

FUJI POWER MOSFET

Super FAP-G Series

200305
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 characteristicAbsolute maximum ratings

● (Tc=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit
Drain-source voltage	V _{DS}	900	V
	V _{DSX} *5	900	V
Continuous drain current	I _D	±3.7	A
Pulsed drain current	I _D (puls)	±14.8	A
Gate-source voltage	V _{GS}	±30	V
Repetitive or non-repetitive	I _{AR} *2	3.7	A
Maximum Avalanche Energy	E _{AS} *1	171.1	mJ
Maximum Drain-Source dV/dt	dV _{DS} /dt *4	40	kV/μs
Peak Diode Recovery dV/dt	dV/dt *3	5	kV/μs
Max. power dissipation	P _D	T _a =25°C	W
		T _c =25°C	
Operating and storage temperature range	T _{ch}	+150	°C
	T _{stg}	-55 to +150	°C
Isolation Voltage	V _{ISO} *6	2000	V _{rms}

*1 L=22.9mH, Vcc=90V, Tch=25°C See to Avalanche Energy Graph *2 Tch=150°C

*3 $I_F \leq -I_D$, $-di/dt = 50 \text{ A}/\mu\text{s}$, $V_{CC} \leq BV_{DSS}$, $T_{ch} \leq 150^\circ\text{C}$ *4 $V_{DS} \leq 900 \text{ V}$ *5 $V_{GS} = -30 \text{ V}$ *6 $f = 60 \text{ Hz}$, $t = 60 \text{ sec.}$

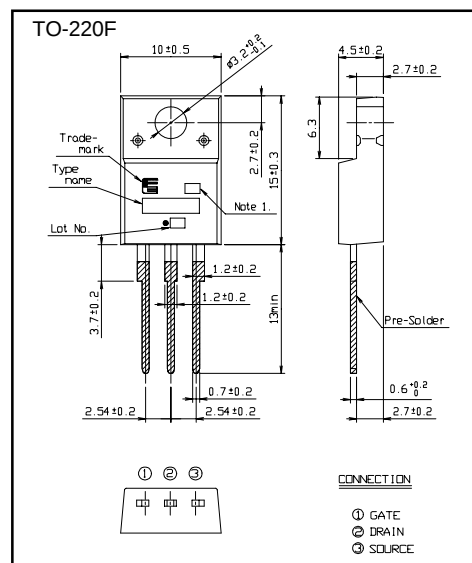
● Electrical characteristics (T_c =25°C unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D=250\mu A$ $V_{GS}=0V$	900			V
Gate threshold voltage	$V_{GS(th)}$	$I_D=250\mu A$ $V_{DS}=V_{GS}$	3.0		5.0	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=900V$ $V_{GS}=0V$ $T_{ch}=25^{\circ}C$			25	μA
		$V_{DS}=720V$ $V_{GS}=0V$ $T_{ch}=125^{\circ}C$			250	
Gate-source leakage current	I_{GSS}	$V_{GS}=\pm 30V$ $V_{DS}=0V$			100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$I_D=1.85A$ $V_{GS}=10V$		3.31	4.30	Ω
Forward transconductance	g_{fs}	$I_D=1.85A$ $V_{DS}=25V$	2	4		S
Input capacitance	C_{iss}	$V_{DS}=25V$		430	650	pF
Output capacitance	C_{oss}	$V_{GS}=0V$		60	90	
Reverse transfer capacitance	C_{rss}	$f=1MHz$		3.5	5	
Turn-on time t_{on}	$t_{d(on)}$	$V_{CC}=600V$ $I_D=1.85A$		19	29	ns
	t_r	$V_{GS}=10V$		7	11	
Turn-off time t_{off}	$t_{d(off)}$	$R_G=10\Omega$		32	48	
	t_f			17	26	
Total Gate Charge	Q_G	$V_{CC}=450V$		16.5	24.8	nC
Gate-Source Charge	Q_{GS}	$I_D=3.7A$		6.4	9.6	
Gate-Drain Charge	Q_{GD}	$V_{GS}=10V$		3.7	5.6	
Avalanche capability	I_{AV}	$L=22.9mH$ $T_{ch}=25^{\circ}C$	3.7			A
Diode forward on-voltage	V_{SD}	$I_F=3.7A$ $V_{GS}=0V$ $T_{ch}=25^{\circ}C$		0.9	1.50	V
Reverse recovery time	t_{rr}	$I_F=3.7A$ $V_{GS}=0V$		1.0		μs
Reverse recovery charge	Q_{rr}	$-di/dt=100A/\mu s$ $T_{ch}=25^{\circ}C$		4.0		μC

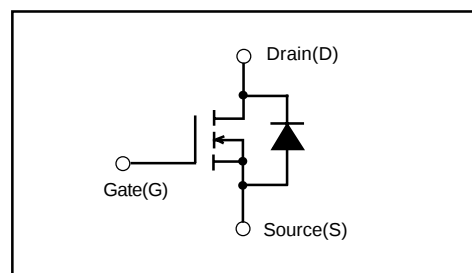
● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	Rth(ch-c)	channel to case			2.907	°C/W
	Rth(ch-a)	channel to ambient			58.0	°C/W

■ Outline Drawings [mm]

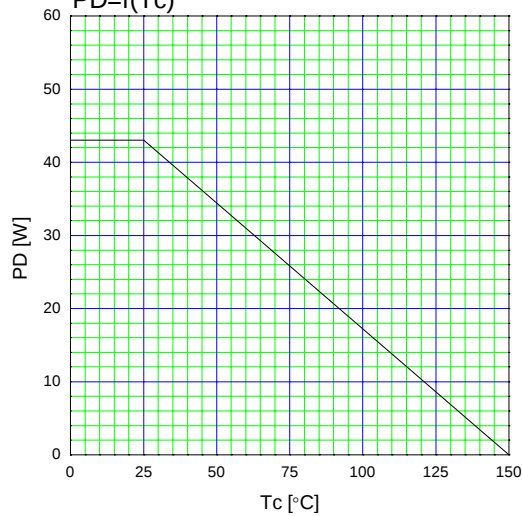


■ Equivalent circuit schematic

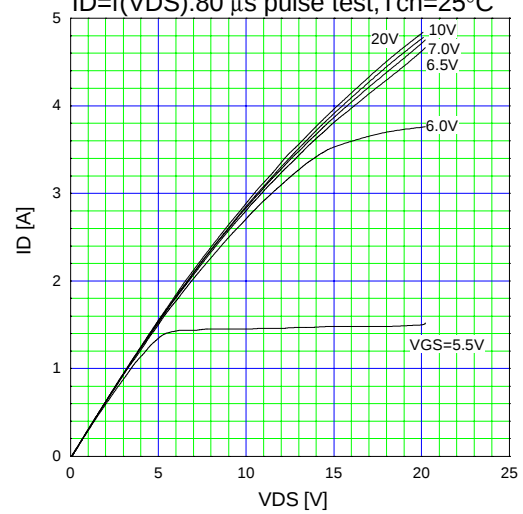


Characteristics

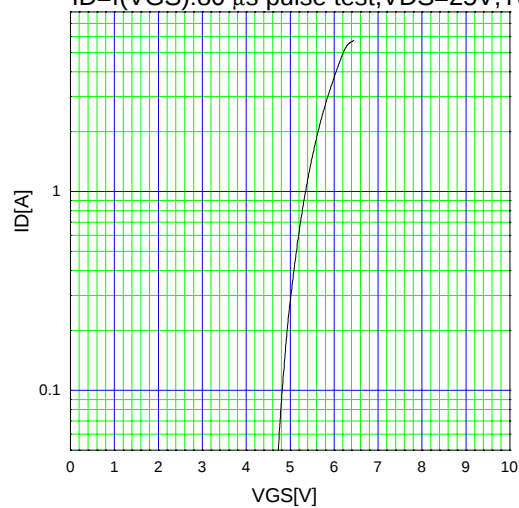
Allowable Power Dissipation
 $PD=f(T_c)$



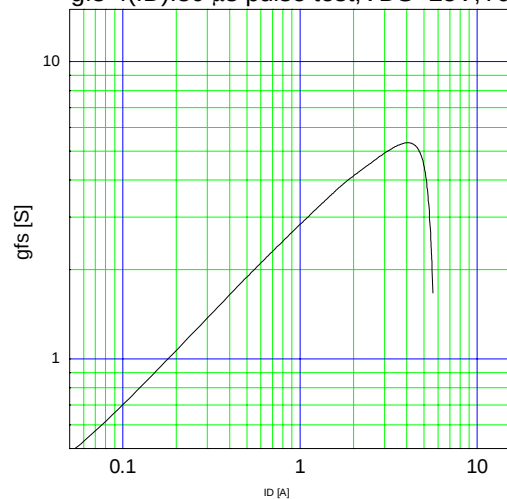
Typical Output Characteristics
 $ID=f(V_{DS})$: 80 μ s pulse test, $T_{ch}=25^\circ\text{C}$



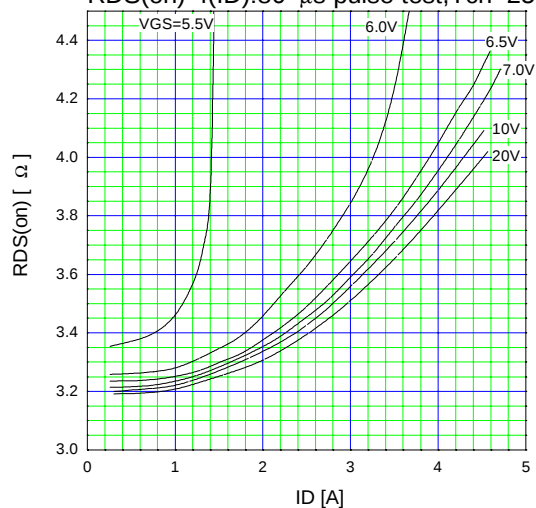
Typical Transfer Characteristic
 $ID=f(V_{GS})$: 80 μ s pulse test, $V_{DS}=25\text{V}$, $T_{ch}=25^\circ\text{C}$



Typical Transconductance
 $g_{fs}=f(ID)$: 80 μ s pulse test, $V_{DS}=25\text{V}$, $T_{ch}=25^\circ\text{C}$



Typical Drain-Source on-state Resistance
 $R_{DS(on)}=f(ID)$: 80 μ s pulse test, $T_{ch}=25^\circ\text{C}$



Drain-Source On-state Resistance
 $R_{DS(on)}=f(T_{ch})$: $ID=1.85\text{A}$, $V_{GS}=10\text{V}$

