

N-CHANNEL SILICON POWER MOSFET



FUJI POWER MOSFET Super FAP-G Series

■ Features

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

■ Applications

Switching regulators DC-DC converters

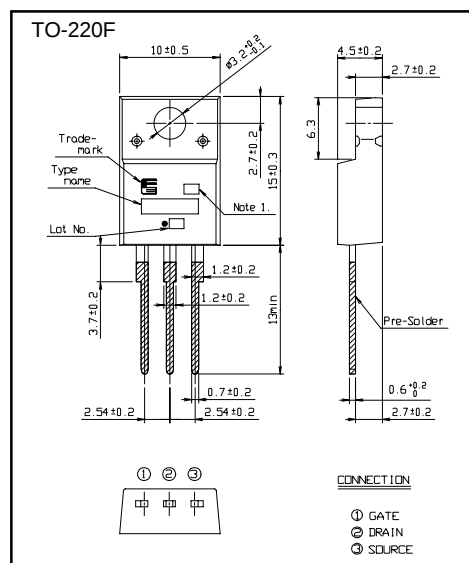
UPS (Uninterruptible Power Supply)

■ Maximum ratings and characteristic

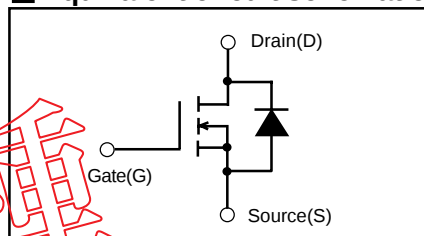
- Absolute maximum ratings
(Tc=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit	Remarks
Drain-source voltage	V_{DS}	230	V	
	V_{DSX}	230	V	$V_{GS}=-30V$
Continuous Drain Current	I_D	40	A	
Pulsed Drain Current	$I_{D(puls)}$	± 160	A	
Gate-Source Voltage	V_{GS}	± 30	V	
Maximum Avalanche current	I_{AR}	40	A	Note *1
Non-Repetitive	E_{AS}	633.1	mJ	Note *2
Maximum Avalanche Energy	E_{AR}	27	mJ	Note *3
Repetitive	dV_{DS}/dt	20	kV/ μ s	$V_{DS} \leq 230V$
Maximum Avalanche Energy		5	kV/ μ s	Note *4
Maximum Drain-Source dV/dt	dV/dt	270	W	$T_C=25^{\circ}C$
Peak Diode Recovery dV/dt	P_D	2.02	°C	$T_a=25^{\circ}C$
Max. Power Dissipation	T_{ch}	+150	°C	
Operating and Storage	T_{stg}	-55 to +150	°C	
Temperature range	V_{ISO}	2	kVrms	$t=60sec$ $f=60Hz$
Isolation Voltage				

■ **Outline Drawings** (mm) 200406



■ Equivalent circuit schematic



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

Note *2: Starting Tch=25°C, I_{AS}=16A, L=4.09mH,

 $V_{GG} = 48V, R_G = 50\Omega$

EAS limited by maximum channel temperature and Avalanche current.

See to the 'Avalanche Energy' graph

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

See to the 'Transient Thermal impedance' graph.

● 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	230			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} =230V V _{GS} =0V			25	μA
		V _{DS} =184V V _{GS} =0V			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 =20A V _{GS} =10V		58	76	mΩ
Forward Transconductance	g _{fs}	I _D =20A V _{DS} =25V	12	24		S
Input Capacitance	C _{iss}	V _{DS} =75V		1880	2820	pF
Output Capacitance	C _{oss}	V _{GS} =0V		230	345	
Reverse Transfer Capacitance	C _{rss}	f=1MH		12	18	
Turn-On Time t _{on}	t _{d(on)}	V _{CC} =180V I _D =20A		28	42	ns
	t _r	V _{GS} =10V		8.4	12.6	
Turn-Off Time t _{off}	t _{d(off)}	R _{GS} =10 Ω		56	84	
	t _f			6	9	
Total Gate Charge	Q _G	V _{CC} =115V		42.0	63.0	nC
Gate-Source Charge	Q _{GS}	I _D =40A		18.0	27.0	
Gate-Drain Charge	Q _{GD}	V _{GS} =10V		12.0	18.0	
Diode forward on-voltage	V _{SD}	I _F =40A V _{GS} =0V T _{ch} =25°C		1.10	1.50	V
Reverse recovery time	t _{rr}	I _F =40A V _{GS} =0V		230		ns
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		2.5		μC

- **Thermal characteristics**

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			1.316	°C/W
	R _{th(ch-a)}	channel to ambient			58	°C/W

Characteristics

