

2SK3771-01MR

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

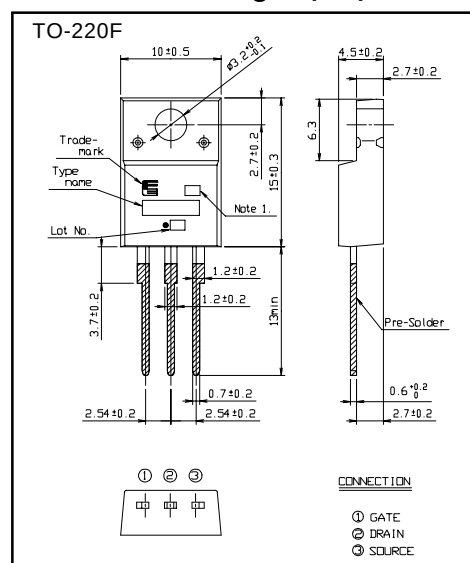
Switching regulators DC-DC converters
UPS (Uninterruptible Power Supply)

Maximum ratings and characteristic

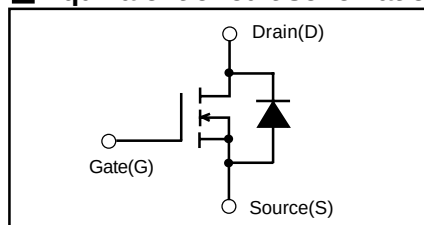
● Absolute maximum ratings
(T_c=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit	Remarks
Drain-source voltage	V _{DS}	100	V	
	V _{DSX}	70	V	V _{GS} =-30V
Continuous Drain Current	I _D	29	A	
Pulsed Drain Current	I _D (puls)	±116	A	
Gate-Source Voltage	V _{GS}	±30	V	
Maximum Avalanche current	I _{AS}	29	A	Note *1
Non-Repetitive	E _{AS}	376.4	mJ	Note *2
Maximum Avalanche Energy	E _{AR}	3.7	mJ	Note *3
Repetitive				
Maximum Avalanche Energy				
Maximum Drain-Source dV/dt	dV _{DS} /dt	20	kV/μs	V _{DS} ≤100V
Peak Diode Recovery dV/dt	dV/dt	5	kV/μs	Note *4
Max. Power Dissipation	P _D	37	W	T _c =25°C
		2.16		T _a =25°C
Operating and Storage	T _{ch}	+150	°C	
Temperature range	T _{stg}	-55 to +150	°C	
Isolation Voltage	V _{ISO}	2	kVrms	t=60sec. f=60Hz

Outline Drawings (mm) 200407



Equivalent circuit schematic



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

Note *2: Starting T_{ch}=25°C, I_{AS}=12A, L=3.14mH,

V_{CC}=48V, 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 (T_c=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	100			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} =100V V _{GS} =0V			25	μA
		V _{DS} =80V 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 =14.5A V _{GS} =10V		45	59	mΩ
Forward Transconductance	g _{fs}	I _D =14.5A V _{DS} =25V	6	12		S
Input Capacitance	C _{iss}	V _{DS} =75V		740	1100	pF
Output Capacitance	C _{oss}	V _{GS} =0V		200	300	pF
Reverse Transfer Capacitance	C _{rss}	f=1MHz		15	22	pF
Turn-On Time t _{on}	t _{d(on)}	V _{CC} =48V		13	19	ns
		I _D =14.5A		6	9	ns
Turn-Off Time t _{off}	t _{d(off)}	V _{GS} =10V		20	30	ns
		R _{GS} =10 Ω		8	12	ns
Total Gate Charge	Q _G	V _{CC} =50V		23	35	nC
Gate-Source Charge	Q _{GS}	I _D =29A		10	15	nC
Gate-Drain Charge	Q _{GD}	V _{GS} =10V		7	11	nC
Diode forward on-voltage	V _{SD}	I _F =29A V _{GS} =0V T _{ch} =25°C		1.00	1.50	V
Reverse recovery time	t _{rr}	I _F =29A V _{GS} =0V		110		ns
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		0.5		μC

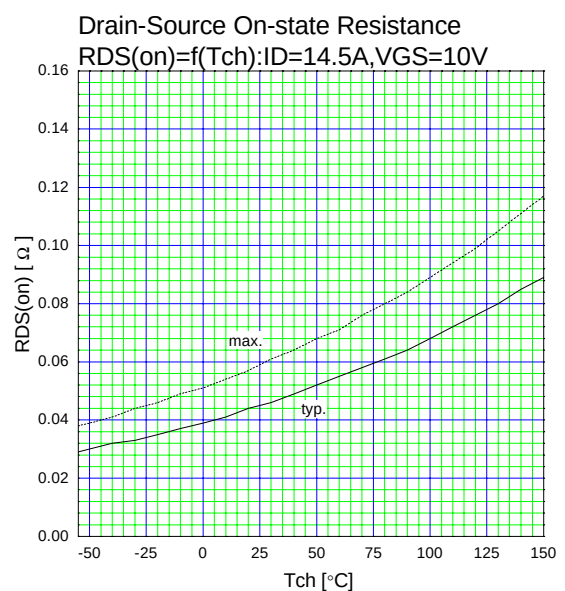
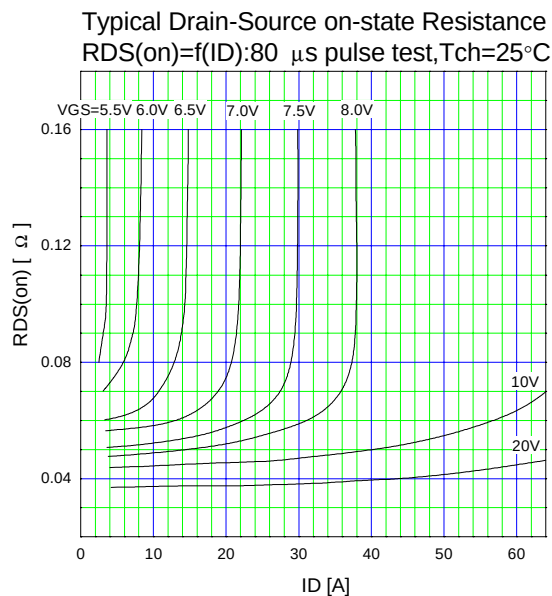
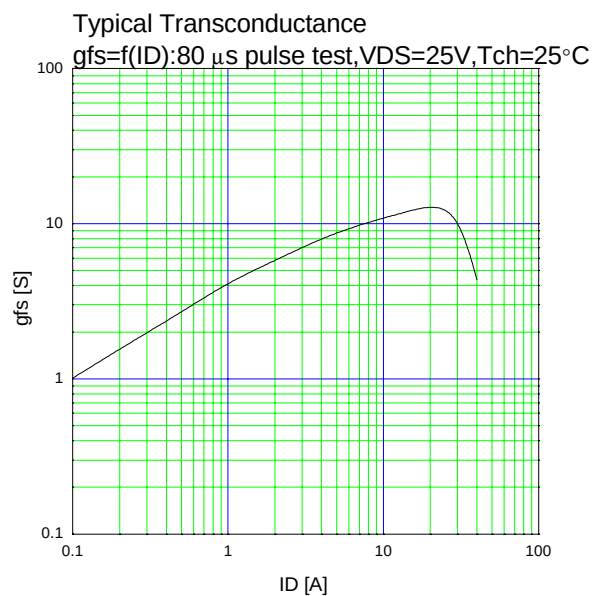
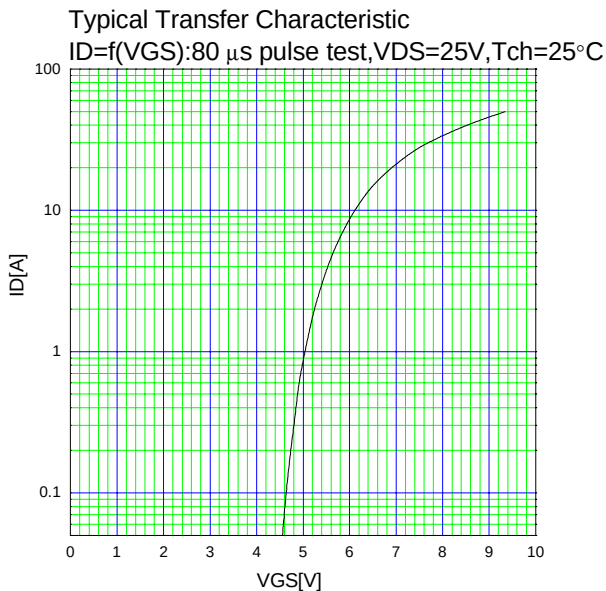
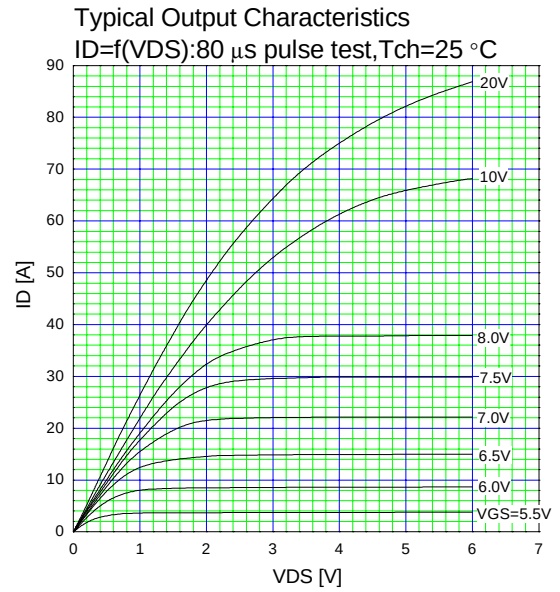
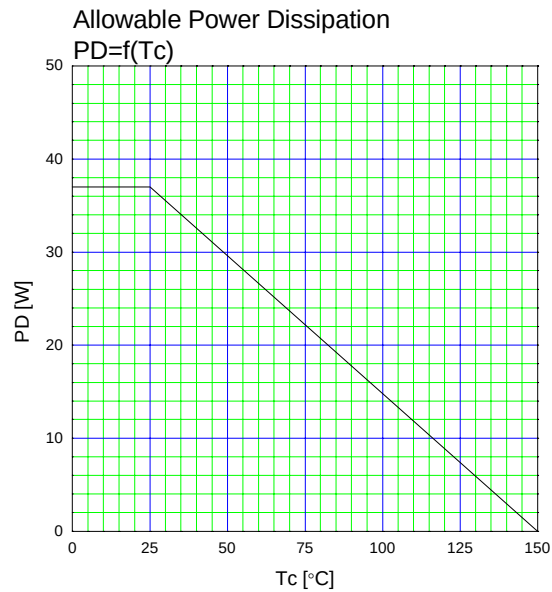
Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			3.378	°C/W
	R _{th(ch-a)}	channel to ambient				°C/W

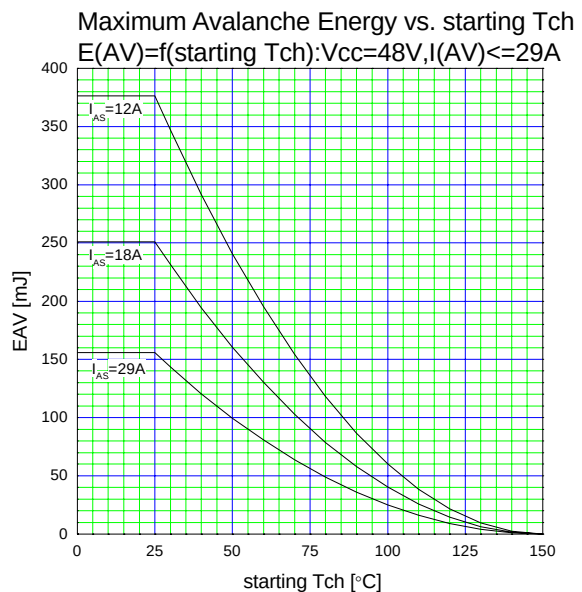
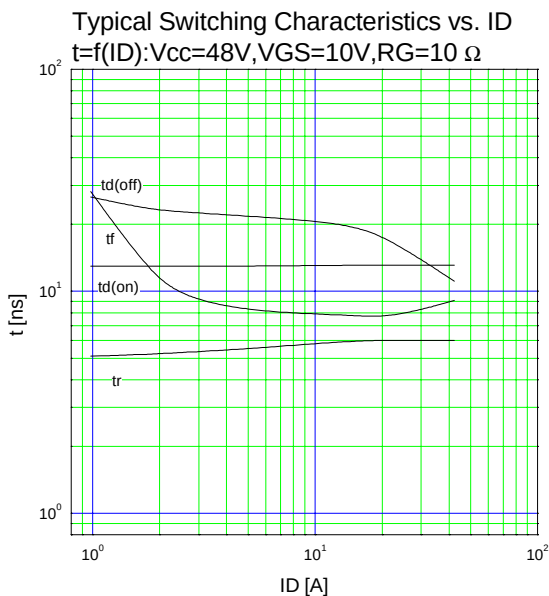
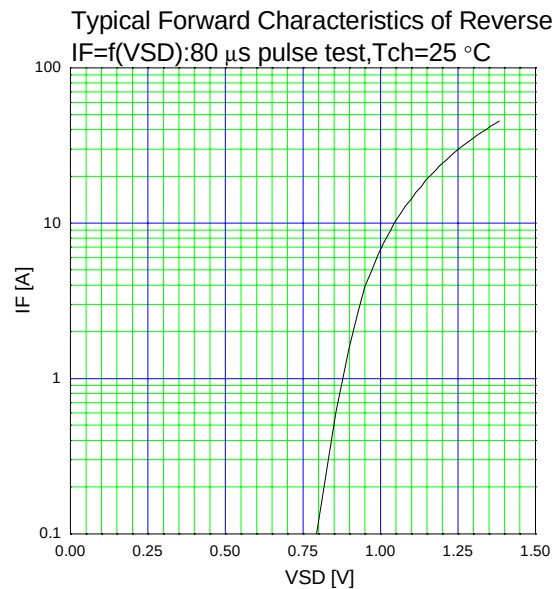
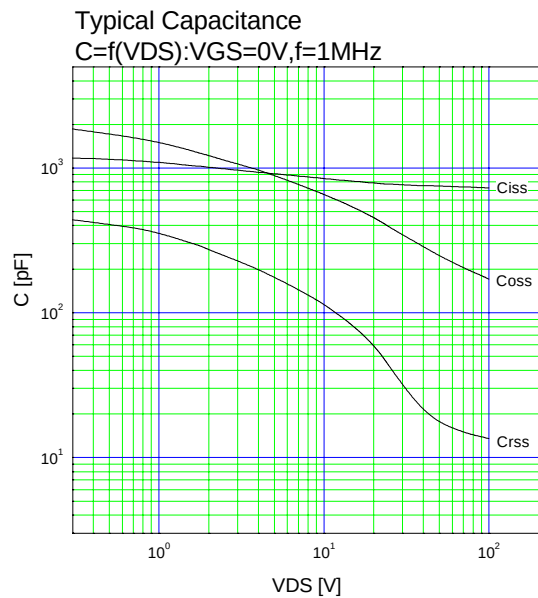
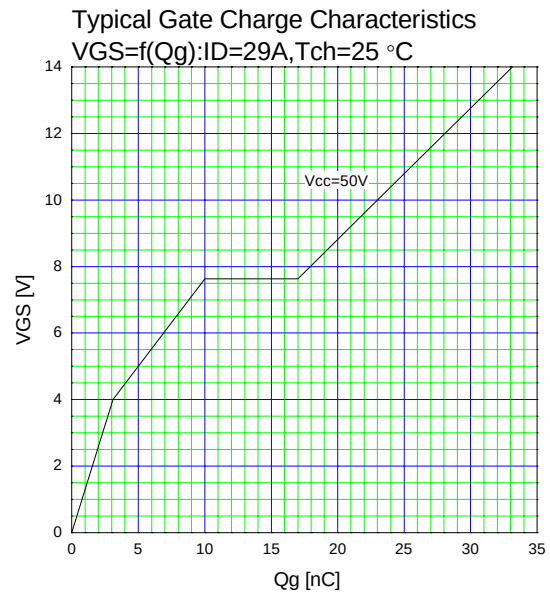
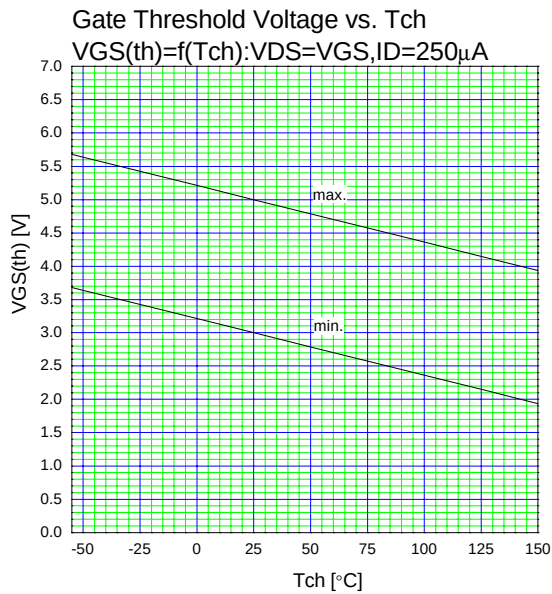
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Characteristics

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