

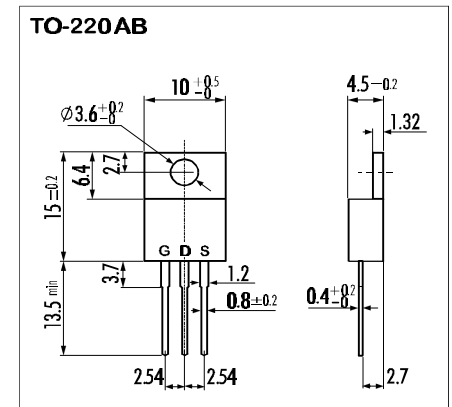
> **Features**

- 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**



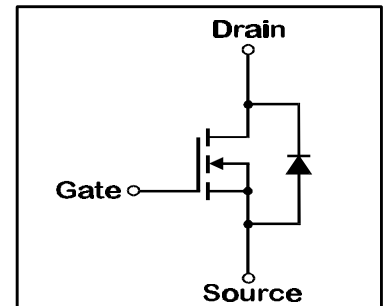
> **Maximum Ratings and Characteristics**

- Absolute Maximum Ratings (T<sub>C</sub>=25°C), unless otherwise specified

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V <sub>DS</sub>	30	V
Continous Drain Current	I <sub>D</sub>	35	A
Pulsed Drain Current	I <sub>D(puls)</sub>	140	A
Gate-Source-Voltage	V <sub>GS</sub>	±16	V
Maximum Avalanche Energy	E <sub>AV</sub>	129,3	mJ*
Max. Power Dissipation	P <sub>D</sub>	30	W
Operating and Storage Temperature Range	T <sub>ch</sub>	150	°C
	T <sub>stg</sub>	-55 ~ +150	°C

\* L=0,07mH, V<sub>CC</sub>=12V

> **Equivalent Circuit**



- Electrical Characteristics (T<sub>C</sub>=25°C), unless otherwise specified

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown-Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =1mA V <sub>GS</sub> =0V	30			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	I <sub>D</sub> =1mA V <sub>DS</sub> =V <sub>GS</sub>	1,0	1,5	2,0	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V T <sub>ch</sub> =25°C		10	500	μA
		V <sub>GS</sub> =0V T <sub>ch</sub> =125°C		0,2	1,0	mA
Gate Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±16V V <sub>DS</sub> =0V		10	100	nA
Drain Source On-State Resistance	R <sub>DS(on)</sub>	I <sub>D</sub> =17,5A V <sub>GS</sub> =4V		0,022	0,03	Ω
		I <sub>D</sub> =17,5A V <sub>GS</sub> =10V		0,014	0,02	Ω
Forward Transconductance	g <sub>fs</sub>	I <sub>D</sub> =17,5A V <sub>DS</sub> =25V	16	33		S
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V		1100	1650	pF
Output Capacitance	C <sub>oss</sub>	V <sub>GS</sub> =0V		550	830	pF
Reverse Transfer Capacitance	C <sub>rss</sub>	f=1MHz		240	360	pF
Turn-On-Time t <sub>on</sub> (t <sub>on</sub> =t <sub>d(on)</sub> +t <sub>r</sub> )	t <sub>d(on)</sub>	V <sub>CC</sub> =15V		9	15	ns
		I <sub>D</sub> =35A		15	23	ns
Turn-Off-Time t <sub>off</sub> (t <sub>off</sub> =t <sub>d(off)</sub> +t <sub>f</sub> )	t <sub>d(off)</sub>	V <sub>GS</sub> =10V		75	115	ns
		R <sub>GS</sub> =10 Ω		50	75	ns
Avalanche Capability	I <sub>AV</sub>	L = 100μH T <sub>ch</sub> =25°C	35			A
Diode Forward On-Voltage	V <sub>SD</sub>	I <sub>F</sub> =2xI <sub>DR</sub> V <sub>GS</sub> =0V T <sub>ch</sub> =25°C		0,98	1,71	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =2xI <sub>DR</sub> V <sub>GS</sub> =0V		50		ns
Reverse Recovery Charge	Q <sub>rr</sub>	-dI <sub>F</sub> /dt=100A/μs T <sub>ch</sub> =25°C		0,08		μC

- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	R <sub>th(ch-a)</sub>	channel to air			75	°C/W
	R <sub>th(ch-c)</sub>	channel to case			4,16	°C/W

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

# 2SK2806-01

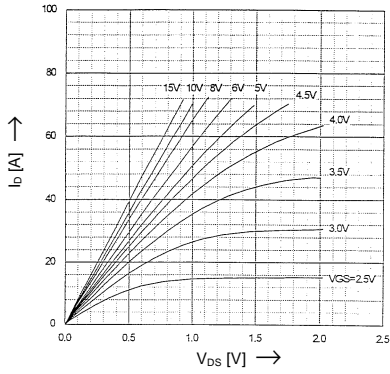
## FAP-IIIB Series



### > Characteristics

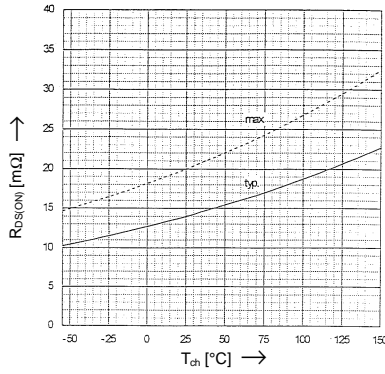
Typical Output Characteristics

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



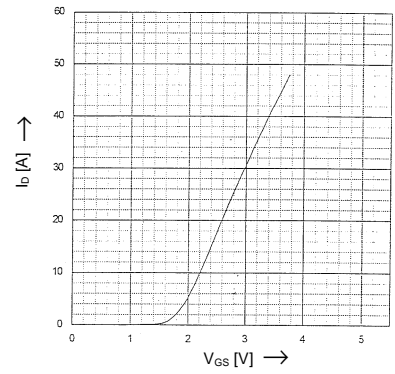
Drain-Source On-State Resistance vs.  $T_{ch}$

$R_{DS(on)} = f(T_{ch})$ ;  $I_D=17,5\text{A}$ ;  $V_{GS}=10\text{V}$



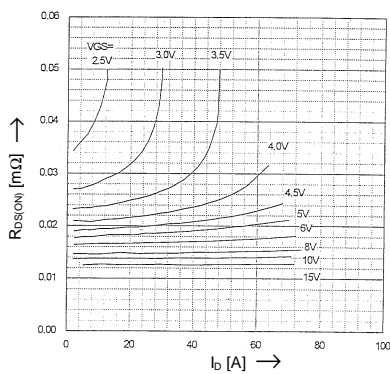
Typical Transfer Characteristics

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



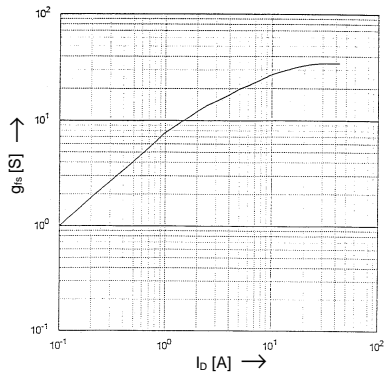
Typical Drain-Source On-State-Resistance vs.  $I_D$

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



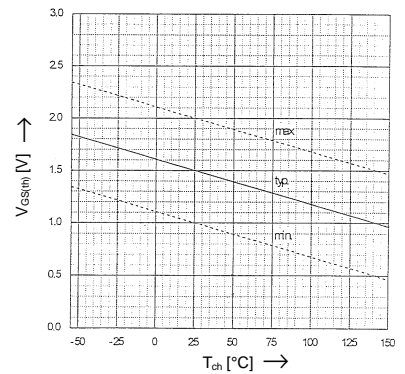
Typical Forward Transconductance vs.  $I_D$

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



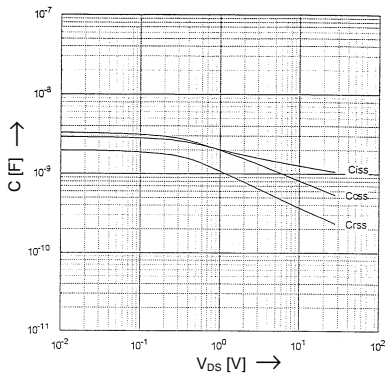
Gate Threshold Voltage vs.  $T_{ch}$

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



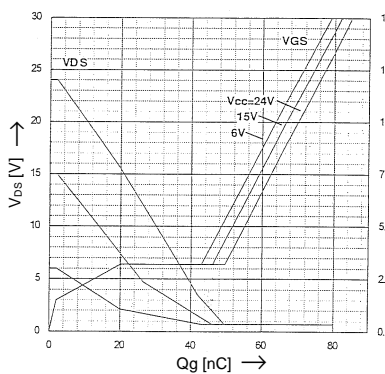
Typical Capacitances vs.  $V_{DS}$

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



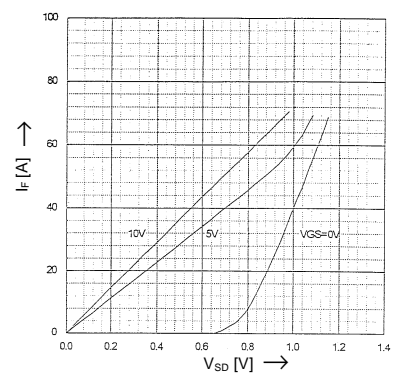
Typical Gate Charge Characteristic

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



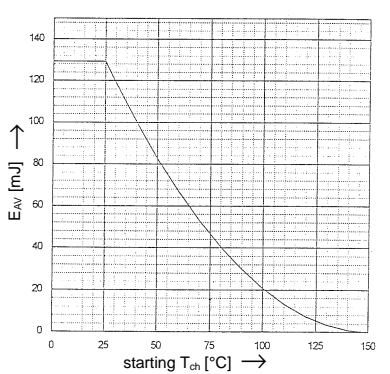
Forward Characteristics of Reverse Diode

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



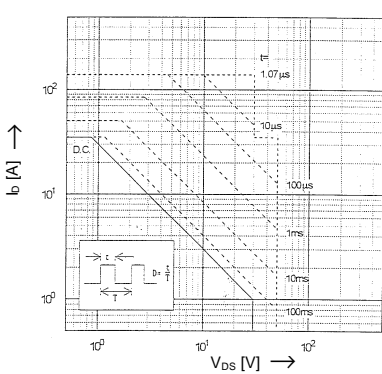
Maximum Avalanche Energy vs. starting  $T_{ch}$

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



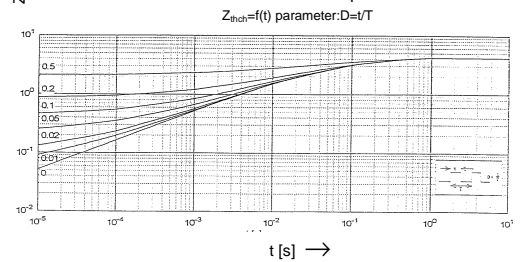
Safe Operation Area

$I_D=f(V_{DS})$ ;  $D=0,01$ ;  $T_C=25^\circ\text{C}$



Transient Thermal impedance

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



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

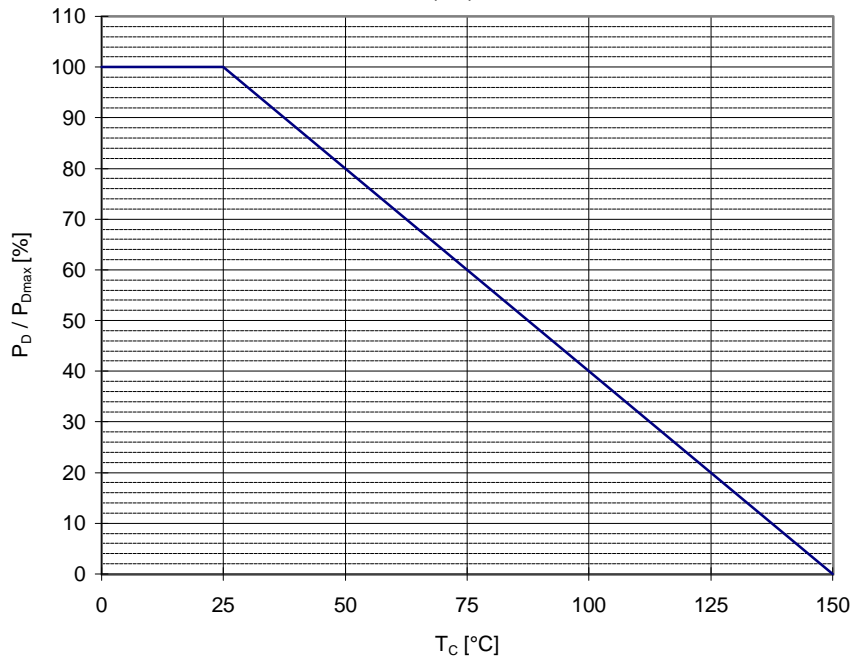
# 2SK2806-01

## FAP-IIIB Series



### > Characteristics

Power Dissipation  
 $P_D=f(T_C)$



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

