2SK3516-01L,S,SJ

FUJI ELECTRIC

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

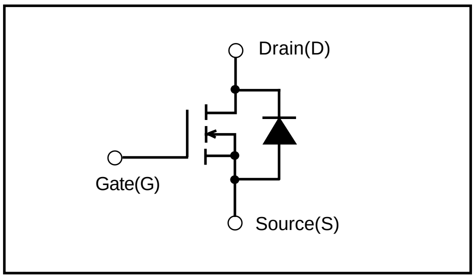
Applications

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

Outline Drawings

P4

Equivalent circuit schematic



Maximum ratings and characteristicAbsolute maximum ratings

● (Tc=25°C unless otherwise specified)

Item	Symbol	Ratings	Unit
Drain-source voltage	V_{DS}	450	V
Continuous drain current	I_D	±8	A
Pulsed drain current	$I_{D(puls]}$	±32	A
Gate-source voltage	V_{GS}	±30	V
Repetitive or non-repetitive	I_{AR} *2	8	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	1.67	W
	Tc=25°C	65	
Operating and storage	T_{ch}	+150	℃
temperature range	T_{stg}	-55 to +150	℃

*1 L=5.53mH, Vcc=45V *2 Tch≦150°C *3 I_F≦-I_D, -di/dt=50A/µs, Vcc≦BV_{DSS}, Tch≦150°C
*4 VDS≦450V

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

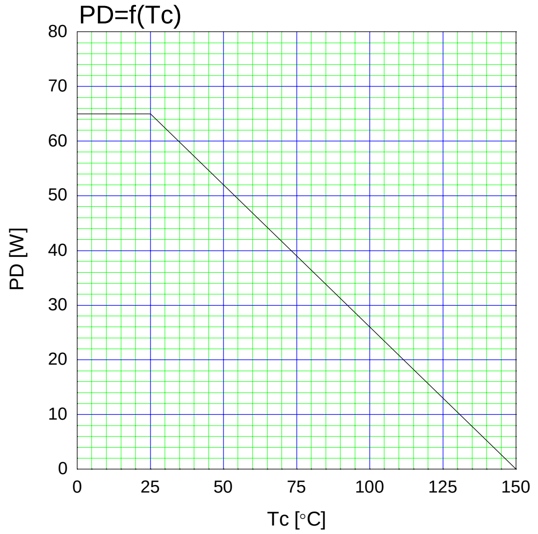
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltaget	$V_{(BR)DSS}$	I_D= 250µA V_{GS}=0V	450			V
Gate threshold voltage	$V_{GS(th)}$	I_D= 250µA V_{DS}=V_{GS}	3.0		5.0	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=450V V_{GS}=0V T_{ch}=25°C			25	µA
		V_{DS}=360V V_{GS}=0V 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=4A V_{GS}=10V		0.50	0.65	Ω
Forward transcondutance	g_{fs}	I_D=4A V_{DS}=25V	4	8		S
Input capacitance	C_{iss}	V_{DS}=25V		800	1200	pF
Output capacitance	C_{oss}	V_{GS}=0V		120	150	
Reverse transfer capacitance	C_{rss}	f=1MHz		4.5	7	
Turn-on time t_{on}	$t_{d(on)}$	V_{CC}=300V I_D=4A		15	23	ns
	t_r	V_{GS}=10V		12	18	
Turn-off time t_{off}	$t_{d(off)}$	R_{GS}=10 Ω		25	38	
	t_f			7	11	
Total Gate Charge	Q_G	V_{CC}=225V		22	33	nC
Gate-Source Charge	Q_{GS}	I_D=8A		9.5	14.5	
Gate-Drain Charge	Q_{GD}	V_{GS}=10V		6.5	10	
Avalanche capability	I_{AV}	L=5.53mH T_{ch}=25°C	8			A
Diode forward on-voltage	V_{SD}	I_F=8A V_{GS}=0V T_{ch}=25°C		1.00	1.50	V
Reverse recovery time	t_{rr}	I_F=8A V_{GS}=0V		0.7		µs
Reverse recovery charge	Q_{rr}	-di/dt=100A/µs T_{ch}=25°C		3.5		µC

● Thermalcharacteristics

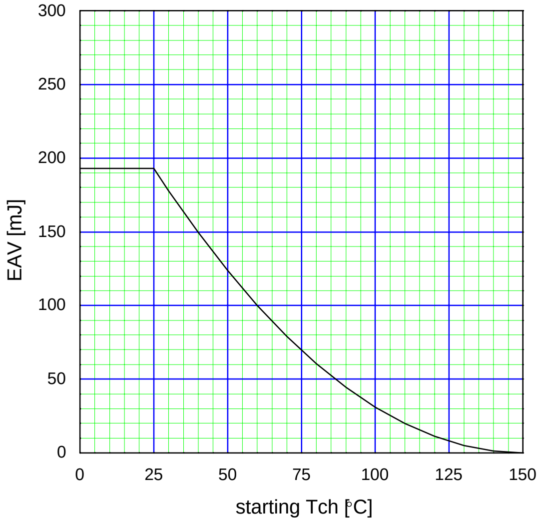
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			1.92	°C/W
	$R_{th(ch-a)}$	channel to ambient			75.0	°C/W

Characteristics

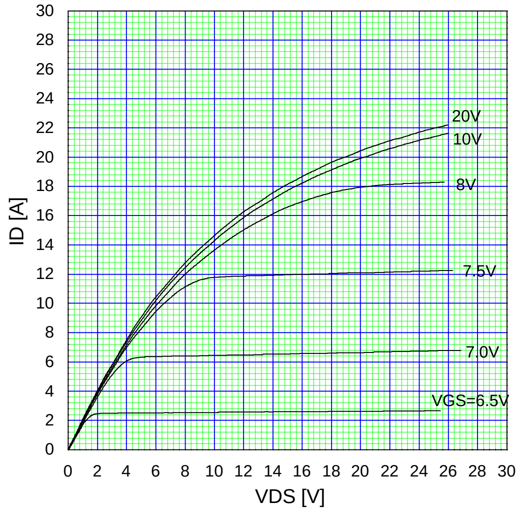
Allowable Power Dissipation
PD=f(Tc)



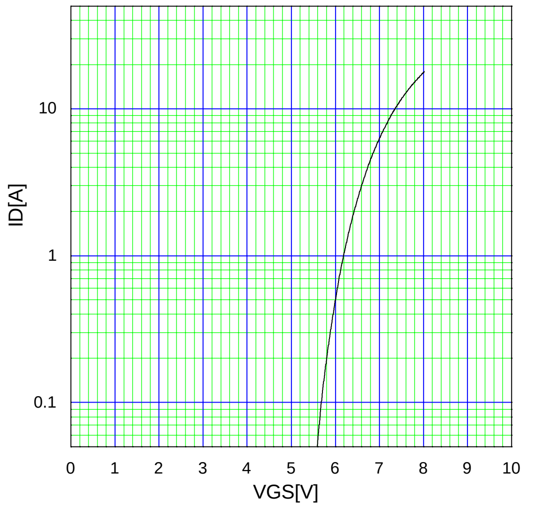
Maximum Avalanche Energy vs. starting Tch
E(AV)=f(starting Tch):Vcc=45V,I(AV)<=8A



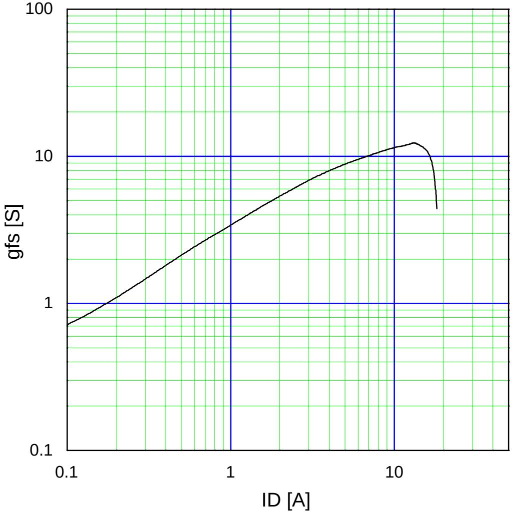
Typical Output Characteristics
ID=f(VDS):80µs Pulse test,Tch=25°C



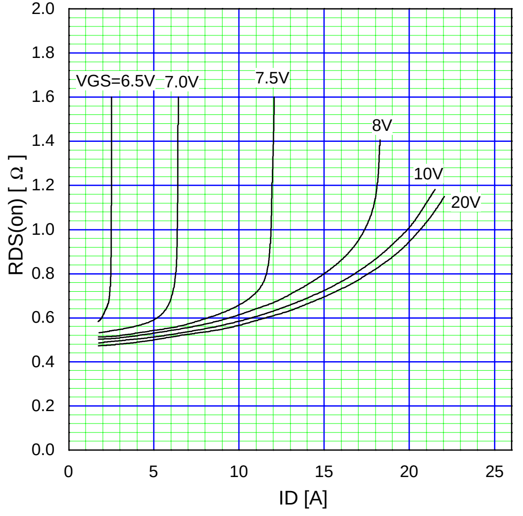
Typical Transfer Characteristic
ID=f(VGS):80µs Pulse test, VDS=25V,Tch=25°C



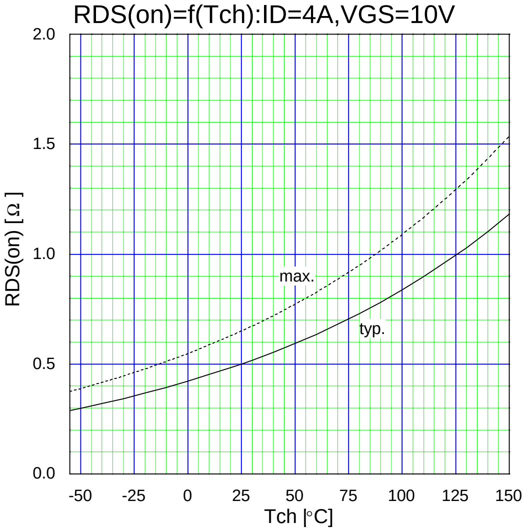
Typical Transconductance
gfs=f(ID):80µs Pulse test, VDS=25V,Tch=25°C



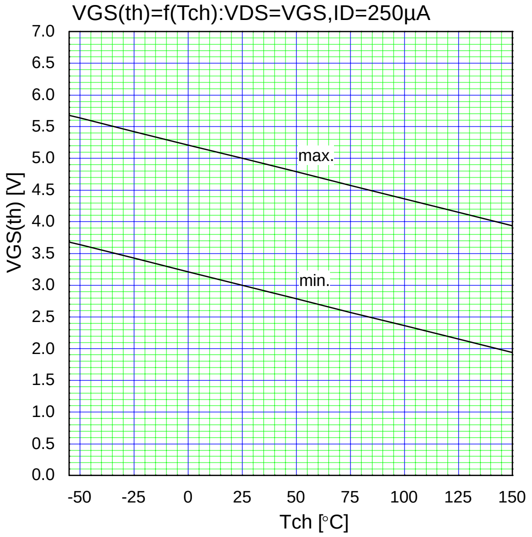
Typical Drain-Source on-state Resistance
RDS(on)=f(ID):80µs Pulse test, Tch=25°C



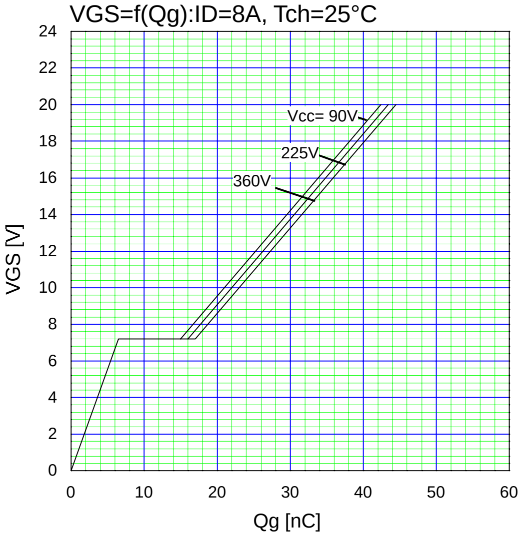
Drain-Source On-state Resistance
RDS(on)=f(Tch):ID=4A,VGS=10V



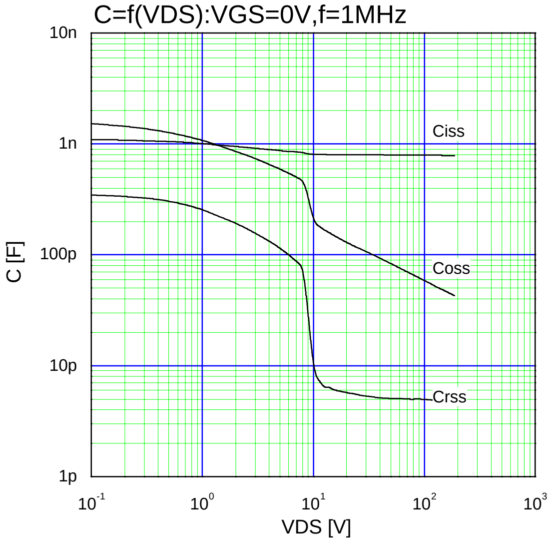
Gate Threshold Voltage vs. Tch
VGS(th)=f(Tch):VDS=VGS,ID=250μA



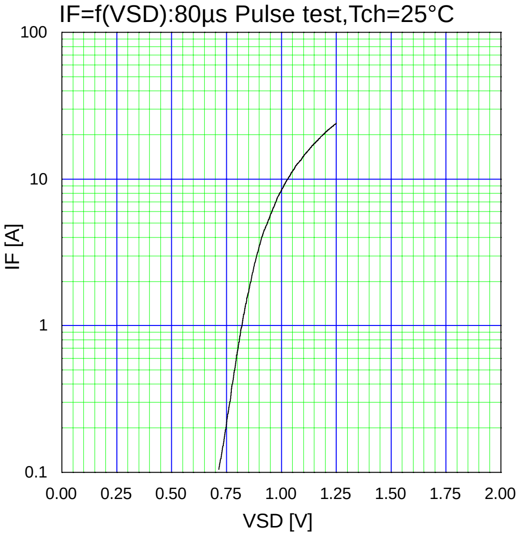
Typical Gate Charge Characteristics
VGS=f(Qg):ID=8A, Tch=25°C



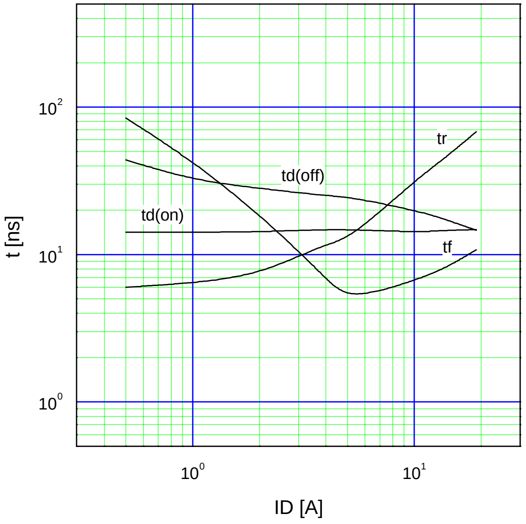
Typical Capacitance
C=f(VDS):VGS=0V,f=1MHz



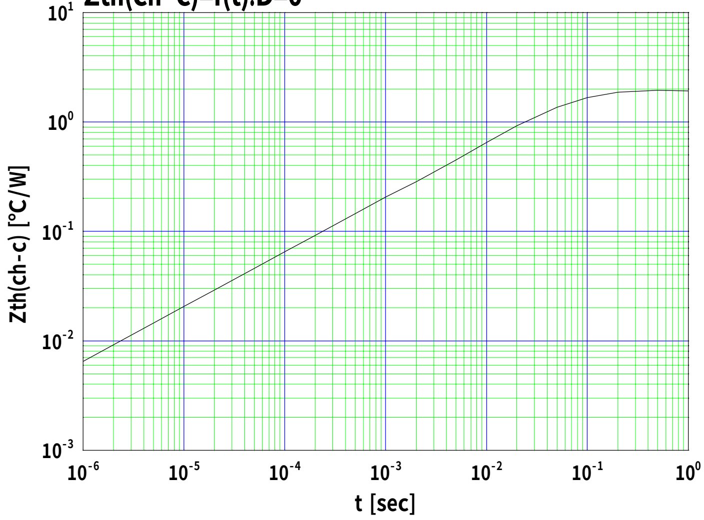
Typical Forward Characteristics of Reverse Diode
IF=f(VSD):80μs Pulse test,Tch=25°C



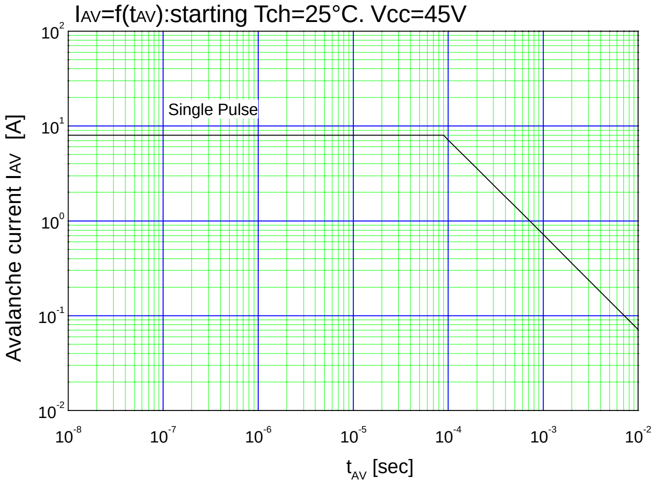
Typical Switching Characteristics vs. ID
t=f(ID):Vcc=300V, VGS=10V, RG=10Ω



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

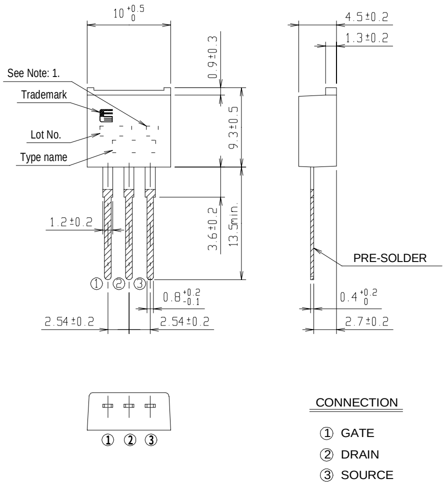


Maximum Avalanche Current Pulsewidth
$I_{AV}=f(t_{AV})$:starting Tch=25°C. Vcc=45V



Outline Drawings (mm)

Type(L)

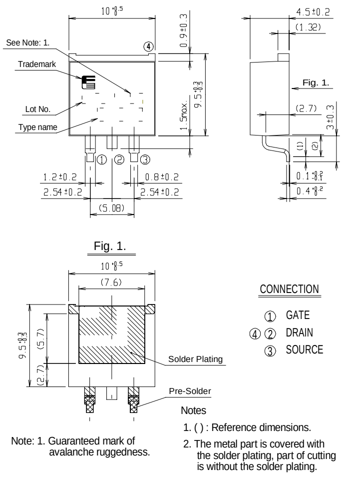


CONNECTION

① GATE
② DRAIN
③ SOURCE

Note: 1. Guaranteed mark of avalanche ruggedness.

Type(S)



CONNECTION

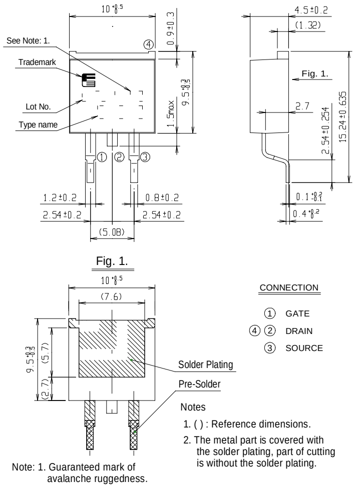
① GATE
④ ② DRAIN
③ SOURCE

Notes

1. ( ) : Reference dimensions.
2. The metal part is covered with the solder plating, part of cutting is without the solder plating.

Note: 1. Guaranteed mark of avalanche ruggedness.

Type(SJ)



CONNECTION

① GATE
④ ② DRAIN
③ SOURCE

Notes

1. ( ) : Reference dimensions.
2. The metal part is covered with the solder plating, part of cutting is without the solder plating.

Note: 1. Guaranteed mark of avalanche ruggedness.