2SK3474-01

FUJI POWER MOSFET 200303

Super FAP-G Series

N-CHANNEL SILICON POWER MOSFET

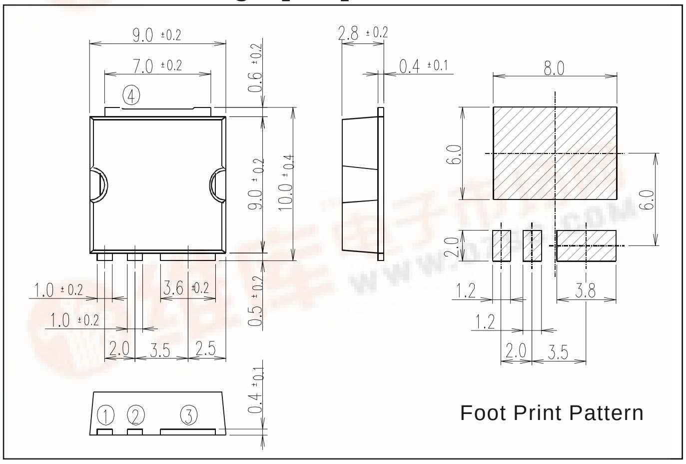
■ Features

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

■ Applications

for Switching

■ Outline Drawings [mm]

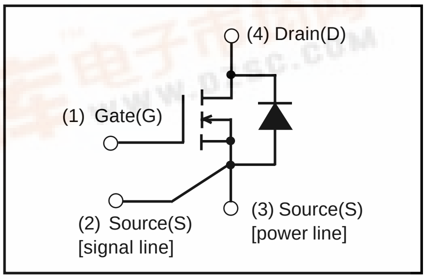


■ Absolute Maximum Ratings at T_c=25°C
(unless otherwise specified)

Item	Symbol	Ratings	Unit	Remarks
Drain-source voltage	V_{DS}	150	V	
	V_{DSX}	120	V	V_{GS}=30V
Continuous drain current	I_D	±33	A	
		±4.1 *4	A	Ta=25°C
Pulsed drain current	$I_{D(puls)}$	±132	A	
Gate-source voltage	V_{GS}	±30	V	
Repetitive or non-repetitive	I_{AR} *2	33	A	
Maximum Avalanche Energy	E_{AS} *1	169	mJ	
Maximum Drain-Source dV/dt	dV_{DS}/dt	20	kV/μs	V_{DS}≦150V
Peak Diode Recovery dV/dt	dV/dt *3	5	kV/μs	
Max. power dissipation	P_D	2.4 *4	W	Ta=25°C
		150	W	
Operating and storage	T_{ch}	+150	℃	
temperature range	T_{stg}	-55 to +150	℃	

*1 L=0.228mH, Vcc=48V, See to Avalanche Energy Graph *2 Tch≦150°C *3 I_F≦-I_D, -di/dt=50A/μs, Vcc≦BV_{DSS}, Tch≦150°C
*4 Surface mounted on 1000mm², t=1.6mm FR-4 PCB(Drain pad area:500mm²)

■ Equivalent circuit schematic



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

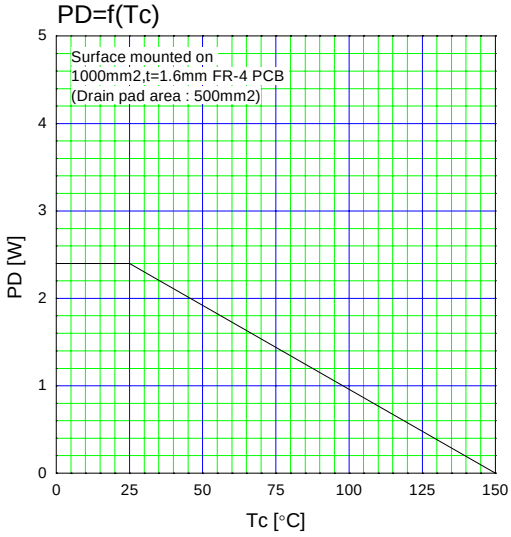
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltaget	$V_{(BR)DSS}$	I_D=250μA V_{GS}=0V	150			V
Gate threshold voltage	$V_{GS(th)}$	I_D= 250μA V_{DS}=V_{GS}	3.0		5.0	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=150V V_{GS}=0V T_{ch}=25°C			25	μA
		V_{DS}=120V V_{GS}=0V 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=11.5A V_{GS}=10V		54	70	mΩ
Forward transconductance	g_{fs}	I_D=11.5A V_{DS}=25V	8	16		S
Input capacitance	C_{iss}	V_{DS}=75V		1500	1730	pF
Output capacitance	C_{oss}	V_{GS}=0V		200	300	
Reverse transfer capacitance	C_{rss}	f=1MHz		17	26	
Turn-on time t_{on}	$t_{d(on)}$	V_{CC}=48V I_D=11.5A		13	20	ns
	t_r	V_{GS}=10V		15	23	
Turn-off time t_{off}	$t_{d(off)}$	R_{GS}=10 Ω		34	51	
	t_f			15	23	
Total Gate Charge	Q_G	V_{CC}=48V		34	51	nC
Gate-Source Charge	Q_{GS}	I_D=23A		9	13.5	
Gate-Drain Charge	Q_{GD}	V_{GS}=10V		12.5	19	
Avalanche capability	I_{AV}	L=228 μH T_{ch}=25°C	33			A
Diode forward on-voltage	V_{SD}	I_F=23A V_{GS}=0V T_{ch}=25°C		1.10	1.60	V
Reverse recovery time	t_{rr}	I_F=23A V_{GS}=0V		0.13		μs
Reverse recovery charge	Q_{rr}	-di/dt=100A/μs T_{ch}=25°C		0.6		μC

● Thermalcharacteristics

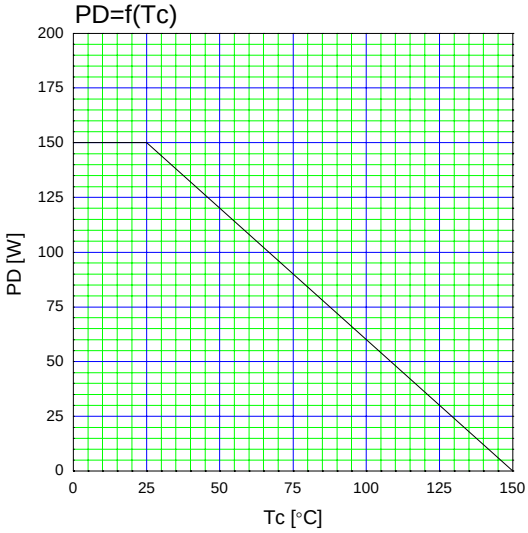
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			0.833	°C/W
	$R_{th(ch-a)}$	channel to ambient			87.0	°C/W

Characteristics

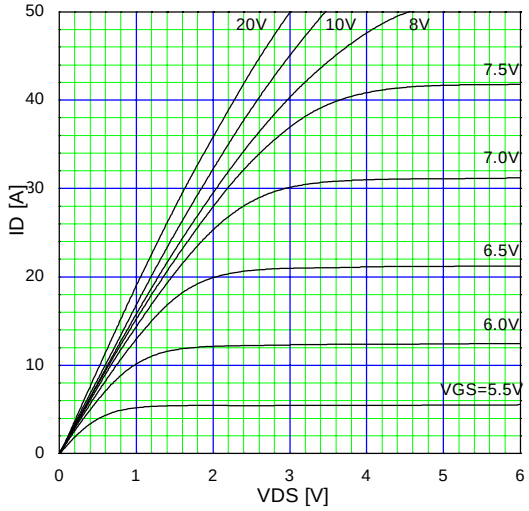
Allowable Power Dissipation
PD=f(Tc)



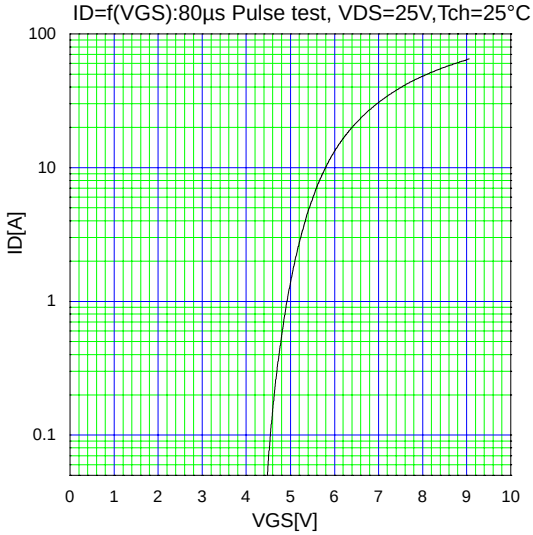
Allowable Power Dissipation
PD=f(Tc)



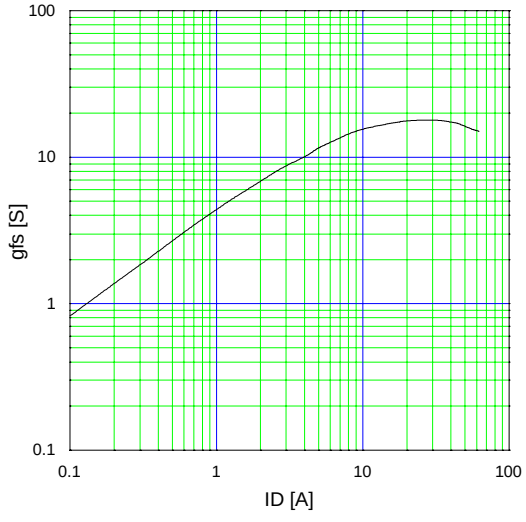
Typical Output Characteristics
ID=f(VDS):80µs Pulse test,Tch=25°C



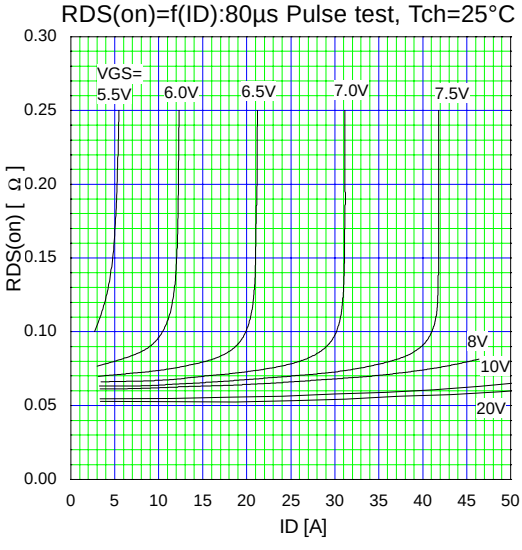
Typical Transfer Characteristic
ID=f(VGS):80µs Pulse test, VDS=25V,Tch=25°C



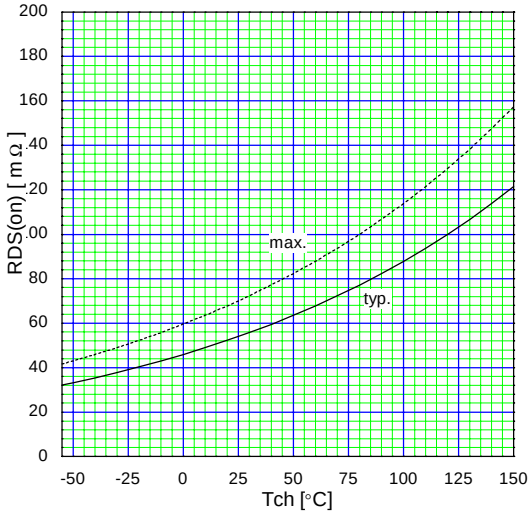
Typical Transconductance
gfs=f(ID):80µs Pulse test, VDS=25V,Tch=25°C



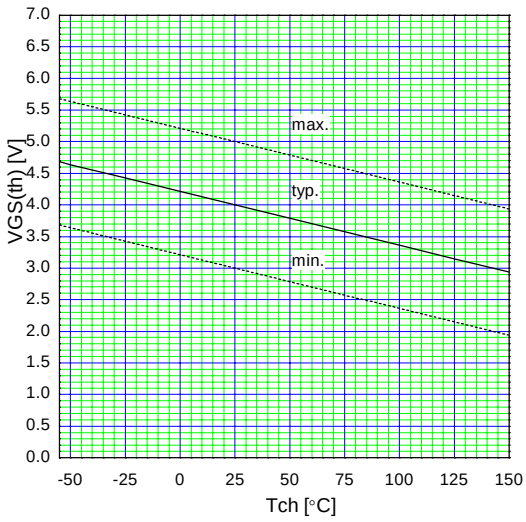
Typical Drain-Source on-state Resistance
RDS(on)=f(ID):80µs Pulse test, Tch=25°C



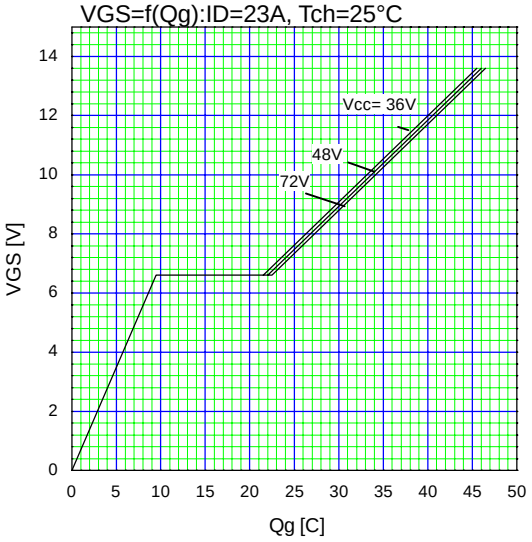
Drain-Source On-state Resistance
RDS(on)=f(Tch):ID=11.5A,VGS=10V



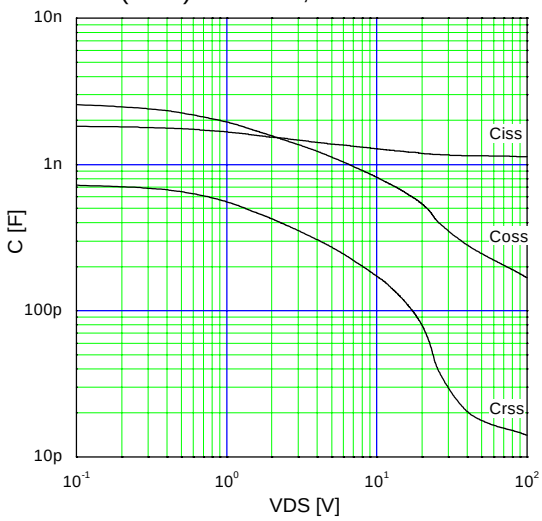
Gate Threshold Voltage vs. Tch
VGS(th)=f(Tch):VDS=VGS,ID=1mA



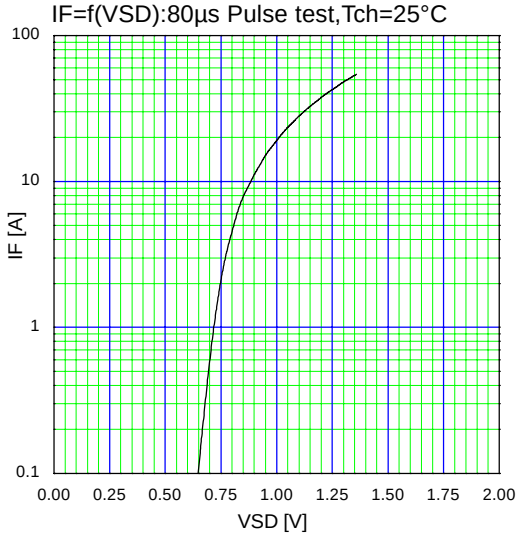
Typical Gate Charge Characteristics
VGS=f(Qg):ID=23A, Tch=25°C



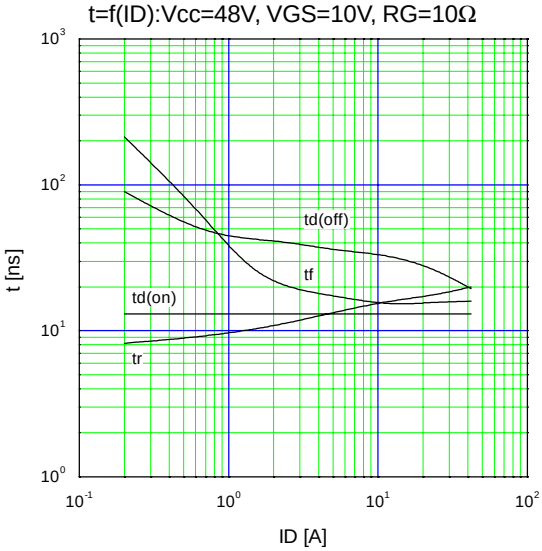
Typical Capacitance
C=f(VDS):VGS=0V,f=1MHz



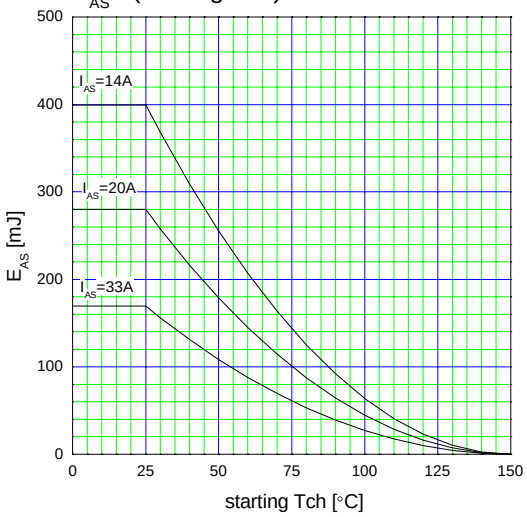
Typical Forward Characteristics of Reverse Diode
IF=f(VSD):80µs Pulse test,Tch=25°C



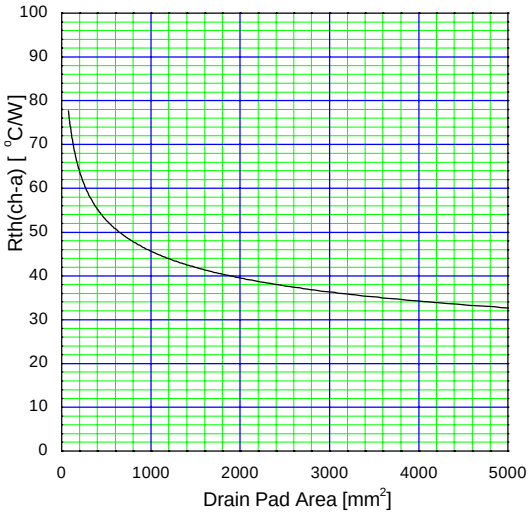
Typical Switching Characteristics vs. ID
t=f(ID):Vcc=48V, VGS=10V, RG=10Ω



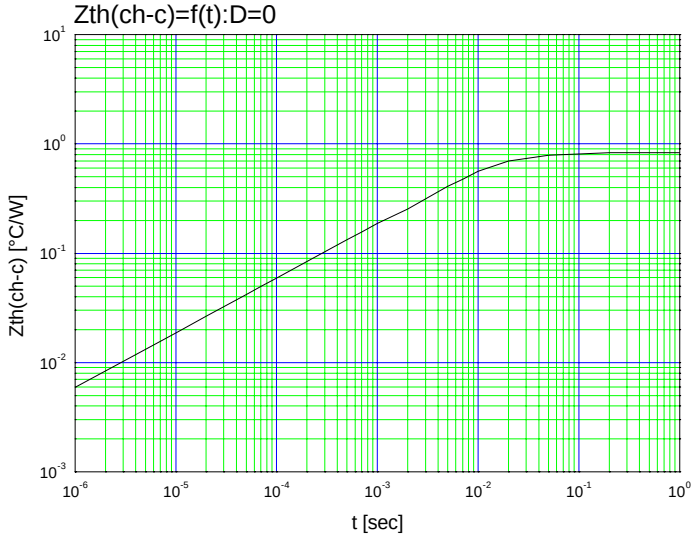
Maximum Avalanche Energy vs. starting Tch
E_{AS}=f(starting Tch):Vcc=48V



Thermal Resistance vs. Drain Pad area
t=1.6mm FR-4 PCB



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



Maximum Avalanche Current Pulsewidth
I_{AV}=f(t_{AV}):starting Tch=25◦C,Vcc=48V