

N-CHANNEL SILICON POWER MOSFET

FUJI POWER MOSFET

Super FAP-G Series

Features

High speed switching Low on-resistance
No secondary breakdown Low driving power
Avalanche-proof

Applications

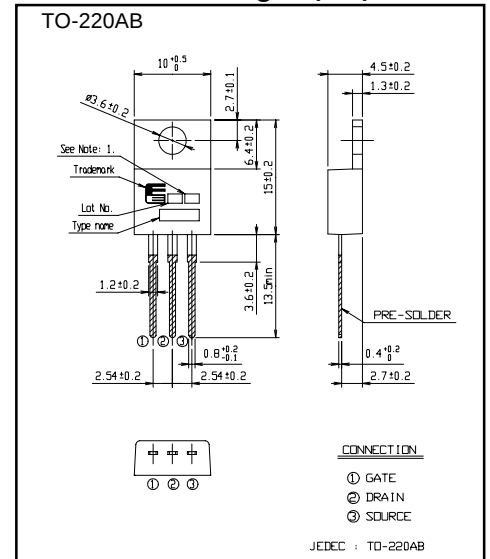
Switching regulators DC-DC converters
UPS (Uninterruptible Power Supply)

Maximum ratings and characteristic

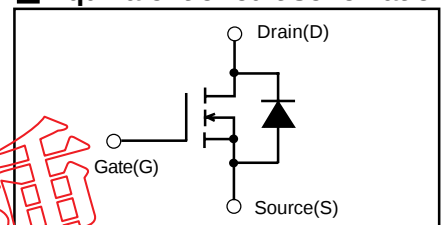
Absolute maximum ratings (Tc=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit	Remarks
Drain-source voltage	V _{DS}	600	V	
	V _{DSX}	600	V	V _{GS} =-30V
Continuous Drain Current	I _D	4.5	A	
Pulsed Drain Current	I _D (puls)	±18	A	
Gate-Source Voltage	V _{GS}	±30	V	
Maximum Avalanche current	I _{AS}	4.5	A	Note *1
Non-Repetitive	E _{AS}	261 J	mJ	Note *2
Maximum Avalanche Energy	E _{AS}	8	mJ	Note *3
Repetitive				
Maximum Avalanche Energy				
Maximum Drain-Source dV/dt	dV _{DS} /dt	20	kV/μs	V _{DS} ≤600V
Peak Diode Recovery dV/dt	dV/dt	5	kV/μs	Note *4
Max. Power Dissipation	P _D	80	W	Tc=25°C
		202	W	Ta=25°C
Operating and Storage Temperature range	T _{ch} T _{stg}	-55 to +150	°C	

Outline Drawings (mm) 200406



Equivalent circuit schematic



Note *1: T_{ch} ≤ 150°C, Repetitive and Non-repetitive

Note *2: Starting T_{ch}=25°C, I_{AS}=1.8A, L=148mH,

V_{CC}=60V, R_G=50Ω

E_{AS} limited by maximum channel temperature and Avalanche current.

See to the 'Avalanche Energy' graph

Note *3: Repetitive rating: Pulse width limited by maximum channel temperature.

See to the 'Transient Thermal impedance' graph.

Note *4: I_F ≤ -I_D, -di/dt = 50A/μs, V_{CC} ≤ BV_{DSS}, T_{ch} ≤ 150°C

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

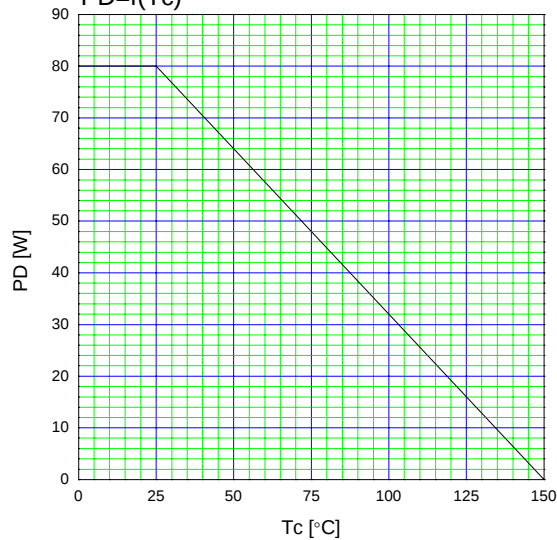
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA V _{GS} =0V	600			V
Gate Threshold Voltage	V _{GS(th)}	I _D =250μA V _{DS} =V _{GS}	3.0		5.0	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =600V V _{GS} =0V V _{DS} =480V V _{GS} =0V			25 250	μA
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 =2.25A V _{GS} =10V		1.8	2.3	Ω
Forward Transconductance	g _{fs}	I _D =2.25A V _{DS} =25V	2.5	5		S
Input Capacitance	C _{iss}	V _{DS} =25V V _{GS} =0V		400	600	pF
Output Capacitance	C _{oss}			60	90	
Reverse Transfer Capacitance	C _{rss}	f=1MHz		3	5	
Turn-On Time t _{on}	t _{d(on)} t _r	V _{CC} =300V I _D =2.25A		18 4	27 6	ns
Turn-Off Time t _{off}	t _{d(off)} t _f	V _{GS} =10V R _{GS} =10Ω		30 5	45 7.5	
Total Gate Charge	Q _G	V _{CC} =300V		15	23	nC
Gate-Source Charge	Q _{GS}	I _D =4.5A		5.5	8	
Gate-Drain Charge	Q _{GD}	V _{GS} =10V		3	4.5	
Diode forward on-voltage	V _{SD}	I _F =4.5A V _{GS} =0V T _{ch} =25°C		1.00	1.50	V
Reverse recovery time	t _{rr}	I _F =4.5A V _{GS} =0V		0.7		μs
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		3.5		μC

Thermal characteristics

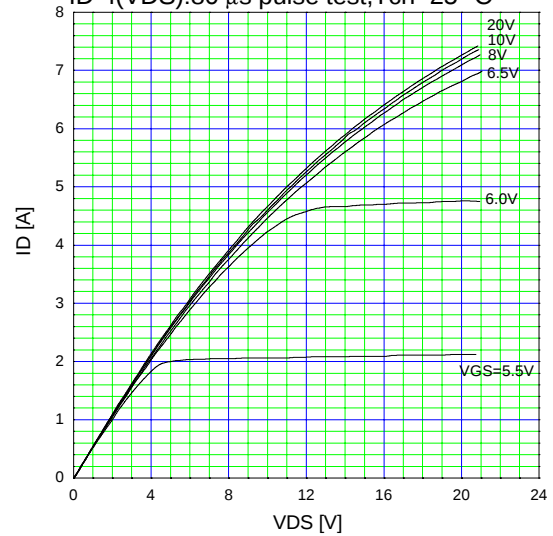
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)} R _{th(ch-a)}	channel to case channel to ambient			1.563 62	°C/W

Characteristics

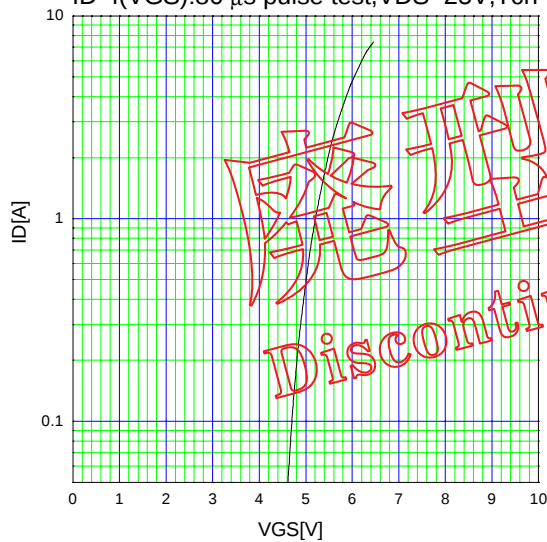
Allowable Power Dissipation
 $PD=f(T_c)$



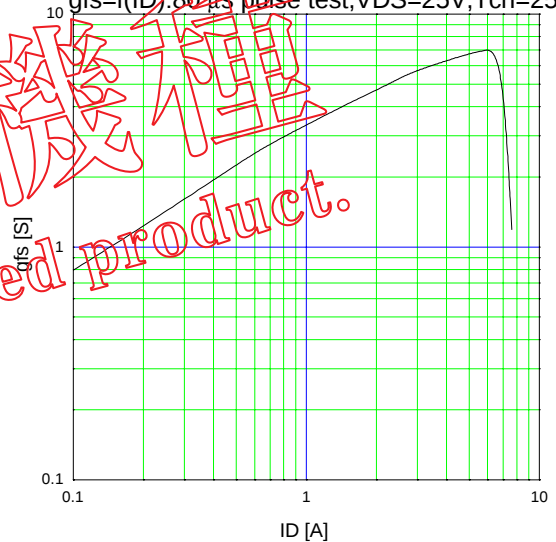
Typical Output Characteristics
 $ID=f(V_{DS}): 80 \mu s$ pulse test, $T_{ch}=25^\circ C$



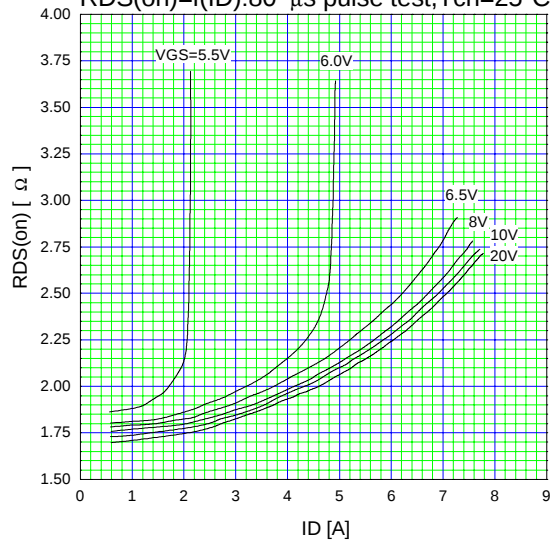
Typical Transfer Characteristic
 $ID=f(V_{GS}): 80 \mu s$ pulse test, $V_{DS}=25V$, $T_{ch}=25^\circ C$



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
 $R_{DS(on)}=f(T_{ch}): ID=2.25A$, $V_{GS}=10V$

