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TRANSISTOR MODULE (THREE PHASES BRIDGE TYPE)

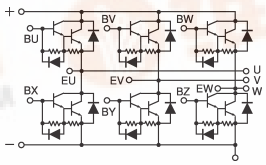
QF20AA40/60

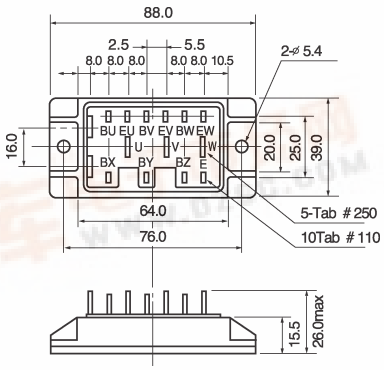
TOP

QF20AA is six pack Darlington power transistor module which has six transistors connected in three phase bridge configuraction. 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=20A, 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℃)

Symbol	Item	Conditions	Ratings		Unit
			QF20AA40	QF20AA60	
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	20 (40)		A
$-I_C$	Reverse Collector Current		20		A
I_B	Base Current		2		A
P_T	Total power dissipation	T_C=25℃	160		W
T_j	Junction Temperature		−40～+150		℃
Tstg	Storage Temperature		−40～+125		℃
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)
	Mass	Typical Value	95		g

■Electrical Characteristics

(Tj=25℃)

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}		200	mA
$V_{CEO(SUS)}$	Collector Emitter Sustaning Voltage	QF20AA40	I_C=1A	300		V
		QF20AA60		450		
$V_{CEX(SUS)}$		QF20AA40	I_C=4A, I_{B2}=−1A	400		V
		QF20AA60		600		
h_{FE}	DC Current Gain		I_C=20A, V_{CE}=2V	75		
			I_C=20A, V_{CE}=5V	100		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage		I_C=20A, I_B=0.27A		2.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage		I_C=20A, I_B=0.27A		2.5	V
ton	Switching Time	On Time	Vcc=300V, I_C=20A I_{B1}=0.5A, I_{B2}=−0.5A		1.0	μs
ts		Storage Time			12.0	
tf		Fall Time			2.0	
V_{ECO}	Collector-Emitter Reverse Voltage		−I_C=20A		1.6	V
$R_{th(j-c)}$	Thermal Impedance (junction to case)		Transistor part		0.8	℃/W
			Diode part		2.2	

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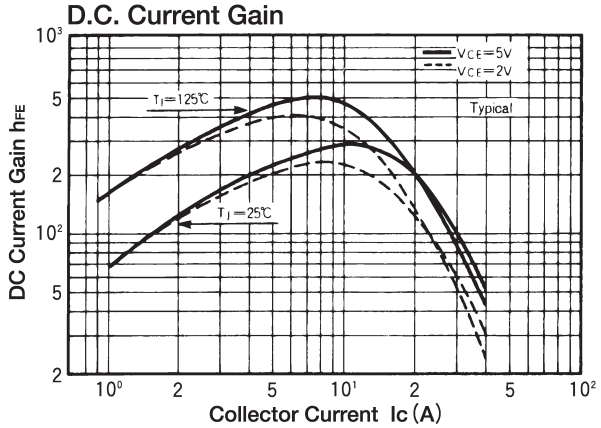
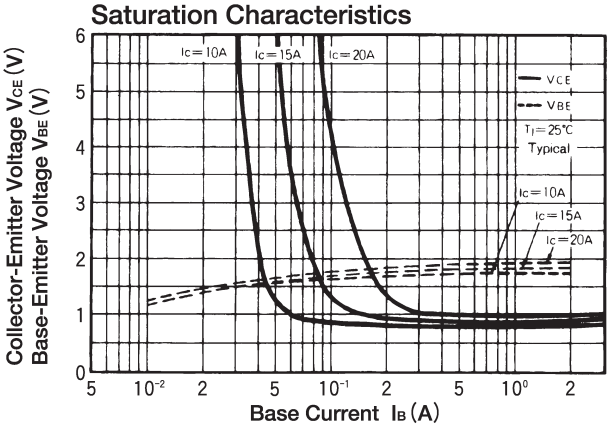
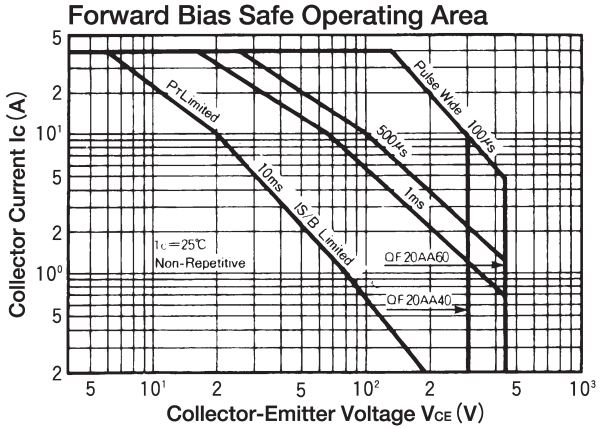
D.C. Current Gain



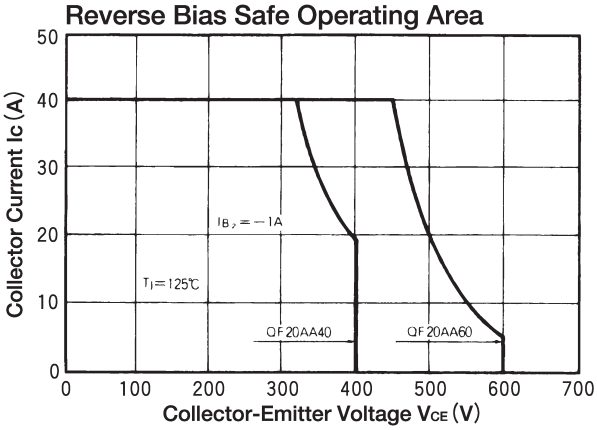
Saturation Characteristics



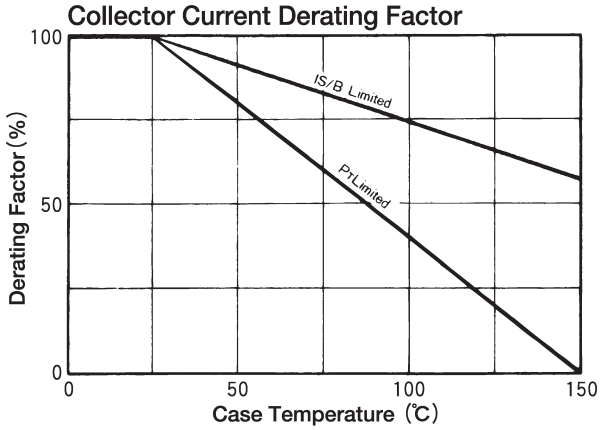
Forward Bias Safe Operating Area



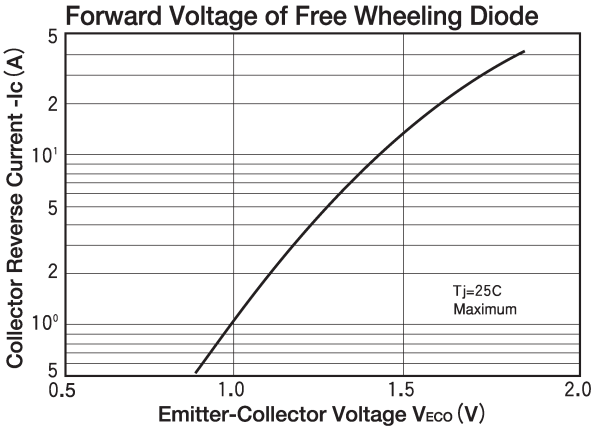
Reverse Bias Safe Operating Area



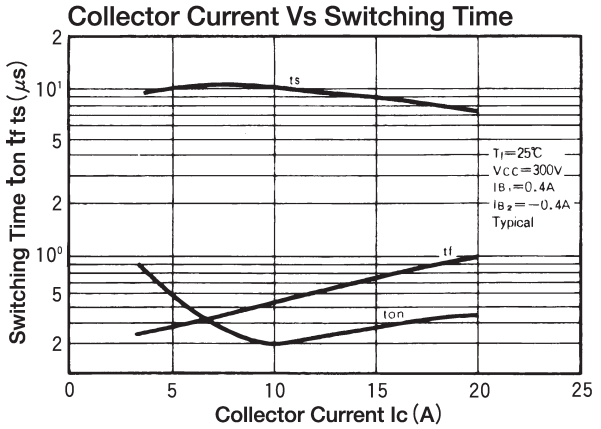
Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Collector Current Vs Switching Time



Maximum Transient Thermal Impedance Characteristics