

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}	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 _{ch} =25°C	2.02	W
	T _c =25°C	225	W
Operating and storage temperature range	T _{ch}	+150	°C
	T _{stg}	-55 to +150	°C

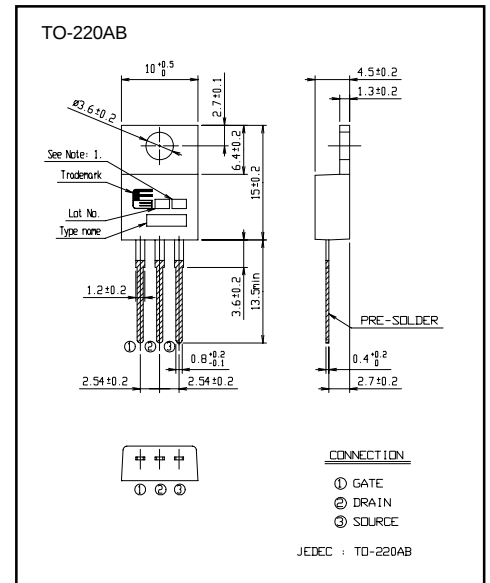
*1 L=10.1mH, V_{CC}=90V, T_{ch}=25°C See to Avalanche Energy Graph *2 T_{ch} ≤ 150°C*3 I_F ≤ -I_D, -di/dt=50A/μs, V_{CC} ≤ BV_{DS}, T_{ch} ≤ 150°C *4 V_{DS} ≤ 900V *5 V_{GS} = -30V● Electrical characteristics (T_c=25°C unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V _{(BR)DSS}	I _D = 250μA V _{GS} = 0V	900			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} = 900V V _{GS} = 0V			25	μA
		V _{DS} = 720V V _{GS} = 0V			250	μA
Gate-source leakage current	I _{GSS}	V _{GS} = ±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	pF
Reverse transfer capacitance	C _{rss}	f = 1MHz		6.6	10	pF
Turn-on time t _{on}	td(on)	V _{CC} = 600V I _D = 3.5A		22	33	ns
	tr	V _{GS} = 10V		8	12	ns
Turn-off time t _{off}	td(off)	R _{GS} = 10 Ω		45	67.5	ns
	tf			10.5	16	ns
Total Gate Charge	Q _G	V _{CC} = 450V		25	37.5	nC
Gate-Source Charge	Q _{GS}	I _D = 7A		4	6	nC
Gate-Drain Charge	Q _{GD}	V _{GS} = 10V		8.5	13	nC
Avalanche capability	I _{AV}	L = 10.1mH T _{ch} = 25°C	7			A
Diode forward on-voltage	V _{SD}	I _F = 7A V _{GS} = 0V T _{ch} = 25°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/μs T _{ch} = 25°C		8.0		μC

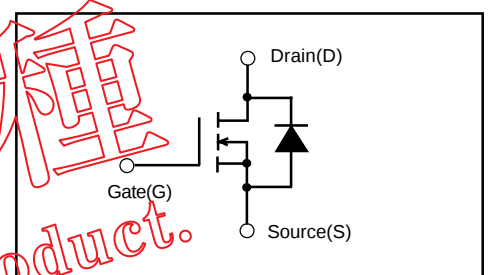
● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			0.560	°C/W
	R _{th(ch-a)}	channel to ambient			62.0	°C/W

■ Outline Drawings [mm]

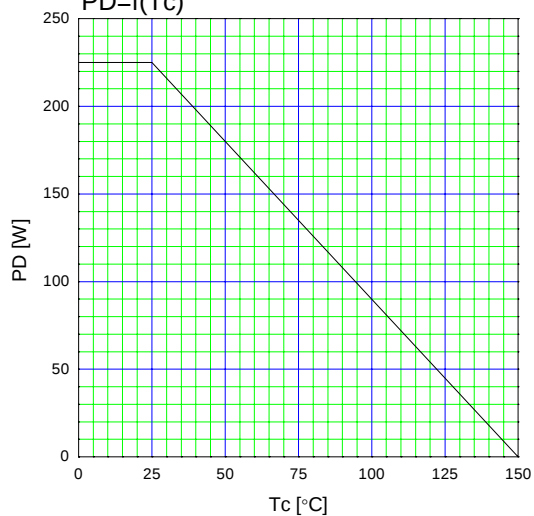


■ Equivalent circuit schematic

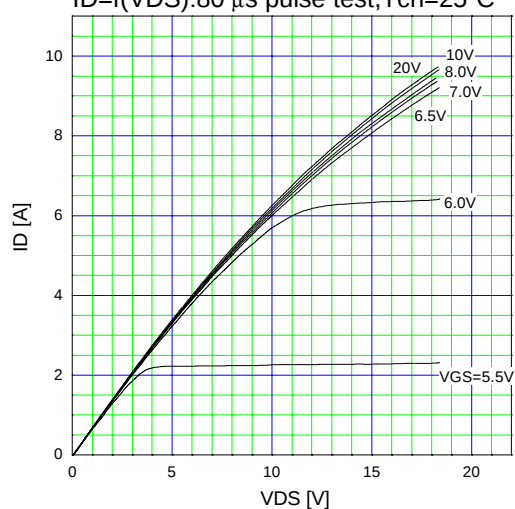


Characteristics

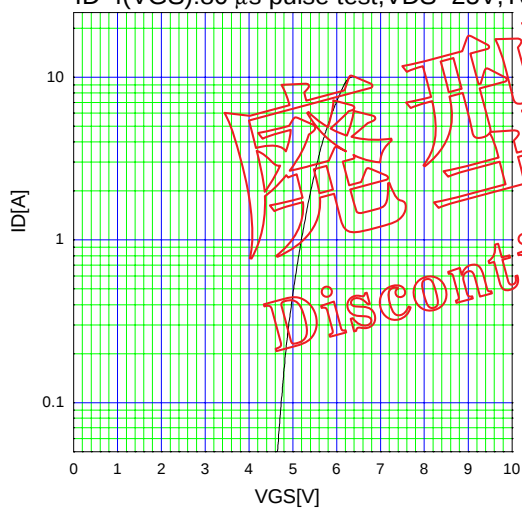
Allowable Power Dissipation
 $PD=f(T_c)$



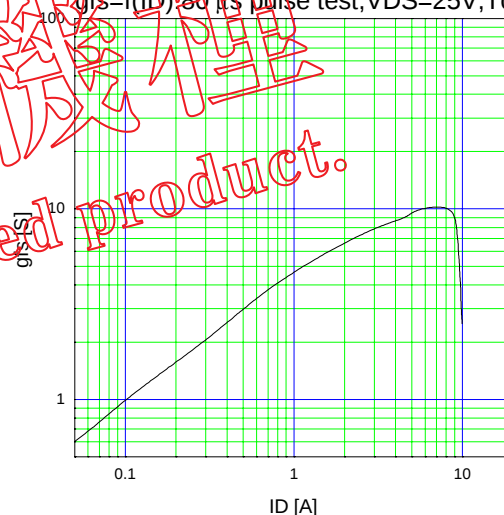
Typical Output Characteristics
 $ID=f(V_{DS}): 80 \mu s$ pulse test, $T_{ch}=25^\circ C$



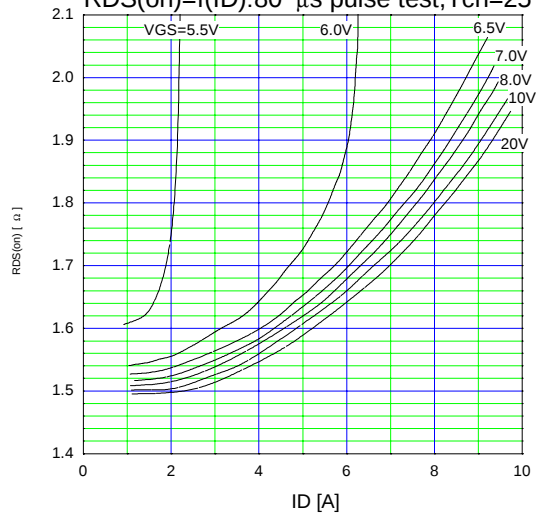
Typical Transfer Characteristic
 $ID=f(V_{GS}): 80 \mu s$ pulse test, $V_{DS}=25V$, $T_{ch}=25^\circ C$



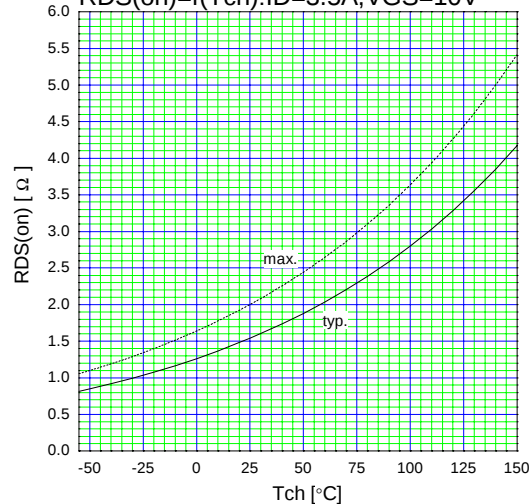
Typical Transconductance
 $g_{fs}=f(ID): 80 \mu s$ pulse test, $V_{DS}=25V$, $T_{ch}=25^\circ C$



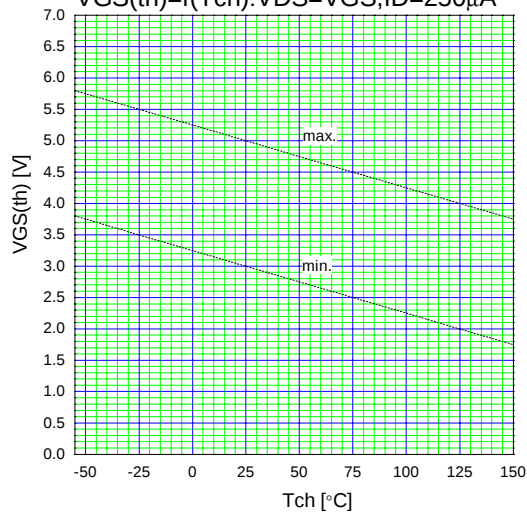
Typical Drain-Source on-state Resistance
 $R_{DS(on)}=f(ID): 80 \mu s$ pulse test, $T_{ch}=25^\circ C$



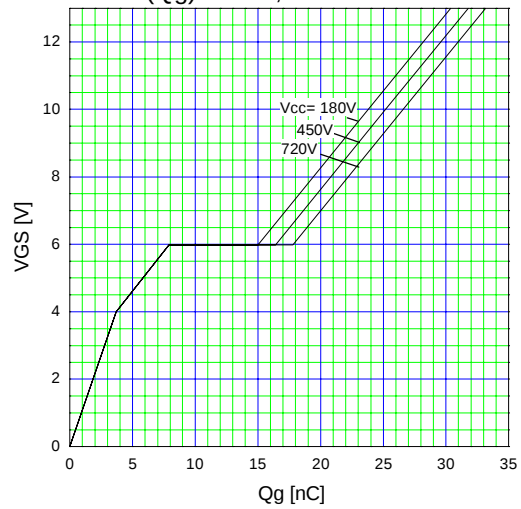
Drain-Source On-state Resistance
 $R_{DS(on)}=f(T_{ch}): ID=3.5A$, $V_{GS}=10V$



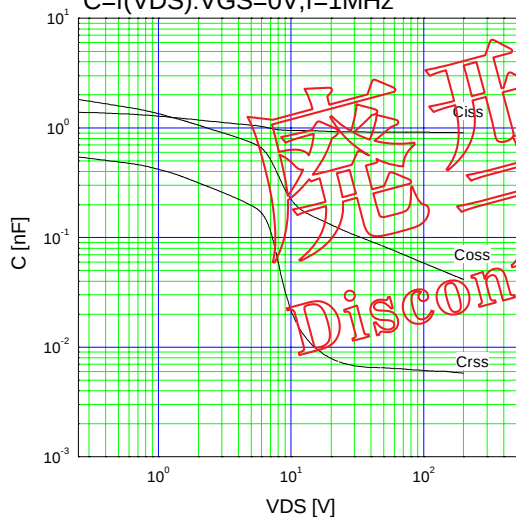
Gate Threshold Voltage vs. T_{ch}
 $V_{GS(th)} = f(T_{ch})$: $V_{DS} = V_{GS}$, $I_D = 250 \mu A$



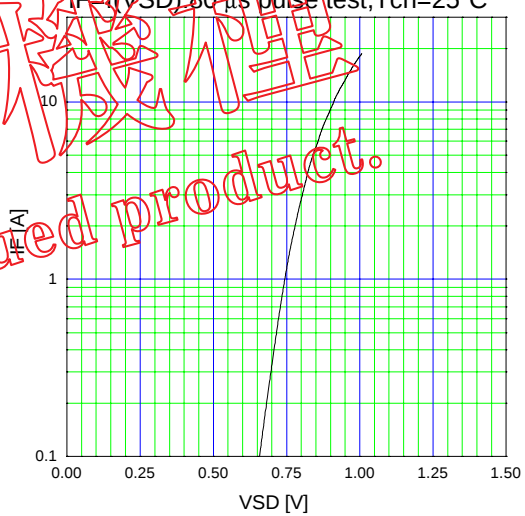
Typical Gate Charge Characteristics
 $V_{GS} = f(Q_g)$: $I_D = 7A$, $T_{ch} = 25^\circ C$



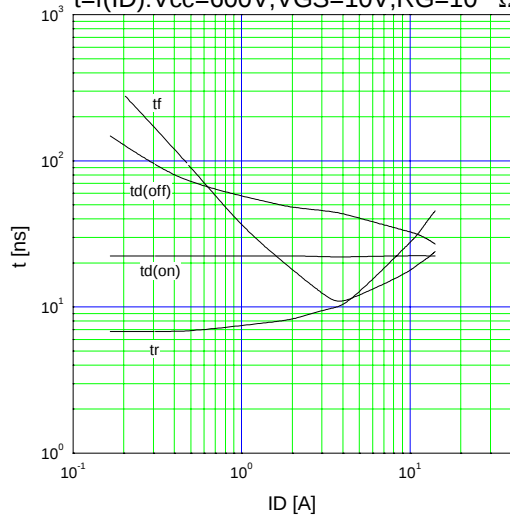
Typical Capacitance
 $C = f(V_{DS})$: $V_{GS} = 0V$, $f = 1MHz$



Typical Forward Characteristics of Reverse Diode
 $I_F = f(V_{SD})$: 80 μs pulse test, $T_{ch} = 25^\circ C$



Typical Switching Characteristics vs. I_D
 $t = f(I_D)$: $V_{CC} = 600V$, $V_{GS} = 10V$, $R_G = 10 \Omega$



Maximum Avalanche Energy vs. starting T_{ch}
 $E_{AS} = f(\text{starting } T_{ch})$: $V_{CC} = 90V$

