2SK2643-01

FUJI POWER MOSFET

N-CHANNEL SILICON POWER MOSFET

FAP-2S Series

■ Features

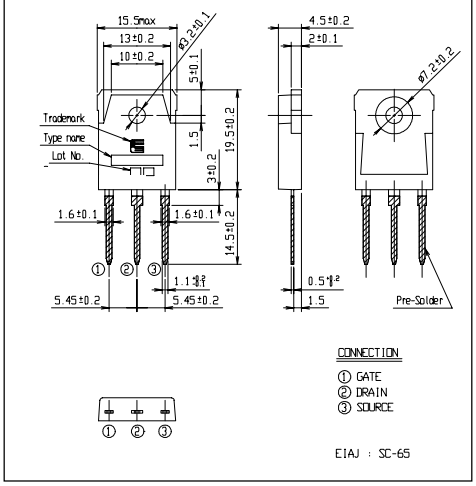
High speed switching
Low on-resistance
No secondary breadown
Low driving power
Avalanche-proof

■ Applications

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

■ Outline Drawings

TO-3P



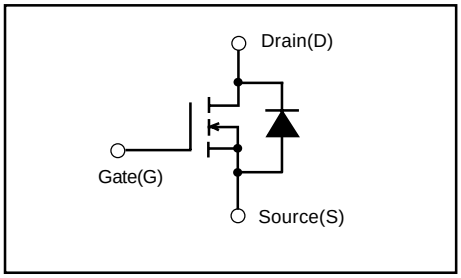
■ Maximum ratings and characteristicAbsolute maximum ratings

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

Item	Symbol	Ratings	Unit
Drain-source voltage	V_{DS}	500	V
Continuous drain current	I_D	±15	A
Pulsed drain current	$I_{D(puls)}$	±60	A
Gate-source voltage	V_{GS}	±35	V
Repetitive or non-repetitive	I_{AR} *2	15	A
Maximum Avalanche Energy	E_{AS} *1	200	mJ
Max. power dissipation	P_D	125	W
Operating and storage	T_{ch}	+150	℃
temperature range	T_{stg}	-55 to +150	℃

*1 L=1.63mH, Vcc=50V *2 Tch≦150°C

■ Equivalent circuit schematic



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

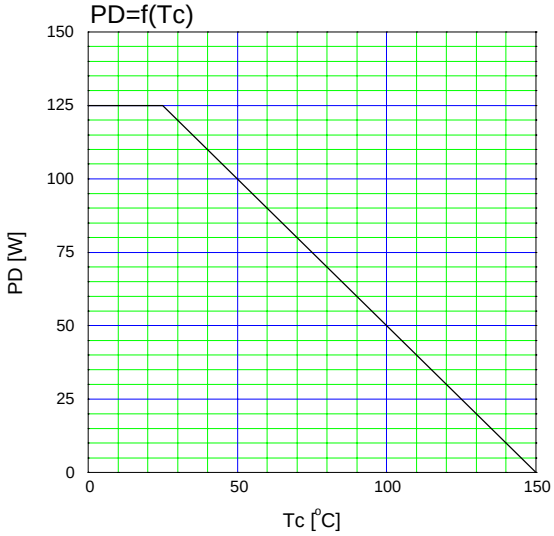
Item	Symbol	Test Conditions		Min.	Typ.	Max.	Units
Drain-source breakdown voltaget	$V_{(BR)DSS}$	I_D=1mA V_{GS}=0V		500			V
Gate threshold voltage	$V_{GS(th)}$	I_D=1mA V_{DS}=V_{GS}		3.5	4.0	4.5	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=500V	T_{ch}=25°C		10	500	μA
		V_{GS}=0V	T_{ch}=125°C		0.2	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=7.5A V_{GS}=10V			0.44	0.55	Ω
Forward transcondutance	g_{fs}	I_D=7.5A V_{DS}=25V		4.5	9.0		S
Input capacitance	C_{iss}	V_{DS}=25V			1400	2100	pF
Output capacitance	C_{oss}	V_{GS}=0V			250	380	
Reverse transfer capacitance	C_{rss}	f=1MHz			110	170	
Turn-on time t_{on}	$t_{d(on)}$	V_{CC}=300V I_D=15A			30	50	ns
	t_r	V_{GS}=10V			110	170	
Turn-off time t_{off}	$t_{d(off)}$	R_{GS}=10 Ω			90	140	
	t_f				55	90	
Avalanche capability	I_{AV}	L=100 μH T_{ch}=25°C		15			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			500		ns
Reverse recovery charge	Q_{rr}	-di/dt=100A/μs T_{ch}=25°C			8.0		μC

● **Thermalcharacteristics**

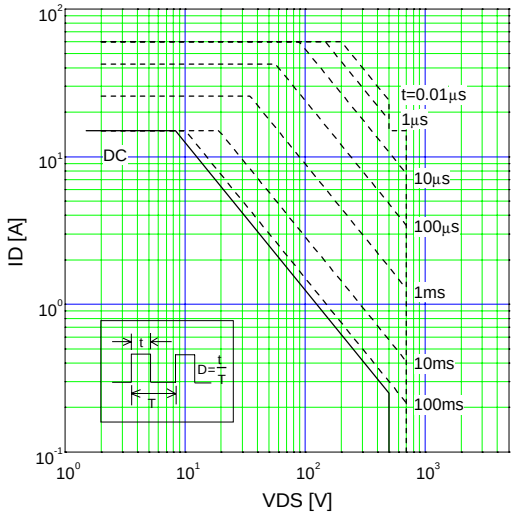
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			1.0	°C/W
	$R_{th(ch-a)}$	channel to ambient			35.0	°C/W

Characteristics

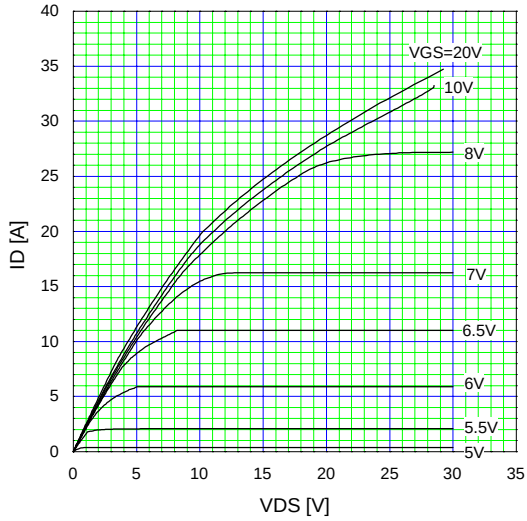
Power Dissipation
PD=f(Tc)



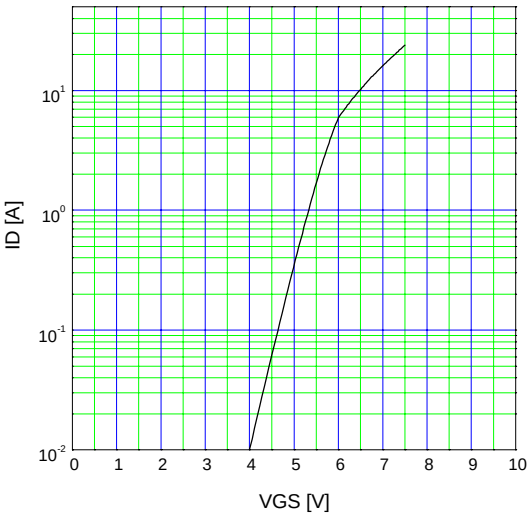
Safe operating area
ID=f(VDS):D=0.01,Tc=25°C



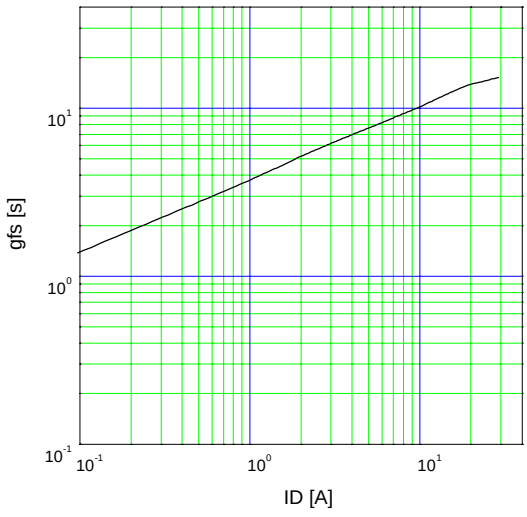
Typical output characteristics
ID=f(VDS):80µs Pulse test,Tch=25°C



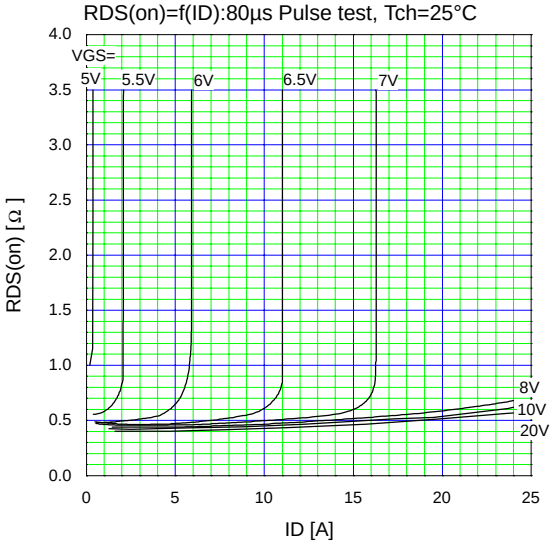
Typical transfer characteristic
ID=f(VGS):80µs Pulse test,VDS=25V,Tch=25°C



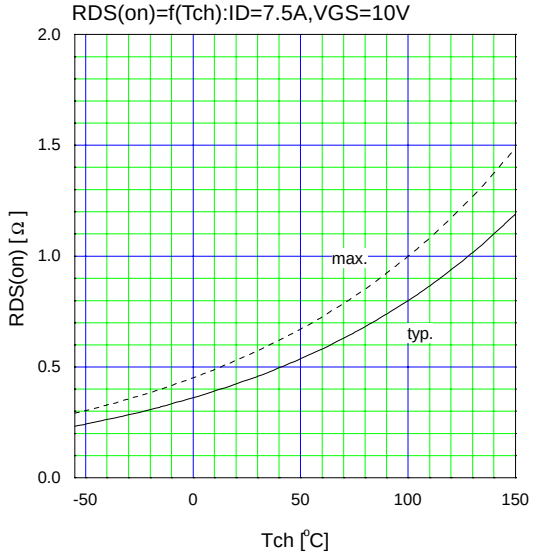
Typical forward transconductance
gfs=f(ID):80µs Pulse test,VDS=25V,Tch=25°C



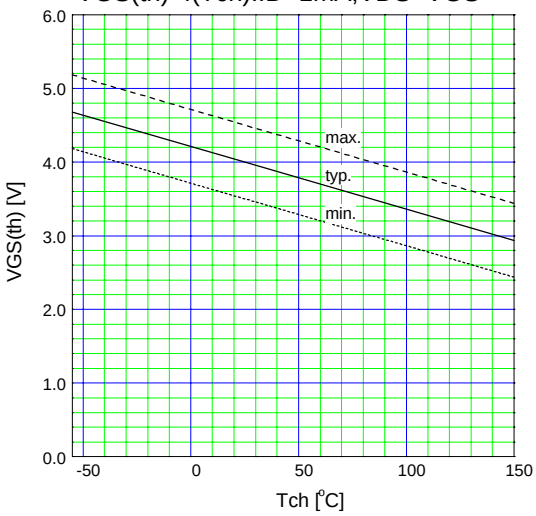
Typical drain-source on-state resistance
RDS(on)=f(ID):80µs Pulse test, Tch=25°C



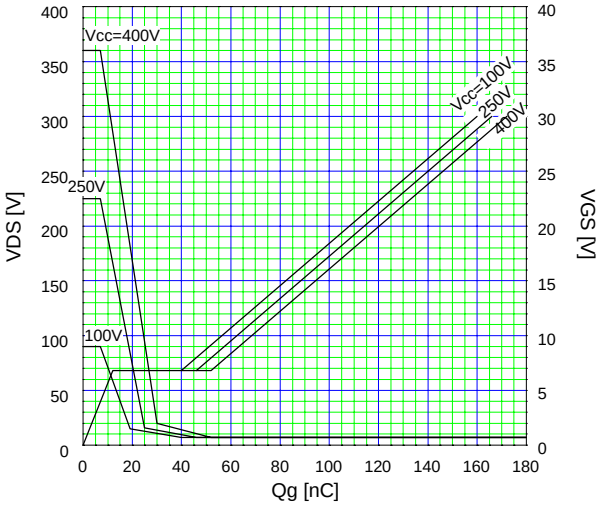
Drain-source on-state resistance
RDS(on)=f(Tch):ID=7.5A,VGS=10V



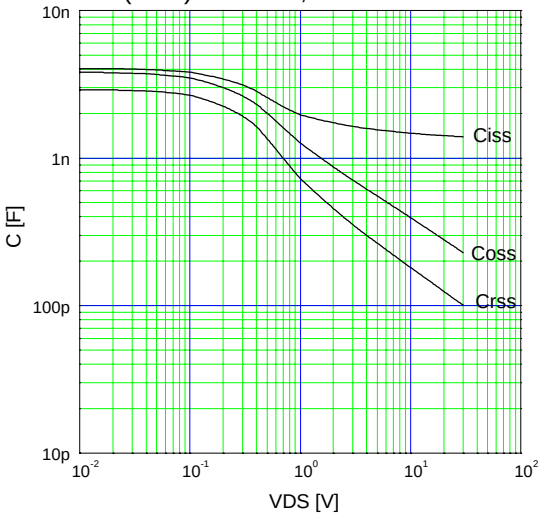
Gate threshold voltage
VGS(th)=f(Tch):ID=1mA,VDS=VGS



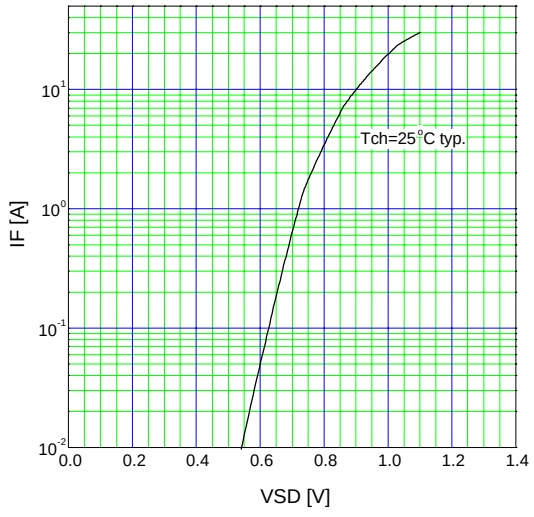
Typical gate charge characteristic
VGS=f(Qg):ID=15A,Tch=25°C



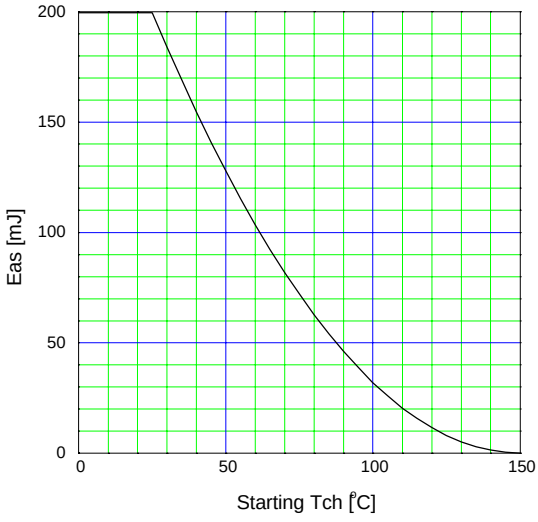
Typical capacitances
C=f(VDS):VGS=0V,f=1MHz



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



Avalanche energy derating
Eas=f(starting Tch):Vcc=50V,I_{AV}=15A



Transient thermal impedande
Zthch=f(t) parameter:D=t/T