2SK3549-01

200401

FUJI POWER MOSFET
N-CHANNEL SILICON POWER MOSFET

Super FAP-G Series

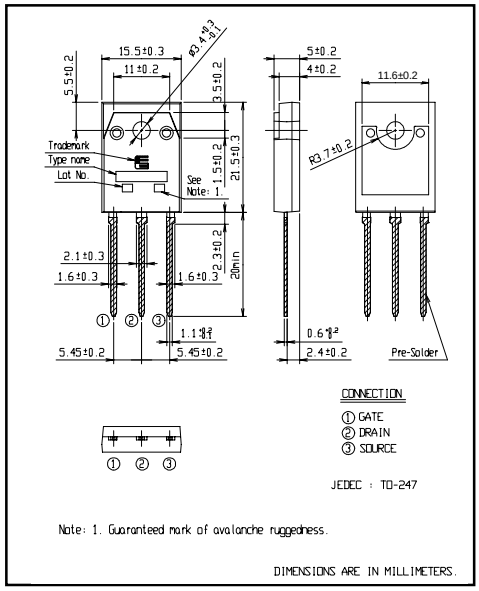
■ Features

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

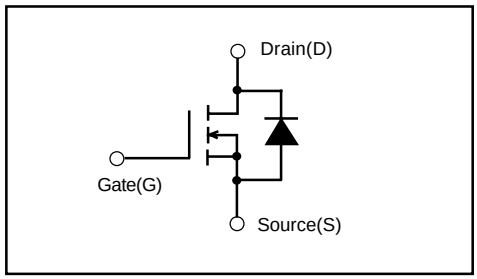
■ Applications

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

■ Outline Drawings [mm]



■ 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}		900	V
	V_{DSX} *5		900	V
Continuous drain current	I_D		±10	A
Pulsed drain current	$I_{D(puls)}$		±40	A
Gate-source voltage	V_{GS}		±30	V
Repetitive or non-repetitive	I_{AR}	*2	10	A
Maximum Avalanche Energy	E_{AS}	*1	330	mJ
Maximum Drain-Source dV/dt	dV_{DS}/dt	*4	40	kV/µs
Peak Diode Recovery dV/dt	dV/dt	*3	5	kV/µs
Max. power dissipation	P_D	Ta=25°C	2.50	W
		Tc=25°C	270	
Operating and storage temperature range	T_{ch}		+150	°C
	T_{stg}		-55 to +150	°C

*1 L=6.06mH, Vcc=90V,Tch=25°C, See to Avalanche Energy Graph *2 Tch≦150°C
*3 IF≦-ID, -di/dt=50A/µs, Vcc≦BVDSS, Tch≦150°C *4 VDS≦ 900V *5 VGS=-30V

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

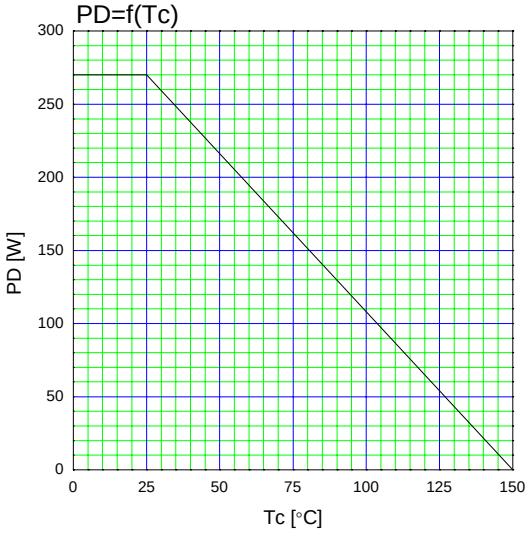
Item	Symbol	Test Conditions		Min.	Typ.	Max.	Units
Drain-source breakdown voltaget	$V_{(BR)DSS}$	I_D= 250µA V_{GS}=0V		900			V
Gate threshold voltage	$V_{GS(th)}$	I_D= 250µA V_{DS}=V_{GS}		3.0		5.0	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=900V V_{GS}=0V	Tch=25°C			25	µA
		V_{DS}=720V V_{GS}=0V	Tch=125°C			250	
Gate-source leakage current	I_{GSS}	V_{GS}=±30V V_{DS}=0V				100	nA
Drain-source on-state resistance	$R_{DS(on)}$	I_D=5A V_{GS}=10V			1.08	1.40	Ω
Forward transcondutance	g_{fs}	I_D=5A V_{DS}=25V		6	12		S
Input capacitance	C_{iss}	V_{DS}=25V			1250	1900	pF
Output capacitance	C_{oss}	V_{GS}=0V			160	240	
Reverse transfer capacitance	C_{rss}	f=1MHz			12	18	
Turn-on time t_{on}	$t_{d(on)}$	V_{CC}=600V I_D=5A			26	39	ns
	t_r	V_{GS}=10V			23	35	
Turn-off time t_{off}	$t_{d(off)}$	R_{GS}=10 Ω			60	90	
	t_f				17	26	
Total Gate Charge	Q_G	V_{CC}=450V			34.5	52	nC
Gate-Source Charge	Q_{GS}	I_D=10A			5	7.5	
Gate-Drain Charge	Q_{GD}	V_{GS}=10V			12	18	
Avalanche capability	I_{AV}	L=6.06mH T_{ch}=25°C		10			A
Diode forward on-voltage	V_{SD}	I_F=10A V_{GS}=0V T_{ch}=25°C			0.90	1.50	V
Reverse recovery time	t_{rr}	I_F=10A V_{GS}=0V			3.1		µs
Reverse recovery charge	Q_{rr}	-di/dt=100A/µs T_{ch}=25°C			17.0		µC

● Thermalcharacteristics

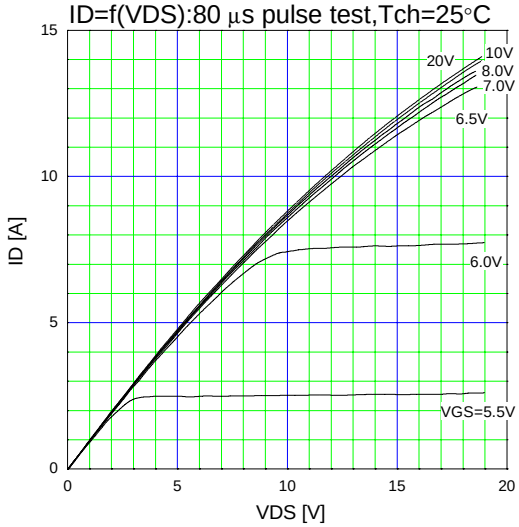
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			0.463	°C/W
	$R_{th(ch-a)}$	channel to ambient			50.0	°C/W

Characteristics

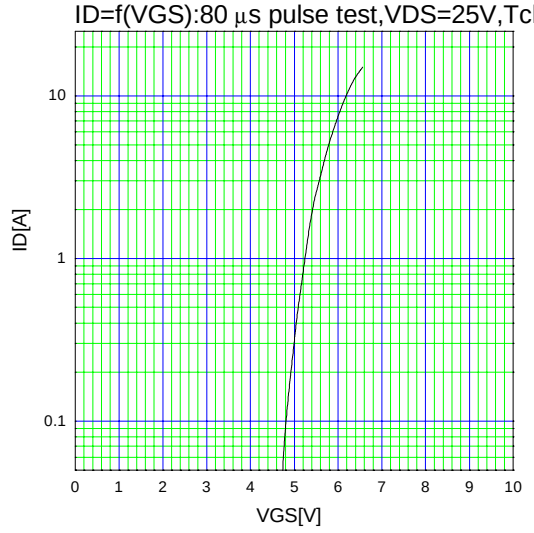
Allowable Power Dissipation
PD=f(Tc)



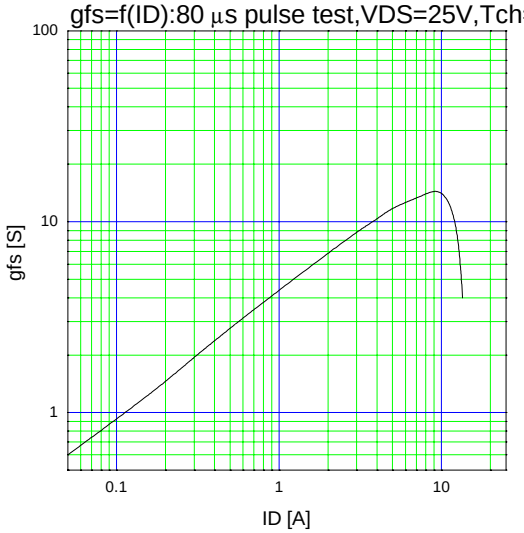
Typical Output Characteristics
ID=f(VDS):80 μs pulse test,Tch=25°C



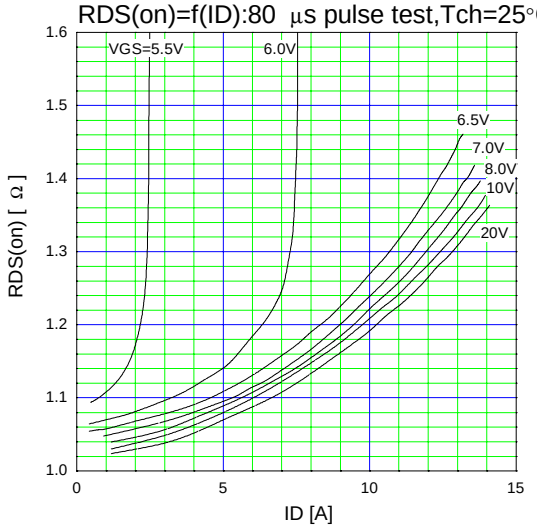
Typical Transfer Characteristic
ID=f(VGS):80 μs pulse test,VDS=25V,Tch=25°C



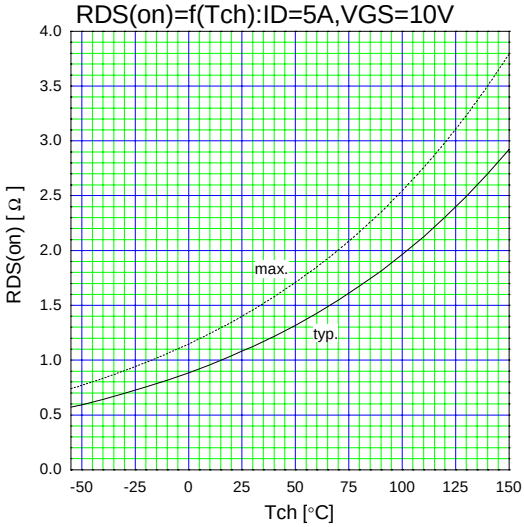
Typical Transconductance
gfs=f(ID):80 μs pulse test,VDS=25V,Tch=25°C



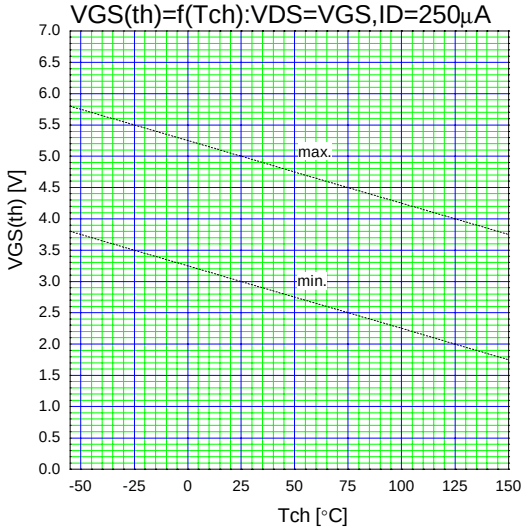
Typical Drain-Source on-state Resistance
RDS(on)=f(ID):80 μs pulse test,Tch=25°C



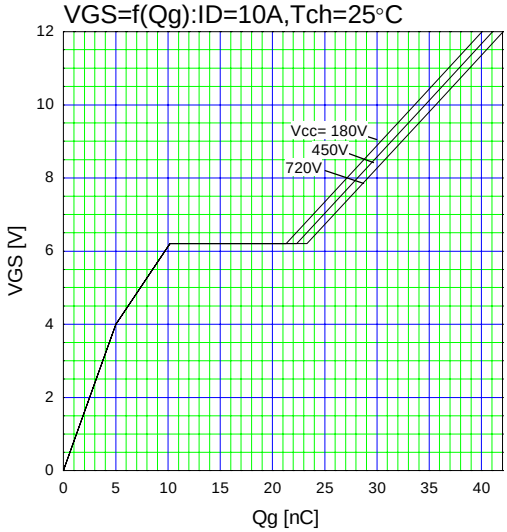
Drain-Source On-state Resistance
RDS(on)=f(Tch):ID=5A,VGS=10V



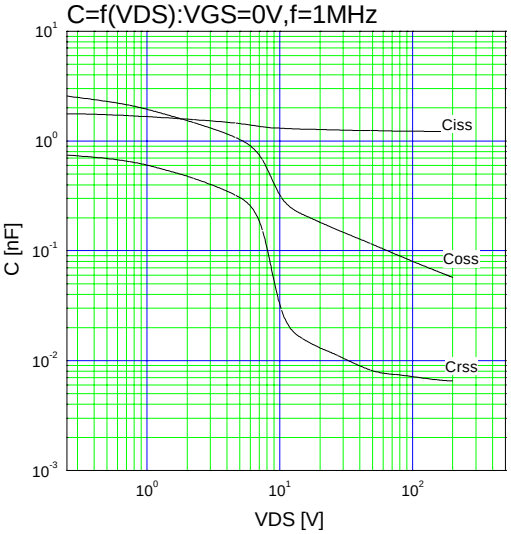
Gate Threshold Voltage vs. Tch
VGS(th)=f(Tch):VDS=VGS,ID=250μA



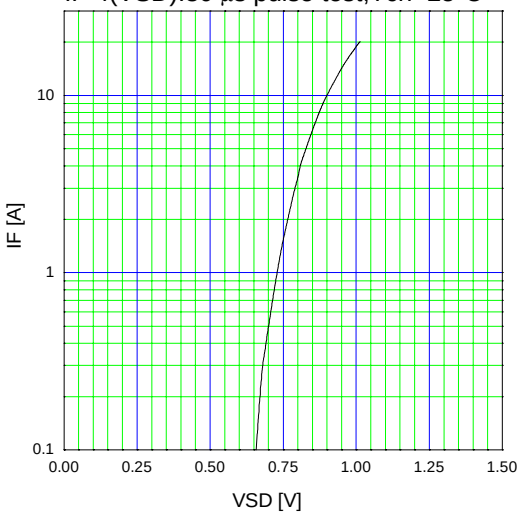
Typical Gate Charge Characteristics
VGS=f(Qg):ID=10A,Tch=25°C



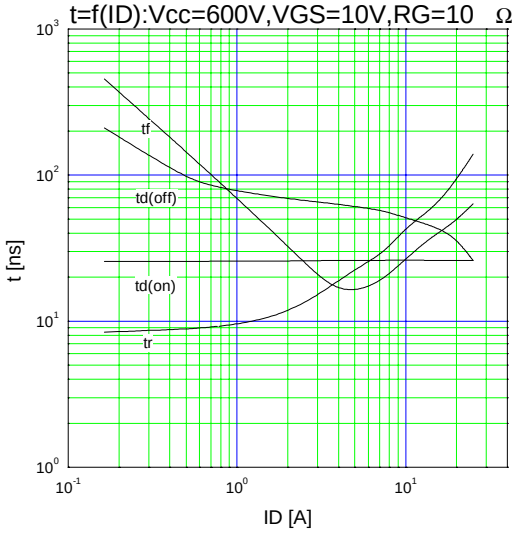
Typical Capacitance
C=f(VDS):VGS=0V,f=1MHz



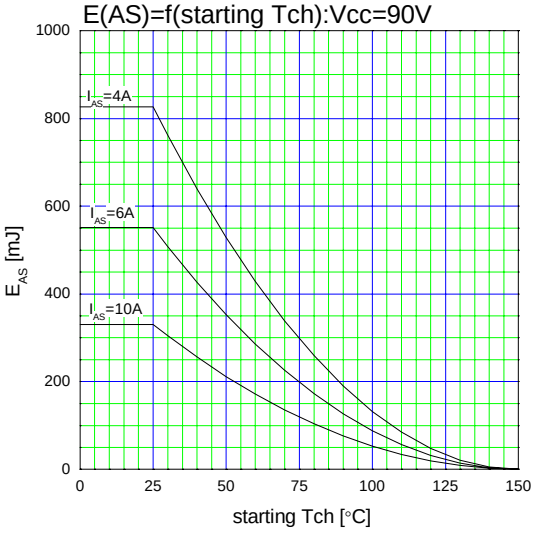
Typical Forward Characteristics of Reverse Diode
IF=f(VSD):80 μs pulse test,Tch=25°C



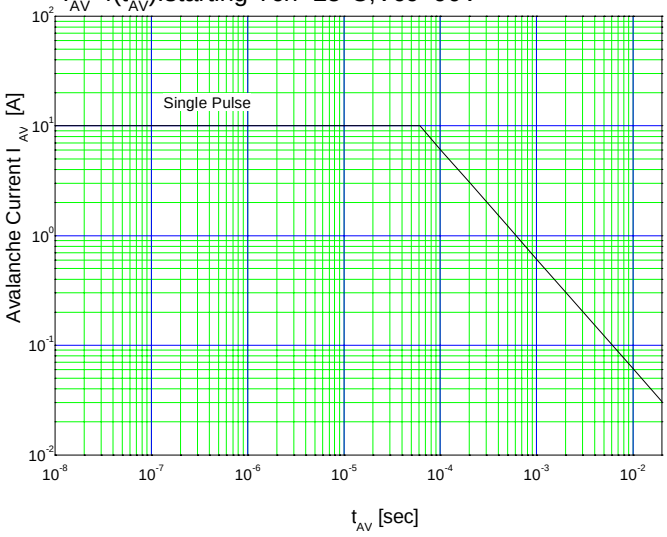
Typical Switching Characteristics vs. ID
t=f(ID):Vcc=600V,VGS=10V,RG=10 Ω



Maximum Avalanche Energy vs. starting Tch
E(AS)=f(starting Tch):Vcc=90V



Maximum Avalanche Current Pulsewidth
$I_{AV}=f(t_{AV})$:starting Tch=25°C,Vcc=90V



Maximum Transient Thermal Impedance
Zth(ch-c)=f(t):D=0

