2SK2644-01 FUJI POWER MOSFET

N-CHANNEL SILICON POWER MOSFET

FAP-IIS SERIES

■ Features

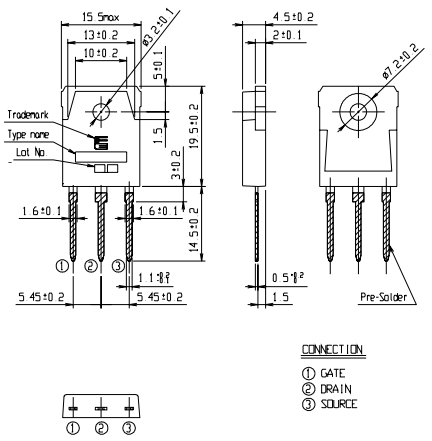
- High speed switching
- Low on-resistance
- No secondary breakdown
- Low driving power
- High voltage
- VGS=±35V Guarantee
- Avalanche-proof

■ Applications

- Switching regulators
- UPS
- DC-DC converters
- General purpose power amplifier

■ Outline Drawings

TO-3P

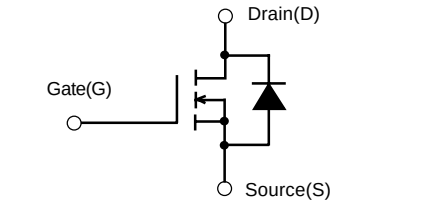


■ Maximum ratings and characteristics

● **Absolute maximum ratings (Tc=25°C unless otherwise specified)**

Item	Symbol	Rating	Unit	Remarks
Drain-source voltage	V_{DS}	500	V	
Continuous drain current	I_D	±18	A	
Pulsed drain current	$I_{D[puls]}$	±72	A	
Gate-source peak voltage	V_{GS}	±35	V	
Repetitive or non-repetitive	I_{AV}	18	A	R_{ch}≦150°C
Maximum avalanche energy	E_{AV}	518.5	mJ	
Maximum power dissipation	P_D	125	W	
Operating and storage temperature range	T_{ch}	+150	°C	
	T_{stg}	-55 to +150	°C	

■ Equivalent circuit schematic



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

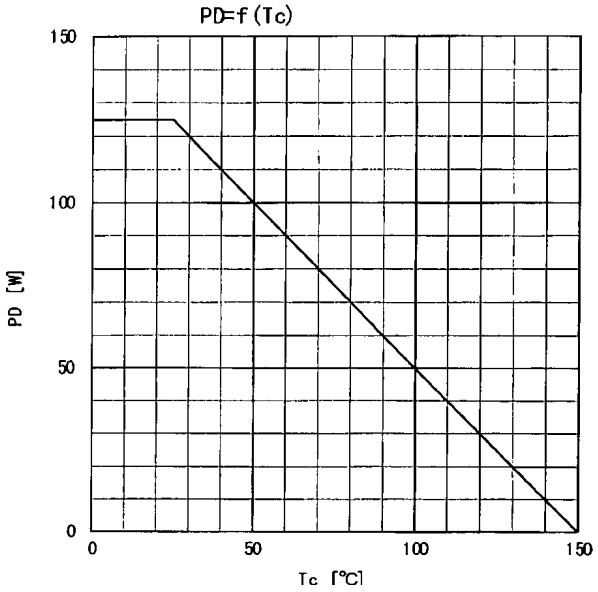
Item	Symbol	Test Conditions		Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	I_D=1mA V_{GS}=0V		500			V
Gate threshold voltage	$V_{GS(th)}$	I_D=1mA V_{DS}=V_{GS}		3.5	4.0	4.5	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=500V V_{GS}=0V	T_{ch}=25°C		10	500	μA
			T_{ch}=125°C		0.2	1.0	mA
Gate-source leakage current	I_{GSS}	V_{GS}=±35V V_{DS}=0V			10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	I_D=9A V_{GS}=10V			0.38	0.45	Ω
Forward transconductance	g_{fs}	I_D=9A V_{DS}=25V		5.5	11		S
Input capacitance	C_{iss}	V_{DS}=25V V_{GS}=0V f=1MHz			1700	2600	pF
Output capacitance	C_{oss}				280	420	
Reverse transfer capacitance	C_{rss}				120	180	
Turn-on time	$t_{d(on)}$	V_{CC}=300V R_G=10 Ω I_D=18A V_{GS}=10V			20	30	ns
	t_r				100	150	
Turn-off time	$t_{d(off)}$				110	165	
	t_f				65	100	
Avalanche capability	I_{AV}	L=2.93mH T_{ch}=25°C		18			A
Diode forward on-voltage	V_{SD}	I_F=2xI_{DR} V_{GS}=0V T_{ch}=25°C			1.1	1.65	V
Reverse recovery time	t_{rr}	I_F=I_{DR} V_{GS}=0V -di/dt=100A/μs T_{ch}=25°C			620		ns
Reverse recovery charge	Q_{rr}				9.0		μC

● **Thermal characteristics**

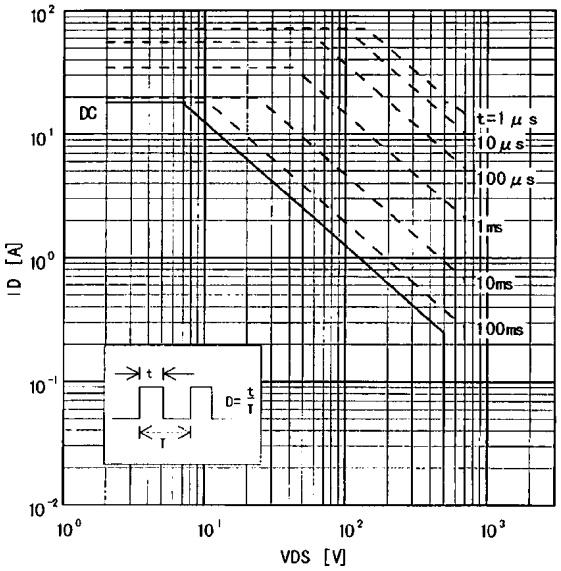
Item	Symbol	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$			1.0	°C/W
	$R_{th(ch-a)}$			35.0	°C/W

Characteristics

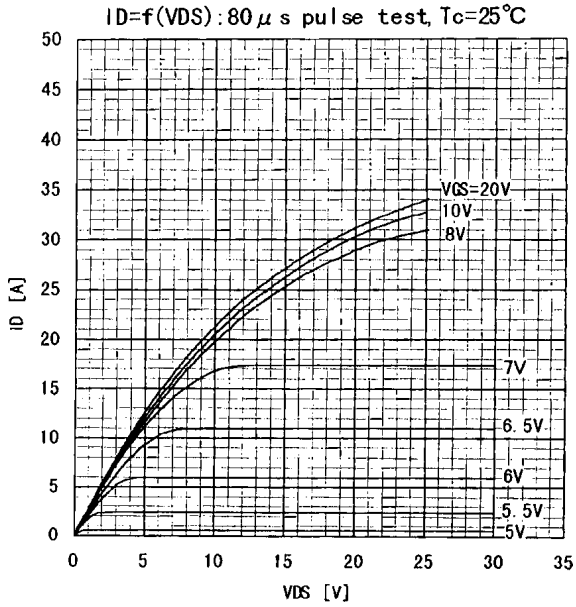
Power Dissipation
PD=f(Tc)



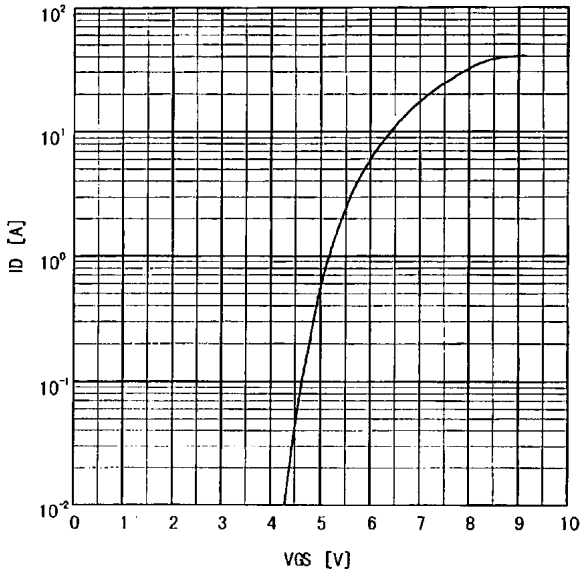
Safe operating area
ID=f(VDS) : D=0.01, Tc=25°C



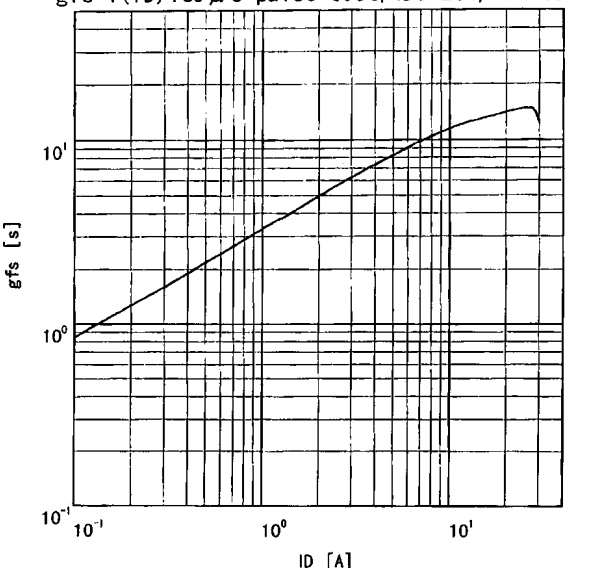
Typical output characteristics
ID=f(VDS) : 80μs pulse test, Tc=25°C



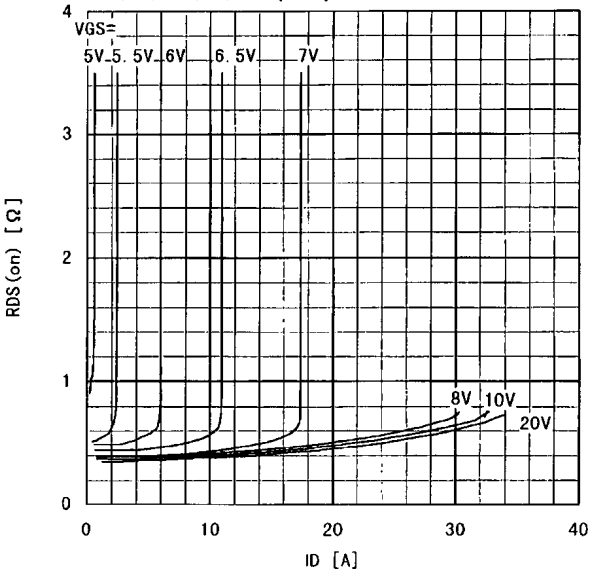
Typical transfer characteristic
ID=f(VGS) : 80μs pulse test, VDS=25V, Tch=25°C



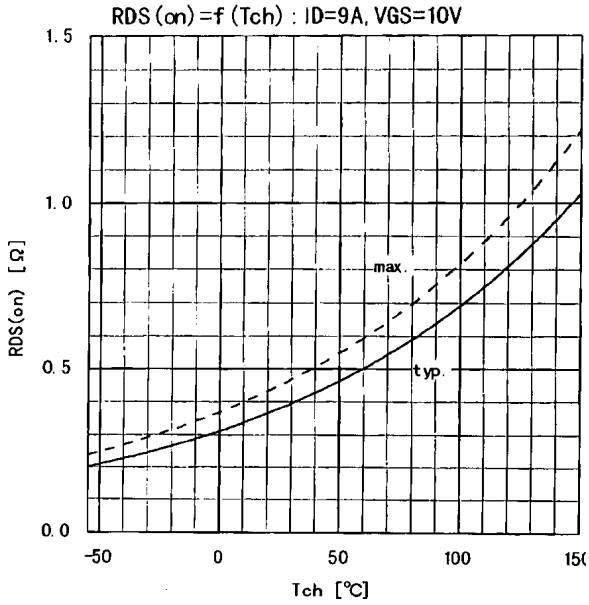
Typical forward transconductance
gfs=f(ID) : 80μs pulse test, VDS=25V, Tch=25°C



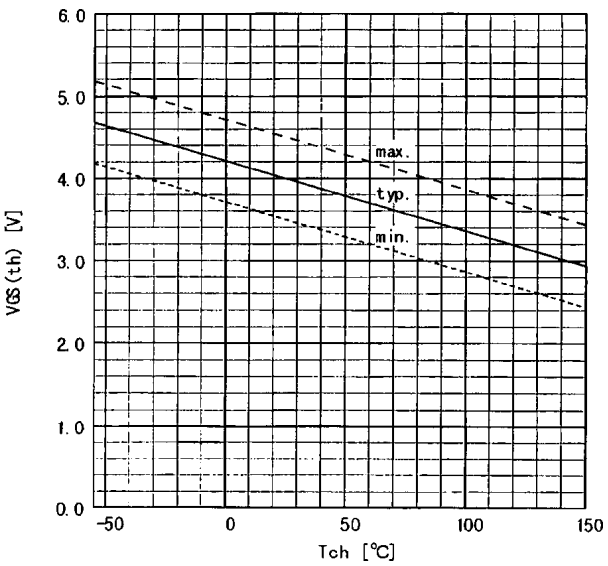
Typical drain-source on-state resistance
RDS(on)=f(ID) : 80μs pulse test, Tc=25°C



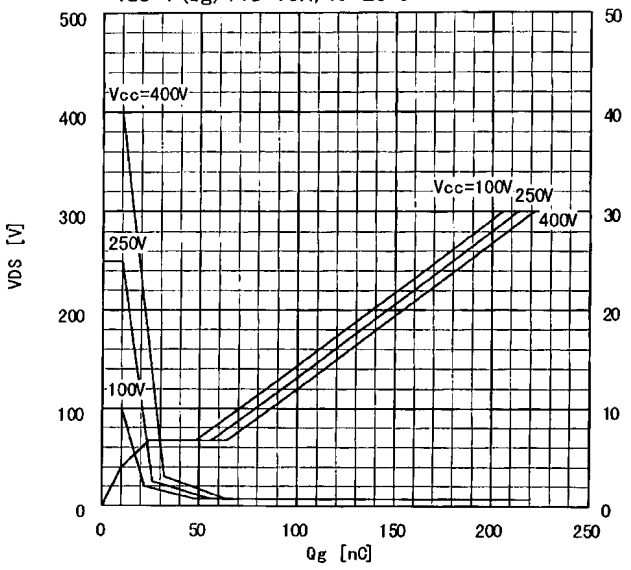
Drain-source on-state resistance
RDS(on)=f(Tch) : ID=9A, VGS=10V



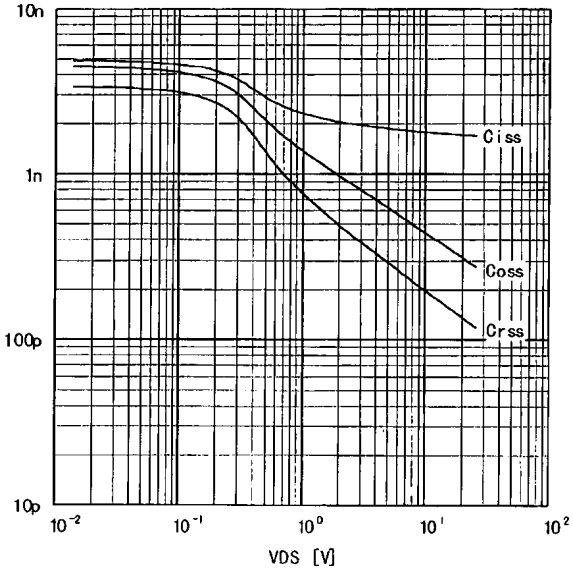
Gate threshold voltage
VGS(th)=f(Tch) : ID=1mA, VDS=VGS



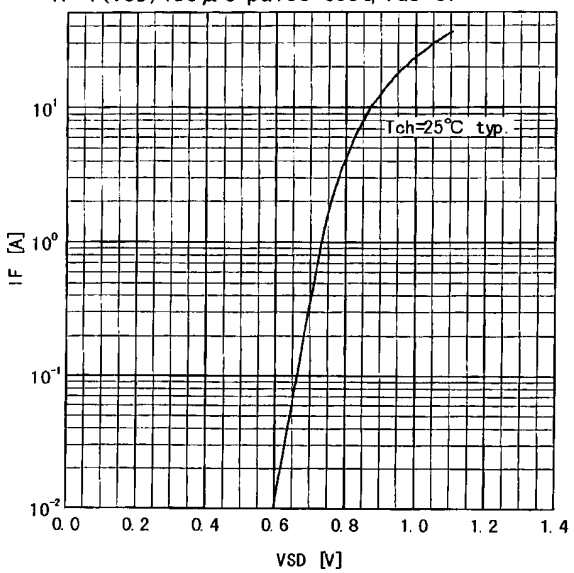
Typical gate charge characteristic
VGS=f(Qg) : ID=18A, Tc=25℃



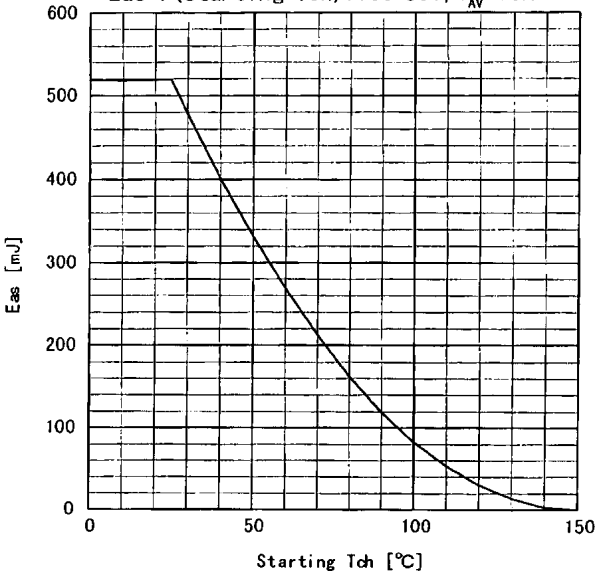
Typical capacitances
C=f(VDS) : VGS=0V, f=1MHz

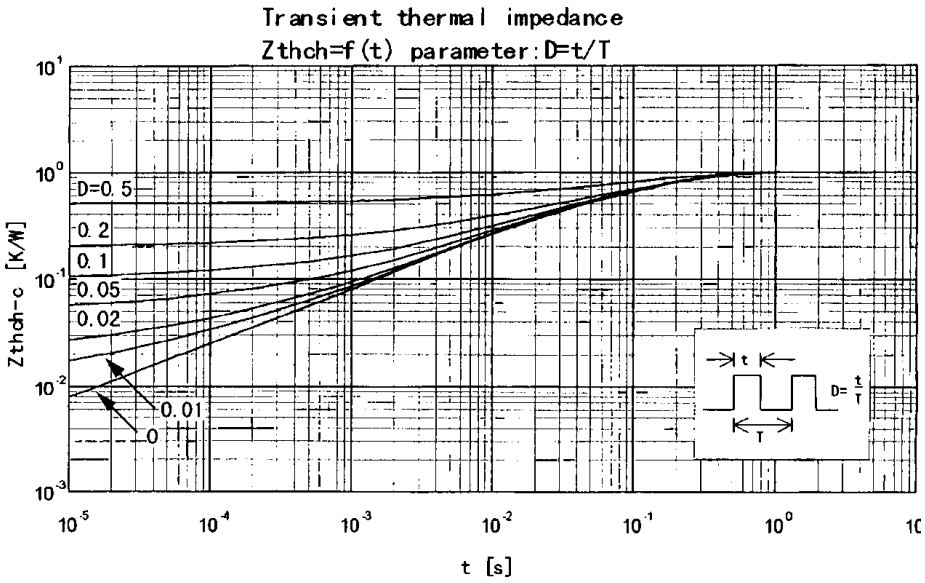


Forward characteristic of reverse of diode
IF=f(VSD) : 80μs pules test, VGS=0V



Avalanche energy derating
Eas=f(starting Tch) : Vcc=50V, I_{AV}=18A




Transient thermal impedance
Zthch=f(t) parameter:D=t/T
Zthch-c [K/W]
t [s]
D=0.5
0.2
0.1
0.05
0.02
0.01
0
t
T
D= t/T