

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}	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/ μs
Peak Diode Recovery dV/dt	dV/dt^*3	5	kV/ μs
Max. power dissipation	P_D	$T_a=25^\circ\text{C}$	2.02
		$T_c=25^\circ\text{C}$	225
Operating and storage temperature range	T_{ch}	+150	$^\circ\text{C}$
	T_{stg}	-55 to +150	$^\circ\text{C}$

*1 $L=10.1\text{mH}$, $V_{CC}=90\text{V}$, $T_{ch}=25^\circ\text{C}$ See to Avalanche Energy Graph *2 $T_{ch}\leq 150^\circ\text{C}$

*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 $V_{GS}=-30\text{V}$

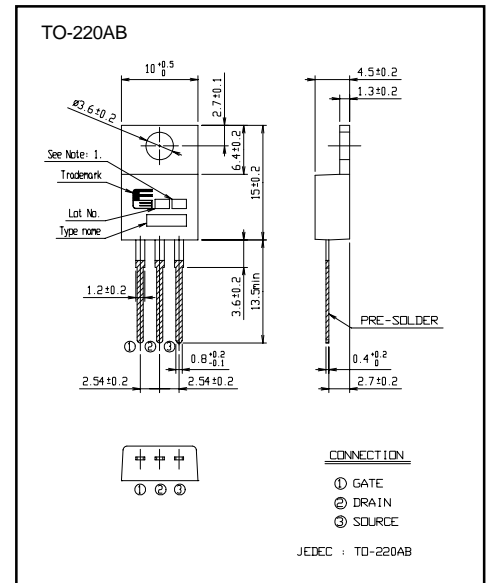
Electrical characteristics ($T_c=25^\circ\text{C}$ unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D=250\mu\text{A}$ $V_{GS}=0\text{V}$	900			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}	$V_{DS}=900\text{V}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$			25	μA
		$V_{DS}=720\text{V}$ $V_{GS}=0\text{V}$ $T_{ch}=125^\circ\text{C}$			250	
Gate-source leakage current	I_{GSS}	$V_{GS}=\pm 30\text{V}$ $V_{DS}=0\text{V}$			100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$I_D=3.5\text{A}$ $V_{GS}=10\text{V}$		1.54	2.00	Ω
Forward transconductance	g_{fs}	$I_D=3.5\text{A}$ $V_{DS}=25\text{V}$	4.1	8.2		S
Input capacitance	C_{iss}	$V_{DS}=25\text{V}$		920	1380	pF
Output capacitance	C_{oss}	$V_{GS}=0\text{V}$		115	175	
Reverse transfer capacitance	C_{rss}	$f=1\text{MHz}$		6.6	10	
Turn-on time t_{on}	$t_{d(on)}$	$V_{CC}=600\text{V}$ $I_D=3.5\text{A}$		22	33	ns
	t_r	$V_{GS}=10\text{V}$		8	12	
Turn-off time t_{off}	$t_{d(off)}$	$R_{GS}=10\Omega$		45	67.5	
	t_f			10.5	16	
Total Gate Charge	Q_G	$V_{CC}=450\text{V}$		25	37.5	nC
Gate-Source Charge	Q_{GS}	$I_D=7\text{A}$		4	6	
Gate-Drain Charge	Q_{GD}	$V_{GS}=10\text{V}$		8.5	13	
Avalanche capability	I_{AV}	$L=10.1\text{mH}$ $T_{ch}=25^\circ\text{C}$	7			A
Diode forward on-voltage	V_{SD}	$I_F=7\text{A}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$		0.90	1.50	V
Reverse recovery time	t_{rr}	$I_F=7\text{A}$ $V_{GS}=0\text{V}$		2.6		μs
Reverse recovery charge	Q_{rr}	$-di/dt=100\text{A}/\mu\text{s}$ $T_{ch}=25^\circ\text{C}$		8.0		μC

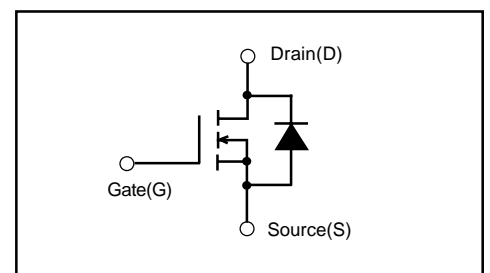
Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			0.560	$^\circ\text{C}/\text{W}$
	$R_{th(ch-a)}$	channel to ambient			62.0	$^\circ\text{C}/\text{W}$

Outline Drawings [mm]

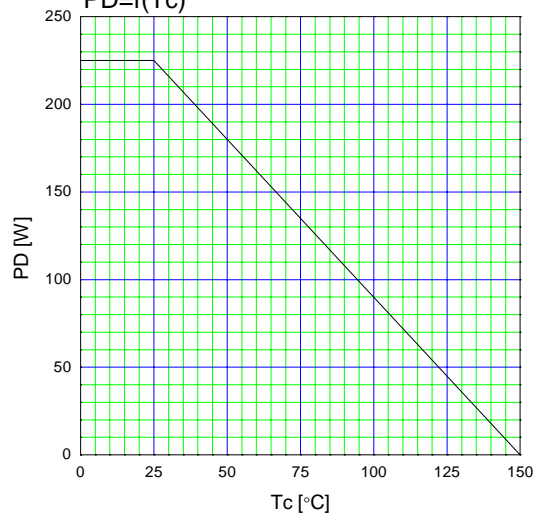


Equivalent circuit schematic

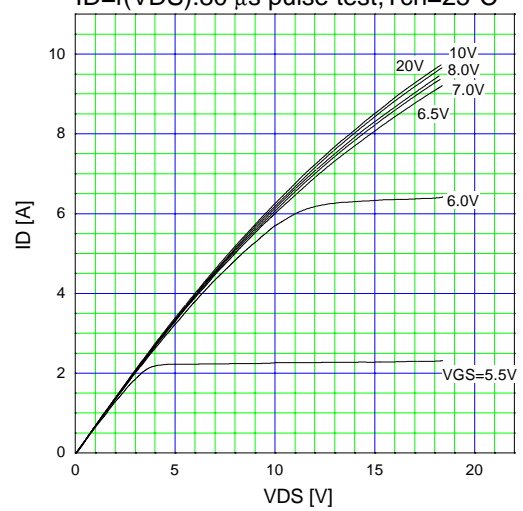


■ Characteristics

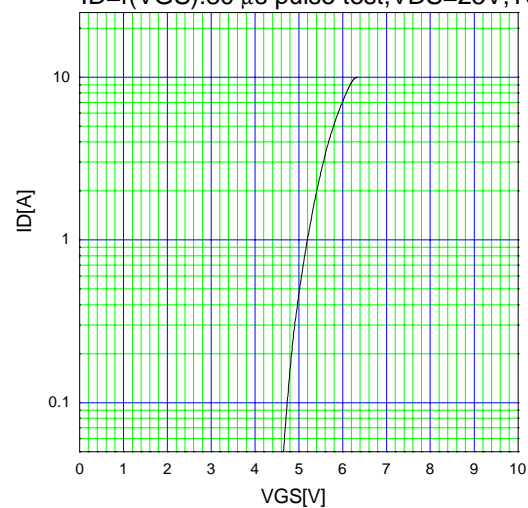
Allowable Power Dissipation
 $PD=f(T_c)$



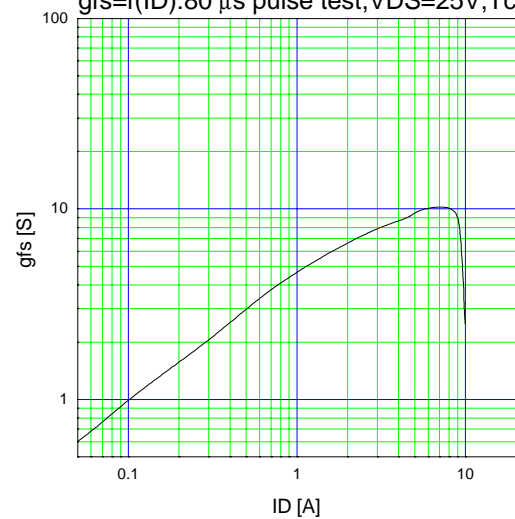
Typical Output Characteristics
 $ID=f(V_{DS})$: 80 μ s pulse test, $T_{ch}=25^{\circ}\text{C}$



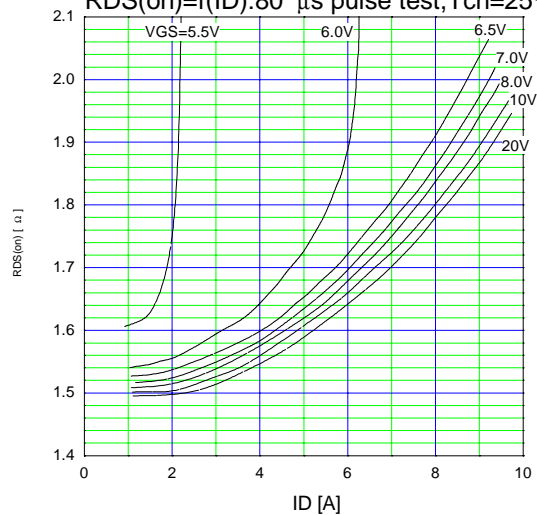
Typical Transfer Characteristic
 $ID=f(V_{GS})$: 80 μ s pulse test, $V_{DS}=25\text{V}$, $T_{ch}=25^{\circ}\text{C}$



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

