



### Description:

Powerex Dual MOSFET Module is designed specially for customer applications. The module is isolated for easy mounting with other components on a common heatsink.

### Features:

- Typical  $R_{DS(on)} = 0.0055\Omega$
- Extremely High dv/dt Capability
- Fast Body-Drain Diode
- Isolated Baseplate for Easy Heat Sinking
- Low Thermal Impedance
- Isolated Material: DBC Alumina
- (4) STY100NS20FD Chips per MOSFET Switch

### Applications:

- High Current, High Speed Switching
- Motor Drive
- DC-AC Converter for Welding Equipment
- Switch Mode Power Supply

Dim	Inches	Millimeters
A	4.25	108.0
B	2.44	62.0
C	1.14+0.04/-0.02	29+1.0/-0.5
D	3.66±0.01	93.0±0.25
E	1.88±0.01	48.0±0.25
F	0.67	17.0
G	0.16	4.0
H	0.24	6.0
J	0.59	15.0

Dim	Inches	Millimeters
K	0.55	14.0
L	0.87	22.0
M	0.33	8.5
N	0.10	2.5
P	0.85	21.5
Q	0.98	25.0
R	0.11	2.8
S	0.25 Dia.	6.5 Dia.
T	0.6	15.15

**Maximum Ratings, T<sub>j</sub>=25°C unless otherwise specified**

Ratings	Symbol	QJD0240002	Units
Drain-source voltage, V <sub>GS</sub> =0V	V <sub>DSS</sub>	200	Volts
Gate-source voltage	V <sub>GSS</sub>	±20	Volts
Drain Current at T <sub>c</sub> = 25°C	I <sub>D</sub>	400	Amperes
Drain Current at T <sub>c</sub> = 100°C	I <sub>D</sub>	252	Amperes
Max Operating Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-40 to 125	°C
Mounting Torque, M6 Terminal Screws	-	40	In-lb
Mounting Torque, M6 Mounting Screws	-	40	In-lb
Module Weight (Typical)	-	400	Grams
V Isolation	V <sub>RMS</sub>	2000	Volts

**Static Electrical Characteristics, T<sub>j</sub>=25°C unless otherwise specified**

Characteristic	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =1mA, V <sub>GS</sub> =0V	200	-	-	Volts
Drain leakage current	I <sub>DSS</sub>	V <sub>DS</sub> =200V, V <sub>GS</sub> =0V	-	-	40	μA
Drain leakage current at T <sub>c</sub> = 125°C	I <sub>DSS</sub>	V <sub>DS</sub> =200V, V <sub>GS</sub> =0V	-	-	400	μA
Gate leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±400	nA
Gate-source threshold voltage	V <sub>GS(th)</sub>	I <sub>D</sub> =1mA, V <sub>DS</sub> =10V	3.0	4.0	5.0	Volts
Drain-source on state resistance	R <sub>DS(ON)</sub>	I <sub>D</sub> =200A, V <sub>GS</sub> =10V	-	5.5	6.0	mΩ
Drain-source on-state voltage	V <sub>DS(ON)</sub>	I <sub>D</sub> =200A, V <sub>GS</sub> =10V	-	1.1	1.2	Volts
Forward On Voltage MOS Diode	V <sub>SD</sub>	I <sub>SD</sub> =400A, V <sub>GS</sub> =0V	-	-	1.6	Volts

**Dynamic Electrical Characteristics, T<sub>j</sub>=25°C unless otherwise specified**

Characteristic	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V	-	31600	-	pF
Output Capacitance	C <sub>oss</sub>	V <sub>GS</sub> =0V	-	6000	-	pF
Reverse Transfer Capacitance	C <sub>rss</sub>	f=1MHz	-	1840	-	pF
Turn on Delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =100V	-	TBD	-	ns
Rise Time	t <sub>r</sub>	I <sub>D</sub> =200A	-	TBD	-	ns
Turn- off Delay Time	t <sub>d(off)</sub>	V <sub>GS</sub> =10V	-	TBD	-	ns
Fall Time	t <sub>f</sub>	R <sub>G</sub> =4.7Ω	-	TBD	-	ns
Reverse Recovery Time MOS Diode	t <sub>rr</sub>	I <sub>SD</sub> =400A	-	225	-	ns
Reverse Recovery Charge MOS Diode	Q <sub>rr</sub>	di/dt=400A/μs V <sub>DD</sub> =160V	-	5.4	-	μC
Reverse Recovery Current MOS Diode	I <sub>RRM</sub>	T <sub>j</sub> =150°C	-	48	-	Amperes

**Thermal Characteristics, T<sub>j</sub>=25°C unless otherwise specified**

Characteristic	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Channel to Case	R <sub>θ(ch-c)</sub>	Per Mosfet	-	0.08	TBD	°C/W
Contact Thermal Resistance (Thermal Grease Applied)	R <sub>θCF</sub>	Per Module	-	0.020	-	°C/W