

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
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
Drain-source voltage	V_{DS}	150	V
	V_{DSX}^{*5}	120	V
Continuous drain current	I_D	± 40	A
Pulsed drain current	$I_D(\text{puls})$	± 160	A
Gate-source voltage	V_{GS}	± 30	V
Non-repetitive Avalanche current	I_{AS}^{*2}	40	A
Maximum Avalanche Energy	E_{AS}^{*1}	387	mJ
Maximum Drain-Source dV/dt	dV_{DS}/dt^{*4}	20	kV/ μs
Peak Diode Recovery dV/dt	dV/dt^{*3}	5	kV/ μs
Max. power dissipation	P_D	$T_a=25^\circ\text{C}$	2.16
		$T_c=25^\circ\text{C}$	70
Operating and storage temperature range	T_{ch}	+150	$^\circ\text{C}$
	T_{stg}	-55 to +150	$^\circ\text{C}$
Isolation voltage	V_{ISO}^{*6}	2	kVrms

*1 $L=335\mu\text{H}$, $V_{CC}=48\text{V}$ *2 $T_{ch}\leq 150^\circ\text{C}$ *3 $I_F=-I_D$, $-di/dt=50\text{A}/\mu\text{s}$, $V_{CC}\leq BV_{DS}$, $T_{ch}\leq 150^\circ\text{C}$

*4 $V_{DS}\leq 150\text{V}$ *5 $V_{GS}=-30\text{V}$ *6 $t=60\text{sec}$ $f=60\text{Hz}$

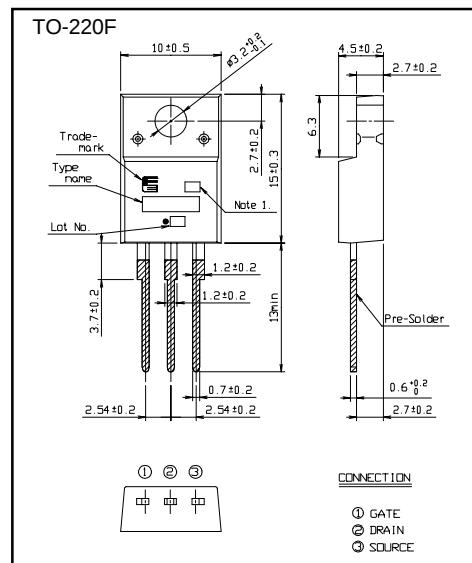
Electrical characteristics ($T_c=25^\circ\text{C}$ unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D=250\mu\text{A}$ $V_{GS}=0\text{V}$	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}	$V_{GS}=\pm 30\text{V}$ $V_{DS}=0\text{V}$		10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$I_D=20\text{A}$ $V_{GS}=10\text{V}$		31	41	m Ω
Forward transconductance	g_{fs}	$I_D=20\text{A}$ $V_{DS}=25\text{V}$	13	26		S
Input capacitance	C_{iss}	$V_{DS}=75\text{V}$		1940	2910	pF
Output capacitance	C_{oss}	$V_{GS}=0\text{V}$		310	465	
Reverse transfer capacitance	C_{rss}	$f=1\text{MHz}$		24	36	
Turn-on time t_{on}	$t_{d(on)}$	$V_{CC}=48\text{V}$ $I_D=20\text{A}$		20	30	ns
	t_r	$V_{GS}=10\text{V}$		26	39	
Turn-off time t_{off}	$t_{d(off)}$	$R_{GS}=10\Omega$		50	75	
	t_f			20	30	
Total Gate Charge	Q_G	$V_{CC}=75\text{V}$		52	78	nC
Gate-Source Charge	Q_{GS}	$I_D=40\text{A}$		15	22.5	
Gate-Drain Charge	Q_{GD}	$V_{GS}=10\text{V}$		18	27	
Avalanche capability	I_{AV}	$L=100\mu\text{H}$ $T_{ch}=25^\circ\text{C}$	40			A
Diode forward on-voltage	V_{SD}	$I_F=40\text{A}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$		1.10	1.65	V
Reverse recovery time	t_{rr}	$I_F=40\text{A}$ $V_{GS}=0\text{V}$		0.14		μs
Reverse recovery charge	Q_{rr}	$-di/dt=100\text{A}/\mu\text{s}$ $T_{ch}=25^\circ\text{C}$		0.77		μC

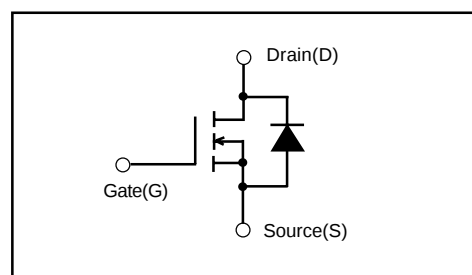
Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			1.786	$^\circ\text{C}/\text{W}$
	$R_{th(ch-a)}$	channel to ambient			58.0	$^\circ\text{C}/\text{W}$

Outline Drawings (mm)



Equivalent circuit schematic



Characteristics

