

2SK3580-01MR

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}	300	V
	V _{DSX} *5	270	V
Continuous drain current	I _D	±12	A
Pulsed drain current	I _{D(puls)}	±48	A
Gate-source voltage	V _{GS}	±30	V
Repetitive or non-repetitive	I _{AR} *2	12	A
Maximum Avalanche Energy	E _{AS} *1	193	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	2.16
		T _c =25°C	35
Operating and storage temperature range	T _{ch}	+150	°C
	T _{stg}	-55 to +150	°C
Isolation Voltage	V _{ISO} *6	2	kVrms

*1 L=2.32mH, 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}≤300V *5 V_{GS}=-30V *6 t=60sec f=60Hz

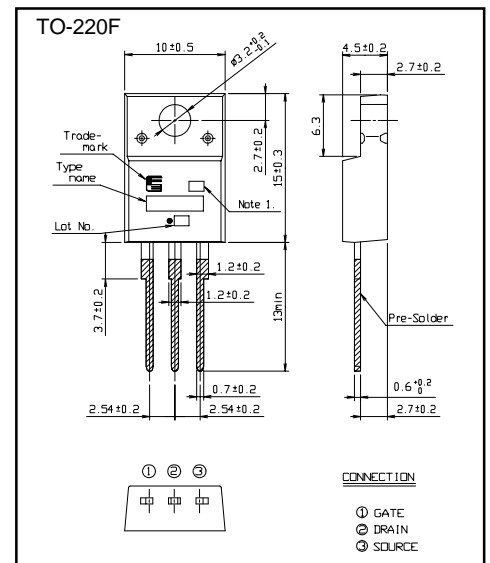
Electrical characteristics (Tc =25°C unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V(BR) _{DSS}	I _D =250μA V _{GS} =0V	300			V
Gate threshold voltage	V _{GS(th)}	I _D =250μA V _{DS} =V _{GS}	3.5		4.5	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =300V V _{GS} =0V	T _{ch} =25°C		25	μA
			T _{ch} =125°C		250	
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 =6A V _{GS} =10V		1.22	0.28	Ω
Forward transconductance	g _{fs}	I _D =6A V _{DS} =25V	5	10.5		S
Input capacitance	C _{iss}	V _{DS} =25V V _{GS} =0V f=1MHz		980	1470	pF
Output capacitance	C _{oss}			170	255	
Reverse transfer capacitance	C _{rss}			5.5	11	
Turn-on time t _{on}	td(on)	V _{CC} =150V I _D =6A V _{GS} =10V		14.5	29	ns
	t _r			6.5	9.8	
Turn-off time t _{off}	td(off)	R _{GS} =10 Ω		28	42	ns
	t _f			4	6	
Total Gate Charge	Q _G	V _{CC} =150V		23	34.5	nC
Gate-Source Charge	Q _{GS}	I _D =12A		9.7	14.6	
Gate-Drain Charge	Q _{GD}	V _{GS} =10V		5.6	11.2	
Avalanche capability	I _{AV}	L=100μH T _{ch} =25°C	12			A
Diode forward on-voltage	V _{SD}	I _F =12A V _{GS} =0V T _{ch} =25°C		1.20	1.80	V
Reverse recovery time	t _{rr}	I _F =12A V _{GS} =0V		0.2		μs
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		1.80		μC

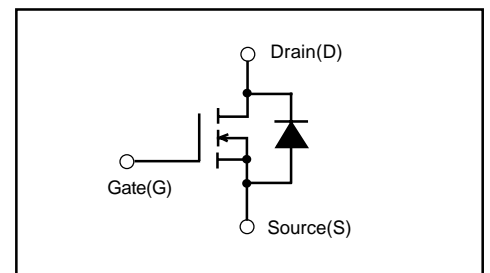
Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			3.57	°C/W
	R _{th(ch-a)}	channel to ambient			58.0	°C/W

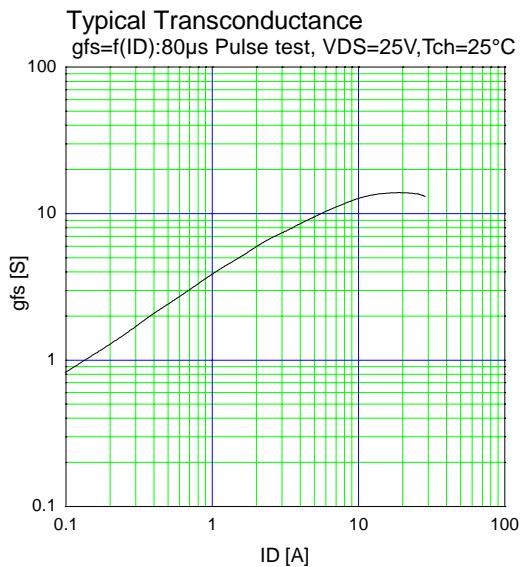
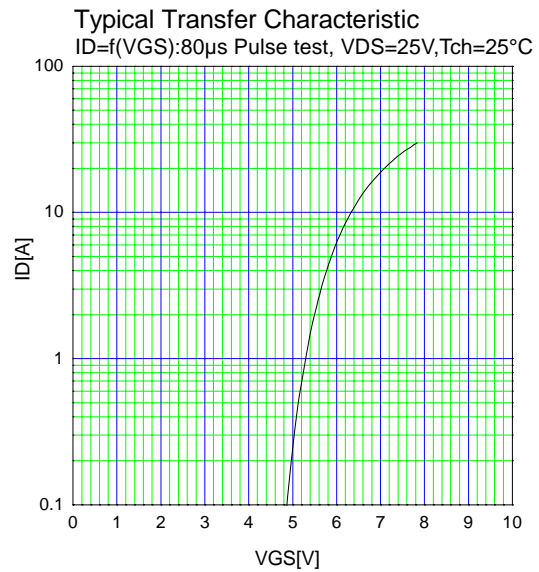
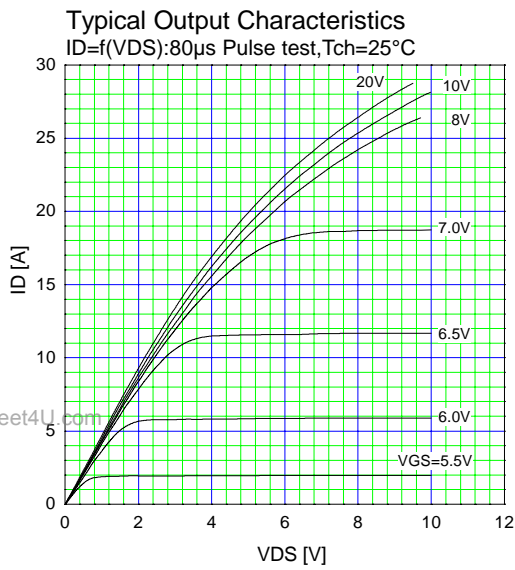
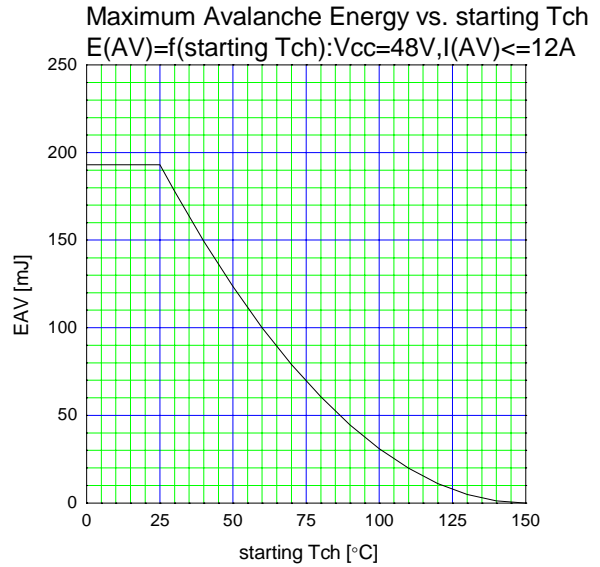
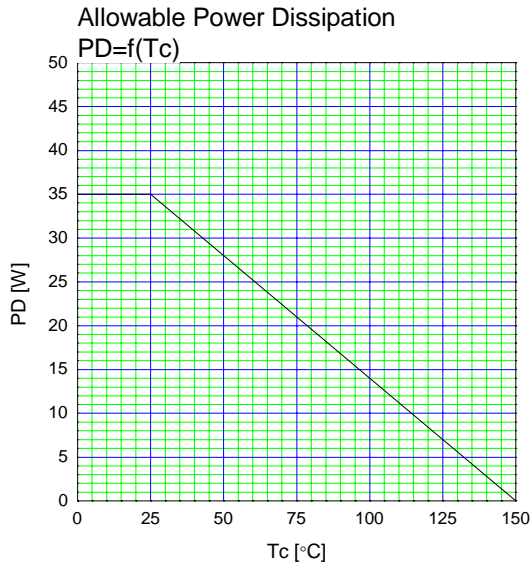
Outline Drawings



Equivalent circuit schematic

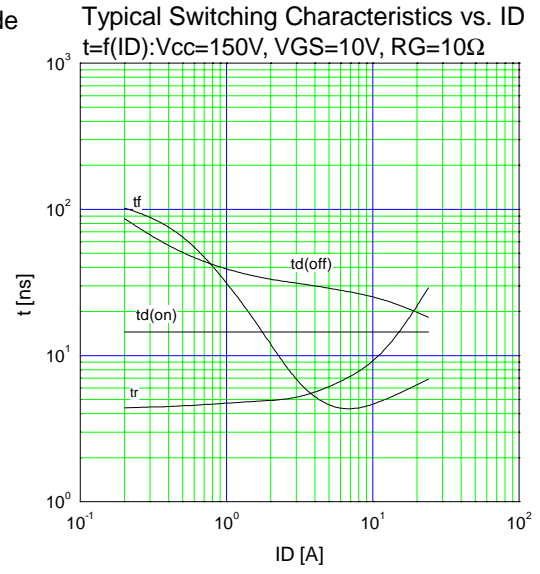
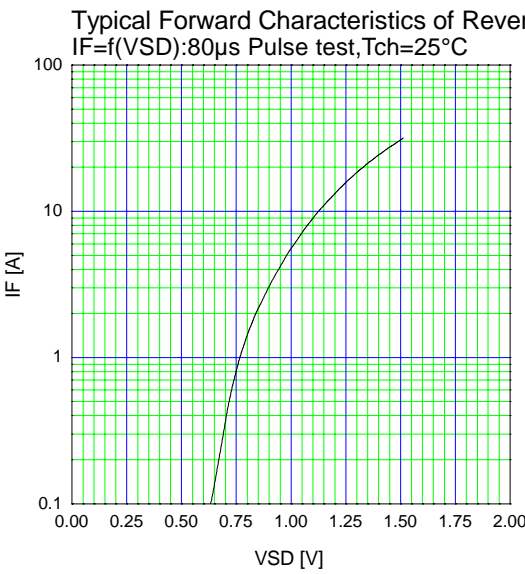
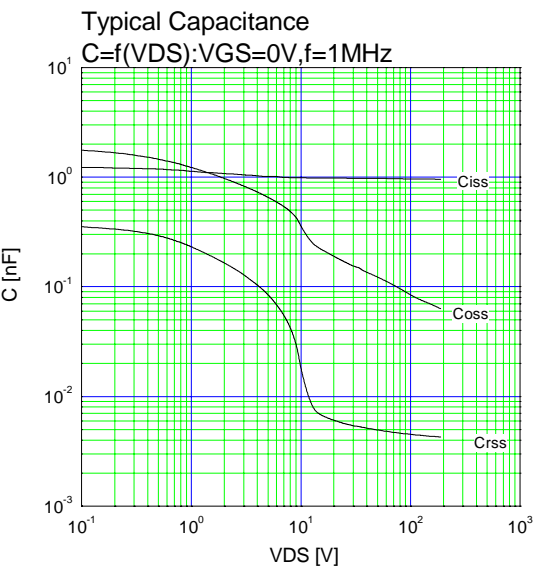
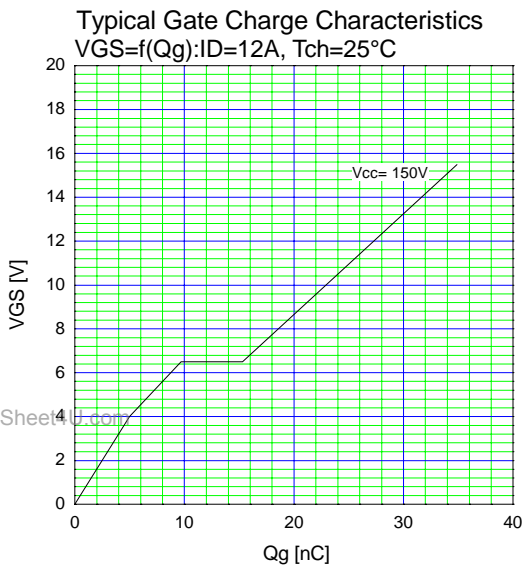
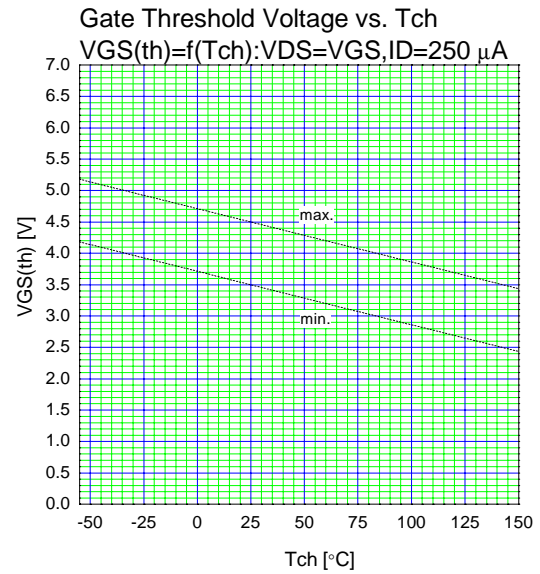
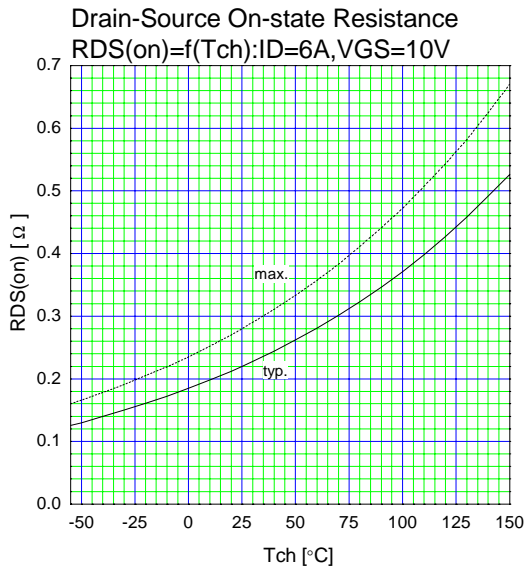


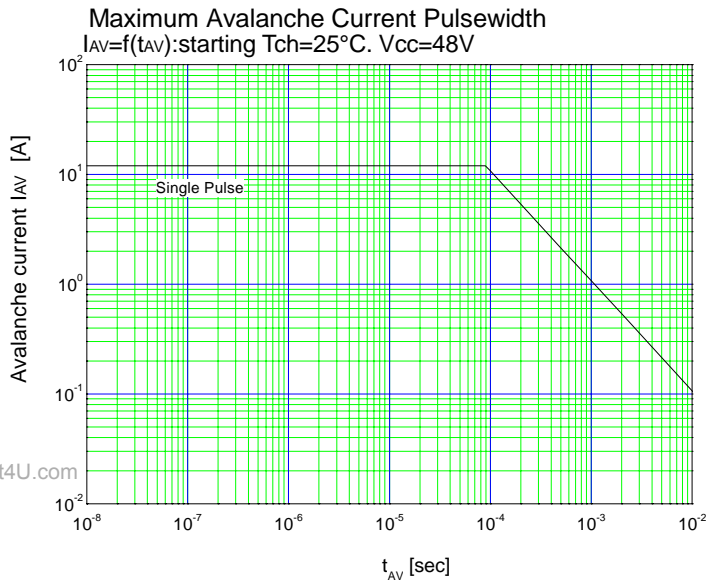
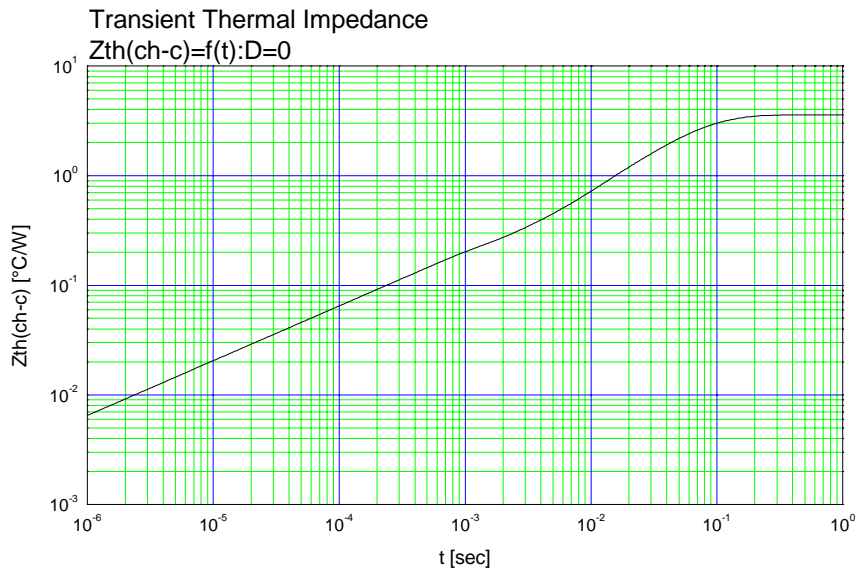
Characteristics



$R_{DS(on)}=f(I_D): 80\mu s \text{ Pulse test, } T_{ch}=25^\circ C$

R_{DS(on)} [Ω]





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