

## FUJI POWER MOSFET

## N-CHANNEL SILICON POWER MOSFET

# Super FAP-G Series

### 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	$V_{DS}$	900	V
	$V_{DSX}^*5$	900	V
Continuous drain current	$I_D$	$\pm 10$	A
Pulsed drain current	$I_{D(puls)}$	$\pm 40$	A
Gate-source voltage	$V_{GS}$	$\pm 30$	V
Repetitive or non-repetitive	$I_{AR}^*2$	10	A
Maximum Avalanche Energy	$E_{AS}^*1$	330	mJ
Maximum Drain-Source dV/dt	$dV_{DS}/dt^*4$	40	kV/ $\mu\text{s}$
Peak Diode Recovery dV/dt	$dV/dt^*3$	5	kV/ $\mu\text{s}$
Max. power dissipation	$P_D$	$T_a=25^\circ\text{C}$	2.50
		$T_c=25^\circ\text{C}$	270
Operating and storage temperature range	$T_{ch}$	+150	$^\circ\text{C}$
	$T_{stg}$	-55 to +150	$^\circ\text{C}$

\*1  $L=6.06\text{mH}$ ,  $V_{CC}=90\text{V}$ ,  $T_{ch}=25^\circ\text{C}$ , See to Avalanche Energy Graph \*2  $T_{ch} \leq 150^\circ\text{C}$

\*3  $I_F \leq -I_D$ ,  $-di/dt=50\text{A}/\mu\text{s}$ ,  $V_{CC} \leq BV_{DSS}$ ,  $T_{ch} \leq 150^\circ\text{C}$  \*4  $V_{DS} \leq 900\text{V}$  \*5  $V_{GS} = -30\text{V}$

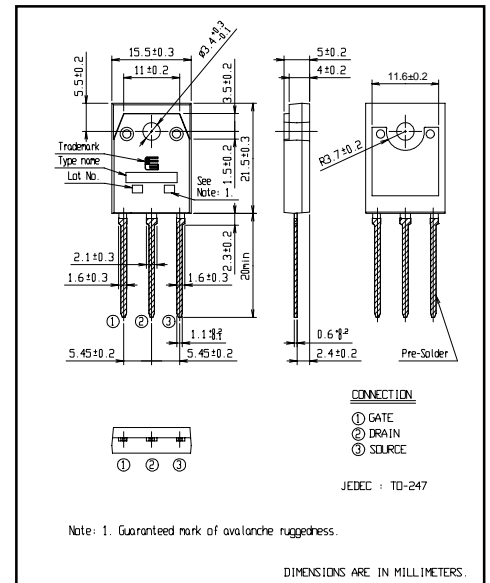
### Electrical characteristics ( $T_c = 25^\circ\text{C}$ unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D = 250\mu\text{A}$ $V_{GS} = 0\text{V}$	900			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	$I_{DSS}$	$V_{DS} = 900\text{V}$ $V_{GS} = 0\text{V}$			25	$\mu\text{A}$
		$V_{DS} = 720\text{V}$ $V_{GS} = 0\text{V}$			250	
Gate-source leakage current	$I_{GSS}$	$V_{GS} = \pm 30\text{V}$ $V_{DS} = 0\text{V}$			100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$I_D = 5\text{A}$ $V_{GS} = 10\text{V}$		1.08	1.40	$\Omega$
Forward transconductance	$g_{fs}$	$I_D = 5\text{A}$ $V_{DS} = 25\text{V}$	6	12		S
Input capacitance	$C_{iss}$	$V_{DS} = 25\text{V}$		1250	1900	pF
Output capacitance	$C_{oss}$	$V_{GS} = 0\text{V}$		160	240	
Reverse transfer capacitance	$C_{rss}$	$f = 1\text{MHz}$		12	18	
Turn-on time $t_{on}$	$t_{d(on)}$	$V_{CC} = 600\text{V}$ $I_D = 5\text{A}$		26	39	ns
	$t_r$	$V_{GS} = 10\text{V}$		23	35	
Turn-off time $t_{off}$	$t_{d(off)}$	$R_{GS} = 10\Omega$		60	90	
	$t_f$			17	26	
Total Gate Charge	$Q_G$	$V_{CC} = 450\text{V}$		34.5	52	nC
Gate-Source Charge	$Q_{GS}$	$I_D = 10\text{A}$		5	7.5	
Gate-Drain Charge	$Q_{GD}$	$V_{GS} = 10\text{V}$		12	18	
Avalanche capability	$I_{AV}$	$L = 6.06\text{mH}$ $T_{ch} = 25^\circ\text{C}$	10			A
Diode forward on-voltage	$V_{SD}$	$I_F = 10\text{A}$ $V_{GS} = 0\text{V}$ $T_{ch} = 25^\circ\text{C}$		0.90	1.50	V
Reverse recovery time	$t_{rr}$	$I_F = 10\text{A}$ $V_{GS} = 0\text{V}$		3.1		$\mu\text{s}$
Reverse recovery charge	$Q_{rr}$	$-di/dt = 100\text{A}/\mu\text{s}$ $T_{ch} = 25^\circ\text{C}$		17.0		$\mu\text{C}$

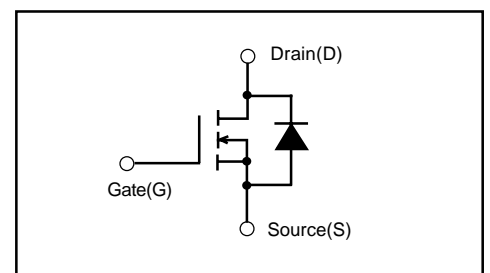
### Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			0.463	$^\circ\text{C}/\text{W}$
	$R_{th(ch-a)}$	channel to ambient			50.0	$^\circ\text{C}/\text{W}$

### Outline Drawings [mm]



### Equivalent circuit schematic



Characteristics

