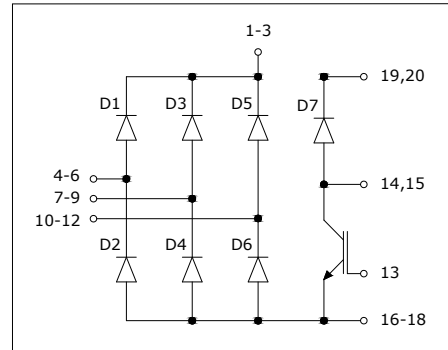


PRELIMINARY DATASHEET
Rectifier Diodes, 6 x 80A, 1600V, Bridge Configuration With Brake Chopper in iQpowermod™ Package

- General purpose rectifiers
- Low forward voltage
- Pb-free lead finish; RoHS compliant


DIODE Maximum Ratings (D1 to D6) , at $T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Value	Units
Repetitive peak reverse voltage	V_{RRM}	1600	V
Diode forward current, $T_c = 100^\circ\text{C}$	I_F	80	A
Repetitive peak forward current $t_p = 10\text{ ms}$, no voltage reapplied, half sine wave	I_{FSM}	1500	
Thermal resistance, junction to case	R_{thJC}	0.28	K/W

DIODE Electrical Characteristics (D1 to D6) , at $T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward voltage	V_F	$I_F = 80\text{A}$	-	1.6	-	V
Peak reverse recovery current	I_R	$V_R = 1600\text{V}$	-	-	10	mA

DIODE Maximum Ratings (D7) , at $T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Value	Units
Repetitive peak reverse voltage	V_{RRM}	1700	V
Diode forward current	I_F	50	A
Repetitive peak forward current, $t_p = 1\text{ ms}$	I_{FRM}	100	
Thermal resistance, junction to case	R_{thJC}	0.63	K/W

DIODE Electrical Characteristics (D7) , at $T_j = 25^\circ\text{C}$, unless otherwise specified

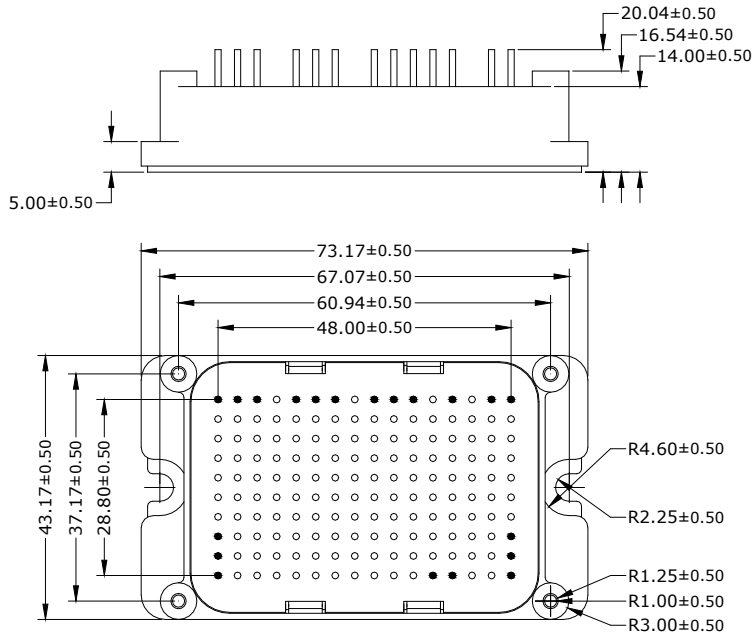
Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward voltage	V_F	$I_F = 50\text{A}$, $V_{GE} = 0\text{V}$	-	1.8	2.20	V
Reverse recovery current $T_j = 25^\circ\text{C}$	I_{rrm}	$V_{GE} = -15\text{V}$ $I_F = 50\text{A}$, $-di/dt = 1200\text{A}/\mu\text{s}$ ($T_{vj} = 125^\circ\text{C}$), $V_R = 900\text{V}$,	-	76.5	-	A
$T_j = 125^\circ\text{C}$			-	83.5	-	
Reverse recovery charge $T_j = 25^\circ\text{C}$	Q_{rr}	$V_{GE} = -15\text{V}$ $I_F = 50\text{A}$, $-di/dt = 1200\text{A}/\mu\text{s}$ ($T_{vj} = 125^\circ\text{C}$), $V_R = 900\text{V}$,	-	14.5	-	μC
$T_j = 125^\circ\text{C}$			-	24.5	-	

MAXIMUM RATINGS (IGBT), at $T_j = 25^\circ\text{C}$, unless otherwise specified

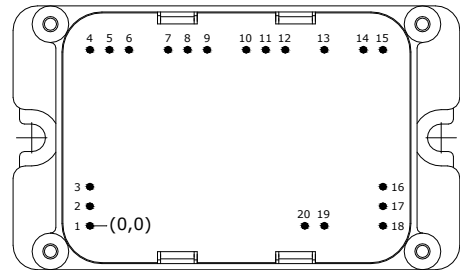
Parameter	Symbol	Value	Units
Collector-emitter voltage	V_{CES}	1700	V
DC collector current, $T_C=80^\circ\text{C}$	I_C	75	A
Repetitive peak collector current $T_P=1\text{ms}, T_C=80^\circ\text{C}$	I_{CRM}	150	
Gate-emitter voltage	V_{GE}	± 20	V
Thermal resistance, junction to case	R_{thJC}	0.27	K/W

ELECTRICAL CHARACTERISTICS (IGBT), at $T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit	
			Min.	Typ.	Max.		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$V_{GE} = 15\text{V}, I_C = 75\text{A}$	-	2.00	2.45	V	
Gate-emitter threshold voltage	$V_{GE(th)}$	$I_C = 3\text{mA}, V_{CE} = V_{GE}$	5.2	5.8	6.5	V	
Zero gate voltage collector current	I_{CES}	$V_{CE} = 1700\text{V}, V_{GE} = 0$	-	-	5.0	mA	
Gate-emitter leakage current	I_{GES}	$V_{CE} = 0\text{V}, V_{GE} = 20\text{V}$	-	-	400	nA	
Input capacitance	C_{iss}	$V_{CE} = 25\text{V},$ $V_{GE} = 0\text{V},$ $f = 1\text{MHz}$	-	6800	-	pF	
Reverse transfer capacitance	C_{rss}		-	220	-		
Gate charge	Q_{Gate}	$V_{GE} = -15\text{V} \dots +15\text{V}$	-	900	-	nC	
Turn-on delay time (inductive load) $T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	$t_{d(on)}$	$V_{CE} = 900\text{V},$ $I_C = 75\text{A},$ $V_{GE} = \pm 15\text{V},$ $R_G = 6.8\Omega$	-	370	-	ns	
Rise time (inductive load) $T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	t_r		-	40	-		
Turn-off delay time (inductive load) $T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	$t_{d(off)}$		-	650	-		
Fall time $T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	t_f		-	180	-		
Turn-on energy $T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	E_{on}		-	16.5	-		mJ
Turn-off energy $T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	E_{off}		-	24.0	-		
			-	16.0	-		
			-	23.5	-		

Package Outline Drawing


PIN LAYOUT					
PIN	X	Y	PIN	X	Y
1	0	0	12	32.00	28.80
2	0	3.20	13	38.40	28.80
3	0	6.40	14	44.80	28.80
4	0	28.80	15	48.00	28.80
5	3.20	28.80	16	48.00	6.40
6	6.40	28.80	17	48.00	3.20
7	12.80	28.80	18	48.00	0
8	16.00	28.80	19	38.40	0
9	19.20	28.80	20	35.20	0
10	25.60	28.80			
11	28.80	28.80			


Disclaimer

These specifications may not be considered as a guarantee of components characteristics. Components have to be tested depending on intended application as adjustments may be necessary. The use of **iQXPRZ Power Inc.** components in life support appliances and systems are subject to written approval of **iQXPRZ Power Inc.**