

2SK3579-01MR

FUJI
ELECTRIC

FUJI POWER MOSFET
N-CHANNEL SILICON POWER MOSFET

Super FAP-G Series

■ 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}	150	V
	V _{DSX} *5	130	V
Continuous drain current	I _D	±23	A
Pulsed drain current	I _D (puls)	±96	A
Gate-source voltage	V _{GS}	±20	V
Repetitive or non-repetitive	I _{AR} *2	23	A
Maximum Avalanche Energy	E _{AS} *1	242	mJ
Maximum Drain-Source dV/dt	dV _{DS} /dt *4	20	kV/μs
Peak Diode Recovery dV/dt	dV/dt *3	5	kV/μs
Max. power dissipation	P _D	T _a =25°C	2.1
		T _c =25°C	40
Operating and storage temperature range	T _{ch}	+150	°C
	T _{stg}	-55 to +150	°C
Isolation Voltage	V _{ISO} *6	2	kVrms

*1 L=0.67mH, V_{CC}=48V *2 T_{ch}≤150°C *3 I_F≤I_D, -di/dt=50A/μs, V_{CC}≤BV_{DSS}, T_{ch}≤150°C

*4 V_{DS}≤250V *5 V_{GS}=-20V *6 t=60sec f=60Hz

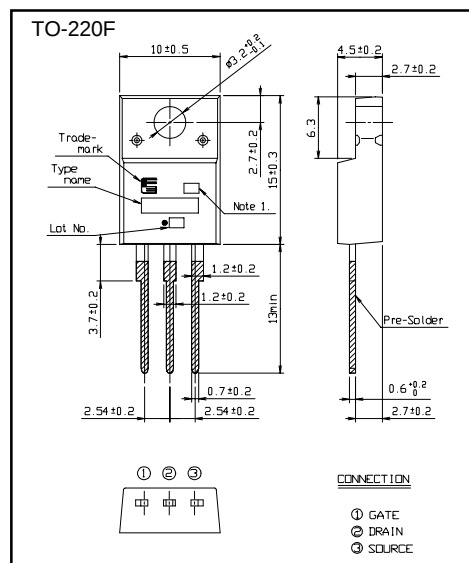
● Electrical characteristics (T_c=25°C unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V _{(BR)DSS}	I _D =250μA V _{GS} =0V	150			V
Gate threshold voltage	V _{GS(th)}	I _D =250μA V _{DS} =V _{GS}	1.0		2.5	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =150V V _{GS} =0V			25	μA
		V _{DS} =120V V _{GS} =0V			250	μA
Gate-source leakage current	I _{GSS}	V _{GS} =±20V V _{DS} =0V		10	100	nA
Drain-source on-state resistance	R _{DS(on)}	I _D =11.5A V _{GS} =10V		65	90	mΩ
Forward transconductance	g _{fs}	I _D =11.5A V _{DS} =25V	12	24		S
Input capacitance	C _{iss}	V _{DS} =75V		1470	2200	pF
Output capacitance	C _{oss}	V _{GS} =0V		190	285	pF
Reverse transfer capacitance	C _{rss}	f=1MHz		18	27	pF
Turn-on time t _{on}	td(on)	V _{CC} =48V I _D =11.5A		24	36	ns
	t _r	V _{GS} =10V		23	35	ns
Turn-off time t _{off}	td(off)	R _G =10Ω		300	450	ns
	t _r			45	68	ns
Total Gate Charge	Q _G	V _{CC} =48V		48	72	nC
Gate-Source Charge	Q _{GS}	I _D =23A		6	9	nC
Gate-Drain Charge	Q _{GD}	V _{GS} =10V		12	18	nC
Gate-Internal Resistance (Tep.Coefficient)	R _g		23.3	39	54.4	Ω
	ΔR _g /ΔT _{ch}			0.12		%/°C
Avalanche capability	I _{AV}	L=100μH T _{ch} =25°C	23			A
Diode forward on-voltage	V _{SD}	I _F =23A V _{GS} =0V T _{ch} =25°C		1.10	1.65	V
Reverse recovery time	t _{rr}	I _F =23A V _{GS} =0V		0.13		μs
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		0.6		μC

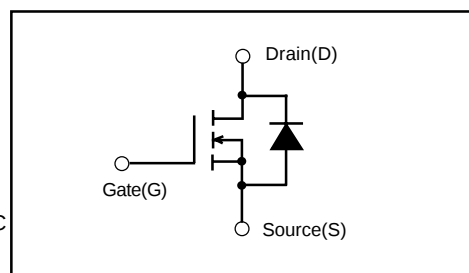
● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			3.125	°C/W
	R _{th(ch-a)}	channel to ambient			58.0	°C/W

■ Outline Drawings

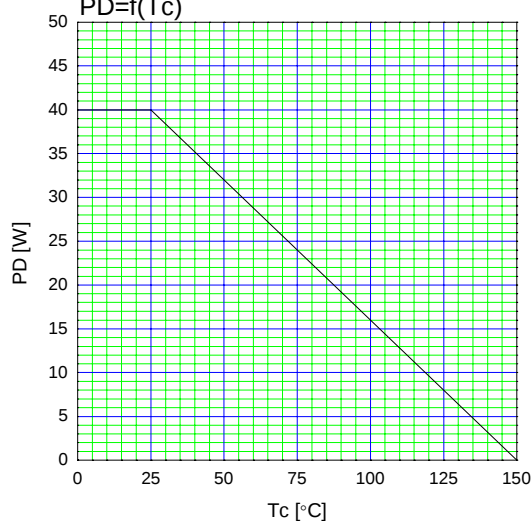


■ Equivalent circuit schematic

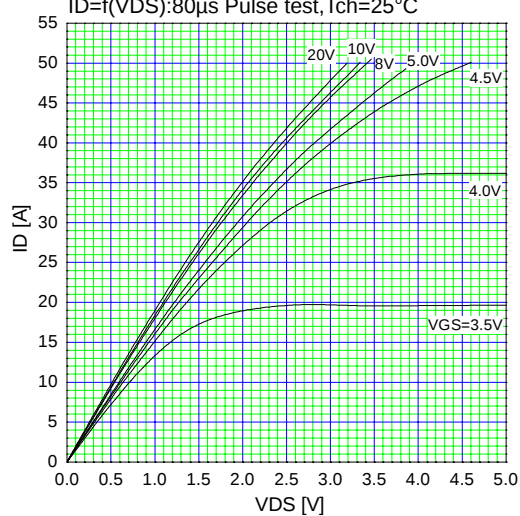


Characteristics

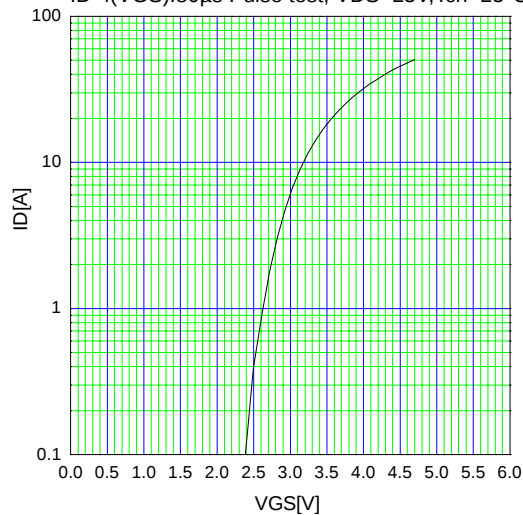
Allowable Power Dissipation
 $PD=f(T_c)$



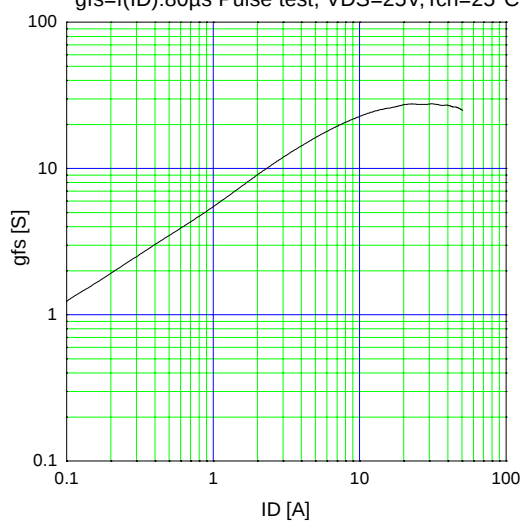
Typical Output Characteristics
 $ID=f(V_{DS}): 80\mu s$ Pulse test, $T_{ch}=25^\circ C$



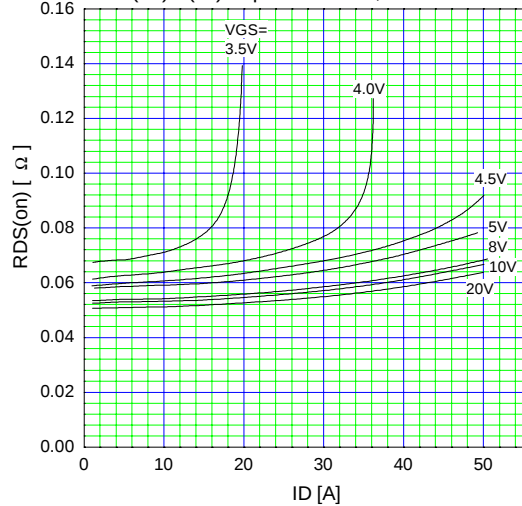
Typical Transfer Characteristic
 $ID=f(V_{GS}): 80\mu s$ Pulse test, $V_{DS}=25V$, $T_{ch}=25^\circ C$



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
 $R_{DS(on)}=f(T_{ch}): ID=11.5A$, $V_{GS}=10V$

