

TRANSISTOR MODULE (THREE PHASES BRIDGE TYPE)

QF20AA40/60

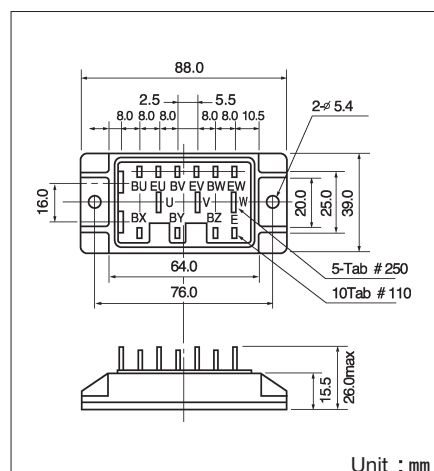
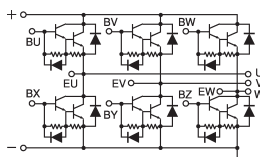
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QF20AA is six pack Darlington power transistor module which has six transistors connected in three phase bridge configuration. Each transistor has a reverse paralleled fast recovery diode. The mounting base of the module is electrically isolated from semiconductor elements for simple heatsink construction,

- $I_C=20A$, $V_{CEX}=400/600V$
- 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 (VVF), AC Servo, UPS



Maximum Ratings

($T_j=25^\circ C$)

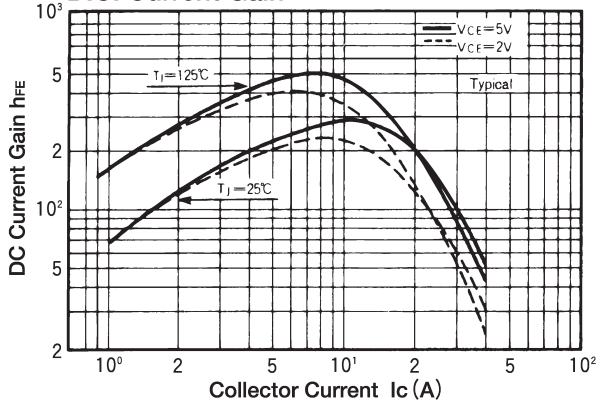
Symbol	Item	Conditions	Ratings		Unit
			QF20AA40	QF20AA60	
V_{CBO}	Collector-Base Voltage		400	600	V
V_{CEX}	Collector-Emitter Voltage	$V_{BE} = -2V$	400	600	V
V_{EBO}	Emitter-Base Voltage		10		V
I_C	Collector Current	() = $p_w \leq 1ms$	20 (40)		A
$-I_C$	Reverse Collector Current		20		A
I_B	Base Current		2		A
P_T	Total power dissipation	$T_C = 25^\circ C$	160		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 (M5)	Recommended Value 1.5~2.5 (15~25)	2.7 (28)		N·m (kgf·cm)
	Mass	Typical Value	95		g

Electrical Characteristics

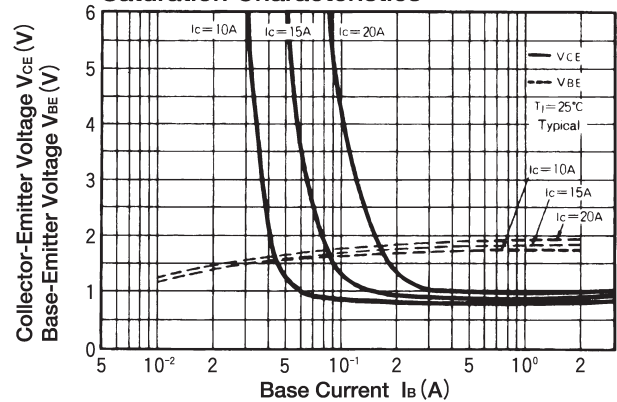
($T_j=25^\circ C$)

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	$V_{EB} = V_{EBO}$		200	mA
$V_{CEO(SUS)}$	Collector Emitter Sustaining Voltage	$I_C = 1A$	300		V
			450		V
$V_{CEX(SUS)}$	Collector Emitter Sustaining Voltage	$I_C = 4A, I_{B2} = -1A$	400		V
			600		V
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
t_{on}	Switching Time	On Time		1.0	μs
t_s		Storage Time		12.0	
t_f		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	$^\circ C/W$
		Diode part		2.2	

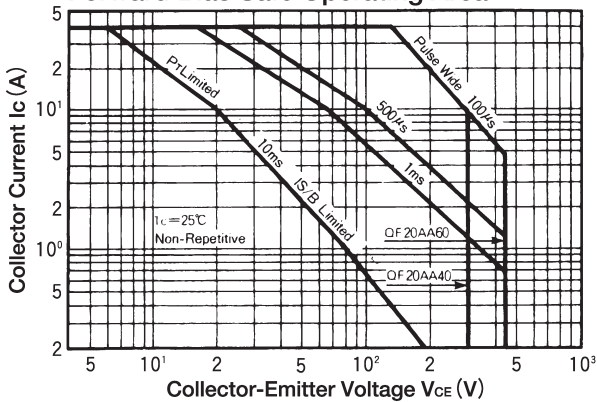
D.C. Current Gain



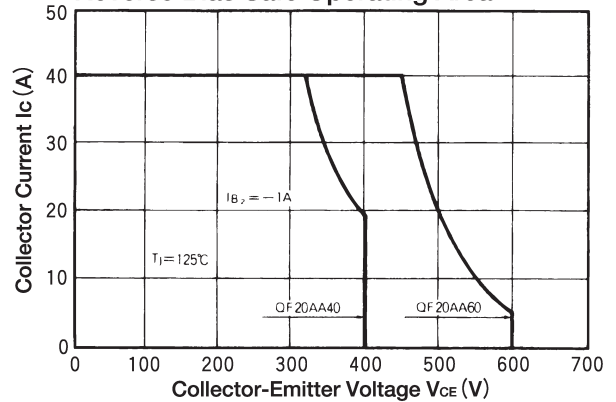
Saturation Characteristics



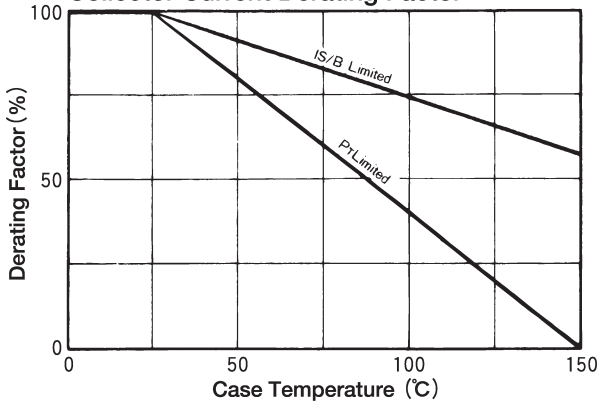
Forward Bias Safe Operating Area



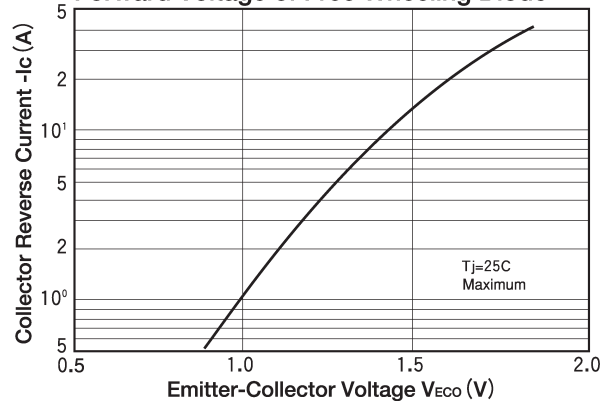
Reverse Bias Safe Operating Area



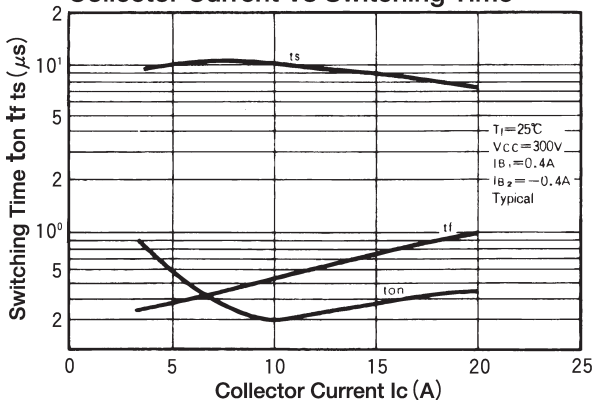
Collector Current Derating Factor



Forward Voltage of Free Wheeling Diode



Collector Current Vs Switching Time



Maximum Transient Thermal Impedance Characteristics

