

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

● (Tc=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit
Drain-source voltage	V _{DS}	100	V
	V _{DSX} *5	70	V
Continuous drain current	I _D	±73	A
Pulsed drain current	I _{D(puls)}	±292	A
Gate-source voltage	V _{GS}	±30	V
Non-repetitive Avalanche current	I _{AS} *2	73	A
Maximum Avalanche Energy	E _{AS} *1	319.2	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°C	2.16
		T _c =25°C	95
Operating and storage temperature range	T _{ch}	+150	°C
	T _{stg}	-55 to +150	°C
Isolation Voltage	V _{ISO} *6	2	kVrms

*1 L=71.9μH, V_{CC}=48V, T_{ch}=25°C, See to Avalanche Energy Graph *2 T_{ch}≤150°C

*3 I_F≤-I_D, -di/dt=50A/μs, V_{CC}≤BV_{DSS}, T_{ch}≤150°C *4 V_{DS}≤100V *5 V_{GS}=-30V *6 t=60sec, f=60Hz

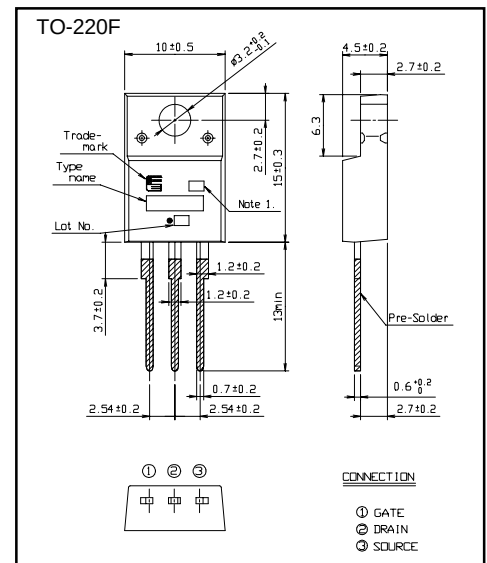
● Electrical characteristics (T_c=25°C unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V _{(BR)DSS}	I _D =250μA V _{GS} =0V	100			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} =100V V _{GS} =0V			25	μA
		V _{DS} =80V V _{GS} =0V			250	
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 =25A V _{GS} =10V		19	25	mΩ
Forward transconductance	g _{fs}	I _D =25A V _{DS} =25V	15	30		S
Input capacitance	C _{iss}	V _{DS} =75V		1830	2745	pF
Output capacitance	C _{oss}	V _{GS} =0V		460	690	
Reverse transfer capacitance	C _{rss}	f=1MHz		38	57	
Turn-on time t _{on}	td(on)	V _{CC} =48V I _D =25A		20	30	ns
	t _r	V _{GS} =10V		35	53	
Turn-off time t _{off}	td(off)	R _{GS} =10 Ω		50	75	
	t _f			23	35	
Total Gate Charge	Q _G	V _{CC} =50V		52	78	nC
Gate-Source Charge	Q _{GS}	I _D =50A		16	24	
Gate-Drain Charge	Q _{GD}	V _{GS} =10V		18	27	
Avalanche capability	I _{AV}	L=71.9μH T _{ch} =25°C	73			A
Diode forward on-voltage	V _{SD}	I _F =50A V _{GS} =0V T _{ch} =25°C		1.10	1.65	V
Reverse recovery time	t _{rr}	I _F =50A V _{GS} =0V		0.1		μs
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		0.4		μC

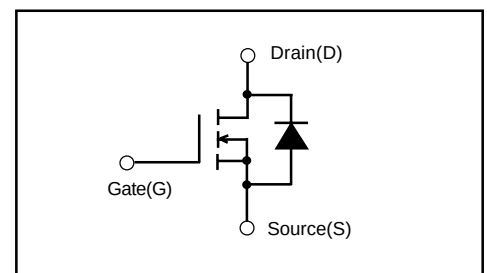
● Thermal characteristics

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			58.0	°C/W

■ Outline Drawings (mm)

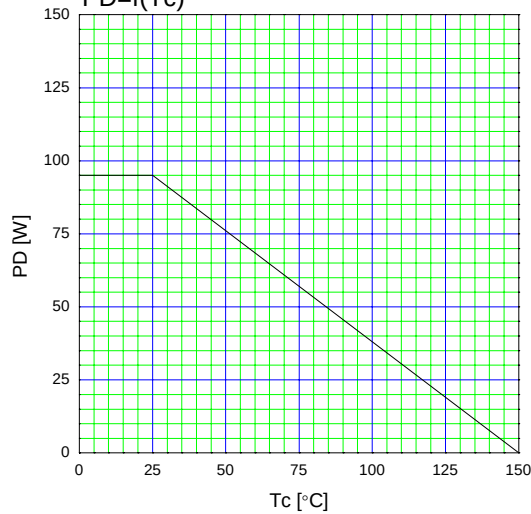


■ Equivalent circuit schematic

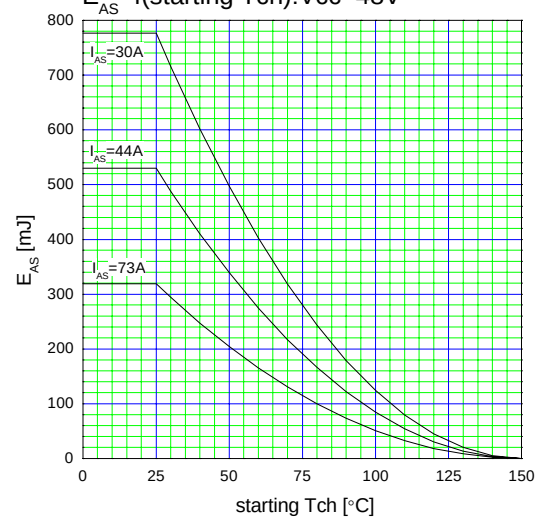


Characteristics

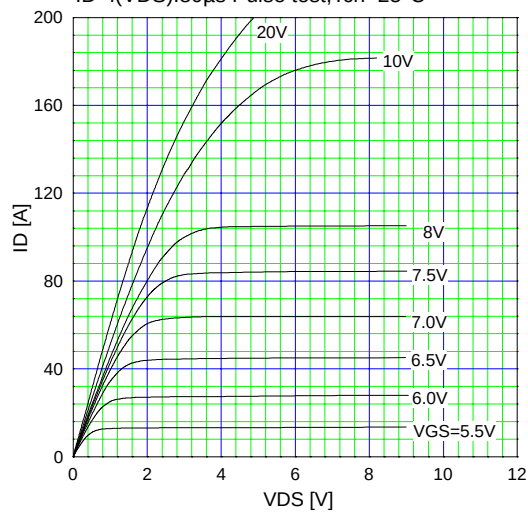
Allowable Power Dissipation
 $PD=f(T_c)$



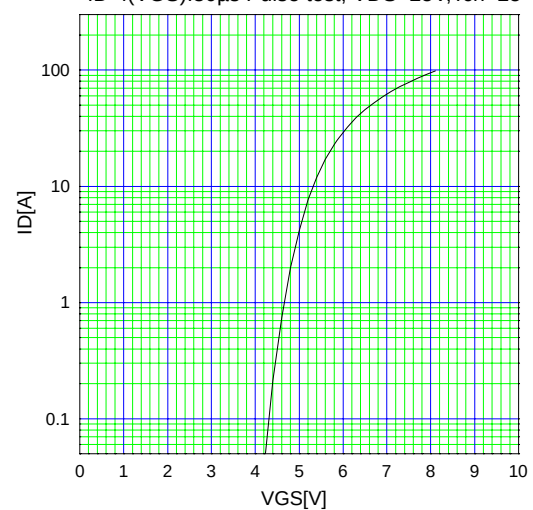
Maximum Avalanche Energy vs. starting T_{ch}
 $E_{AS}=f(\text{starting } T_{ch}):V_{CC}=48V$



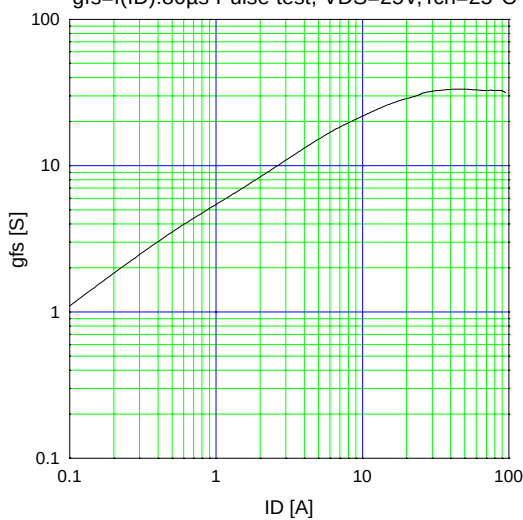
Typical Output Characteristics
 $ID=f(V_{DS}):80\mu s$ Pulse test, $T_{ch}=25^\circ C$



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



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



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

