

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 characteristicAbsolute maximum ratings

● (Tc=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit
Drain-source voltage	V_{DS}	250	V
	$V_{DSX} \times 5$	220	V
Continuous drain current	I_D	± 37	A
Pulsed drain current	$I_{D(puls)}$	± 148	A
Gate-source voltage	V_{GS}	± 30	V
Repetitive or non-repetitive	$I_{AR} \times 2$	37	A
Maximum Avalanche Energy	$E_{AS} \times 1$	251.9	mJ
Maximum Drain-Source dV/dt	$dV_{DS}/dt \times 4$	20	kV/ μ s
Peak Diode Recovery dV/dt	$dV/dt \times 3$	5	kV/ μ s
Max. power dissipation	P_D	$T_a = 25^\circ C$	W
		$T_c = 25^\circ C$	
Operating and storage temperature range	T_{ch}	+150	$^\circ C$
	T_{sta}	-55 to +150	$^\circ C$

*1 L=309μH, Vcc=48V, 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 $V_{DS} \leq 250 \text{ V}$ *5 $V_{GS} = -30 \text{ V}$

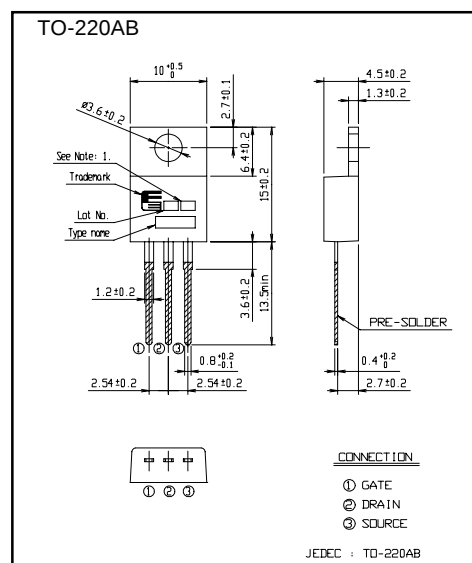
● Electrical characteristics (T_c =25°C unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V(BR)DSS	Id=250μA VGS=0V	250			V
Gate threshold voltage	VGS(th)	Id= 250μA VDS=VGS	3.0		5.0	V
Zero gate voltage drain current	IDSS	VDS=250V VGS=0V Tch=25°C			25	μA
		VDS=200V VGS=0V Tch=125°C			250	
Gate-source leakage current	IGSS	VGS=±30V VDS=0V		10	100	nA
Drain-source on-state resistance	RDS(on)	Id=12.5A VGS=10V		75	100	mΩ
Forward transconductance	gfs	Id=12.5A VDS=25V	8	16		S
Input capacitance	Ciss	VDS=75V		2000	3000	pF
Output capacitance	Coss	VGS=0V		220	330	
Reverse transfer capacitance	Crss	f=1MHz		15	30	
Turn-on time ton	td(on)	VCC=72V Id=12.5A		20	30	ns
	tr	VGS=10V		30	45	
Turn-off time toff	td(off)	RGS=10 Ω		60	90	
	tf			20	30	
Total Gate Charge	QG	VCC=72V		44	66	nC
Gate-Source Charge	QGS	Id=12A		14	21	
Gate-Drain Charge	QGD	VGS=10V		16	24	
Avalanche capability	Iav	L=309μH Tch=25°C	37			A
Diode forward on-voltage	VSd	If=25A VGS=0V Tch=25°C		1.10	1.65	V
Reverse recovery time	trr	If=25A VGS=0V		0.45		μs
Reverse recovery charge	Qrr	-di/dt=100A/μs Tch=25°C		1.5		μC

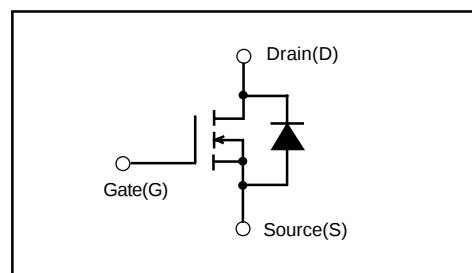
● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			0.463	°C/W
	R _{th(ch-a)}	channel to ambient			62.0	°C/W

■ Outline Drawings [mm]

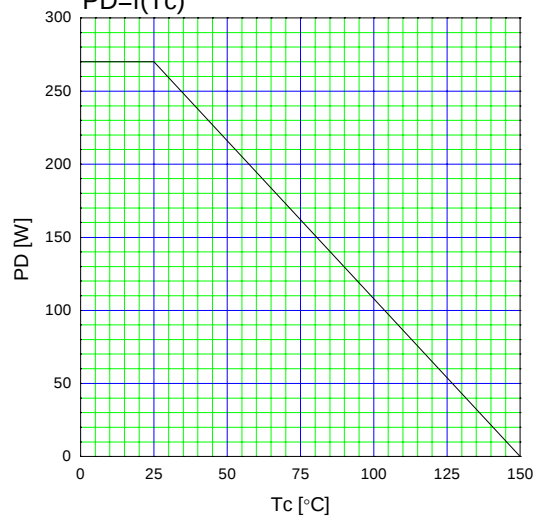


■ Equivalent circuit schematic

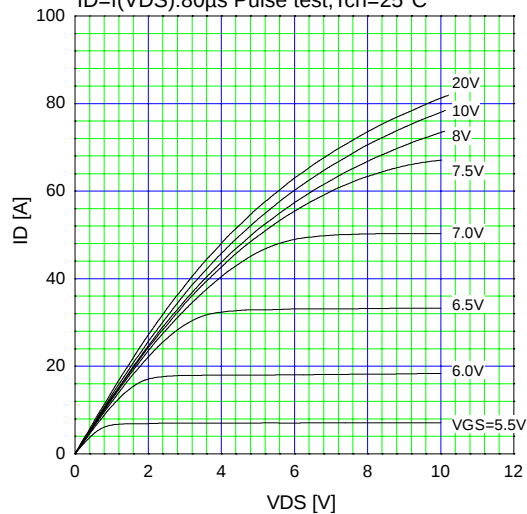


Characteristics

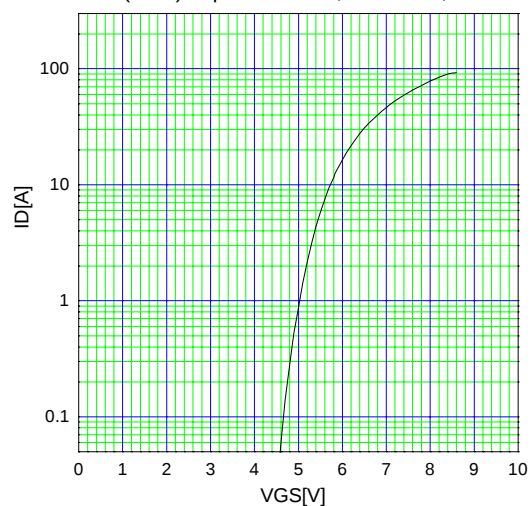
Allowable Power Dissipation
 $PD=f(T_c)$



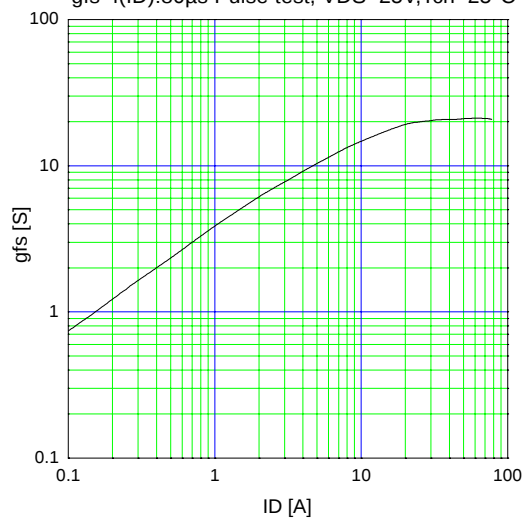
Typical Output Characteristics
 $ID=f(V_{DS}): 80\mu s$ Pulse test, $T_{ch}=25^{\circ}C$



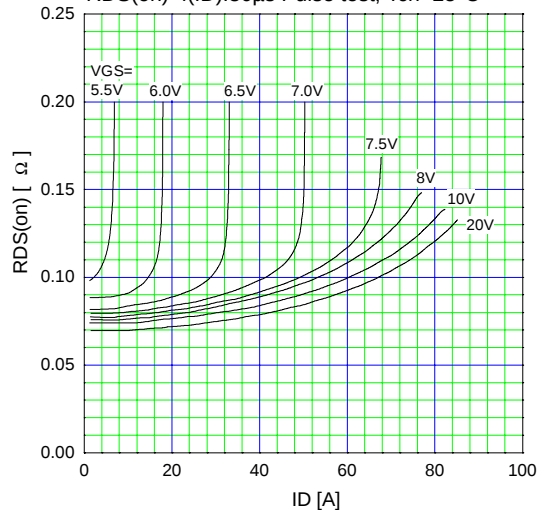
Typical Transfer Characteristic
 $ID=f(V_{GS}): 80\mu s$ Pulse test, $V_{DS}=25V$, $T_{ch}=25^{\circ}C$



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, $T_{ch}=25^{\circ}C$



Drain-Source On-state Resistance
 $R_{DS(on)}=f(T_{ch}): ID=12.5A$, $V_{GS}=10V$

