

## FUJI POWER MOSFET Super FAP-G Series

## N-CHANNEL SILICON POWER MOSFET

### Features

- High speed switching
- Low on-resistance
- No secondary breakdown
- Low driving power
- Avalanche-proof

### Applications

- Switching regulators
- UPS (Uninterruptible Power Supply)
- DC-DC converters

### Maximum ratings and characteristic Absolute maximum ratings

( $T_c=25^\circ\text{C}$  unless otherwise specified)

Item	Symbol	Ratings	Unit
Drain-source voltage	$V_{DS}$	600	V
	$V_{DSX}^*5$	600	V
Continuous drain current	$I_D$	$\pm 17$	A
Pulsed drain current	$I_{D(puls)}$	$\pm 68$	A
Gate-source voltage	$V_{GS}$	$\pm 30$	V
Repetitive or non-repetitive	$I_{AR}^*2$	17	A
Maximum Avalanche Energy	$E_{AS}^*1$	412	mJ
Maximum Drain-Source dV/dt	$dV_{DS}/dt^*4$	20	kV/ $\mu\text{s}$
Peak Diode Recovery dV/dt	$dV/dt^*3$	5	kV/ $\mu\text{s}$
Max. power dissipation	$P_D$	$T_a=25^\circ\text{C}$	3.125
		$T_c=25^\circ\text{C}$	120
Operating and storage temperature range	$T_{ch}$	+150	$^\circ\text{C}$
	$T_{stg}$	-55 to +150	$^\circ\text{C}$
Isolation Voltage	$V_{ISO}^*6$	2	kVrms

\*1  $L=2.62\text{mH}$ ,  $V_{CC}=60\text{V}$  \*2  $T_{ch}\leq 150^\circ\text{C}$  \*3  $I_F\leq -I_D$ ,  $-di/dt=50\text{A}/\mu\text{s}$ ,  $V_{CC}\leq BV_{DS}$ ,  $T_{ch}\leq 150^\circ\text{C}$

\*4  $V_{DS}\leq 600\text{V}$  \*5  $V_{GS}=-30\text{V}$  \*6  $t=60\text{sec}$   $f=60\text{Hz}$

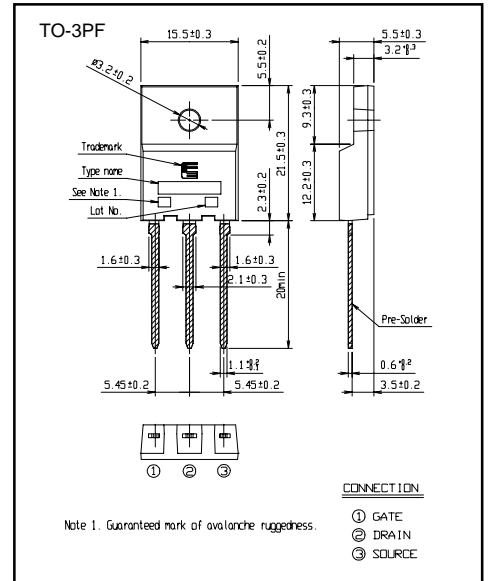
### Electrical characteristics ( $T_c=25^\circ\text{C}$ unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D=250\mu\text{A}$ $V_{GS}=0\text{V}$	600			V
Gate threshold voltage	$V_{GS(th)}$	$I_D=250\mu\text{A}$ $V_{DS}=V_{GS}$	3.0		5.0	V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS}=600\text{V}$ $V_{GS}=0\text{V}$			25	$\mu\text{A}$
		$V_{DS}=480\text{V}$ $V_{GS}=0\text{V}$			250	$\mu\text{A}$
Gate-source leakage current	$I_{GSS}$	$V_{GS}=\pm 30\text{V}$ $V_{DS}=0\text{V}$		10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$I_D=8.5\text{A}$ $V_{GS}=10\text{V}$		0.29	0.37	$\Omega$
Forward transconductance	$g_{fs}$	$I_D=8.5\text{A}$ $V_{DS}=25\text{V}$	10	20		S
Input capacitance	$C_{iss}$	$V_{DS}=25\text{V}$		2280	3420	pF
Output capacitance	$C_{oss}$	$V_{GS}=0\text{V}$		290	435	pF
Reverse transfer capacitance	$C_{rss}$	$f=1\text{MHz}$		16	24	pF
Turn-on time $t_{on}$	$t_{d(on)}$	$V_{CC}=300\text{V}$ $I_D=8.5\text{A}$		26	39	ns
	$t_r$	$V_{GS}=10\text{V}$		37	56	ns
Turn-off time $t_{off}$	$t_{d(off)}$	$R_{GS}=10\Omega$		78	117	ns
	$t_f$			13	19	ns
Total Gate Charge	$Q_G$	$V_{CC}=300\text{V}$		54	81	nC
Gate-Source Charge	$Q_{GS}$	$I_D=17\text{A}$		15	23	nC
Gate-Drain Charge	$Q_{GD}$	$V_{GS}=10\text{V}$		20	30	nC
Avalanche capability	$I_{AV}$	$L=2.62\text{mH}$ $T_{ch}=25^\circ\text{C}$	17			A
Diode forward on-voltage	$V_{SD}$	$I_F=17\text{A}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$		0.93	1.50	V
Reverse recovery time	$t_{rr}$	$I_F=17\text{A}$ $V_{GS}=0\text{V}$		0.7		$\mu\text{s}$
Reverse recovery charge	$Q_{rr}$	$-di/dt=100\text{A}/\mu\text{s}$ $T_{ch}=25^\circ\text{C}$		10.0		$\mu\text{C}$

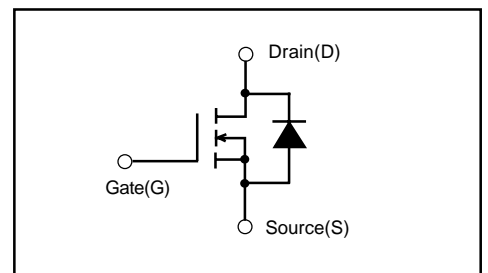
### Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			1.042	$^\circ\text{C}/\text{W}$
	$R_{th(ch-a)}$	channel to ambient			1.042	$^\circ\text{C}/\text{W}$

### Outline Drawings



### Equivalent circuit schematic



## Characteristics

