2SK2690-01 FUJI POWER MOSFET

Fuji Electric

200511

FAP-IIIB Series

N-CHANNEL SILICON POWER MOSFET

■ Features

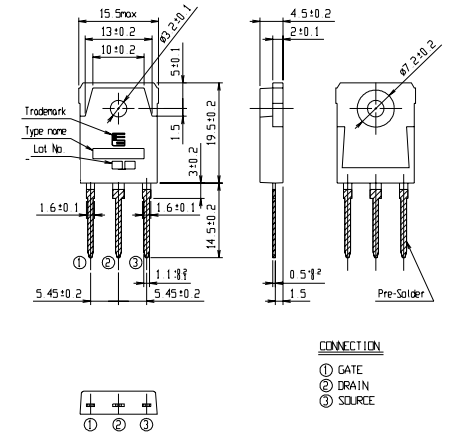
- High speed switching
- Low on-resistance
- No secondary breadown
- Low driving power

■ Applications

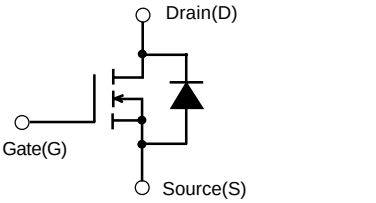
- Switching regulators
- UPS (Uninterruptible Power Supply)
- DC-DC converters

■ Outline Drawings [mm]

TO-3P



■ 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}	60	V
Continuous drain current	I_D	±80	A
Pulsed drain current	I_{Dp}	±320	A
Gate-source voltage	V_{GS}	±20	V
Maximum avalanche energy	E_{AV} *1	599	mJ
Maximum power dissipation	P_D	125	W
Operating and storage	T_{ch}	+150	℃
Temperature range	T_{stg}	-55 to +150	℃

*1 L=0.125mH, Vcc=24V

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

Item	Symbol	Test Conditions		Min.	Typ.	Max.	Units
Drain-source breakdown voltage	BV_{DSS}	I_D= 1mA V_{GS}=0V		60			V
Gate threshold voltage	$V_{GS(th)}$	I_D= 1mA V_{DS}=V_{GS}		1.0	1.5	2.0	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=60V 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}=±20V V_{DS}=0V			10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	I_D=40A	V_{GS}=4V		12	17	mΩ
			V_{GS}=10V		7.5	10	
Forward transcondutance	g_{fs}	I_D=40A V_{DS}=25V		25.0	55.0		S
Input capacitance	C_{iss}	V_{DS}=25V			3500	5250	pF
Output capacitance	C_{oss}	V_{GS}=0V			1250	1870	
Reverse transfer capacitance	C_{rss}	f=1MHz			360	540	
Turn-on time t_{on}	$t_{d(on)}$	V_{CC}=30V I_D=75A V_{GS}=10V R_{GS}=10Ω			15	23	ns
	t_r				75	120	
Turn-off time t_{off}	$t_{d(off)}$				190	285	
	t_f				110	165	
Avalanche capability	I_{AV}	L=100μH T_{ch}=25°C		80			A
Diode forward on-voltage	V_{SD}	I_F=160A V_{GS}=0V T_{ch}=25°C			1.15	1.65	V
Reverse recovery time	t_{rr}	I_F=80A V_{GS}=0V -di/dt=100A/μs T_{ch}=25°C			75	120	ns
Reverse recovery charge	Q_{rr}				0.17		μC

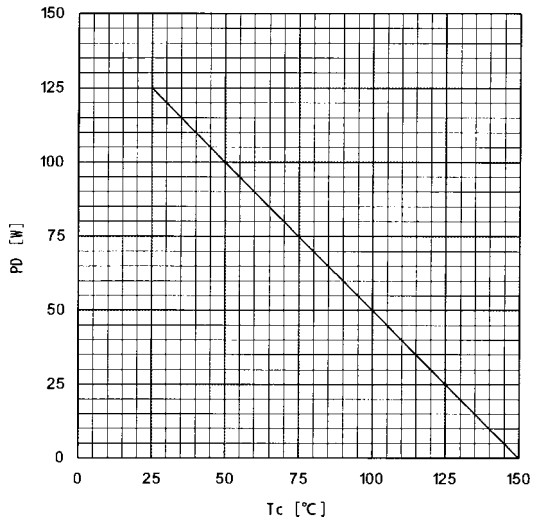
● Thermalcharacteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			1.00	°C/W
	$R_{th(ch-a)}$	channel to ambient			35.0	°C/W

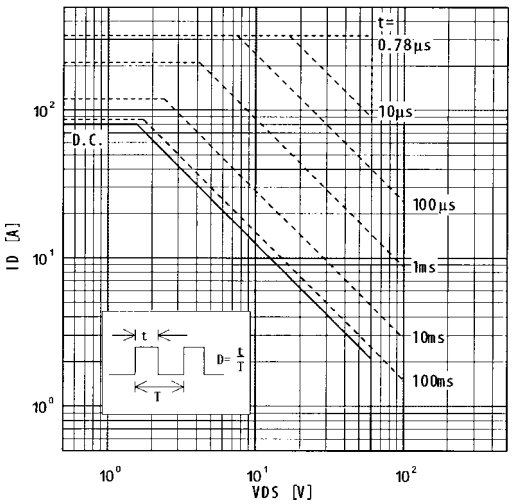
http://www.fujielectric.co.jp/fdt/scd/

Characteristics

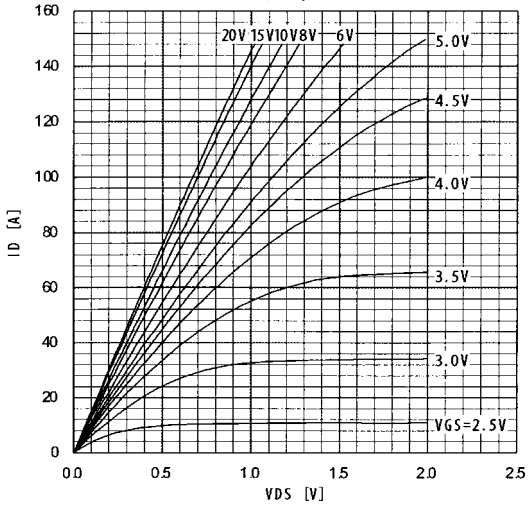
Power Dissipation
PD=f(Tc)



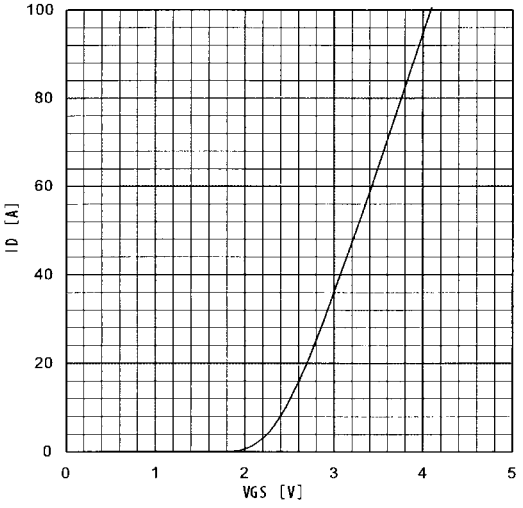
Safe operating area
ID=f(VDS):D=0.01,Tc=25℃



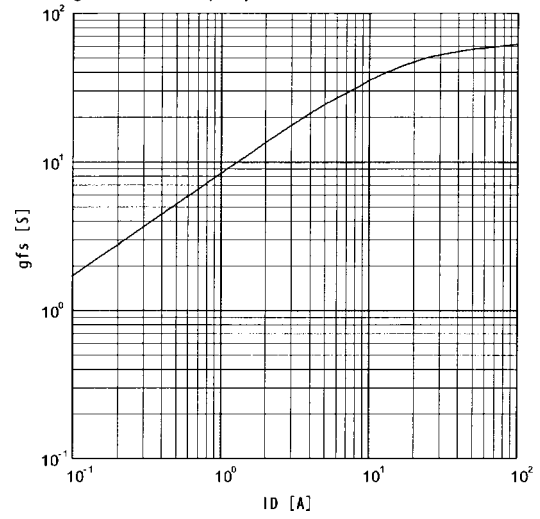
Typical Output Characteristics
ID=f(VDS):80μs pulse test,Tch=25℃



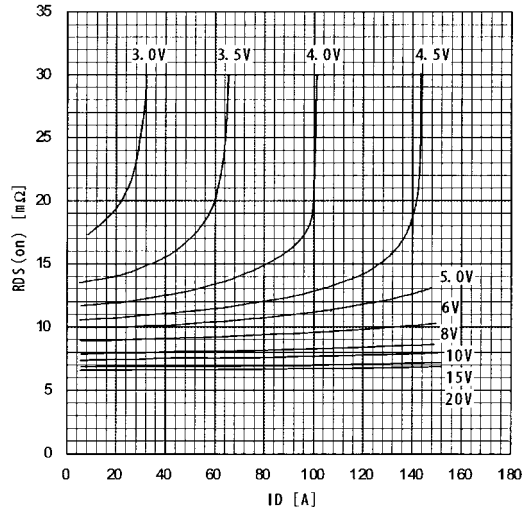
Typical Transfer Characteristic
ID=f(VGS):80μs pulse test,VDS=25V,Tch=25℃



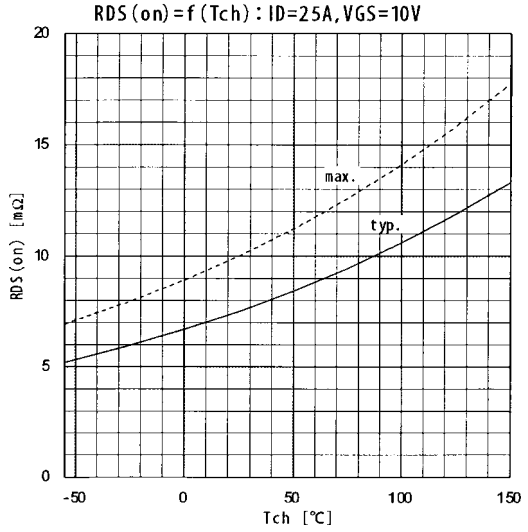
Typical Transconductance
gfs=f(ID):80μs pulse test,VDS=25V,Tch=25℃



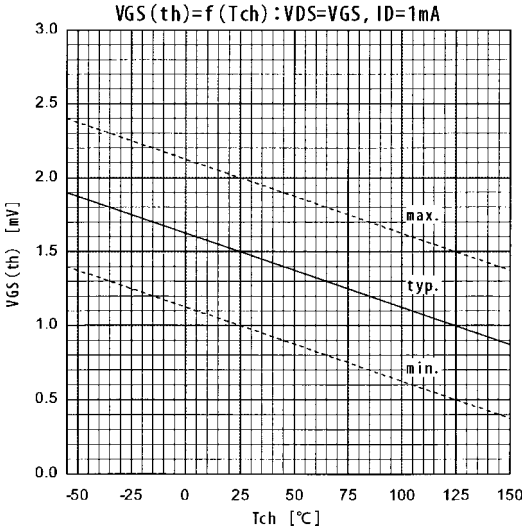
Typical Drain-Source on-State Resistance
RDS(on)=f(ID):80μs pulse test,Tch=25℃



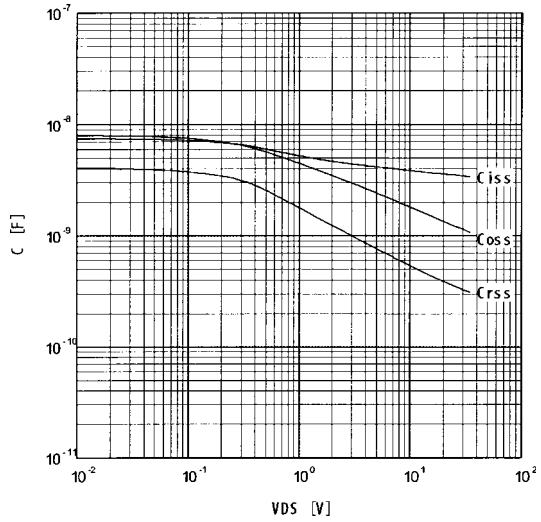
Drain-Source On-state Resistance
RDS(on)=f(Tch):ID=25A,VGS=10V



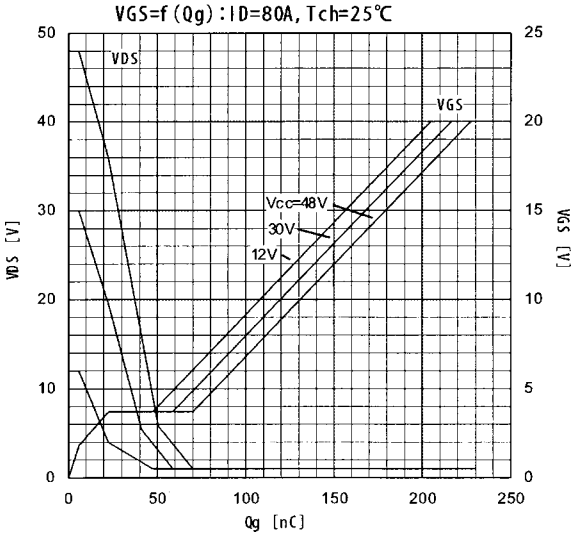
Gate Threshold Voltage vs. Tch
VGS(th)=f(Tch):VDS=VGS, ID=1mA



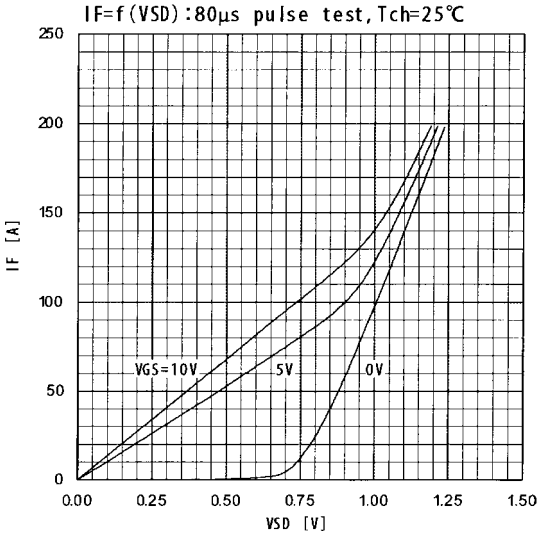
Typical Capacitance
C=f(VDS):VGS=0V, f=1MHz



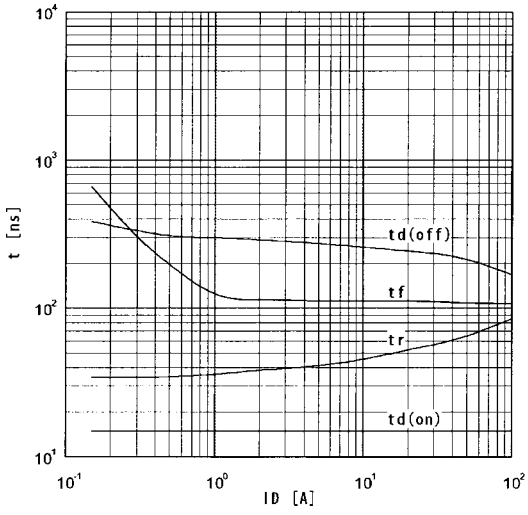
Typical Gate Charge Characteristics
VGS=f(Qg):ID=80A, Tch=25℃



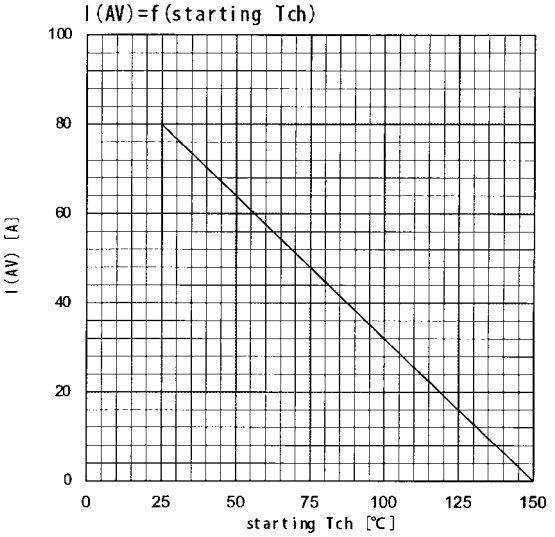
Typical Forward Characteristics of Reverse Diode
IF=f(VSD):80μs pulse test, Tch=25℃



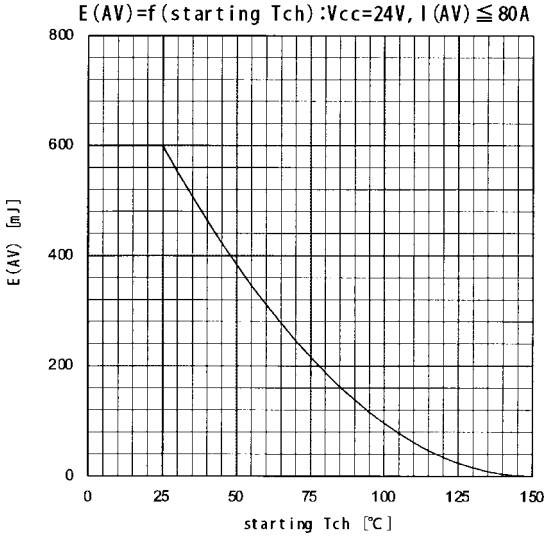
Typical Switching Characteristics vs. ID
t=f(ID):Vcc=30V, VGS=10V, RG=10Ω



Maximum Avalanche Current vs. starting Tch
I(AV)=f(starting Tch)



Maximum Avalanche Energy vs. starting Tch
E(AV)=f(starting Tch):Vcc=24V, I(AV)≦80A



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