



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_j=25°C unless otherwise specified

Ratings	Symbol	QJD0240002	Units
Drain-source voltage, V _{GS} =0V	V _{DSS}	200	Volts
Gate-source voltage	V _{GSS}	±20	Volts
Drain Current at T _c = 25°C	I _D	400	Amperes
Drain Current at T _c = 100°C	I _D	252	Amperes
Max Operating Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-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 _{RMS}	2000	Volts

Static Electrical Characteristics, T_j=25°C unless otherwise specified

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

Dynamic Electrical Characteristics, T_j=25°C unless otherwise specified

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

Thermal Characteristics, T_j=25°C unless otherwise specified

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