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2SK3525-01MR

FUJI POWER MOSFET

Super FAP-G Series

N-CHANNEL SILICON POWER MOSFET

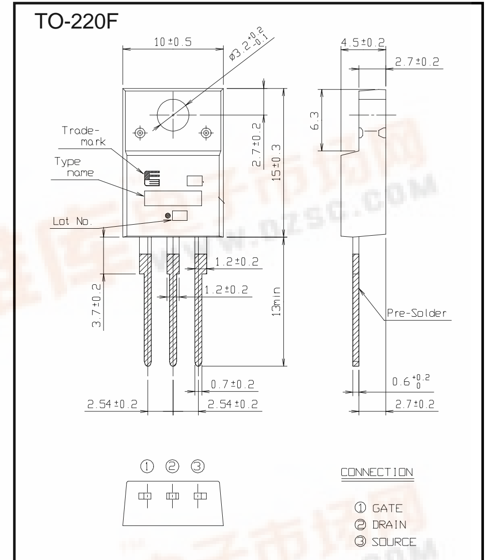
Features

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

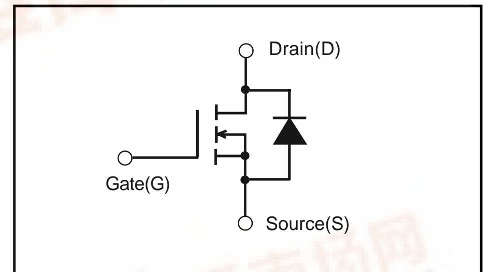
Applications

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

Outline Drawings



Equivalent circuit schematic



Maximum ratings and characteristic Absolute maximum ratings

● (Tc=25°C unless otherwise specified)

Item	Symbol		Ratings	Unit
Drain-source voltage	V_{DS}		600	V
Continuous drain current	I_D		±6	A
Pulsed drain current	$I_{D(puls)}$		±24	A
Gate-source voltage	V_{GS}		±30	V
Repetitive or non-repetitive	I_{AR} *2		6	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	Ta=25°C	2.16	W
		Tc=25°C	58	
Operating and storage temperature range	T_{ch}		+150	℃
	T_{stg}		-55 to +150	℃

*1 L=9.83mH, Vcc=60V *2 Tch≦150°C *3 IF≦-ID, -di/dt=50A/μs, Vcc≦BVDSS, Tch≦150°C
*4 VDS≦600V

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

Item	Symbol	Test Conditions		Min.	Typ.	Max.	Units
Drain-source breakdown voltaget	$V_{(BR)DSS}$	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	T_{ch}=25°C			25	μA
		V_{DS}=480V V_{GS}=0V	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=3A V_{GS}=10V			0.93	1.20	Ω
Forward transcondutance	g_{fs}	I_D=3A V_{DS}=25V		3	6		S
Input capacitance	C_{iss}	V_{DS}=25V			750	1130	pF
Output capacitance	C_{oss}	V_{GS}=0V			100	150	
Reverse transfer capacitance	C_{rss}	f=1MHz			4.0	6.0	
Turn-on time t_{on}	$t_{d(on)}$	V_{CC}=300V I_D=3A			14	21	ns
	t_r	V_{GS}=10V			9	14	
Turn-off time t_{off}	$t_{d(off)}$	R_{GS}=10Ω			24	36	
	t_f				7	10.5	
Total Gate Charge	Q_G	V_{CC}=300V			20	30	nC
Gate-Source Charge	Q_{GS}	I_D=6A			8.5	13	
Gate-Drain Charge	Q_{GD}	V_{GS}=10V			5.5	8.5	
Avalanche capability	I_{AV}	L=9.83mH T_{ch}=25°C		6			A
Diode forward on-voltage	V_{SD}	I_F=6A V_{GS}=0V T_{ch}=25°C			1.00	1.50	V
Reverse recovery time	t_{rr}	I_F=6A V_{GS}=0V			0.7		μs
Reverse recovery charge	Q_{rr}	-di/dt=100A/μs T_{ch}=25°C			3.5		μC

● Thermalcharacteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			2.16	°C/W

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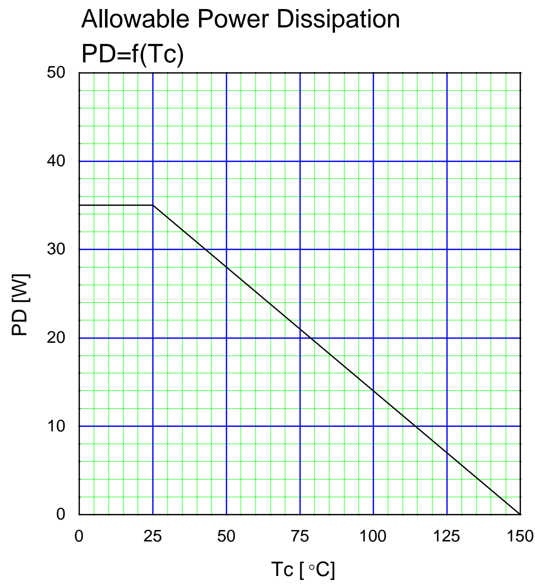
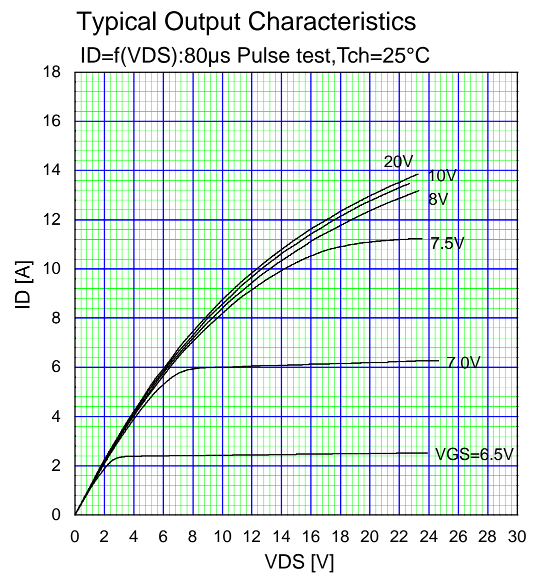
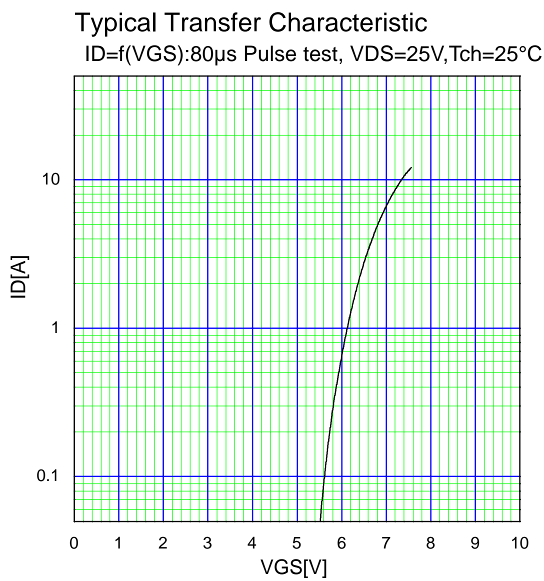
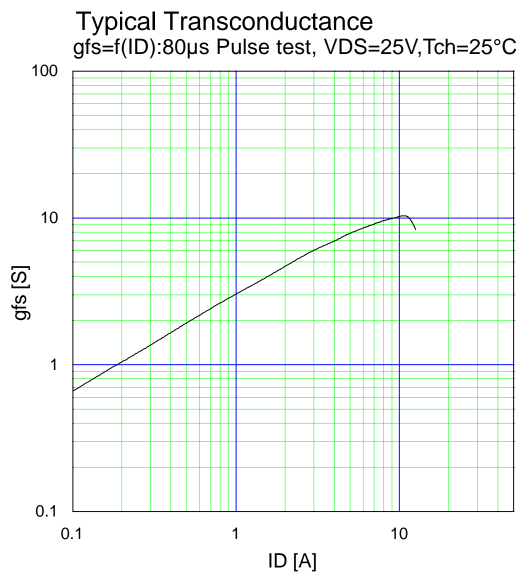
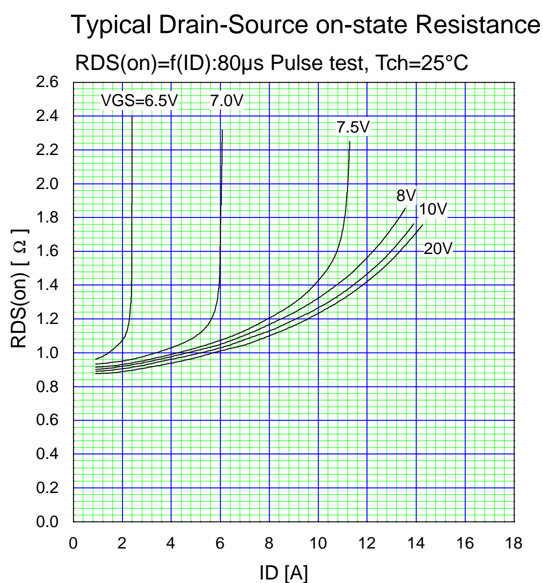
Characteristics

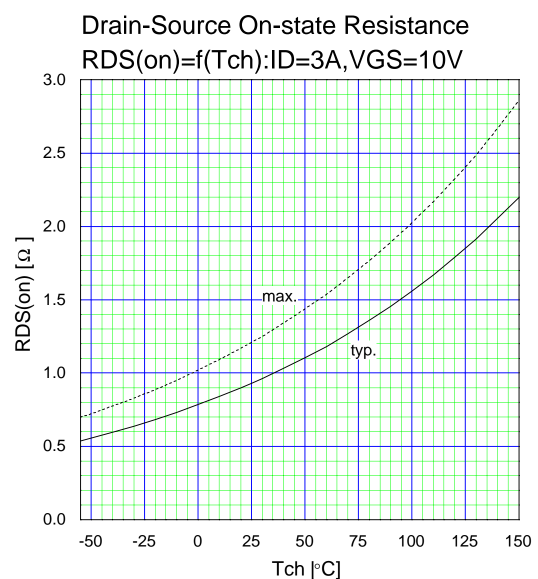


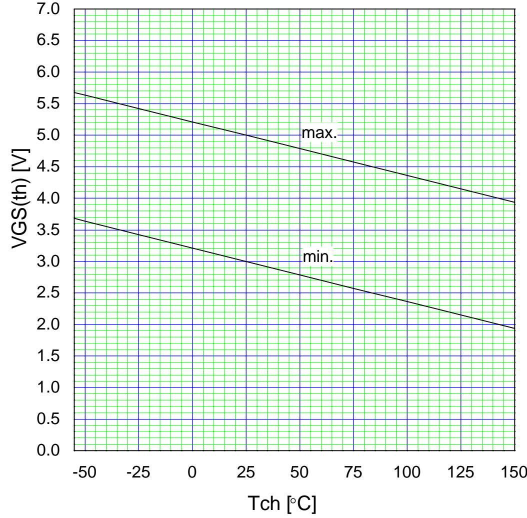


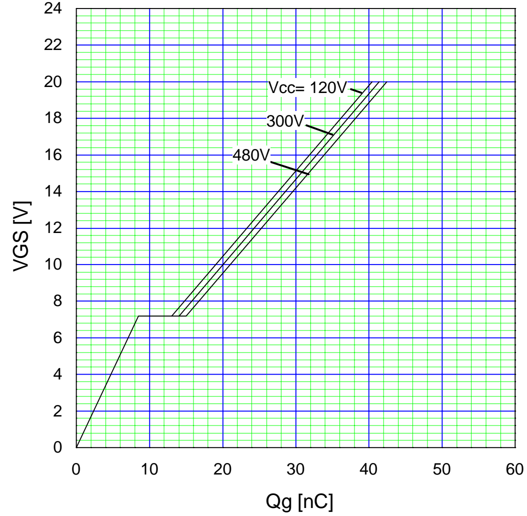


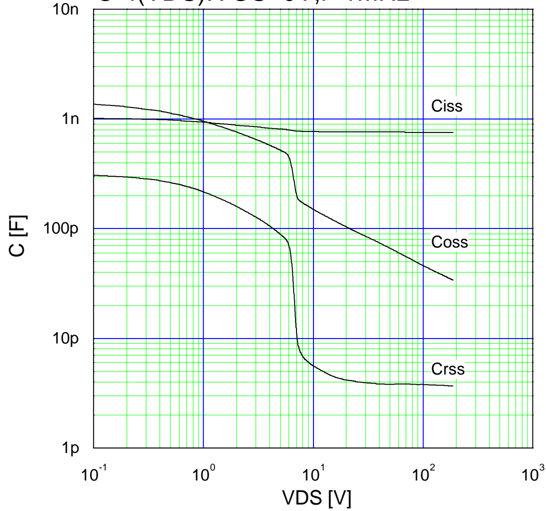


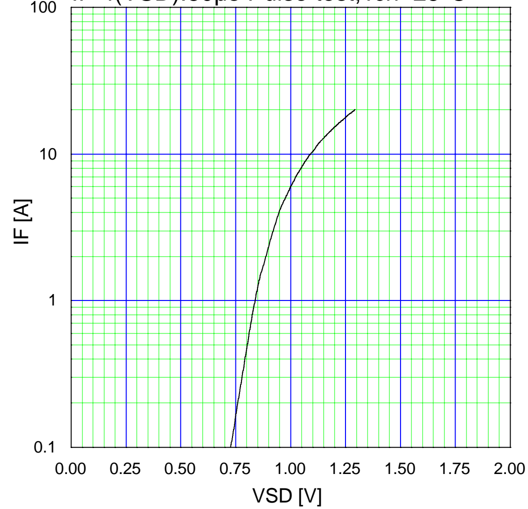


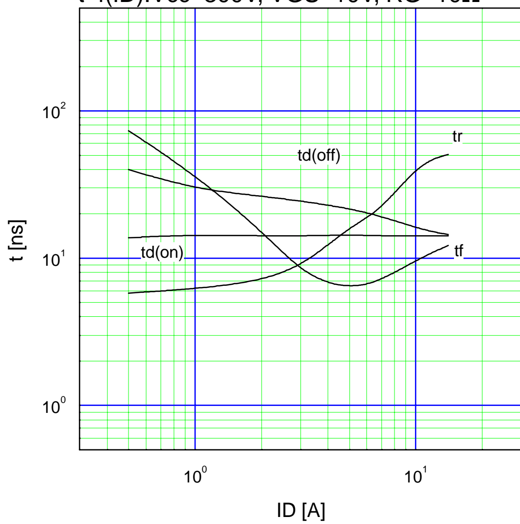


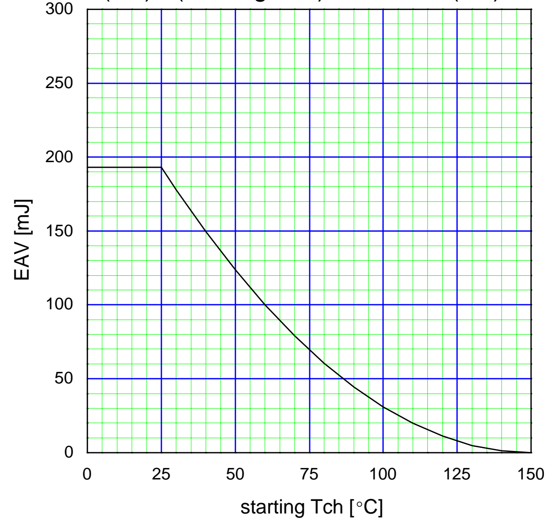

Gate Threshold Voltage vs. Tch
VGS(th)=f(Tch):VDS=VGS,ID=250μA
max.
min.
VGS(th) [V]
Tch [°C]

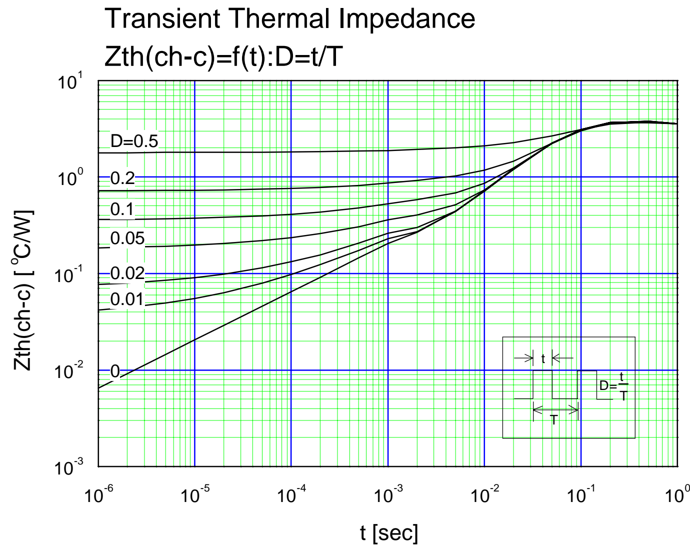

Typical Gate Charge Characteristics
VGS=f(Qg):ID=3A, Tch=25°C
Vcc= 120V
300V
480V
VGS [V]
Qg [nC]

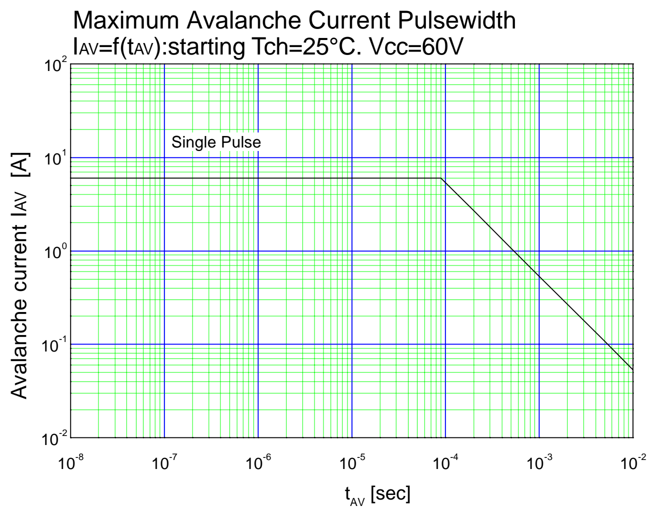

Typical Capacitance
C=f(VDS):VGS=0V,f=1MHz
Ciss
Coss
Crss
C [F]
VDS [V]


Typical Forward Characteristics of Reverse Diode
IF=f(VSD):80μs Pulse test,Tch=25°C
IF [A]
VSD [V]


Typical Switching Characteristics vs. ID
t=f(ID):Vcc=300V, VGS=10V, RG=10Ω
td(off)
tr
td(on)
tf
t [ns]
ID [A]


Maximum Avalanche Energy vs. starting Tch
E(AV)=f(starting Tch):Vcc=60V,I(AV)<=6A
EAV [mJ]
starting Tch [°C]


Transient Thermal Impedance
Zth(ch-c)=f(t):D=t/T
D=0.5
0.2
0.1
0.05
0.02
0.01
0
D=t/T
Zth(ch-c) [°C/W]
t [sec]


Maximum Avalanche Current Pulsewidth
IAV=f(tAV):starting Tch=25°C. Vcc=60V
Single Pulse
Avalanche current IAV [A]
tAV [sec]