

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

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

Item	Symbol	Rated	Unit	Remarks
Drain-source voltage	V_{DS}	500	V	
	V_{DSX}	500	V	$V_{GS}=-30V$
Continuous drain current	I_D	± 19	A	
Pulsed drain current	$I_{D(puls)}$	± 76	A	
Gate-source voltage	V_{GS}	± 30	V	
Non-Repetitive Maximum avalanche current	I_{AS}	19	A	$T_{ch} \leq 150^\circ\text{C}$
Non-Repetitive Maximum avalanche energy	E_{AS}	245.3	mJ	$L=1.25\text{mH}$ $V_{CC}=50V *2$
Maximum Drain-Source dV/dt	dV_{DS}/dt	20	kV/s	$V_{DS} \leq 500V$
Peak diode recovery dV/dt	dV/dt	5	kV/ μs	*3
Max. power dissipation	P_D	2.16	W	$T_a=25^\circ\text{C}$
		97		$T_c=25^\circ\text{C}$
Operating and storage temperature range	T_{ch}	+150	$^\circ\text{C}$	
	T_{stg}	-55 to +150	$^\circ\text{C}$	
Isolation voltage	V_{ISO}	2	kVrms	$t=60\text{sec}, f=60\text{Hz}$

*2 See to Avalanche Energy Graph

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

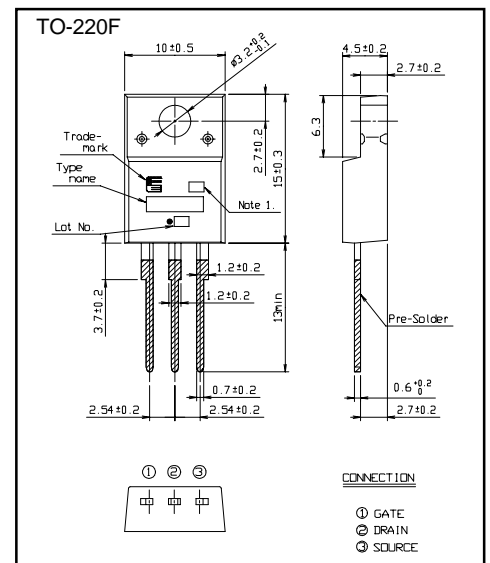
Electrical characteristics ($T_c=25^\circ\text{C}$ unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D=250\mu\text{A}$ $V_{GS}=0V$	500			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}	$V_{DS}=500V$ $V_{GS}=0V$ $T_{ch}=25^\circ\text{C}$			25	μA
		$V_{DS}=400V$ $V_{GS}=0V$ $T_{ch}=125^\circ\text{C}$			250	
Gate-source leakage current	I_{GSS}	$V_{GS}=\pm 30V$ $V_{DS}=0V$		10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$I_D=9.5A$ $V_{GS}=10V$		0.29	0.38	Ω
Forward transconductance	g_{fs}	$I_D=9.5A$ $V_{DS}=25V$	7.5	15		S
Input capacitance	C_{iss}	$V_{DS}=25V$		1560	2340	pF
Output capacitance	C_{oss}	$V_{GS}=0V$		230	345	
Reverse transfer capacitance	C_{rss}	$f=1\text{MHz}$		8	12	
Turn-on time t_{on}	$t_{d(on)}$	$V_{CC}=300V$ $I_D=9.5A$		29	43.5	ns
	t_r	$V_{GS}=10V$		13	19.5	
Turn-off time t_{off}	$t_{d(off)}$	$R_{GS}=10\Omega$		56	84	
	t_f			8	12	
Total Gate Charge	Q_G	$V_{CC}=250V$		34	51	nC
Gate-Source Charge	Q_{GS}	$I_D=19A$		13	19.5	
Gate-Drain Charge	Q_{GD}	$V_{GS}=10V$		10	15	
Avalanche capability	I_{AV}	$L=1.25\text{mH}$ $T_{ch}=25^\circ\text{C}$	19			A
Diode forward on-voltage	V_{SD}	$I_F=19A$ $V_{GS}=0V$ $T_{ch}=25^\circ\text{C}$		1.20	1.50	V
Reverse recovery time	t_{rr}	$I_F=19A$ $V_{GS}=0V$		0.57		μs
Reverse recovery charge	Q_{rr}	$-di/dt=100A/\mu\text{s}$ $T_{ch}=25^\circ\text{C}$		7.0		μC

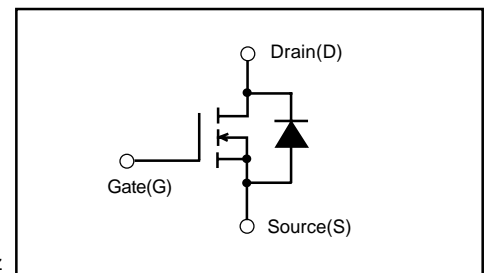
Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			1.289	$^\circ\text{C/W}$
	$R_{th(ch-a)}$	channel to ambient			58.0	$^\circ\text{C/W}$

Outline Drawings [mm]



Equivalent circuit schematic



Characteristics

