FUJI ELECTRIC

2SK2645-01MR

FAP-IIS Series

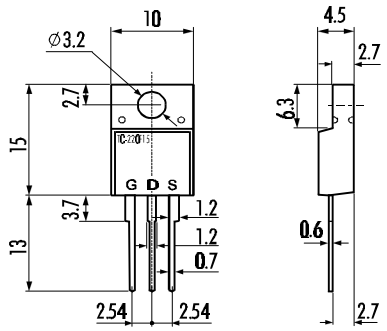
N-channel MOS-FET			
600V	1,2Ω	9A	50W

> Features

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

> Outline Drawing

TO-220F15



> Applications

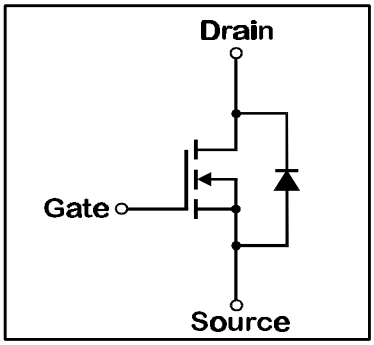
- Switching Regulators
- UPS
- DC-DC converters
- General Purpose Power Amplifier

> Maximum Ratings and Characteristics

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

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V_{DS}	600	V
Continous Drain Current	I_D	9	A
Pulsed Drain Current	$I_{D(puls)}$	32	A
Gate-Source-Voltage	V_{GS}	±30	V
Repetitive or Non-Repetitive (T_{ch} ≤ 150°C)	I_{AR}	9	A
Avalanche Energy	E_{AS}	71,9	mJ
Max. Power Dissipation	P_D	50	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	600			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}=600V 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=4A V_{GS}=10V		1,0	1,2	Ω
Forward Transconductance	g_{fs}	I_D=4A V_{DS}=25V	2,5	5		S
Input Capacitance	C_{iss}	V_{DS}=25V		900	1400	pF
Output Capacitance	C_{oss}	V_{GS}=0V		150	230	pF
Reverse Transfer Capacitance	C_{rss}	f=1MHz		70	110	pF
Turn-On-Time t_{on} (t_{on}=$t_{d(on)}$+t_r)	$t_{d(on)}$	V_{CC}=300V		25	40	ns
	t_r	I_D=9A		70	110	ns
Turn-Off-Time t_{off} (t_{on}=$t_{d(off)}$+t_f)	$t_{d(off)}$	V_{GS}=10V		60	90	ns
	t_f	R_{GS}=10 Ω		35	60	ns
Avalanche Capability	I_{AV}	L = 100µH T_{ch}=25°C	9			A
Diode Forward On-Voltage	V_{SD}	I_F=2xI_{DR} V_{GS}=0V T_{ch}=25°C		1,0	1,5	V
Reverse Recovery Time	t_{rr}	I_F=I_{DR} V_{GS}=0V		550		ns
Reverse Recovery Charge	Q_{rr}	-dI_F/dt=100A/µs T_{ch}=25°C		7,0		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			2,5	°C/W

N-channel MOS-FET			
600V	1,2Ω	9A	50W

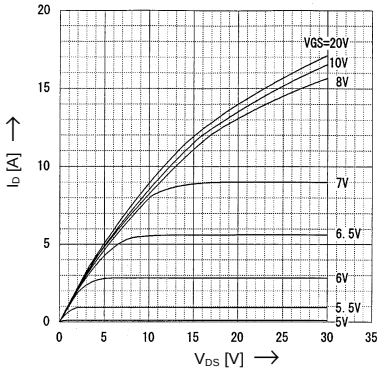
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> Characteristics

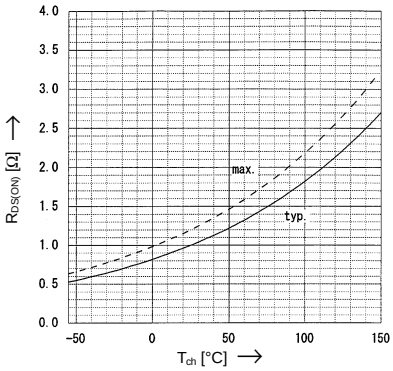
Typical Output Characteristics

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



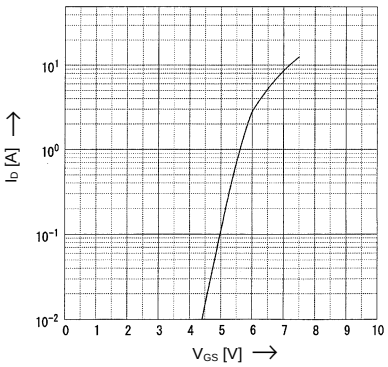
Drain-Source On-State Resistance vs. T_{ch}

$R_{DS(on)} = f(T_{ch})$; $I_D=4A$; $V_{GS}=10V$



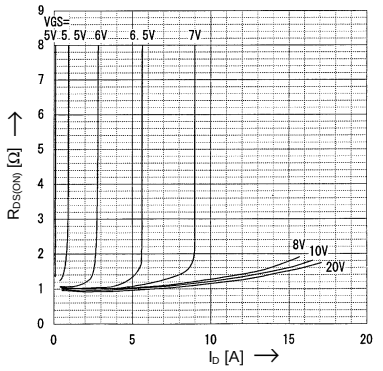
Typical Transfer Characteristics

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



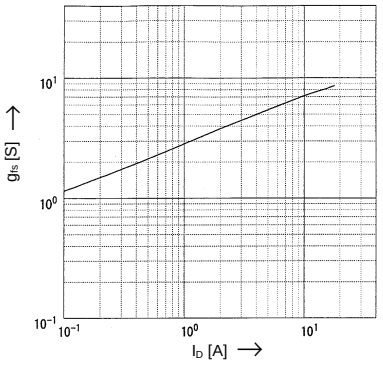
Typical Drain-Source On-State-Resistance vs. I_D

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



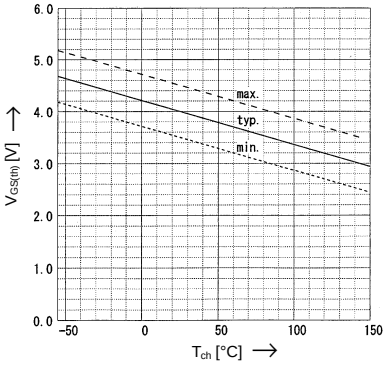
Typical Forward Transconductance vs. I_D

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



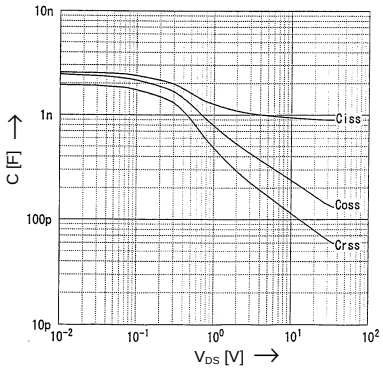
Gate Threshold Voltage vs. T_{ch}

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



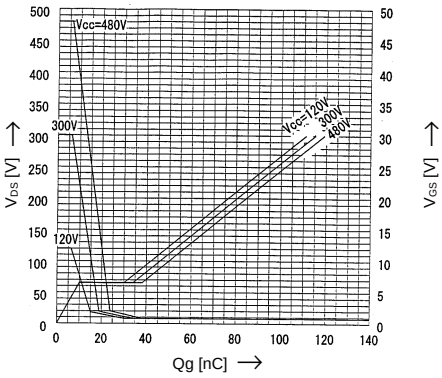
Typical Capacitances vs. V_{DS}

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



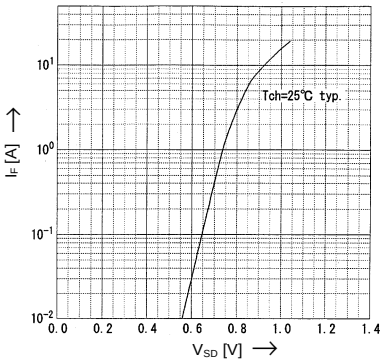
Typical Gate Charge Characteristic

$V_{GS}=f(Qg)$; $I_D=9A$; Tc=25°C



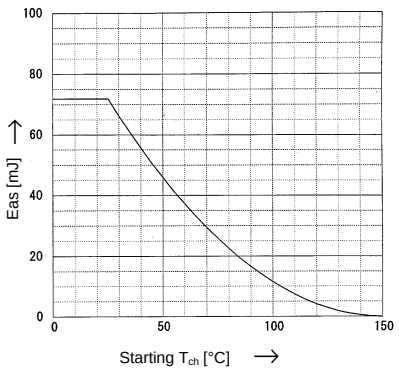
Forward Characteristics of Reverse Diode

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



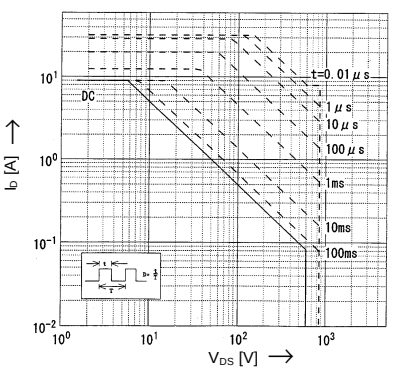
Avalanche Energy Derating

$E_{as}=f(\text{starting } T_{ch})$; $V_{CC}=60V$; $I_{AV}=9A$



Safe Operation Area

$I_D=f(V_{DS})$: D=0,01, Tc=25°C



Transient Thermal impedance

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

