

## 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
- DC-DC converters
- UPS (Uninterruptible Power Supply)

#### Maximum ratings and characteristic Absolute maximum ratings

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

Item	Symbol	Rated	Unit	Remarks
Drain-source voltage	V <sub>DS</sub>	500	V	
	V <sub>DSX</sub>	500	V	V <sub>GS</sub> =-30V
Continuous drain current	I <sub>D</sub>	±52	A	
Pulsed drain current	I <sub>D(puls)</sub>	±208	A	
Gate-source voltage	V <sub>GS</sub>	±30	V	
Non-Repetitive Maximum avalanche current	I <sub>AS</sub>	52	A	T <sub>ch</sub> =25°C *1
Repetitive or Maximum avalanche current	I <sub>AR</sub>	26	A	T <sub>ch</sub> ≤150°C *1
Non-Repetitive Maximum avalanche energy	E <sub>AS</sub>	802.7	mJ	L=544μH V <sub>CC</sub> =50V *2
Maximum Drain-Source dV/dt	dV <sub>DS</sub> /dt	20	kV/s	V <sub>DS</sub> ≤500V
Peak diode recovery dV/dt	dV/dt	5	kV/μs	*3
Max. power dissipation	P <sub>D</sub>	2.50	W	T <sub>a</sub> =25°C
		600		T <sub>c</sub> =25°C
Operating and storage temperature range	T <sub>ch</sub>	+150	°C	
	T <sub>stg</sub>	-55 to +150	°C	

\*1 See to Avalanche Current Graph

\*2 See to Avalanche Energy Graph

\*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

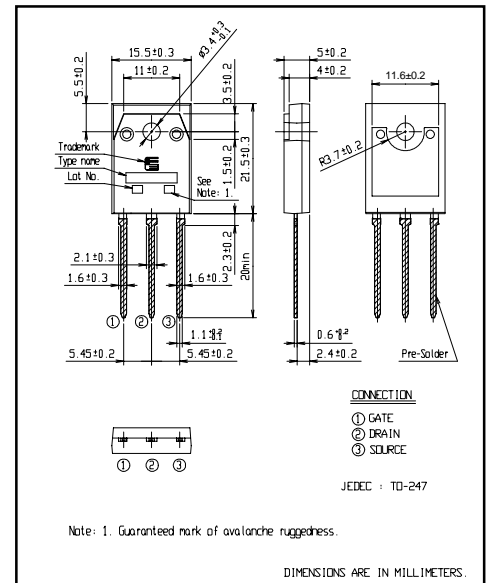
#### Electrical characteristics (T<sub>c</sub>=25°C unless otherwise specified)

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	500			V
Gate threshold voltage	V <sub>GS(th)</sub>	I <sub>D</sub> =250μA V <sub>DS</sub> =V <sub>GS</sub>	3.0			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =500V V <sub>GS</sub> =0V T <sub>ch</sub> =25°C			25	μA
		V <sub>DS</sub> =400V V <sub>GS</sub> =0V T <sub>ch</sub> =125°C			250	
Gate-source leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±30V V <sub>DS</sub> =0V		10	100	nA
Drain-source on-state resistance	R <sub>DS(on)</sub>	I <sub>D</sub> =26A V <sub>GS</sub> =10V		0.09	0.11	Ω
Forward transconductance	g <sub>fs</sub>	I <sub>D</sub> =26A V <sub>DS</sub> =25V	15	30		S
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V		5350	8025	pF
Output capacitance	C <sub>oss</sub>	V <sub>GS</sub> =0V		760	1140	
Reverse transfer capacitance	C <sub>rss</sub>	f=1MHz		42	63	ns
Turn-on time t <sub>on</sub>	t <sub>d(on)</sub>	V <sub>CC</sub> =300V I <sub>D</sub> =26A		80	120	
	t <sub>r</sub>	V <sub>GS</sub> =10V		103	155	
Turn-off time t <sub>off</sub>	t <sub>d(off)</sub>	R <sub>GS</sub> =10Ω		190	285	
	t <sub>f</sub>			49	74	
Total Gate Charge	Q <sub>G</sub>	V <sub>CC</sub> =250V		114	171	nC
Gate-Source Charge	Q <sub>GS</sub>	I <sub>D</sub> =52A		36	54	
Gate-Drain Charge	Q <sub>GD</sub>	V <sub>GS</sub> =10V		40	60	
Avalanche capability	I <sub>AV</sub>	L=544μH T <sub>ch</sub> =25°C	52			A
Diode forward on-voltage	V <sub>SD</sub>	I <sub>F</sub> =52A V <sub>GS</sub> =0V T <sub>ch</sub> =25°C		1.00	1.50	V
Reverse recovery time	t <sub>rr</sub>	I <sub>F</sub> =52A V <sub>GS</sub> =0V		0.83		μs
Reverse recovery charge	Q <sub>rr</sub>	-di/dt=100A/μs T <sub>ch</sub> =25°C		19.0		μC

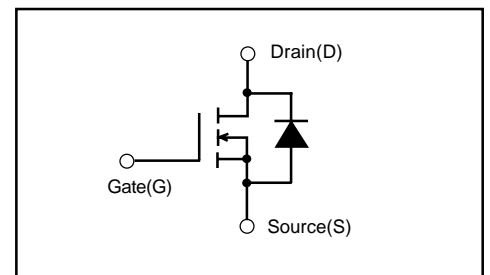
#### Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R <sub>th(ch-c)</sub>	channel to case			0.208	°C/W
	R <sub>th(ch-a)</sub>	channel to ambient			50.0	°C/W

#### Outline Drawings [mm]



#### Equivalent circuit schematic



Characteristics

