TRANSISTOR MODULE (THREE PHASES BRIDGE TYPE)

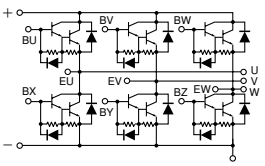
QF50AA40/60

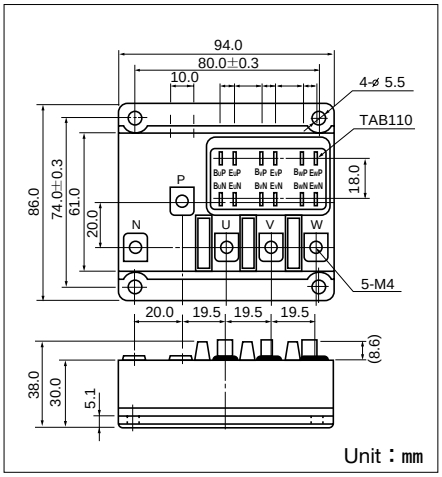
QF50AA is six pack Darlington power transistor module which has six transistors connected in three phase bridge configuration. Each transistor has a reverse paralleled fast recovery diode. The mounting base of the module is electrically isolated from semiconductor elements for simple heatsink construction,

- 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





■Maximum Ratings

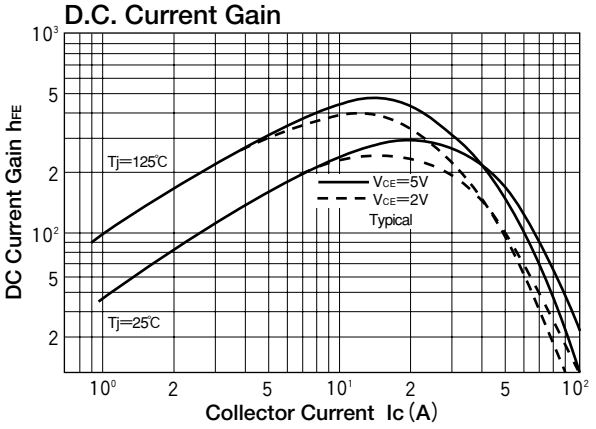
(Tj=25℃ unless otherwise specified)

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		T_C=25℃	300		W
T_j	Junction Temperature			−40 to +150		℃
Tstg	Storage Temperature			−40 to +125		℃
V_{ISO}	Isolation Voltage		A.C.1minute	2500		V
	Mounting Torque	Mounting (M6)	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

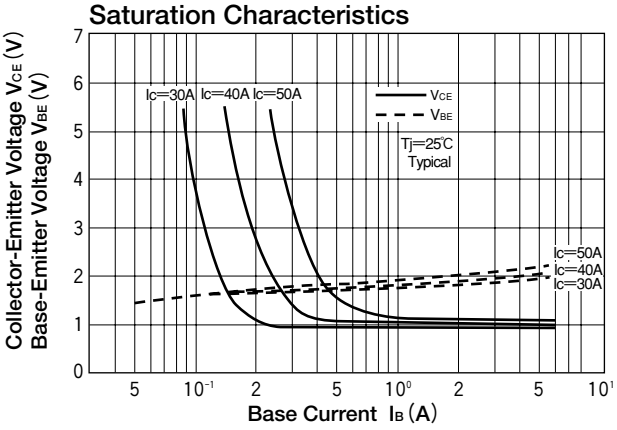
■Electrical Characteristics

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**	Ic=1A	300		V
		QF50AA60		450		
$V_{CEX(SUS)}$		**QF50AA40**	Ic=10A, I_{B2}=−5A	400		V
		QF50AA60		600		
h_{FE}	DC Current Gain		Ic=50A, V_{CE}=2V	75		
			Ic=50A, V_{CE}=5V	100		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage		Ic=50A, I_B=0.67A		2.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage		Ic=50A, I_B=0.67A		2.5	V
ton	Switching Time	On Time	Vcc=300V, Ic=50A I_{B1}=1A, I_{B2}=−1A		1.0	μs
ts		Storage Time			12.0	
tf		Fall Time			2.0	
V_{ECO}	Collector-Emitter Reverse Voltage		−Ic=50A		1.4	V
Rth(j-c)	Thermal Impedance (junction to case)		Transistor part		0.4	℃/W
			Diode part		1.3	

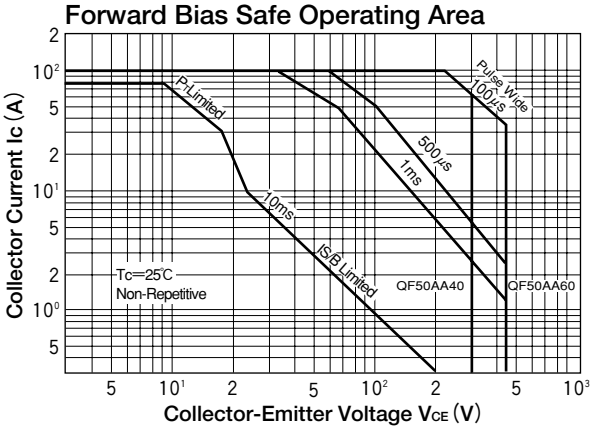
D.C. Current Gain



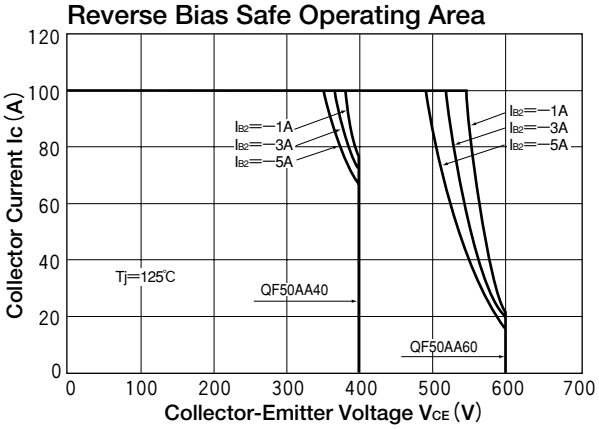
Saturation Characteristics



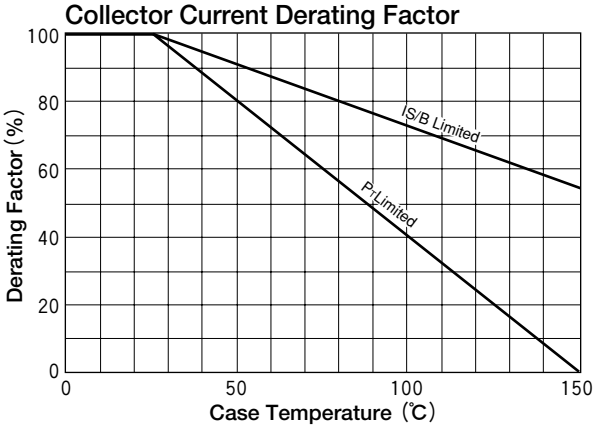
Forward Bias Safe Operating Area



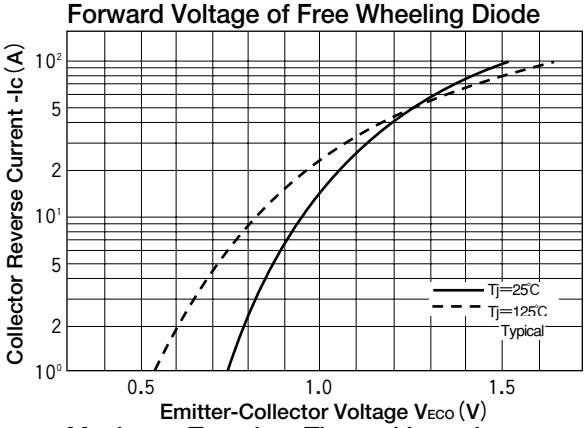
Reverse Bias Safe Operating Area



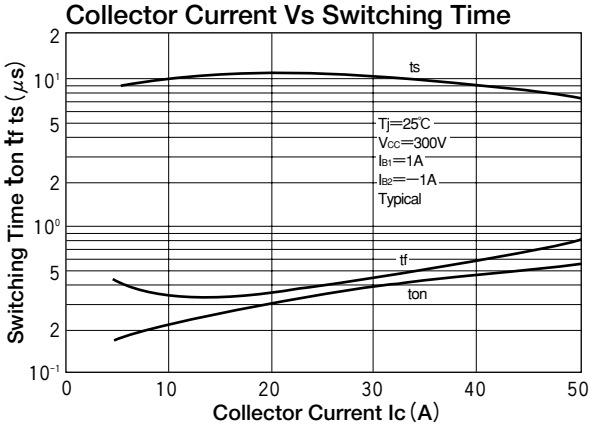
Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Collector Current Vs Switching Time



Maximum Transient Thermal Impedance Characteristics