FUJI ELECTRIC

2SK2808-01MR
FAP-IIS Series

| N-channel MOS-FET			
30V	20mΩ	±35A	20W

> Features
- High Speed Switching
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- High Voltage
- V_{GS} = ± 30V Guarantee
- Repetitive Avalanche Rated

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

> Outline Drawing

TO-220F15
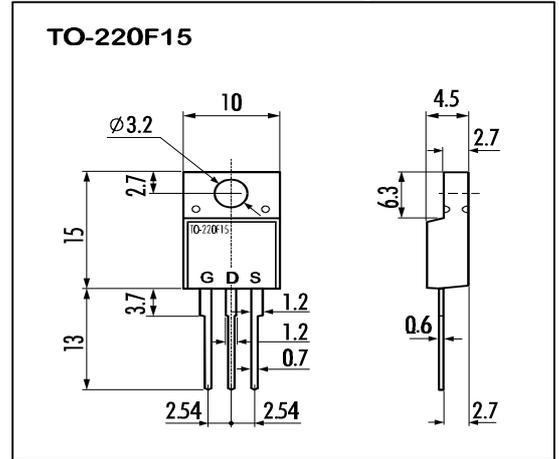
> Maximum Ratings and Characteristics

- Absolute Maximum Ratings (T$_C$=25°C), unless otherwise specified

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V_{DS}	30	V
Continous Drain Current	I_D	±35	A
Pulsed Drain Current	$I_{D(puls)}$	±140	A
Gate-Source-Voltage	V_{GS}	±16	V
Max. Avalanche Energy	E_{AV}	129.3	mJ
Max. Power Dissipation	P_D	20	W
Operating and Storage Temperature Range	T_{ch}	150	°C
	T_{stg}	-55 ~ +150	°C

L=0.70mH,Vcc=12V

> Equivalent Circuit
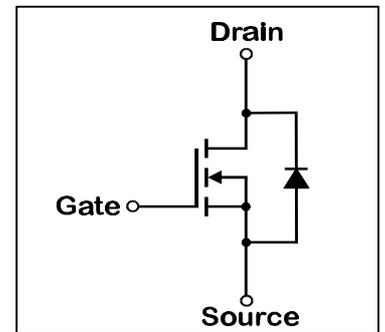
- Electrical Characteristics (T$_C$=25°C), unless otherwise specified

Item	Symbol	Test conditions		Min.	Typ.	Max.	Unit
Drain-Source Breakdown-Voltage	BV$_{DSS}$	I_D=1mA	V_{GS}=0V	30			V
Gate Threshhold 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}=30V	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}=±16V	V_{DS}=0V		10	100	nA
Drain Source On-State Resistance	$R_{DS(on)}$	I_D=17,5A	V_{GS}=4V		22	30	mΩ
			V_{GS}=10V		14	20	mΩ
Forward Transconductance	g_{fs}	I_D=17,5A	V_{DS}=25V	16	33		S
Input Capacitance	C_{iss}	V_{DS}=25V			1100	1650	pF
Output Capacitance	C_{oss}	V_{GS}=0V			550	830	pF
Reverse Transfer Capacitance	C_{rss}	f=1MHz			240	360	pF
Turn-On-Time t_{on} ($t_{on}=t_{d(on)}+t_r$)	$t_{d(on)}$	V_{CC}=15V			9	15	ns
	t_r	I_D=35A			75	115	ns
Turn-Off-Time t_{off} ($t_{on}=t_{d(off)}+t_f$)	$t_{d(off)}$	V_{GS}=10V			15	23	ns
	t_f	R_{GS}=10 Ω			50	75	ns
Avalanche Capability	I_{AV}	L = 100μH	T_{ch}=25°C	35			A
Diode Forward On-Voltage	V_{SD}	I_F=2xI_{DR} V_{GS}=0V T_{ch}=25°C			0,98	1,71	V
Reverse Recovery Time	t_{rr}	I_F=2xI_{DR} V_{GS}=0V			50		ns
Reverse Recovery Charge	Q_{rr}	-dI_F/dt=100A/μs T_{ch}=25°C			0,08		μC

- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	$R_{th(ch-c)}$	channel to case			6,25	°C/W
	$R_{th(ch-a)}$	channel to air			62,5	°C/W

> Characteristics

### Typical Output Characteristics
$I_D = f(V_{DS})$; 80µs pulse test; $T_C = 25°C$
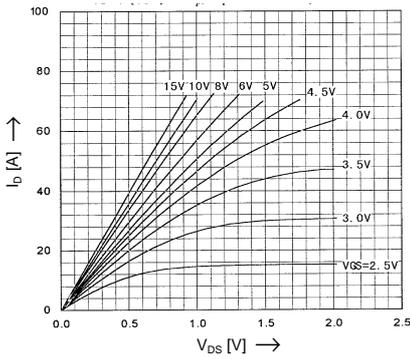
### Drain-Source-On-State Resistance vs. T_{ch}
$R_{DS(on)} = f(T_{ch})$: ID=17.5A; VGS=10V
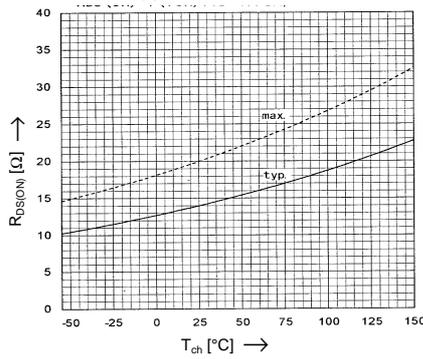
### Typical Transfer Characteristics
$I_D = f(V_{GS})$; 80µs pulse test; $V_{DS} = 25V$; $T_{ch} = 25°C$
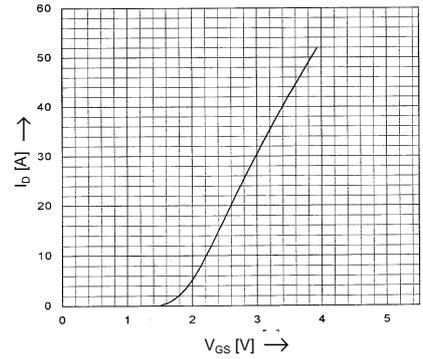
Typical Drain-Source-On-State-Resistance vs. I_D
$R_{DS(on)} = f(I_D)$; 80µs pulse test; $T_C = 25°C$
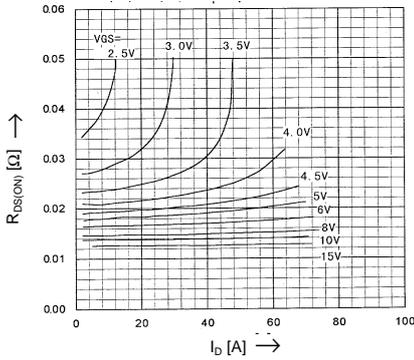
Typical Forward Transconductance vs. I_D
$g_{fs} = f(I_D)$; 80µs pulse test; $V_{DS} = 25V$; $T_{ch} = 25°C$
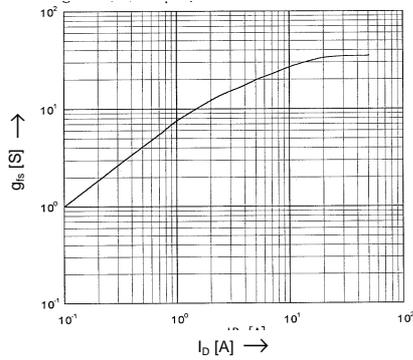
Gate Threshold Voltage vs. T_{ch}
$V_{GS(th)} = f(T_{ch})$; $I_D = 1mA$; $V_{DS} = V_{GS}$
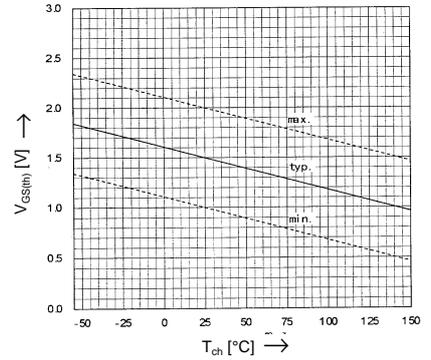
### Typical Capacitances vs. V_{DS}
$C = f(V_{DS})$; $V_{GS} = 0V$; f=1MHz
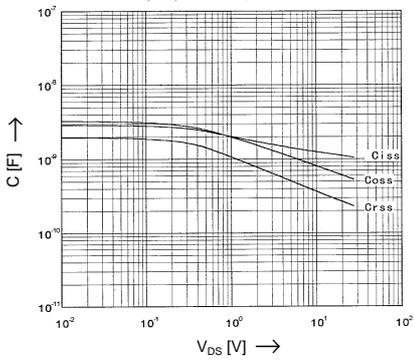
### Typical Gate Charge Characteristic
$V_{GS} = f(Qg)$: ID=35A; Tc=25°C
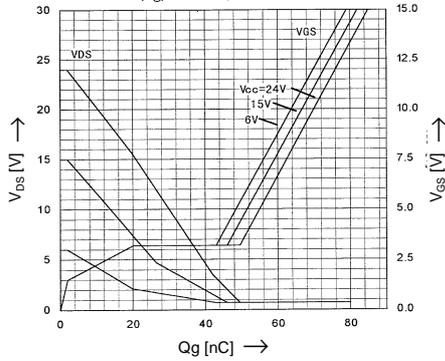
### Forward Characteristics of Reverse Diode
$I_F = f(V_{SD})$: 80µs pulse test; $V_{GS} = 0V$, Tch=25°C
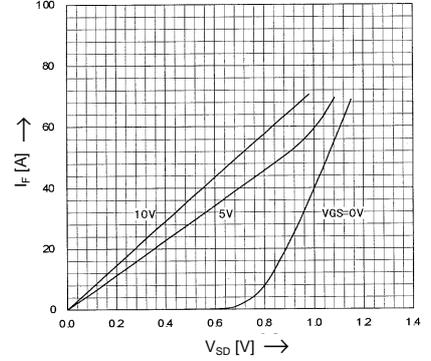
Avalanche Energy Derating
$E(AV) = f(starting Tch)$: Vcc=12V; $I_{(AV)} < 35A$
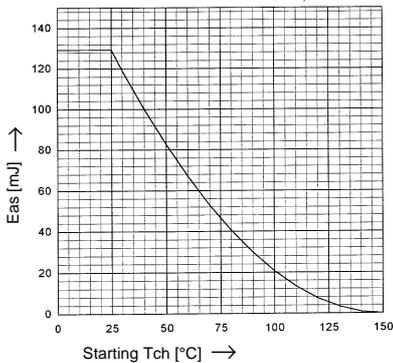
Safe operation area
$I_D = f(V_{DS})$: D=0,01, Tc=25°C
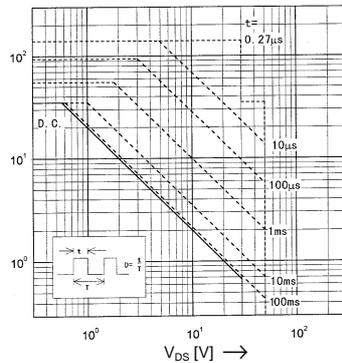
Transient Thermal impedance
$Z_{thch} = f(t)$ parameter: D=t/T

This specification is subject to change without notice!
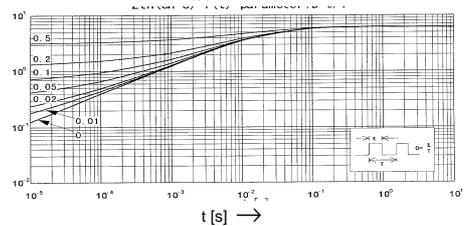
N-channel MOS-FET			
30V	20mΩ	±35A	20W

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> Characteristics

Typical Switching Characteristics

$t=f(I_D)$: V_{CC} = 15V, V_{GS} = 10V, R_G = 10Ω
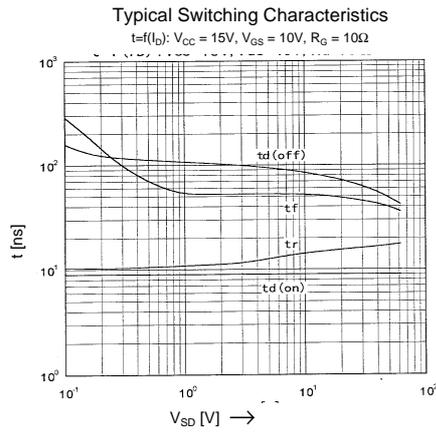
Power Dissipation

$P_D=f(T_C)$
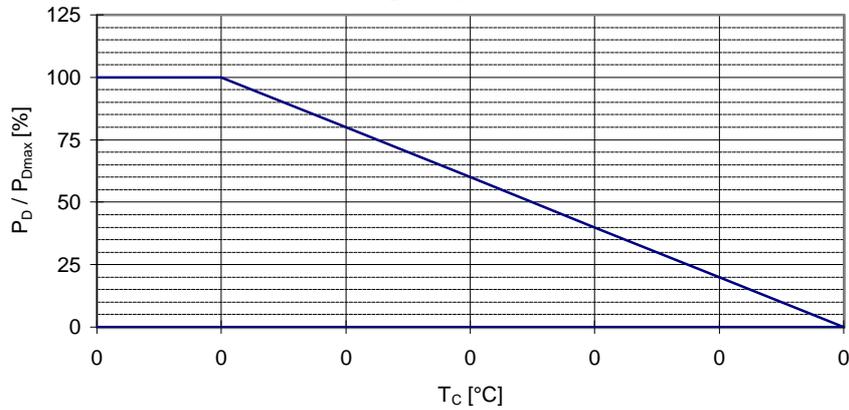
Maximum Avalanche Current vs. starting T_{ch}

$I_{AV}=f(\text{starting } T_{ch})$