

## PRELIMINARY DATASHEET

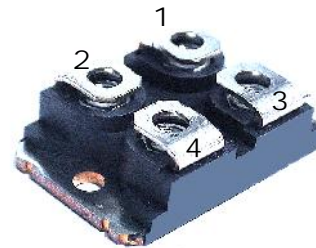
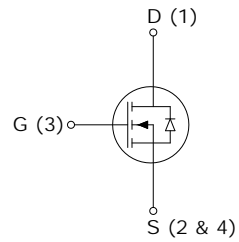
### 600V, 39A N-Channel Enhancement mode CoolMOS™ Power MOSFET in Isolated SOT227 Package

#### APPLICATIONS

- PC power supplies
- Consumer SMPS
- Telecom power supplies
- Server power supplies
- Solar inverters
- Welding inverters
- Induction heating
- Electronics ballast

#### FEATURES

- Extreme dv/dt rated
- Ultra low gate charge
- Ultra low effective capacitances
- Low Rds(on) <0.07Ω
- Pb-free finished; **RoHS compliant**



#### MAXIMUM RATINGS, at T<sub>c</sub> = 25°C unless otherwise noted

Parameter	Symbol	Value	Units
Drain - Source Voltage	V <sub>DSS</sub>	600	V
Drain current – continuous T <sub>c</sub> = 25°C T <sub>c</sub> = 100°C	I <sub>D</sub>	39 24	A
Drain current – pulsed, pulse width limited by T <sub>jmax</sub>	I <sub>D,pulse</sub>	117	
Inverse diode continuous forward current T <sub>c</sub> = 25 °C	I <sub>S</sub>	39	
Inverse diode direct current, pulse width limited by T <sub>jmax</sub>	I <sub>SM</sub>	117	
Drain source voltage slope V <sub>DS</sub> = 480V, I <sub>D</sub> = 47A, T <sub>j</sub> = 125 °C	dv/dt	50	V/ns
Gate source voltage Static AC (f > 1Hz)	V <sub>GS</sub>	±20 ±30	V
Soldering temperature, wave soldering 1.6 mm (0.063 in) from case for 10 s	T <sub>sold</sub>	260	°C
Operating junction and storage temperature	T <sub>j</sub> , T <sub>stg</sub>	-55... +150	°C

#### Thermal and Isolation Characteristics

Parameter	Symbol	Max. Value	Units
<b>Characteristics</b>			
Thermal resistance, junction to case	R <sub>thJC</sub>	0.44	K /W
Thermal resistance, junction to ambient	R <sub>thJA</sub>	62	
Isolation voltage, RMS (measured between terminals and mounting base, 50-60 Hz, for 1-3 seconds )	V <sub>iso</sub>	3000	V

**Electrical Characteristics**, at  $T_C = 25^\circ\text{C}$ , unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
<b>Static Characteristics</b>						
Drain-source breakdown voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = 0.25mA$	600	-	-	V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 2.7mA$	2.1	3.0	3.9	
Drain-source diode forward voltage	$V_{SD}$	$V_{GS} = 0V, I_F = I_S = 39A$	-	-	1.2	V
Zero gate voltage drain current	$I_{DSS}$	$V_{GS} = 0V, V_{DS} = 600V$ $T_C = 25^\circ\text{C}$ $T_C = 150^\circ\text{C}$	-	0.5	25	$\mu\text{A}$
Gate-body leakage current, forward	$I_{GSS}$	$V_{GS} = 30V, V_{DS} = 0V$	-	-	100	nA
Static drain-source On-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$ $T_C = 25^\circ\text{C}$ $T_C = 150^\circ\text{C}$	-	0.06	0.07	$\Omega$
Gate resistance	$R_G$	$f = 1\text{MHz}$ , open drain	-	0.62	-	$\Omega$
<b>Dynamic Characteristics</b>						
Input capacitance	$C_{iss}$	$V_{DS} = 25V,$	-	6800	-	pF
Output capacitance	$C_{oss}$	$V_{GS} = 0V,$	-	2200	-	
Reverse transfer capacitance	$C_{riss}$	$f = 1\text{MHz}$	-	145	-	

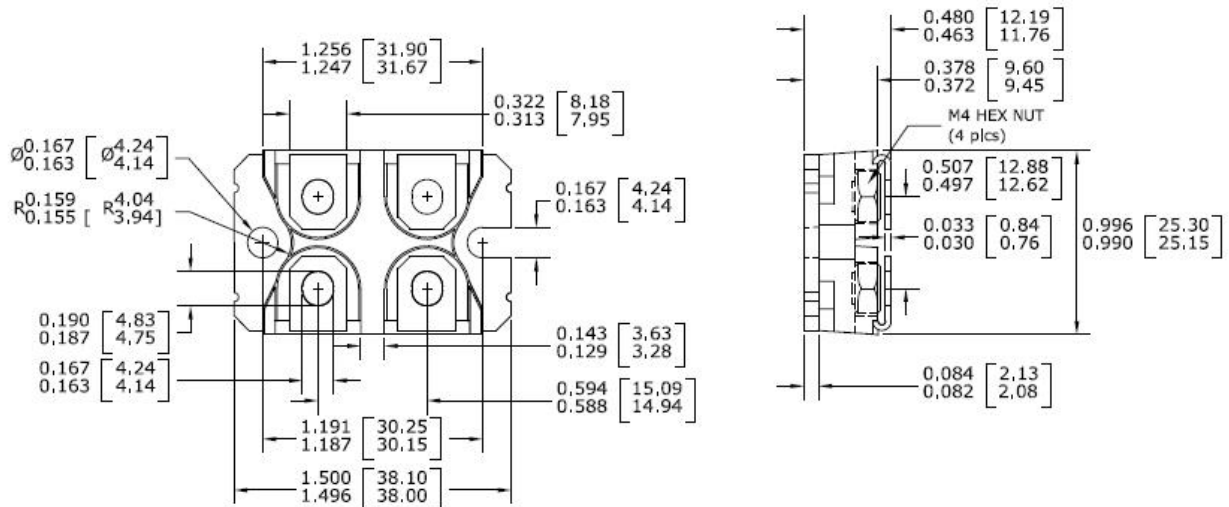
**Switching Characteristics**, at  $T_C = 25^\circ\text{C}$ , unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Turn-on delay time	$t_{d(on)}$	$V_{DS} = 380V, I_D = 39A,$ $V_{GS} = 0/13V, R_G = 1.8\Omega$ $T_C = 125^\circ\text{C}$	-	15	-	ns
Rise time	$t_r$		-	22	-	
Turn-off delay time	$t_{d(off)}$		-	92	-	
Fall time	$t_f$		-	7	-	
Gate charge	$Q_g$	$V_{DD} = 350V, I_D = 39A$ $V_{GS} = 0 \text{ to } 10V$	-	252	-	nC
Gate-source charge	$Q_{gs}$		-	24	-	
Gate-drain charge	$Q_{gd}$		-	121	-	

**Drain-Source Diode Characteristics**, at  $T_C = 25^\circ\text{C}$ , unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Reverse recovery time	$t_{rr}$	$V_R = 350V, I_S = I_F = 39A$ $di_F/dt = 100A/\mu\text{s}$	-	482	-	ns
Reverse recovery charge	$Q_{rr}$		-	19	-	$\mu\text{C}$
Peak reverse recovery current	$I_{rrm}$		-	61	-	A

## Package Outline Drawing



**CoolMOS™** is a registered trademark of Infineon Technologies AG.

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.**