

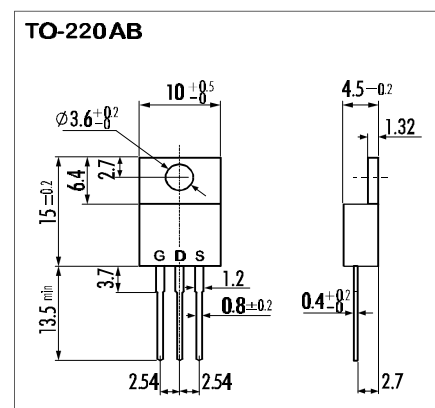
> Features

- 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



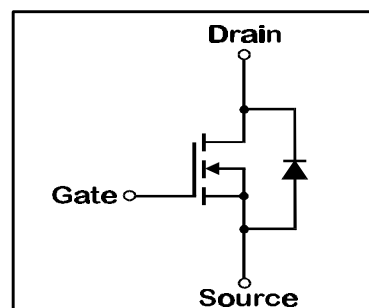
> Maximum Ratings and Characteristics

- Absolute Maximum Ratings ($T_C=25^\circ\text{C}$), unless otherwise specified

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V_{DS}	30	V
Continuous Drain Current	I_D	35	A
Pulsed Drain Current	$I_{D(puls)}$	140	A
Gate-Source-Voltage	V_{GS}	±16	V
Maximum Avalanche Energy	E_{AV}	129,3	mJ*
Max. Power Dissipation	P_D	30	W
Operating and Storage Temperature Range	T_{ch}	150	$^\circ\text{C}$
	T_{stg}	-55 ~ +150	$^\circ\text{C}$

* $L=0,07\text{mH}$, $V_{CC}=12\text{V}$

> Equivalent Circuit



- Electrical Characteristics ($T_C=25^\circ\text{C}$), unless otherwise specified

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown-Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$ $V_{GS}=0\text{V}$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$I_D=1\text{mA}$ $V_{DS}=V_{GS}$	1,0	1,5	2,0	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30\text{V}$ $T_{ch}=25^\circ\text{C}$		10	500	μA
		$V_{GS}=0\text{V}$ $T_{ch}=125^\circ\text{C}$		0,2	1,0	mA
Gate Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16\text{V}$ $V_{DS}=0\text{V}$		10	100	nA
Drain Source On-State Resistance	$R_{DS(on)}$	$I_D=17,5\text{A}$ $V_{GS}=4\text{V}$		0,022	0,03	Ω
		$V_{GS}=10\text{V}$		0,014	0,02	Ω
Forward Transconductance	g_{fs}	$I_D=17,5\text{A}$ $V_{DS}=25\text{V}$	16	33		S
Input Capacitance	C_{iss}	$V_{DS}=25\text{V}$		1100	1650	pF
Output Capacitance	C_{oss}	$V_{GS}=0\text{V}$		550	830	pF
Reverse Transfer Capacitance	C_{rss}	$f=1\text{MHz}$		240	360	pF
Turn-On-Time t_{on} ($t_{on}=t_{d(on)}+t_r$)	$t_{d(on)}$	$V_{CC}=15\text{V}$		9	15	ns
	t_r	$I_D=35\text{A}$		15	23	ns
Turn-Off-Time t_{off} ($t_{off}=t_{d(off)}+t_f$)	$t_{d(off)}$	$V_{GS}=10\text{V}$		75	115	ns
	t_f	$R_{GS}=10\Omega$		50	75	ns
Avalanche Capability	I_{AV}	$L=100\mu\text{H}$ $T_{ch}=25^\circ\text{C}$	35			A
Diode Forward On-Voltage	V_{SD}	$I_F=2 \times I_{DR}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$		0,98	1,71	V
Reverse Recovery Time	t_{rr}	$I_F=2 \times I_{DR}$ $V_{GS}=0\text{V}$		50		ns
Reverse Recovery Charge	Q_{rr}	$-dI_F/dt=100\text{A}/\mu\text{s}$ $T_{ch}=25^\circ\text{C}$		0,08		μC

- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	$R_{th(ch-a)}$	channel to air			75	$^\circ\text{C}/\text{W}$
	$R_{th(ch-c)}$	channel to case			4,16	$^\circ\text{C}/\text{W}$

N-channel MOS-FET			
30V	0,02Ω	35A	30W

2SK2806-01

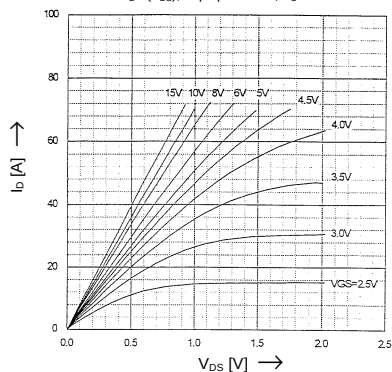
FAP-IIIB Series

FUJI
ELECTRIC

> Characteristics

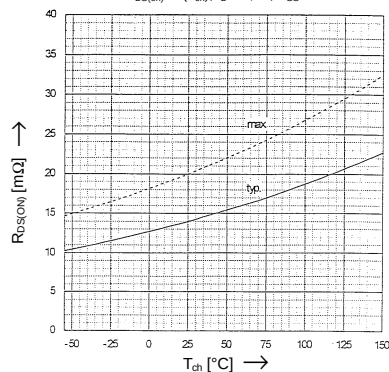
Typical Output Characteristics

$I_D=f(V_{DS})$; 80μs pulse test; $T_{ch}=25^{\circ}C$



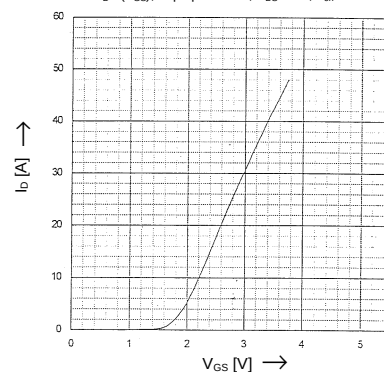
Drain-Source On-State Resistance vs. T_{ch}

$R_{DS(on)}=f(T_{ch})$; $I_D=17.5A$; $V_{GS}=10V$



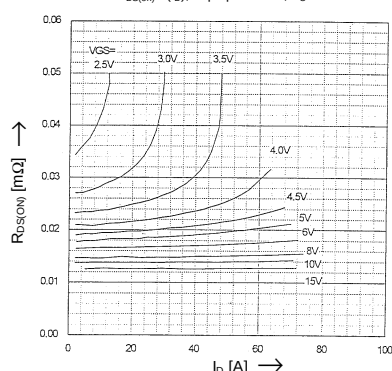
Typical Transfer Characteristics

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



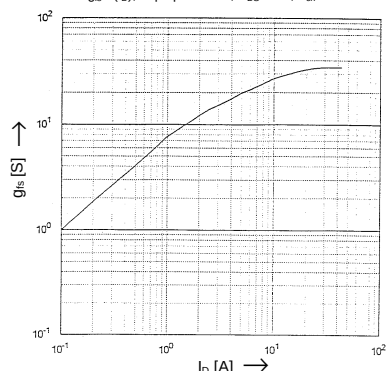
Typical Drain-Source On-State-Resistance vs. I_D

$R_{DS(on)}=f(I_D)$; 80μs pulse test; $T_{ch}=25^{\circ}C$



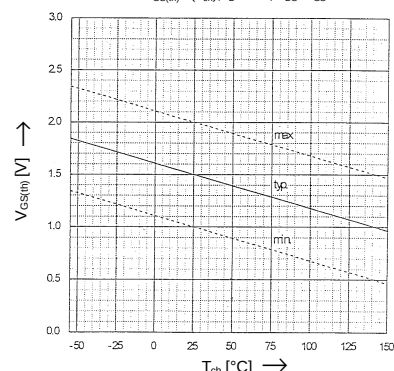
Typical Forward Transconductance vs. I_D

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



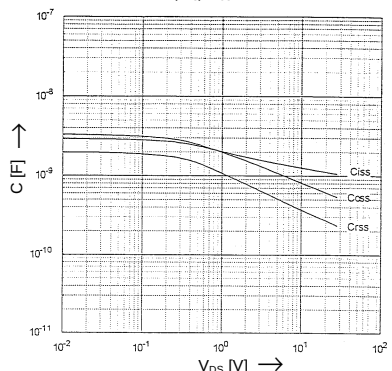
Gate Threshold Voltage vs. T_{ch}

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



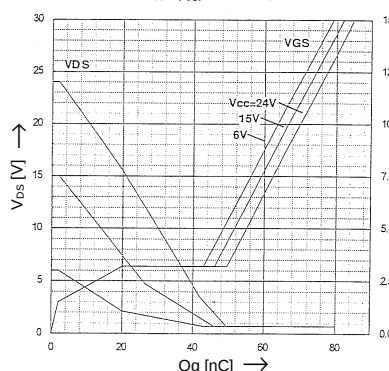
Typical Capacitances vs. V_{DS}

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



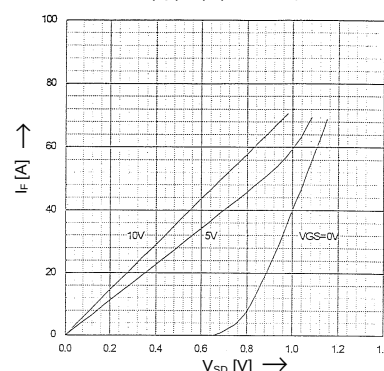
Typical Gate Charge Characteristic

$V_{GS}=f(Q_g)$; $I_D=35A$; $T_{ch}=25^{\circ}C$



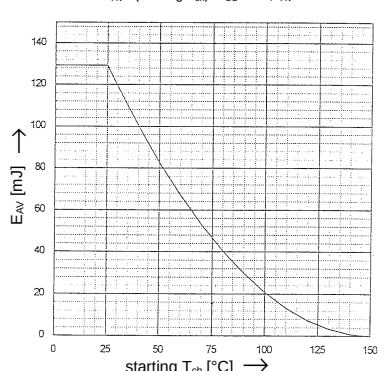
Forward Characteristics of Reverse Diode

$I_F=f(V_{SD})$; 80μs pulse test; $T_{ch}=25^{\circ}C$



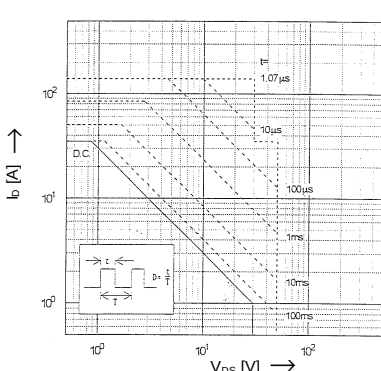
Maximum Avalanche Energy vs. starting T_{ch}

$E_{AV}=f(\text{starting } T_{ch})$; $V_{CC}=12V$; $I_{AV} \leq 35A$



Safe Operation Area

$I_D=f(V_{DS})$; $D=0.01$; $T_c=25^{\circ}C$

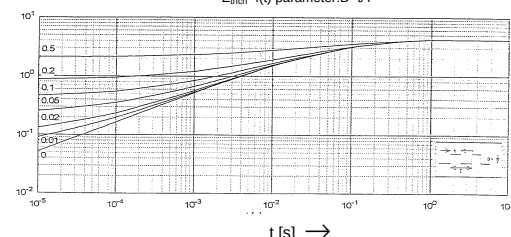


↑

$Z_{th(e-c)}$ [K/W]

Transient Thermal impedance

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



N-channel MOS-FET			
30V	0,02Ω	35A	30W

2SK2806-01

FAP-III B Series



> Characteristics

