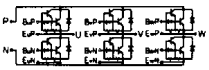
TRANSISTOR MODULE (THREE PHASES BRIDGE TYPE)

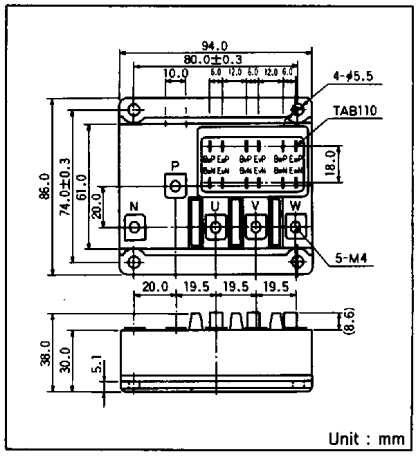
QF50AA40/60

QF50AA is a six pack Darlington power transistor module which has six transistors connected in three phase bridge configuration. Each transistor has a reverse paralleled fast recovery diode. The mounting base of the module is electrically isolated from semiconductor elements for simple heatsink construction.

- I_C=50A 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 Servo, UPS





Unit : mm

■Maximum Ratings

Tj=25°C

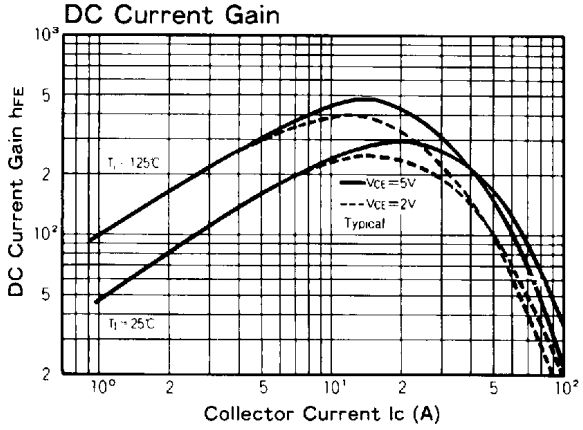
Symbol	Item		Conditions	Ratings		Unit
				QF50AA40	QF50AA60	
V_{CBO}	Collector-Base Voltage			400	600	V
V_{CEX}	Collector-Emitter Voltage		V_{BE}=−2V	400	600	V
V_{EBO}	Emitter-Base Voltage			10		V
I_C	Collector Current		( )=pw≦1ms	50 (100)		A
$-I_C$	Reverse Collector Current			50		A
I_B	Base Current			3		A
P_T	Total power dissipation		Tc=25°C	300		W
Tj	Junction Temperature			−40～+150		°C
Tstg	Storage Temperature			−40～+125		°C
V_{ISO}	Isolation Voltage		A.C. 1minute	2500		V
	Mounting Torque	(M5)	Recommended Value 1.5～2.5 (15～25)	2.7 (28)		N·m (kgf·cm)
		Terminal (M4)	Recommended Value 1.0～1.4 (10～14)	1.5 (15)		
	Mass		Typical value	400		g

■Electrical Characteristics

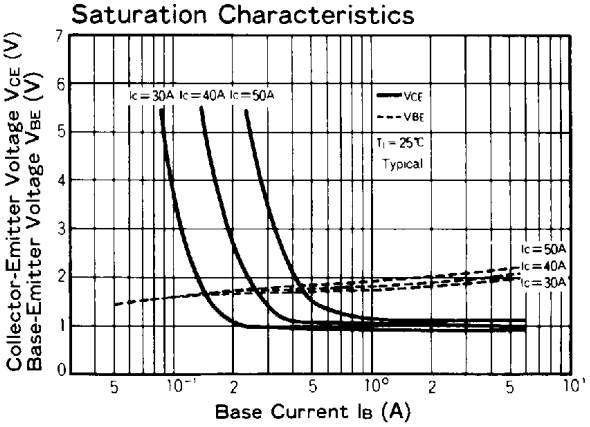
Tj=25°C

Symbol	Item		Conditions	Ratings		Unit
				Min.	Max.	
I_{CBO}	Collector Cut-off Current		$V_{CB}=V_{CBO}$		1.0	mA
I_{EBO}	Emitter Cut-off Current		$V_{EB}=V_{EBO}$		300	mA
$V_{CEO(SUS)}$	Collector-Emitter Sustaning Voltage	QF50AA40	I_C=1A	300		V
		QF50AA60		450		
$V_{CEX(SUS)}$		QF50AA40	I_C=10A I_{B2}=−5A	400		V
		QF50AA60		600		
h_{FE}	DC Current Gain		I_C=50A V_{CE}=2V	75		
			I_C=50A V_{CE}=5V	100		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage		I_C=50A I_B=0.67A		2.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage		I_C=50A I_B=0.67A		2.5	V
ton	Switching Time	On Time	Vcc=300V I_C=50A I_{B1}=1A I_{B2}=−1A		1.0	μs
ts		Storage Time			12.0	
tf		Fall Tjme			2.0	
V_{ECO}	Collector-Emitter Reverse Voltage		$-I_C$=50A		1.4	V
Rth(j-c)	Thermal Impedance (junction to case)		Transistor part		0·4	°C/W
			Diode part		1.3	

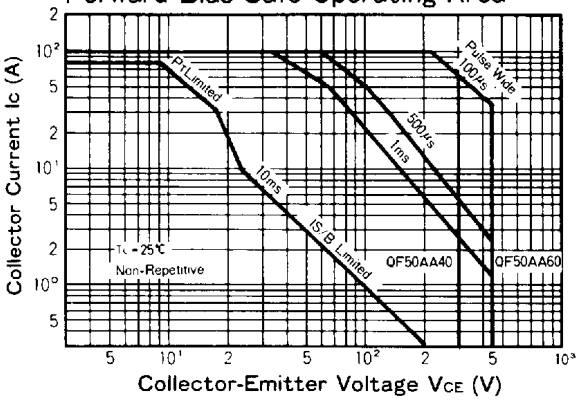
DC Current Gain



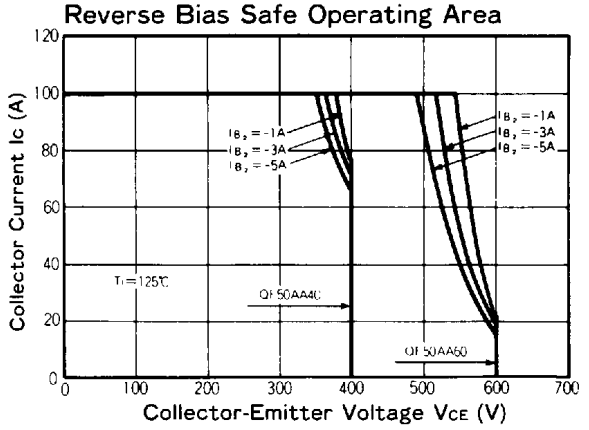
Saturation Characteristics



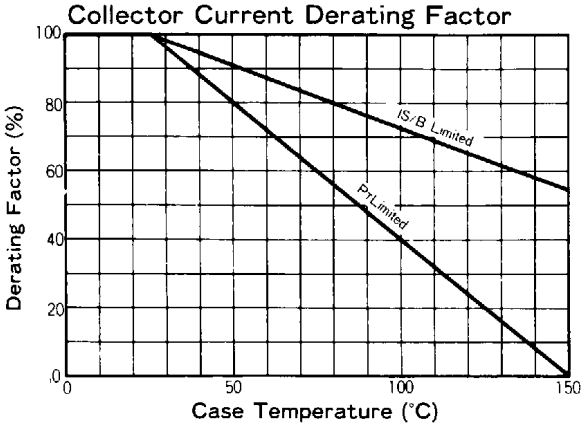
Forward Bias Safe Operating Area



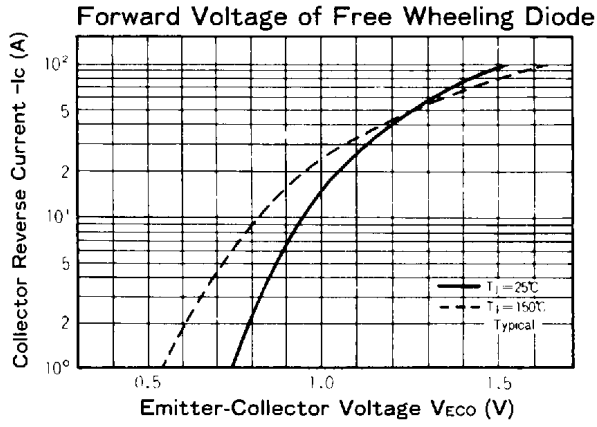
Reverse Bias Safe Operating Area



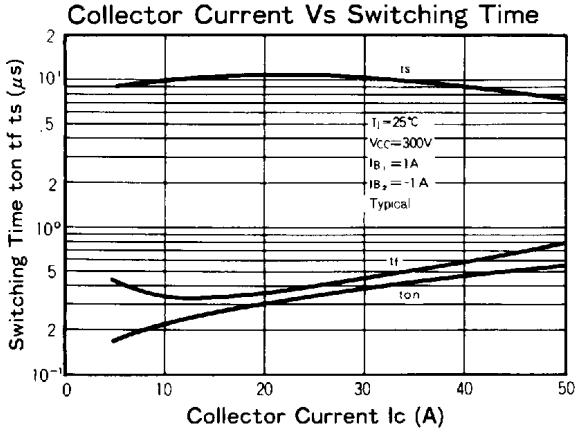
Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Collector Current Vs Switching Time



Maximum Transient Thermal Impedance Characteristics