

FUJI POWER MOSFET Super FAP-G Series

200401
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	± 7	A
Pulsed drain current	$I_{D(puls)}$	± 28	A
Gate-source voltage	V_{GS}	± 30	V
Repetitive or non-repetitive	$I_{AR} *2$	7	A
Maximum Avalanche Energy	$E_{AS} *1$	269.5	mJ
Maximum Drain-Source dV/dt	$dV_{DS}/dt *4$	40	kV/ μ s
Peak Diode Recovery dV/dt	$dV/dt *3$	5	kV/ μ s
Max. power dissipation	P_D $T_a=25^{\circ}C$	2.50	W
	$T_C=25^{\circ}C$	195	
Operating and storage temperature range	T_{Dn}	+150	$^{\circ}C$
	T_{Stg}	-55 to +150	$^{\circ}C$

*1 L=10.1mH, Vcc=90V, Tch=25°C, See to Avalanche Energy Graph *2 Tch=150°C

*3 $I_F \leq -I_D$, $-di/dt = 50A/\mu s$, $V_{CC} \leq BVD_{SS}$, $T_{ch} \leq 150^\circ C$ *4 $V_{DS} \leq 900V$ *5 $V_{GS} = -30V$

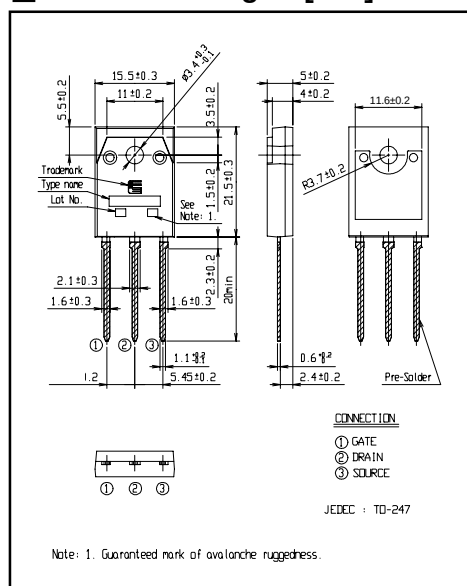
● **Electrical characteristics (Tc = 25°C unless otherwise specified)**

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	$R_{DS(on)}$	$I_D=3.5A$ $V_{GS}=10V$		1.54	2.00	Ω
Forward transconductance	g_{fs}	$I_D=3.5A$ $V_{DS}=25V$	4.1	8.2		S
Input capacitance	C_{iss}	$V_{DS}=25V$		920	1380	pF
Output capacitance	C_{oss}	$V_{GS}=0V$		115	175	
Reverse transfer capacitance	C_{rss}	$f=1MHz$		6.6	10	
Turn-on time t_{on}	$t_{d(on)}$	$V_{CC}=600V$ $I_D=3.5A$		22	33	ns
	t_r	$V_{GS}=10V$		8.0	12	
Turn-off time t_{off}	$t_{d(off)}$	$R_G=10\Omega$		45	67.5	
	t_f			10.5	16	
Total Gate Charge	Q_G	$V_{CC}=450V$		25	37.5	nC
Gate-Source Charge	Q_{GS}	$I_D=7A$		4	6	
Gate-Drain Charge	Q_{GD}	$V_{GS}=10V$		8.5	13	
Avalanche capability	I_{AV}	$L=10.1mH$ $T_{ch}=25^{\circ}C$	7			A
Diode forward on-voltage	V_{SD}	$I_F=7A$ $V_{GS}=0V$ $T_{ch}=25^{\circ}C$		0.90	1.50	V
Reverse recovery time	t_{rr}	$I_F=7A$ $V_{GS}=0V$		2.6		μs
Reverse recovery charge	Q_{rr}	$-di/dt=100A/\mu s$ $T_{ch}=25^{\circ}C$		8.0		μC

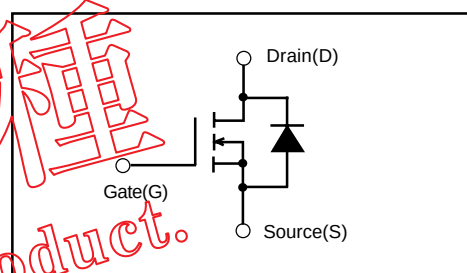
● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	Rth(ch-c)	channel to case			0.640	°C/W
	Rth(ch-a)	channel to ambient			50.0	°C/W

■ Outline Drawings [mm]

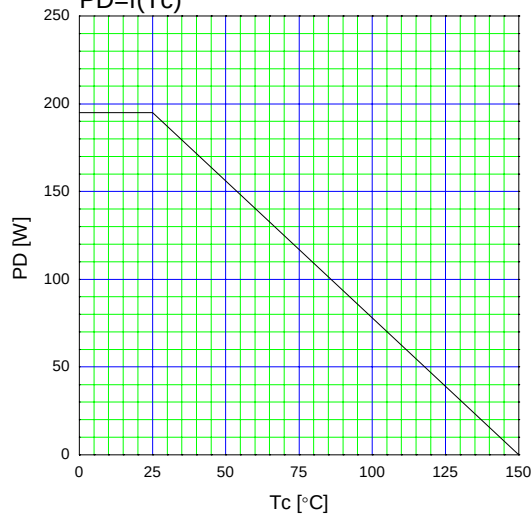


■ Equivalent circuit schematic

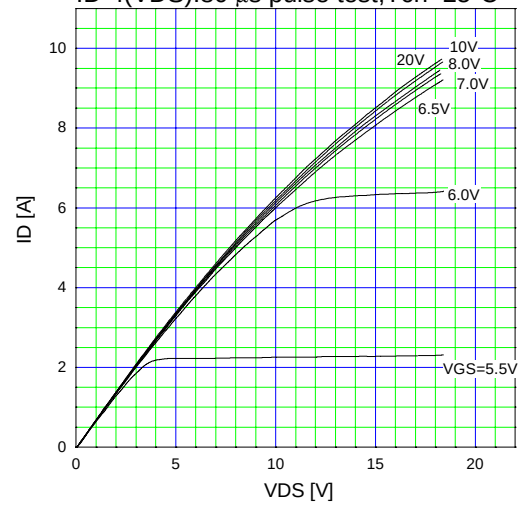


Characteristics

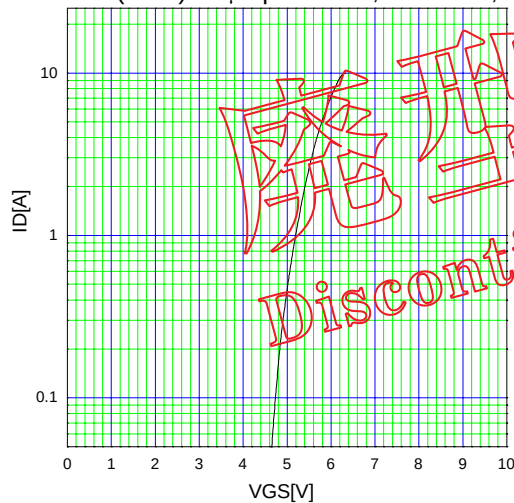
Allowable Power Dissipation
 $PD=f(T_c)$



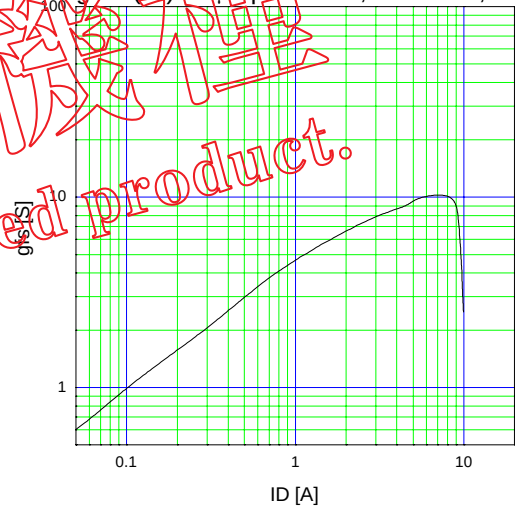
Typical Output Characteristics
 $ID=f(V_{DS}): 80 \mu s$ pulse test, $T_{ch}=25^\circ C$



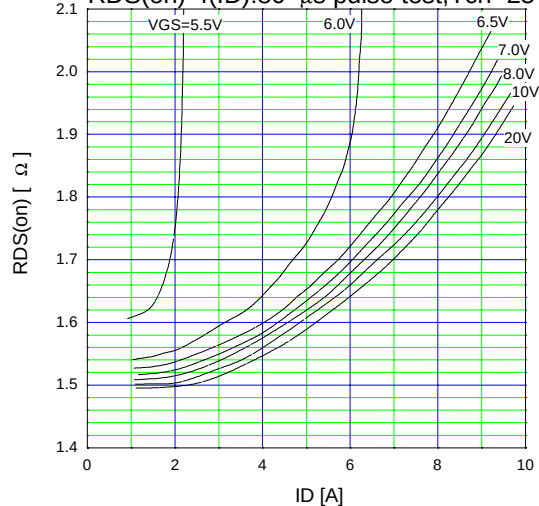
Typical Transfer Characteristic
 $ID=f(V_{GS}): 80 \mu s$ pulse test, $V_{DS}=25V$, $T_{ch}=25^\circ C$



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
 $R_{DS(on)}=f(T_{ch}): ID=3.5A$, $V_{GS}=10V$

