

# 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<sub>c</sub>=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit
Drain-source voltage	V <sub>DS</sub>	800	V
	V <sub>DSX</sub> *5	800	V
Continuous drain current	I <sub>D</sub>	±7	A
Pulsed drain current	I <sub>D</sub> (puls)	±28	A
Gate-source voltage	V <sub>GS</sub>	±30	V
Repetitive or non-repetitive	I <sub>AR</sub> *2	7	A
Maximum Avalanche Energy	E <sub>AS</sub> *1	235.3	mJ
Maximum Drain-Source dV/dt	dV <sub>DS</sub> /dt *4	40	kV/μs
Peak Diode Recovery dV/dt	dV/dt *3	5	kV/μs
Max. power dissipation	P <sub>D</sub>	T <sub>a</sub> =25°C	2.16
		T <sub>c</sub> =25°C	70
Operating and storage temperature range	T <sub>ch</sub>	+150	°C
	T <sub>stg</sub>	-55 to +150	°C
Isolation Voltage	V <sub>ISO</sub> *6	2	kVrms

\*1 L=8.8mH, V<sub>CC</sub>=80V, T<sub>ch</sub>=25°C See to Avalanche Energy Graph \*2 T<sub>ch</sub> ≤ 150°C

\*3 I<sub>F</sub> ≤ -I<sub>D</sub>, -di/dt=50A/μs, V<sub>CC</sub> ≤ BV<sub>DSS</sub>, T<sub>ch</sub> ≤ 150°C \*4 V<sub>DS</sub> ≤ 800V \*5 V<sub>GS</sub>=-30V \*6 t=60sec, f=60Hz

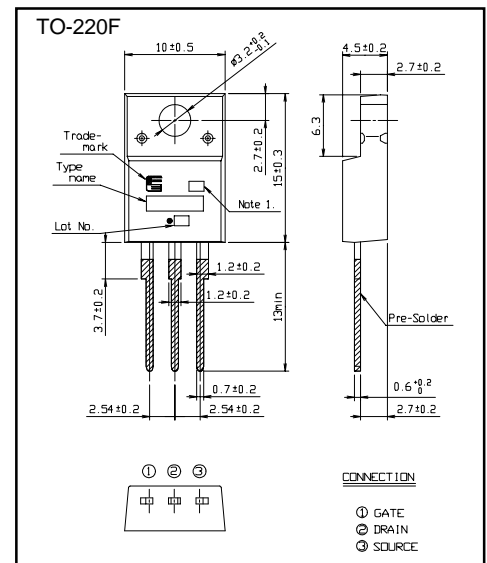
#### ● Electrical characteristics (T<sub>c</sub> =25°C unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> = 250μA V <sub>GS</sub> =0V	800			V
Gate threshold voltage	V <sub>GS(th)</sub>	I <sub>D</sub> = 250μA V <sub>DS</sub> =V <sub>GS</sub>	3.0		5.0	V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =800V V <sub>GS</sub> =0V			25	μA
		V <sub>DS</sub> =640V V <sub>GS</sub> =0V			250	μA
Gate-source leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±30V V <sub>DS</sub> =0V			100	nA
Drain-source on-state resistance	R <sub>DS(on)</sub>	I <sub>D</sub> =3.5A V <sub>GS</sub> =10V		1.46	1.90	Ω
Forward transconductance	g <sub>fs</sub>	I <sub>D</sub> =3.5A V <sub>DS</sub> =25V	4.1	8.2		S
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V		740	1110	pF
Output capacitance	C <sub>oss</sub>	V <sub>GS</sub> =0V		105	160	pF
Reverse transfer capacitance	C <sub>rss</sub>	f=1MHz		7	10.5	pF
Turn-on time t <sub>on</sub>	td(on)	V <sub>CC</sub> =600V I <sub>D</sub> =3.5A		21	31.5	ns
	t <sub>r</sub>	V <sub>GS</sub> =10V		8	12	ns
Turn-off time t <sub>off</sub>	td(off)	R <sub>GS</sub> =10 Ω		40	60	ns
	t <sub>f</sub>			9.6	14.4	ns
Total Gate Charge	Q <sub>G</sub>	V <sub>CC</sub> =400V		21.5	32	nC
Gate-Source Charge	Q <sub>GS</sub>	I <sub>D</sub> =7A		3	4.5	nC
Gate-Drain Charge	Q <sub>GD</sub>	V <sub>GS</sub> =10V		7	10.5	nC
Avalanche capability	I <sub>AV</sub>	L=8.8mH T <sub>ch</sub> =25°C	7			A
Diode forward on-voltage	V <sub>SD</sub>	I <sub>F</sub> =7A V <sub>GS</sub> =0V T <sub>ch</sub> =25°C		0.90	1.50	V
Reverse recovery time	t <sub>rr</sub>	I <sub>F</sub> =7A V <sub>GS</sub> =0V		2.3		μs
Reverse recovery charge	Q <sub>rr</sub>	-di/dt=100A/μs T <sub>ch</sub> =25°C		7.0		μC

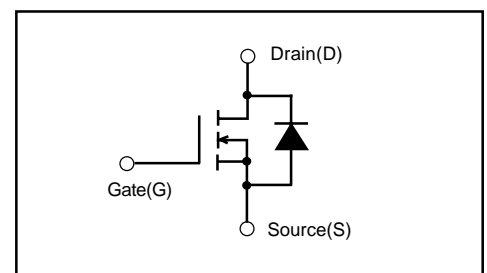
#### ● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R <sub>th(ch-c)</sub>	channel to case			1.790	°C/W
	R <sub>th(ch-a)</sub>	channel to ambient			58.0	°C/W

#### ■ Outline Drawings [mm]



#### ■ Equivalent circuit schematic



## Characteristics

