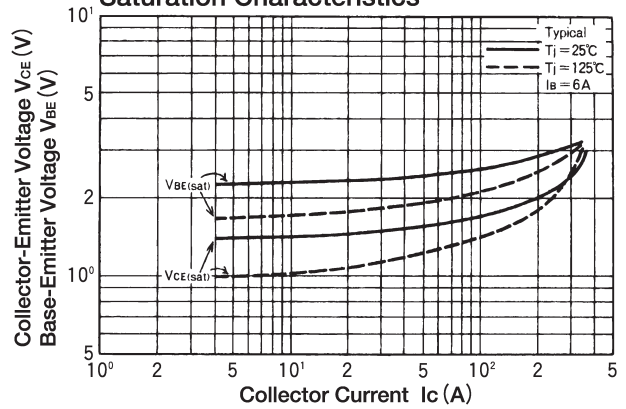
($T_j=25^{\circ}C$)

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 Sustaining 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	$V_{CC}=600V$, $I_C=300A$ $I_{B1}=6A$, $I_{B2}=-6A$		3.0	μs
t_s		Storage Time			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	

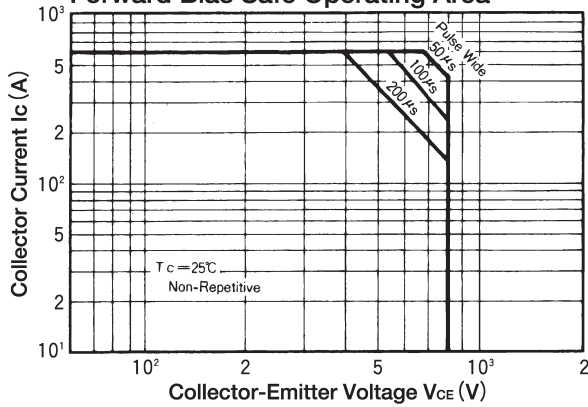
D.C. Current Gain



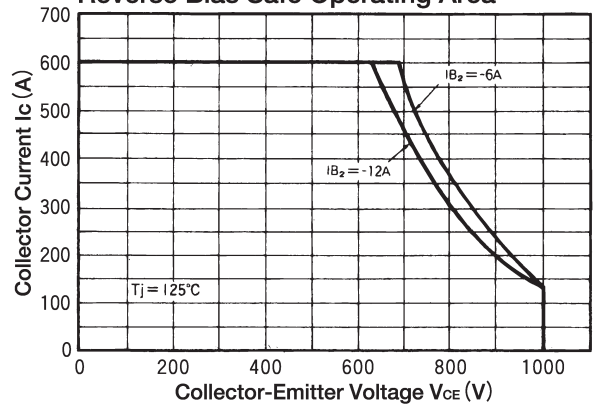
Saturation Characteristics



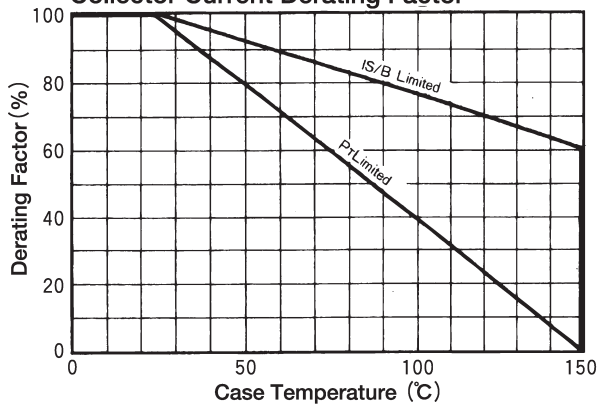
Forward Bias Safe Operating Area



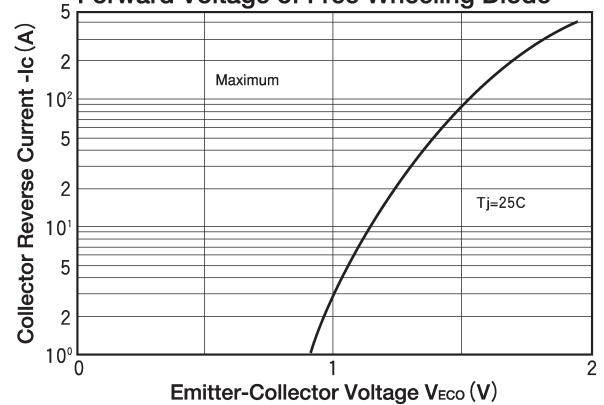
Reverse Bias Safe Operating Area



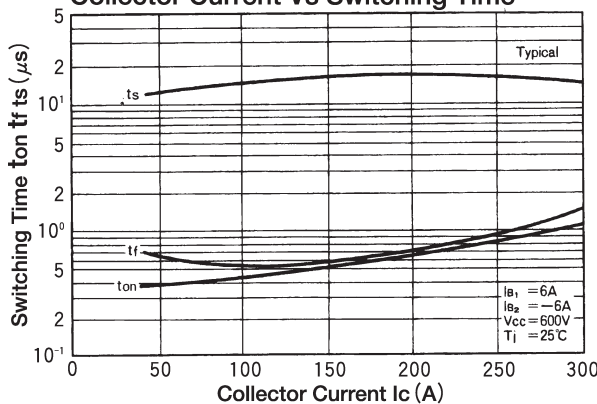
Collector Current Derating Factor



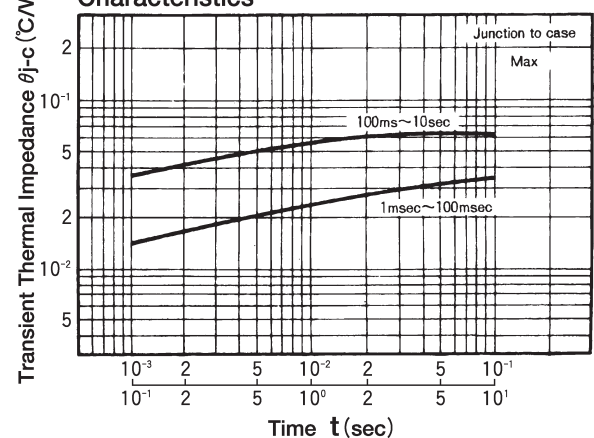
Forward Voltage of Free Wheeling Diode



Collector Current Vs Switching Time



Maximum Transient Thermal Impedance Characteristics



TRANSISTOR MODULE

SQD300AA120

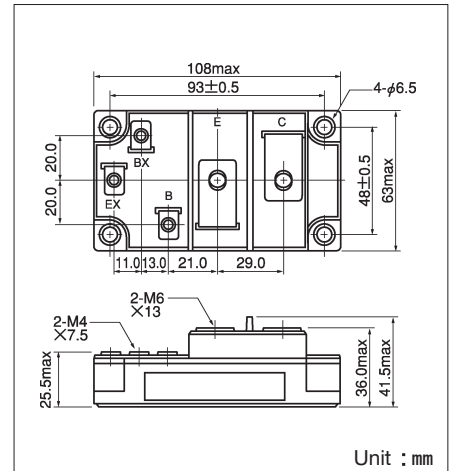
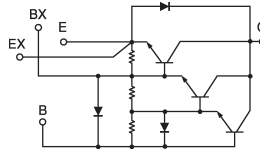
UL;E76102 (M)

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



Unit : mm

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		$-40 \sim +150$	$^\circ C$
T_{stg}	Storage Temperature		$-40 \sim +125$	$^\circ C$
V_{ISO}	Isolation Voltage	A.C.1minute	2500	V
	Mounting Torque	(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	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	μs
t_s		Storage Time		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	

