FUJI ELECTRIC

2SK2647-01MR

FAP-IIS Series

N-channel MOS-FET			
800V	4Ω	4A	40W

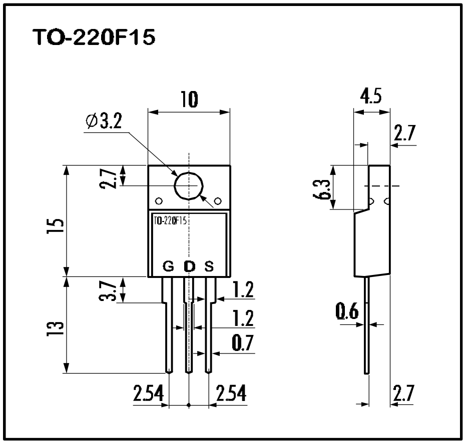
> Features

- High Speed Switching
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- High Voltage
- VGS = ± 30V Guarantee
- Repetitive Avalanche Rated

> Applications

- Switching Regulators
- UPS
- DC-DC converters
- General Purpose Power Amplifier

> Outline Drawing

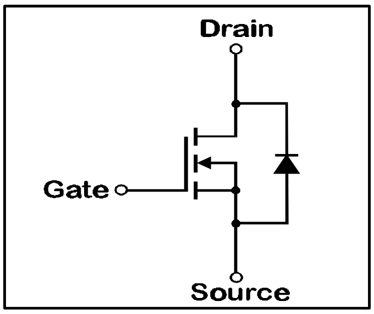


> Maximum Ratings and Characteristics

- Absolute Maximum Ratings (T_C=25°C), unless otherwise specified

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V_{DS}	800	V
Continous Drain Current	I_D	4	A
Pulsed Drain Current	$I_{D(puls)}$	16	A
Gate-Source-Voltage	V_{GS}	±30	V
Repetitive or Non-Repetitive (T_{ch} ≤ 150°C)	I_{AR}	4	A
Avalanche Energy	E_{AS}	109	mJ
Max. Power Dissipation	P_D	40	W
Operating and Storage Temperature Range	T_{ch}	150	°C
	T_{stg}	-55 ~ +150	°C

> Equivalent Circuit



- Electrical Characteristics (T_C=25°C), unless otherwise specified

Item	Symbol	Test conditions		Min.	Typ.	Max.	Unit
Drain-Source Breakdown-Voltage	$V_{(BR)DSS}$	I_D=1mA	V_{GS}=0V	800			V
Gate Threshhold 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}=800V	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}=±30V	V_{DS}=0V		10	100	nA
Drain Source On-State Resistance	$R_{DS(on)}$	I_D=2A	V_{GS}=10V		3,19	4,0	Ω
Forward Transconductance	g_{fs}	I_D=2A	V_{DS}=25V		2		S
Input Capacitance	C_{iss}	V_{DS}=25V			450		pF
Output Capacitance	C_{oss}	V_{GS}=0V			75		pF
Reverse Transfer Capacitance	C_{rss}	f=1MHz			40		pF
Turn-On-Time t_{on} (t_{on}=$t_{d(on)}$+t_r)	$t_{d(on)}$	V_{CC}=600V			20		ns
	t_r	I_D=4A			40		ns
Turn-Off-Time t_{off} (t_{on}=$t_{d(off)}$+t_f)	$t_{d(off)}$	V_{GS}=10V			50		ns
	t_f	R_{GS}=10 Ω			25		ns
Avalanche Capability	I_{AV}	L = 100µH	T_{ch}=25°C	3			A
Diode Forward On-Voltage	V_{SD}	I_F=2xI_{DR} V_{GS}=0V	T_{ch}=25°C		1,0		V
Reverse Recovery Time	t_{rr}	I_F=I_{DR} V_{GS}=0V			450		ns
Reverse Recovery Charge	Q_{rr}	-dI_F/dt=100A/µs T_{ch}=25°C			3,0		µC

- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	$R_{th(ch-a)}$	channel to air			62,5	°C/W
	$R_{th(ch-c)}$	channel to case			3,125	°C/W

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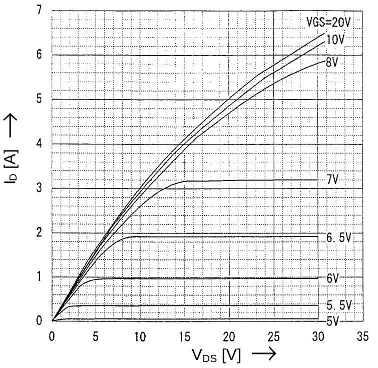
> Characteristics

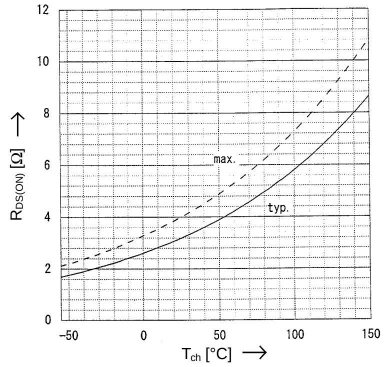
Typical Output Characteristics

I_D=f(V_{DS}); 80µs pulse test; T_C=25°C



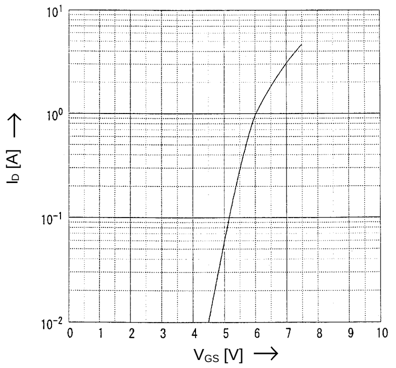
Drain-Source-On-State Resistance vs. T_{ch}

$R_{DS(on)}$ = f(T_{ch}); I_D=2A; V_{GS}=10V



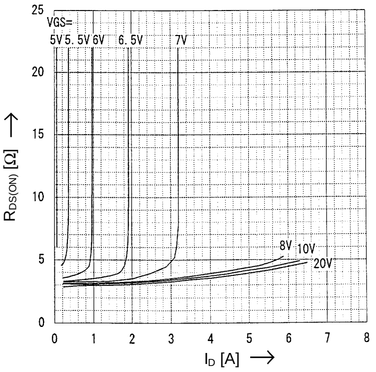
Typical Transfer Characteristics

I_D=f(V_{GS}); 80µs pulse test;V_{DS}=25V; T_{ch}=25°C



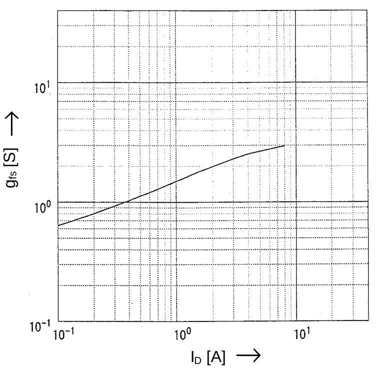
Typical Drain-Source-On-State-Resistance vs. I_D

$R_{DS(on)}$=f(I_D); 80µs pulse test; T_C=25°C



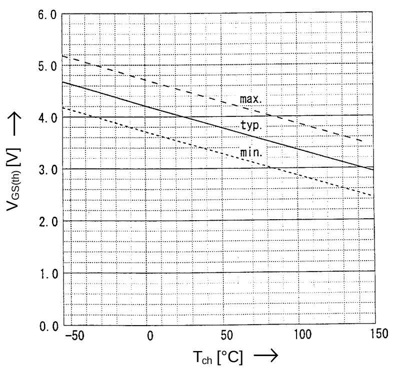
Typical Forward Transconductance vs. I_D

g_{fs}=f(I_D); 80µs pulse test; V_{DS}=25V; T_{ch}=25°C



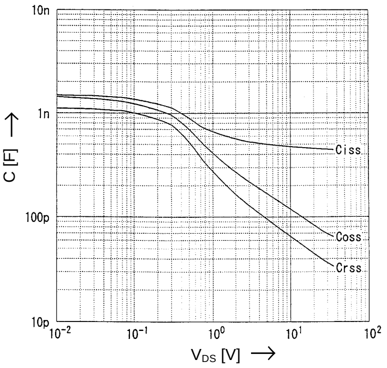
Gate Threshold Voltage vs. T_{ch}

$V_{GS(th)}$=f(T_{ch}); I_D=1mA; V_{DS}=V_{GS}



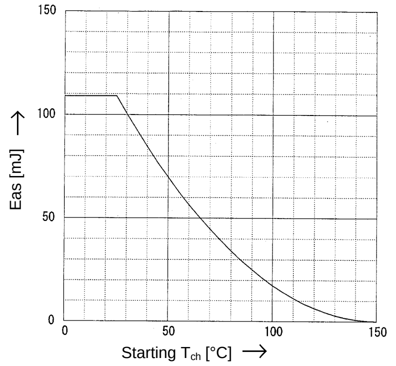
Typical Capacitances vs. V_{DS}

C=f(V_{DS}); V_{GS}=0V; f=1MHz



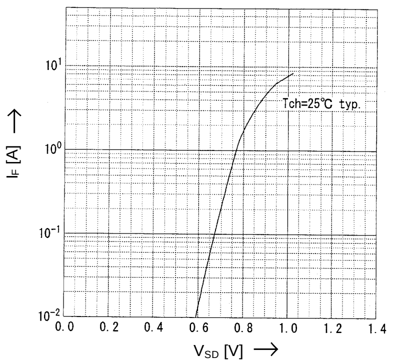
Avalanche Energy Derating

E_{as}=f(starting T_{ch}); V_{CC}=80V; I_{AV}=4A



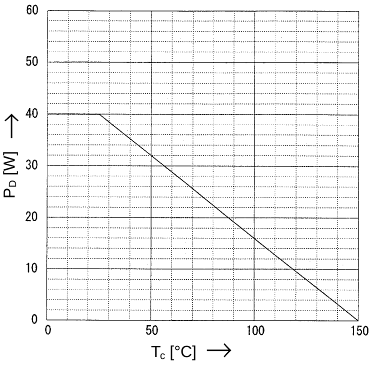
Forward Characteristics of Reverse Diode

I_F=f(V_{SD}); 80µs pulse test; V_{GS}=0V



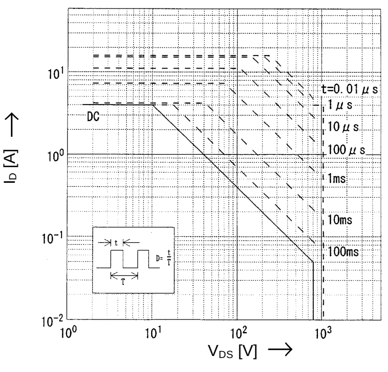
Allowable Power Dissipation vs. T_C

P_D=f(Tc)



Safe operation area

I_D=f(V_{DS}): D=0,01, Tc=25°C



Transient Thermal impedance

Z_{thch}=f(t) parameter:D=t/T