FUJI ELECTRIC

2SK2900-01
FAP-IIIB Series

| N-channel MOS-FET			
60V	14,5mΩ	±45A	60W

> Features
- High Current
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- Avalanche Rated

> Applications
- Motor Control
- General Purpose Power Amplifier
- DC-DC converters

> Outline Drawing

TO-220 AB
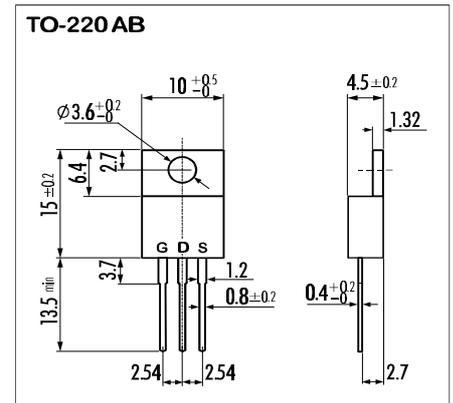
> Maximum Ratings and Characteristics

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

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V$_{DS}$	60	V
Continous Drain Current	I$_D$	±45	A
Pulsed Drain Current	I$_{D(puls)}$	±180	A
Gate-Source-Voltage	V$_{GS}$	±30	V
Maximum Avalanche Energy	E$_{AV}$	461.9	mJ*
Max. Power Dissipation	P$_D$	60	W
Operating and Storage Temperature Range	T$_{ch}$	150	°C
	T$_{stg}$	-55 ~ +150	°C

* L=0,304mH, V$_{CC}$=24V
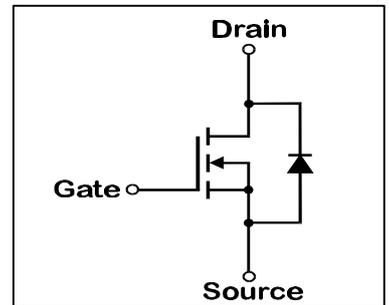
- Electrical Characteristics (T$_C$=25°C), unless otherwise specified

Item	Symbol	Test conditions		Min.	Typ.	Max.	Unit
Drain-Source Breakdown-Voltage	BV$_{DSS}$	I$_D$=1mA	V$_{GS}$=0V	60			V
Gate Threshhold Voltage	V$_{GS(th)}$	I$_D$=10mA	V$_{DS=}$V$_{GS}$	2,5	3	3,5	V
Zero Gate Voltage Drain Current	I$_{DSS}$	V$_{DS}$=60V	T$_{ch}$=25°C		10	500	µA
		V$_{GS}$=0V	T$_{ch}$=125°C		0,2	1,0	mA
Gate Source Leakage Current	I$_{GSS}$	VG$_S$=30V	V$_{DS}$=0V		10	100	nA
Drain Source On-State Resistance	R$_{DS(on)}$	I$_D$=22.5A	V$_{GS}$=10V		12,0	14,5	mΩ
Forward Transconductance	g$_{fs}$	I$_D$=22.5A	V$_{DS}$=25V	10	25		S
Input Capacitance	C$_{iss}$	V$_{DS}$=25V			2300	3450	pF
Output Capacitance	C$_{oss}$	V$_{GS}$=0V			910	1370	pF
Reverse Transfer Capacitance	C$_{rss}$	f=1MHz			260	390	pF
Turn-On-Time t$_{on}$ (t$_{on}$=t$_{d(on)}$+t$_r$)	t$_{d(on)}$	V$_{CC}$=30V			18	30	ns
	t$_r$	V$_{GS}$=10V			55	80	ns
Turn-Off-Time t$_{off}$ (t$_{on}$=t$_{d(off)}$+t$_f$)	t$_{d(off)}$	I$_D$=45A			70	120	ns
	t$_f$	R$_{GS}$=10 Ω			48	80	ns
Avalanche Capability	I$_{AV}$	L = 100µH	T$_{ch}$=25°C	45			A
Diode Forward On-Voltage	V$_{SD}$	I$_F$=45A V$_{GS}$=0V T$_{ch}$=25°C			1,0	1,5	V
Reverse Recovery Time	t$_{rr}$	I$_F$=45A V$_{GS}$=0V			60		ns
Reverse Recovery Charge	Q$_{rr}$	-dI/dt=100A/µs T$_{ch}$=25°C			0,11		µC

- Thermal Characteristics

Item	Symbol		Min.	Typ.	Max.	Unit
Thermal Resistance	R$_{th(ch-c)}$	channel to case			2,08	°C/W
	R$_{th(ch-a)}$	channel to ambient			75,00	°C/W

## > Characteristics

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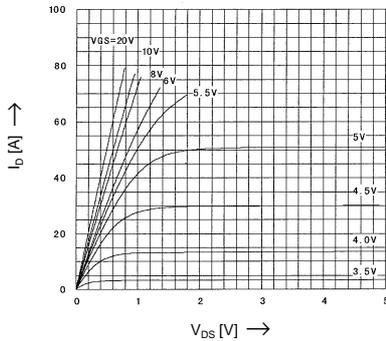

Drain-Source On-State Resistance vs. T_{ch}
$R_{DS(on)} = f(T_{ch})$; $I_D=22,5A$; $V_{GS}=10V$
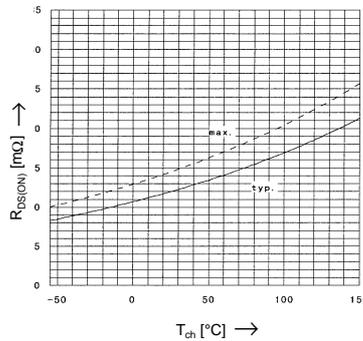

Typical Transfer Characteristics
$I_D=f(V_{GS})$; 80µs pulse test; $V_{DS}=25V$; $T_{ch}=25°C$
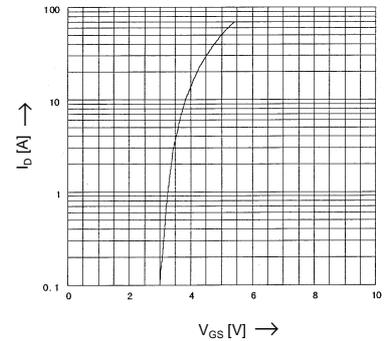
Typical Drain-Source On-State-Resistance vs. I_D
$R_{DS(on)}=f(I_D)$; 80µs pulse test; $T_C=25°C$
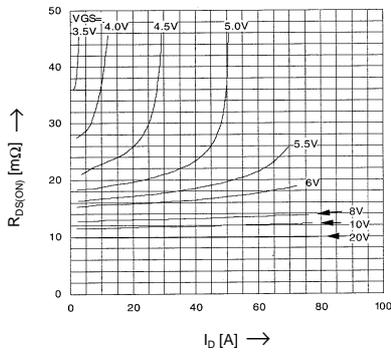
Typical Forward Transconductance vs. I_D
$g_{fs}=f(I_D)$; 80µs pulse test; $V_{DS}=25V$; $T_{ch}=25°C$
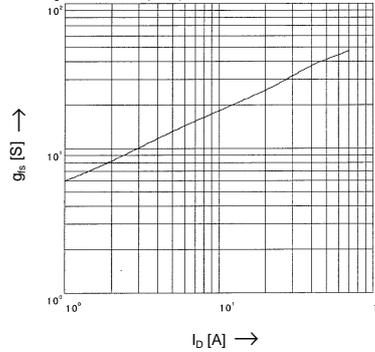
Gate Threshold Voltage vs. T_{ch}
$V_{GS(th)}=f(T_{ch})$; $I_D=10mA$; $V_{DS}=V_{GS}$
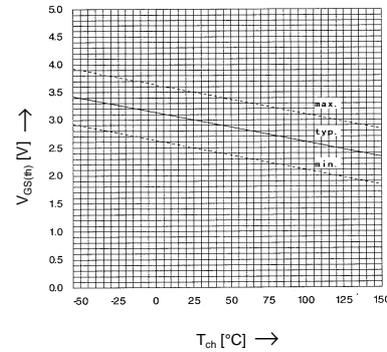

Typical Capacitances vs. V_{DS}
$C=f(V_{DS})$; $V_{GS}=0V$; $f=1MHz$
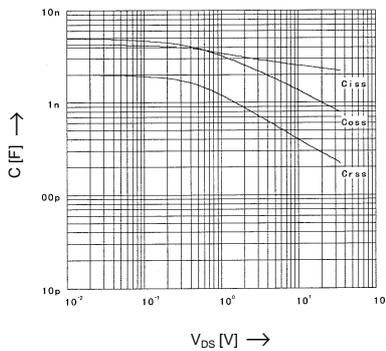
Typical Gate Charge Characteristic
$V_{GS}=f(Qg)$; $I_D=45A$; $T_C=25°C$
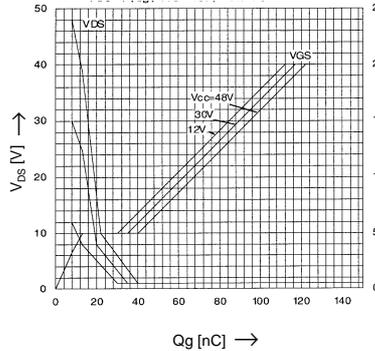
Forward Characteristics of Reverse Diode
$I_F=f(V_{SD})$; 80µs pulse test; $T_{ch}=25°C$
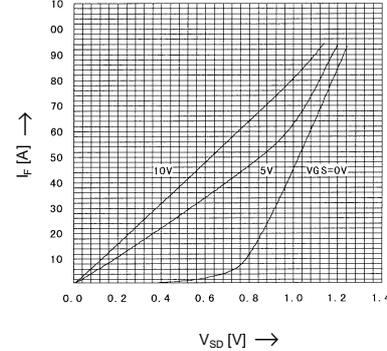
Maximum Avalanche Energy vs. starting T_{ch}
$E_{AV}=f(starting\ T_{ch})$: $V_{CC}=24V$; $I_{AV} \le 45A$
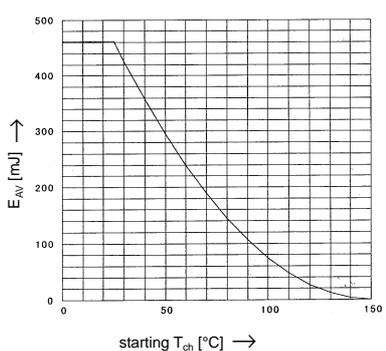
Safe Operation Area
$I_D=f(V_{DS})$: D=0,01, Tc=25°C
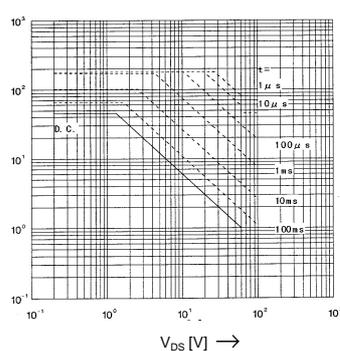
Transient Thermal impedance
$Z_{thch}=f(t)$ parameter:D=t/T
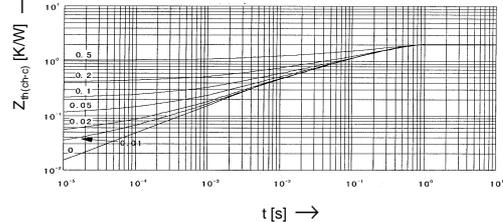
## > Characteristics

Typical Switching Characteristics
$t=f(I_D)$: V_{CC} = 30V, V_{GS} = 10V, R_G = 10Ω
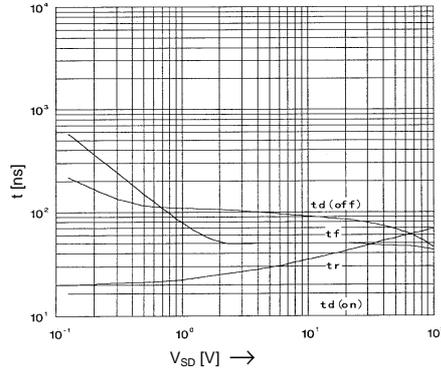
Power Dissipation
$P_D=f(T_C)$
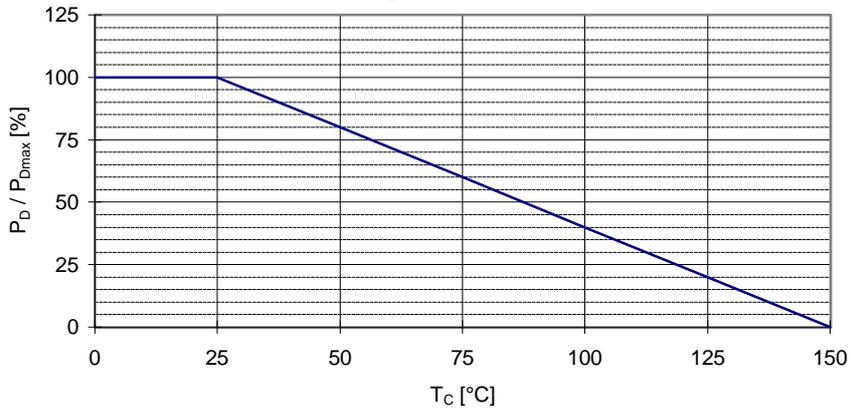
Maximum Avalanche Current vs. starting T_{ch}
$I_{AV}=f(\text{starting } T_{ch})$