

N-CHANNEL SILICON POWER MOSFET



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**
(Tc=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit	Remarks
Drain-source voltage	V _{DS}	300	V	
	V _{DSX}	300	V	V _{GS} =-30V
Continuous Drain Current	I _D	53	A	
Pulsed Drain Current	I _{D(puls)}	±212	A	
Gate-Source Voltage	V _{GS}	±30	V	
Maximum Avalanche current	I _{AR}	53	A	Note *1
Non-Repetitive	E _{AS}	1013.9	mJ	Note *2
Maximum Avalanche Energy				
Repetitive	E _{AR}	41	mJ	Note *3
Maximum Avalanche Energy				
Maximum Drain-Source dV/dt	dV _{DS} /dt	20	kV/μs	V _{DS} ≤300V
Peak Diode Recovery dV/dt	dV/dt	5	kV/μs	Note *4
Max. Power Dissipation	P _D	410	W	T _C =25°C
		250		T _a =25°C
Operating and Storage	T _{ch}	+150	°C	
Temperature range	T _{stg}	-55 to +150	°C	

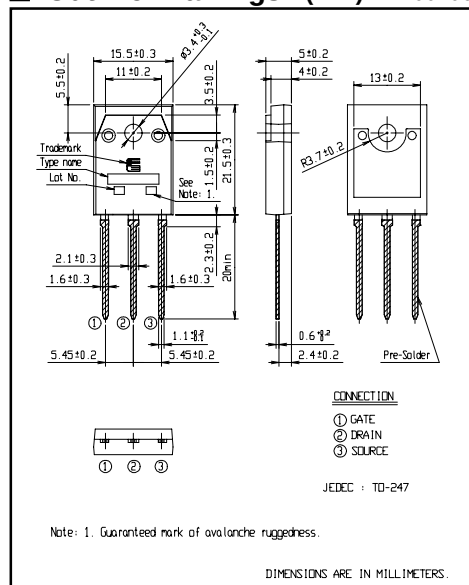
● Electrical characteristics (T_c =25°C unless otherwise specified)

Item	Symbol	Test Conditions		Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	BV _{DSS}	I _D = 250μA V _{GS} =0V		300			V
Gate Threshold Voltage	V _{GS(th)}	I _D = 250μA V _{DS} =V _{GS}		3.0		5.0	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =300V V _{GS} =0V	T _{ch} =25°C			25	μA
		V _{DS} =240V V _{GS} =0V	T _{ch} =125°C			250	
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±30V V _{DS} =0V				100	nA
Drain-Source On-State Resistance	R _{DS(on)}	I _D =26.5A V _{GS} =10V			58	72	mΩ
Forward Transconductance	g _{fs}	I _D =26.5A V _{DS} =25V		12	24		S
Input Capacitance	C _{iss}	V _{DS} =25V			3600	5475	pF
Output Capacitance	C _{oss}	V _{GS} =0V			610	915	
Reverse Transfer Capacitance	C _{rss}	f=1MHz			30	45	
Turn-On Time t _{on}	t _{d(on)}	V _{CC} =180V			40	60	ns
	t _r	I _D =26.5A			58	87	
Turn-Off Time t _{off}	t _{d(off)}	V _{GS} =10V			82	123	
	t _f	R _{GS} =10 Ω			10	15	
Total Gate Charge	Q _G	V _{CC} =150V			80	120	nC
Gate-Source Charge	Q _{GS}	I _D =53A			30	45	
Gate-Drain Charge	Q _{GD}	V _{GS} =10V			25	38	
Diode forward on-voltage	V _{SD}	I _F =53A V _{GS} =0V T _{ch} =25°C			1.20	1.50	V
Reverse recovery time	t _{rr}	I _F =53A V _{GS} =0V			420		ns
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C			5.0		

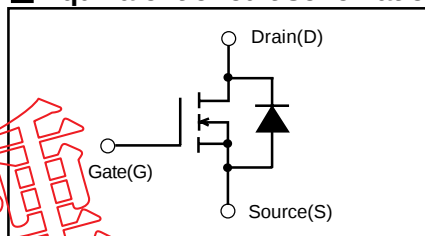
● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	Rth(ch-c)	channel to case			0.305	°C/W
	Rth(ch-a)	channel to ambient			50.0	°C/W

■ **Outline Drawings** (mm) 200406



■ Equivalent circuit schematic



Note *1: $T_{\text{cell}} \geq 150^{\circ}\text{C}$, Repetitive and Non-repetitive

Note *2: Starting Tch = 25°C. I_{AS} = 22A. L = 3.03mH.

$V_{CC}=4.8V, R_G=50\Omega$

① 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: $I_F \leq -I_D$, $-di/dt = 50A/\mu s$, $V_{CE} \leq BV_{DSS}$, $T_{ch} \leq 150^\circ C$

Characteristics

