

FUJI POWER MOSFET
Super FAP-G Series

■ Features

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

■ 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	Remarks
Drain-source voltage	V_{DS}	150	V	
	V_{DSX}	150	V	$V_{GS}=-30\text{V}$
Continuous Drain Current	I_D	92	A	
Pulsed Drain Current	$I_D(\text{puls})$	± 368	A	
Gate-Source Voltage	V_{GS}	± 30	V	
Maximum Avalanche current	I_{AR}	92	A	Note *1
Non-Repetitive Maximum Avalanche Energy	E_{AS}	1205.7	mJ	Note *2
Repetitive Maximum Avalanche Energy	E_{AR}	41	mJ	Note *3
Maximum Drain-Source dV/dt	dV_{DS}/dt	20	kV/ μs	$V_{DS} \leq 150\text{V}$
Peak Diode Recovery dV/dt	dV/dt	5	kV/ μs	Note *4
Max. Power Dissipation	P_D	410	W	$T_c=25^\circ\text{C}$
		2.50		$T_a=25^\circ\text{C}$
Operating and Storage Temperature range	T_{ch}	+150	$^\circ\text{C}$	
	T_{stg}	-55 to +150	$^\circ\text{C}$	

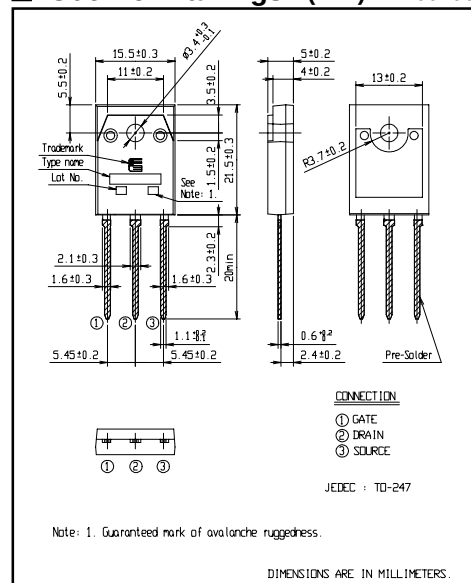
● Electrical characteristics ($T_c=25^\circ\text{C}$ unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	BV_{DS}	$I_D=250\mu\text{A}$ $V_{GS}=0\text{V}$	150			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}	$V_{DS}=150\text{V}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$			25	μA
		$V_{DS}=120\text{V}$ $V_{GS}=0\text{V}$ $T_{ch}=125^\circ\text{C}$			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	$R_{DS(on)}$	$I_D=46\text{A}$ $V_{GS}=10\text{V}$		21	26	$\text{m}\Omega$
Forward Transconductance	g_{fs}	$I_D=46\text{A}$ $V_{DS}=25\text{V}$	12	24		S
Input Capacitance	C_{iss}	$V_{DS}=75\text{V}$ $V_{GS}=0\text{V}$		3800	5400	pF
Output Capacitance	C_{oss}	$V_{GS}=0\text{V}$		530	795	
Reverse Transfer Capacitance	C_{rss}	$f=1\text{MHz}$		35	52.5	
Turn-On Time t_{on}	$t_{d(on)}$	$V_{CC}=48\text{V}$ $I_D=46\text{A}$		40	60	ns
	t_r	$V_{GS}=10\text{V}$		112	168	
Turn-Off Time t_{off}	$t_{d(off)}$	$R_{GS}=10\Omega$		56	84	
	t_f			30	45	
Total Gate Charge	Q_G	$V_{CC}=75\text{V}$		80	120	nC
Gate-Source Charge	Q_{GS}	$I_D=92\text{A}$		30	45	
Gate-Drain Charge	Q_{GD}	$V_{GS}=10\text{V}$		25	38	
Diode forward on-voltage	V_{SD}	$I_F=92\text{A}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$		1.20	1.50	V
Reverse recovery time	t_{rr}	$I_F=92\text{A}$ $V_{GS}=0\text{V}$		250		ns
Reverse recovery charge	Q_{rr}	$-di/dt=100\text{A}/\mu\text{s}$ $T_{ch}=25^\circ\text{C}$		2.0		μC

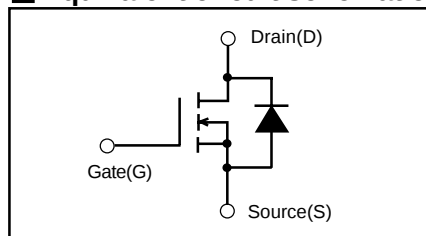
● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			0.305	$^\circ\text{C}/\text{W}$
	$R_{th(ch-a)}$	channel to ambient			50.0	$^\circ\text{C}/\text{W}$

■ Outline Drawings (mm) 200406



■ Equivalent circuit schematic

Note *1: $T_{ch} \leq 150^\circ\text{C}$, Repetitive and Non-repetitiveNote *2: Starting $T_{ch}=25^\circ\text{C}$, $I_{AS}=37\text{A}$, $L=1.29\text{mH}$, $V_{CC}=48\text{V}$, $R_G=50\Omega$

EAS limited by maximum channel temperature and avalanche current.

See to the 'Avalanche Energy' graph

Note *3: Repetitive rating: Pulse width limited by maximum channel temperature.

See to the 'Transient Thermal impedance' graph

Note *4: $I_F \leq -I_D$, $-di/dt=50\text{A}/\mu\text{s}$, $V_{CC} \leq BV_{DS}$, $T_{ch} \leq 150^\circ\text{C}$

Characteristics

