

N-CHANNEL SILICON POWER MOSFET

200407

FUJI POWER MOSFET Super FAP-G Series

Features

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

Applications

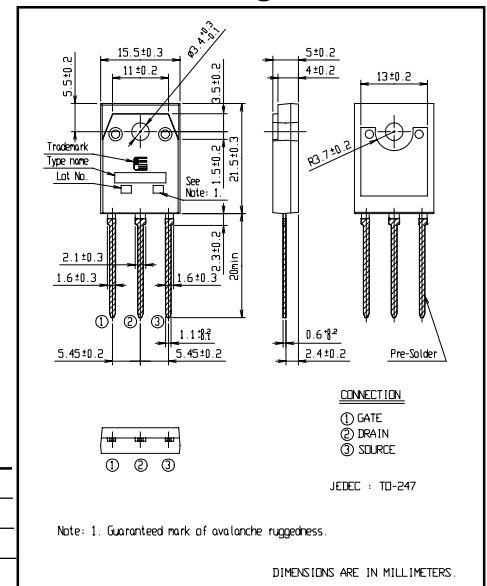
- Switching regulators
- UPS (Uninterruptible Power Supply)
- DC-DC converters

Maximum ratings and characteristic

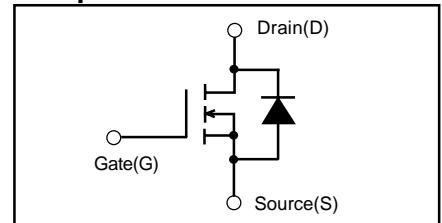
- Absolute maximum ratings (T_c=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit	Remarks
Drain-source voltage	V _{DS}	600	V	
	V _{DSX}	600	V	V _{GS} =-30V
Continuous Drain Current	I _D	±42	A	
		±2.7	A	T _a =25°C
Pulsed Drain Current	I _D (puls)	±168	A	
Gate-Source Voltage	V _{GS}	±30	V	
Non-Repetitive Maximum Avalanche current	I _{AR}	42	A	T _{ch} ≤ 25°C
Repetitive Maximum Avalanche current	I _{AR}	21	A	T _{ch} ≤ 150°C
Non-Repetitive Maximum Avalanche Energy	E _{AS}	828	mJ	Note *2
Maximum Drain-Source dV/dt	dV _{DS} /dt	20	kV/μs	V _{DS} ≤ 600V
Peak Diode Recovery dV/dt	dV/dt	5	kV/μs	Note *3
Peak Diode Recovery di/dt	-di/dt	100	A/μs	Note *4
Max. Power Dissipation	P _D	600	W	T _c =25°C
		2.50	W	T _a =25°C
Operating and Storage Temperature range	T _{ch}	+150	°C	
	T _{stg}	-55 to +150	°C	

Outline Drawings (mm)



Equivalent circuit schematic



Note *2: Starting T_{ch}=25°C, L=861μH, V_{CC}=60V

See to the 'Avalanche Energy' graph

Note *3: I_F ≤ -I_D, -di/dt = 100A/μs, V_{CC} ≤ BV_{DSS}, T_{ch} ≤ 150°C

Note *4: I_F ≤ -I_D, -dV/dt = 5kV/μs, V_{CC} ≤ BV_{DSS}, T_{ch} ≤ 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	600			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} =600V V _{GS} =0V		10	25	μA
		V _{DS} =480V V _{GS} =0V		1.0	2.0	mA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±30V V _{DS} =0V		10	100	nA
Drain-Source On-State Resistance	R _{DS(on)}	I _D =21A V _{GS} =10V		0.14	0.17	Ω
Forward Transconductance	g _{fs}	I _D =21A V _{DS} =25V	20	40		S
Input Capacitance	C _{iss}	V _{DS} =25V		5100	7650	pF
Output Capacitance	C _{oss}	V _{GS} =0V		700	1050	pF
Reverse Transfer Capacitance	C _{rss}	f=1MHz		48	72	pF
Turn-On Time t _{on}	t _{d(on)}	V _{CC} =300V		60	90	ns
	t _r	I _D =21A		90	135	ns
Turn-Off Time t _{off}	t _{d(off)}	V _{GS} =10V		180	270	ns
	t _f	R _{GS} =10Ω		30	45	ns
Total Gate Charge	Q _G	V _{CC} =300V		105	160	nC
Gate-Source Charge	Q _{GS}	I _D =42A		44	65	nC
Gate-Drain Charge	Q _{GD}	V _{GS} =10V		30	45	nC
Avalanche Capability	I _{AV}	L=861μH T _{ch} =25°C	42			A
Diode forward on-voltage	V _{SD}	I _F =42A V _{GS} =0V T _{ch} =25°C		1.10	1.70	V
Reverse recovery time	t _{rr}	I _F =42A V _{GS} =0V		160	250	ns
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		1.00	2.5	μC

Thermal characteristics

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

Characteristics

