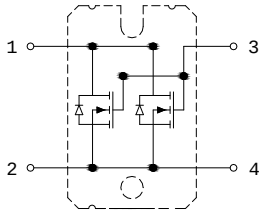
PRELIMINARY DATASHEET

600V 2X39A, Parallel N-Channel Enhancement Mode CoolMOS™ Power MOSFET in Isolated SOT 227 Package



APPLICATIONS

- PC power supplies
- Consumer SMPS
- Telecom power supplies
- Server power supplies
- Solar inverter
- Induction heating
- Electronic ballast
- PC silver box

FEATURES

- Extreme dv/dt rated
- High peak current capability
- Low gate charge
- Low capacitances
- Ultra low $R_{DS(on)}$ < 35mΩ
- Pb-free finished; **RoHS compliant**

MAXIMUM RATINGS, at T_C = 25°C, unless otherwise specified

Parameter	Symbol	Value	Units
Drain-Source voltage	V_{DSS}	600	V
Gate-Source voltage AC (f>1 Hz)	V_{GS}	+/- 30	
Continuous drain current T_C = 25°C T_C = 100°C	I_D	78 49	A
Pulsed drain current, Note 1	I_{Dpulse}	234	
Repetitive avalanche current	I_{AR}	20	
Repetitive avalanche energy, Note 2 I_D = 20A, V_{DD} = 50V	E_{AR}	1.0	mJ
Single-pulsed avalanche energy I_D = 10A, V_{DD} = 50V	E_{AS}	1800	
MOSFET dv/dt ruggedness V_{DS} = 0..480V, I_D=78A	dV/dt	50	V/ns
Operating junction and storage temperature	T_j, T_{stg}	-55 to +150	°C

Thermal and Isolation Characteristics

Parameter	Symbol	Max. Value	Units
Characteristics			
Thermal resistance, junction to case	R_{thJC}	0.22	°C /W
Isolation voltage, RMS (measured between terminals and mounting base, 50-60 Hz, for 1-3 seconds)	V_{iso}	3000	V

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Electrical Characteristics, at T_C = 25°C, unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250μA	600	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 5.4mA	2.1	3.0	3.9	
Drain-source diode forward voltage	V_{SD}	V_{GS} = 0V, I_F = I_S = 78A	-	-	1.2	V
Zero gate voltage drain current	I_{DSS}	V_{GS} = 0V, V_{DS} = 600V T_C = 25°C T_C = 150°C	- -	1.0 -	50 500	μA
Gate-source leakage current	I_{GSS}	V_{GS} = 20V, V_{DS} = 0V	-	-	200	nA
Static drain-source On-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 60A T_C = 25°C T_C = 150°C	- -	30 80	35 -	mΩ
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS} = 100V, V_{GS} = 0V, f = 1.0 MHz	-	13.6	-	nF
Output capacitance	C_{oss}		-	4.4	-	

Switching Characteristics, at T_C = 25°C, unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Turn-on delay time	$t_{d(on)}$	V_{DD}=380V, I_D=78A, V_{GS}=0/13V, R_G=0.9Ω, T_j = 125°C	-	15	-	ns
Rise time	t_r		-	22	-	
Turn-off delay time	$t_{d(off)}$		-	92	-	
Fall time	t_f		-	7	-	
Gate charge	Q_g	V_{DD} = 350V, I_D = 78A, V_{GS} = 0 to 10V	-	504	-	nC
Gate-source charge	Q_{gs}		-	48	-	
Gate-drain charge	Q_{gd}		-	242	-	

Drain-Source Diode Characteristics, at T_C = 25°C, unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Reverse recovery time	t_{rr}	V_R = 400V, I_S = I_F = 78A di_F/dt = 100A/μs	-	482	-	ns
Reverse recovery charge	Q_{rr}		-	38	-	μC
Peak reverse recovery current	I_{rrm}		-	122	-	A

Notes:
1. *Pulse width limited by maximum junction temperature*
2. *Repetitive avalanche causes power losses that can be calculated as* $P_{AV} = E_{AR} \cdot f$

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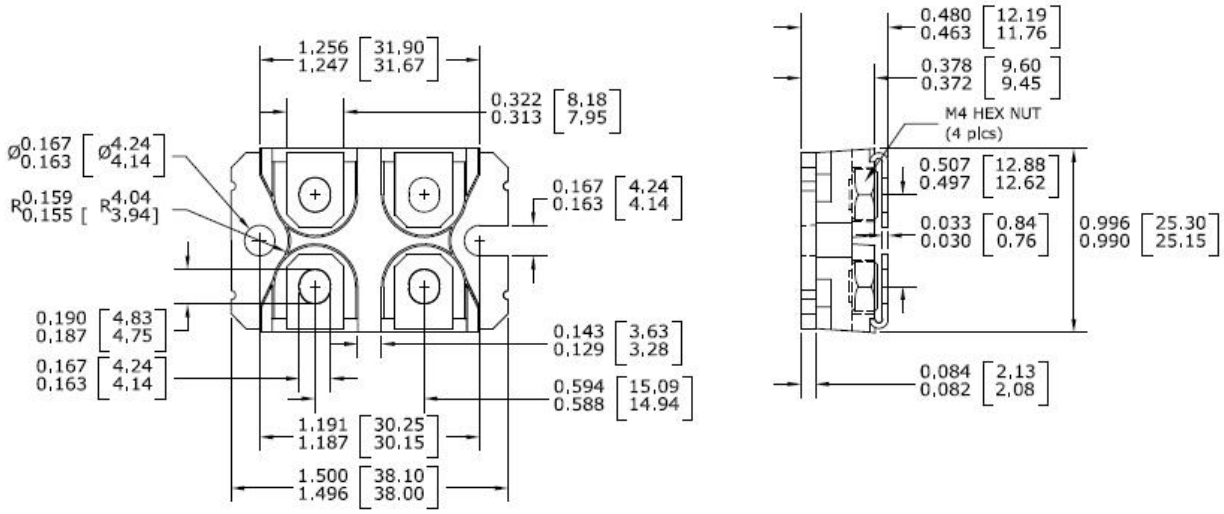
Package Outline Drawing



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CAUTION: These devices are ESD sensitive. Use proper handling procedure.

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.**

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