FUJI ELECTRIC

2SK2893-01

FAP-IIIB Series

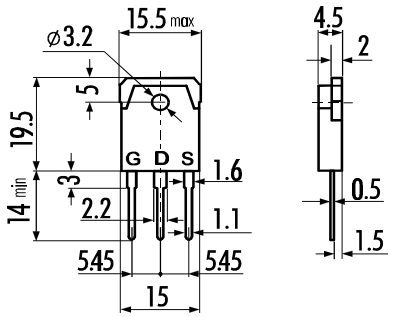
N-channel MOS-FET			
30V	4mΩ	±100A	150W

> Features

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

> Outline Drawing

TO-3P



> Applications

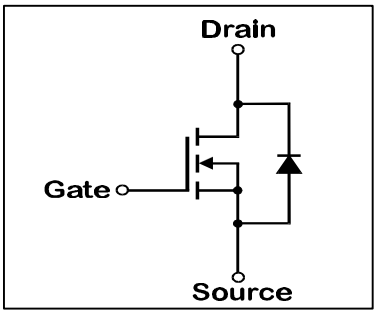
- Motor Control
- General Purpose Power Amplifier
- DC-DC converters

> Maximum Ratings and Characteristics

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

Item	Symbol	Characteristics	Unit
Drain-Source-Voltage	V_{DS}	30	V
Continous Drain Current	I_D	±100	A
Pulsed Drain Current	$I_{D(puls)}$	±400	A
Gate-Source-Voltage	V_{GS}	±16	V
Maximum Avalanche Energy	E_{AV}	2536.7	mJ*
Max. Power Dissipation	P_D	150	W
Operating and Storage Temperature Range	T_{ch}	150	°C
	T_{stg}	-55 ~ +150	°C

L=0.338mH,Vcc=12V



- 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
	I_{DSS}	V_{GS}=0V	T_{ch}=125°C		0,2	1,0	mA
Gate Source Leakage Current	I_{DSS}	V_{GS}=±16V	V_{DS}=0V		10	100	nA
Drain Source On-State Resistance	$R_{DS(on)}$	I_D=50A	V_{GS}=4V		4,8	7,0	
		I_D=50A	V_{GS}=10V		3,2	4,0	mΩ
Forward Transconductance	g_{fs}	I_D=50A	V_{DS}=25V	45	90		S
Input Capacitance	C_{iss}	V_{DS}=25V			6600	9900	pF
Output Capacitance	C_{oss}	V_{GS}=0V			3300	4950	pF
Reverse Transfer Capacitance	C_{rss}	f=1MHz			1400	2100	pF
Turn-On-Time t_{on} (t_{on}=$t_{d(on)}$+t_r)	$t_{d(on)}$	V_{CC}=15V			20	30	ns
	t_r	V_{GS}=10V			150	230	ns
Turn-Off-Time t_{off} (t_{on}=$t_{d(off)}$+t_f)	$t_{d(off)}$	I_D=100A			470	710	ns
	t_f	R_{GS}=10 Ω			370	560	ns
Avalanche Capability	I_{AV}	L = 100µH	T_{ch}=25°C	100			A
Diode Forward On-Voltage	V_{SD}	I_F=100A	V_{GS}=0V T_{ch}=25°C		1,0	1,5	V
Reverse Recovery Time	t_{rr}	I_F=50A	V_{GS}=0V		95		ns
Reverse Recovery Charge	Q_{rr}	-dI/dt=100A/µs	T_{ch}=25°C		0.22		µC

- Thermal Characteristics

Item	Symbol		Min.	Typ.	Max.	Unit
Thermal Resistance	$R_{th(ch-c)}$	channel to case			0,83	°C/W
	$R_{th(ch-a)}$	channel to air			35,00	°C/W

N-channel MOS-FET			
30V	4mΩ	±100A	150W

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FAP-IIIB Series

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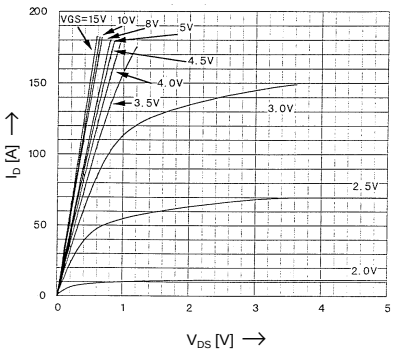
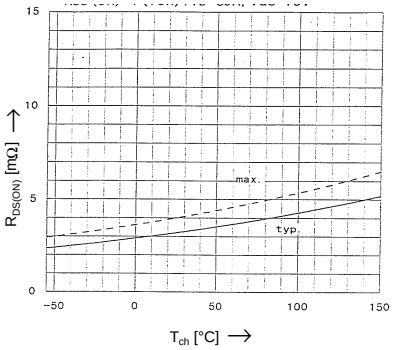
> Characteristics

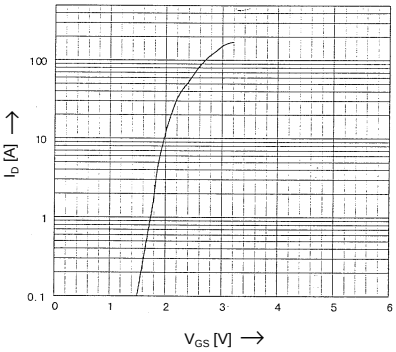
Typical Output Characteristics
$I_D=f(V_{DS})$; 80µs pulse test; $T_C=25°C$



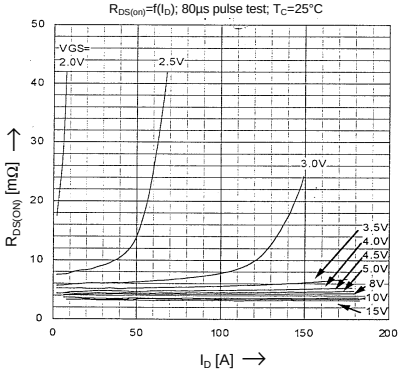
Drain-Source On-State Resistance vs. T_{ch}
$R_{DS(on)}=f(T_{ch})$; $I_D=25A$; $V_{GS}=10V$



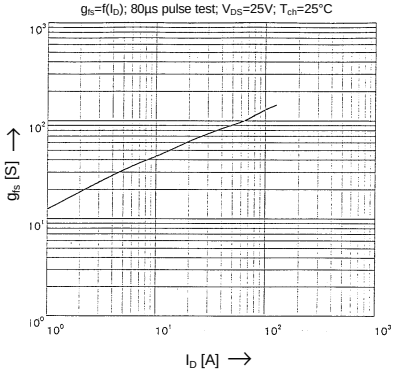
Typical Transfer Characteristics
$I_D=f(V_{GS})$; 80µs pulse test; $V_{DS}=25V$; $T_{ch}=25°C$



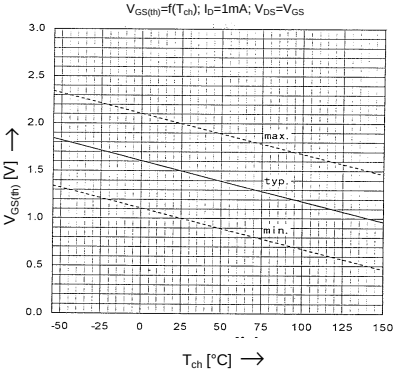
Typical Drain-Source On-State-Resistance vs. I_D
$R_{DS(on)}=f(I_D)$; 80µs pulse test; $T_C=25°C$



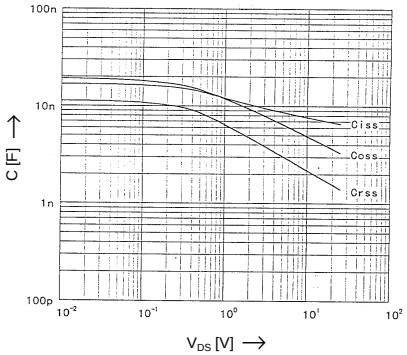
Typical Forward Transconductance vs. I_D
$g_{fs}=f(I_D)$; 80µs pulse test; $V_{DS}=25V$; $T_{ch}=25°C$



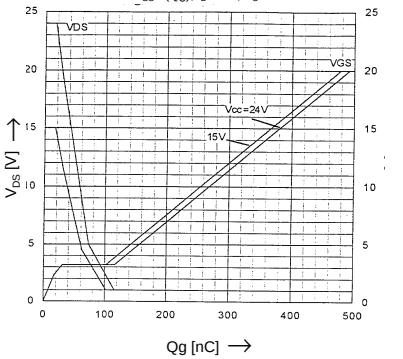
Gate Threshold Voltage vs. T_{ch}
$V_{GS(th)}=f(T_{ch})$; $I_D=1mA$; $V_{DS}=V_{GS}$



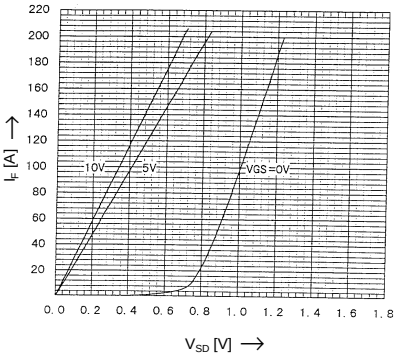
Typical Capacitances vs. V_{DS}
$C=f(V_{DS})$; $V_{GS}=0V$; $f=1MHz$



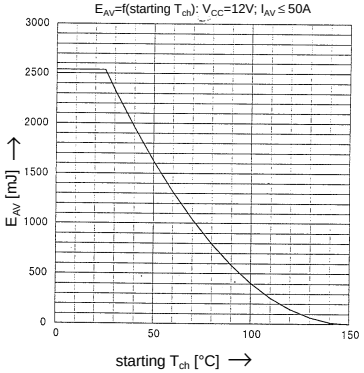
Typical Gate Charge Characteristic
$V_{GS}=f(Qg)$; $I_D=50A$; $T_C=25°C$



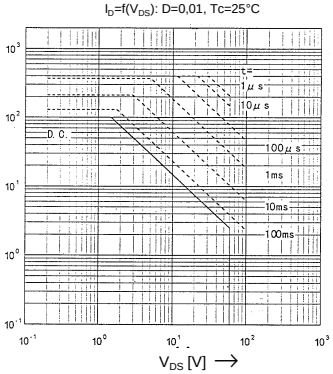
Forward Characteristics of Reverse Diode
$I_F=f(V_{SD})$; 80µs pulse test; $T_{ch}=25°C$



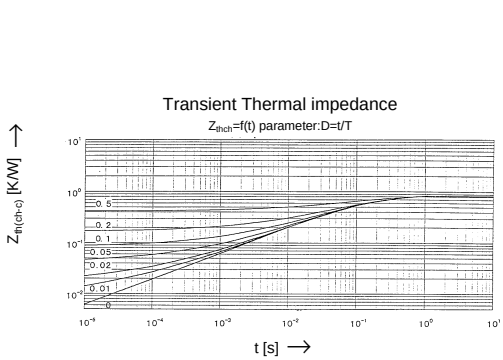
Maximum Avalanche Energy vs. starting T_{ch}
$E_{AV}=f$(starting T_{ch}); $V_{CC}=12V$; $I_{AV}\leq 50A$



Safe Operation Area
$I_D=f(V_{DS})$: D=0,01, Tc=25°C

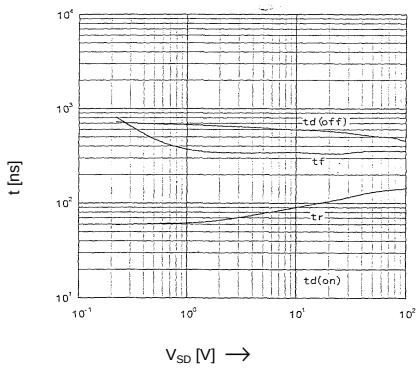


Transient Thermal impedance
$Z_{thch}=f(t)$ parameter:D=t/T

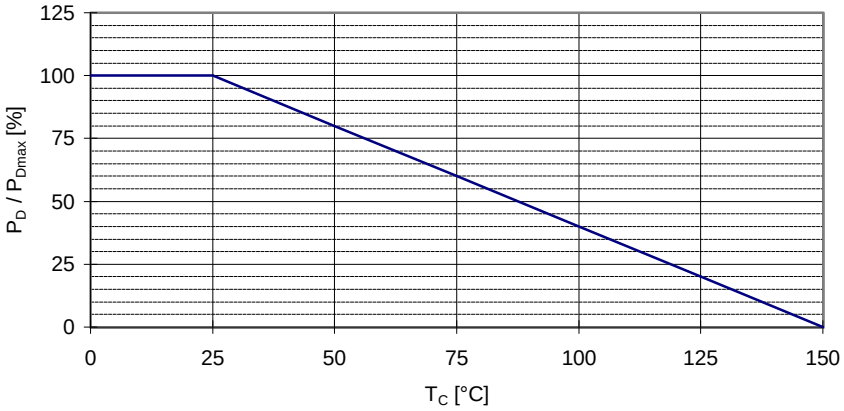


> Characteristics

Typical Switching Characteristics
$t=f(I_D)$: V_{CC} = 15V, V_{GS} = 10V, R_G = 10Ω



Power Dissipation
$P_D=f(T_C)$



Maximum Avalanche Current vs. starting T_{ch}
$I_{AV}=f(\text{starting } T_{ch})$