

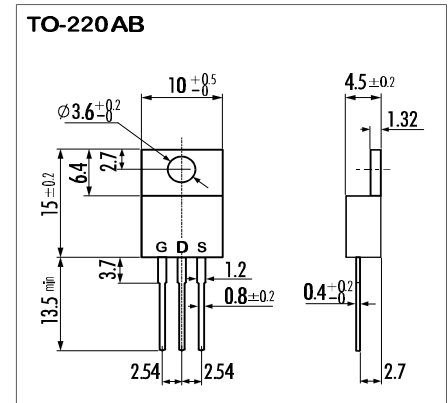
**> Features**

- High Speed Switching
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- High Voltage
- $V_{GS} = \pm 30V$  Guarantee
- Avalanche Proof

**> Applications**

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

**> Outline Drawing**

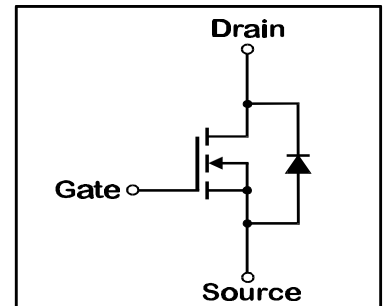


**> Maximum Ratings and Characteristics**

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

Item	Symbol	Rating	Unit
Drain-Source-Voltage	$V_{DS}$	200	V
Drain-Gate-Voltage ( $R_{GS}=20K\Omega$ )	$V_{DGR}$	200	V
Continous Drain Current	$I_D$	18	A
Pulsed Drain Current	$I_{D(puls)}$	72	A
Gate-Source-Voltage	$V_{GS}$	$\pm 30$	V
Max. Power Dissipation	$P_D$	50	W
Operating and Storage Temperature Range	$T_{ch}$	150	$^\circ C$
	$T_{stg}$	-55 ~ +150	$^\circ C$

**> Equivalent Circuit**



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

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown-Voltage	$V_{(BR)DSS}$	$I_D=1mA$ $V_{GS}=0V$	200			V
Gate Threshold Voltage	$V_{GS(th)}$	$I_D=1mA$ $V_{DS}=V_{GS}$	2,5	3,0	3,5	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=200V$ $T_{ch}=25^\circ C$		10	500	$\mu A$
		$V_{GS}=0V$ $T_{ch}=125^\circ C$		0,2	1,0	mA
Gate Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 30V$ $V_{DS}=0V$		10	100	nA
Drain Source On-State Resistance	$R_{DS(on)}$	$I_D=9A$ $V_{GS}=10V$		0,15	0,18	$\Omega$
Forward Transconductance	$g_{fs}$	$I_D=9A$ $V_{DS}=25V$	4,0	9,0		S
Input Capacitance	$C_{iss}$	$V_{DS}=25V$		1100	1650	pF
Output Capacitance	$C_{oss}$	$V_{GS}=0V$		220	330	pF
Reverse Transfer Capacitance	$C_{rss}$	$f=1MHz$		100	150	pF
Turn-On-Time $t_{on}$ ( $t_{on}=t_{d(on)}+t_r$ )	$t_{d(on)}$	$V_{CC}=150V$		15	30	ns
	$t_r$	$I_D=18A$		80	120	ns
Turn-Off-Time $t_{off}$ ( $t_{off}=t_{d(off)}+t_f$ )	$t_{d(off)}$	$V_{GS}=10V$		60	90	ns
	$t_f$	$R_{GS}=10\Omega$		40	60	ns
Avalanche Capability	$I_{AV}$	$L = 100\mu H$ $T_{ch}=25^\circ C$	18,0			A
Diode Forward On-Voltage	$V_{SD}$	$I_F=2I_{DR}$ $V_{GS}=0V$ $T_{ch}=25^\circ C$		1,5	2,25	V
Reverse Recovery Time	$t_{rr}$	$I_F=I_{DR}$ $V_{GS}=0V$		165		ns
Reverse Recovery Charge	$Q_{rr}$	$-dI_F/dt=100A/\mu s$ $T_{ch}=25^\circ C$		1300		$\mu C$

- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	$R_{th(ch-a)}$	channel to air			75,0	$^\circ C/W$
	$R_{th(ch-c)}$	channel to case			2,5	$^\circ C/W$

N-channel MOS-FET			
200V	0,18Ω	18A	50W

# 2SK2521-01

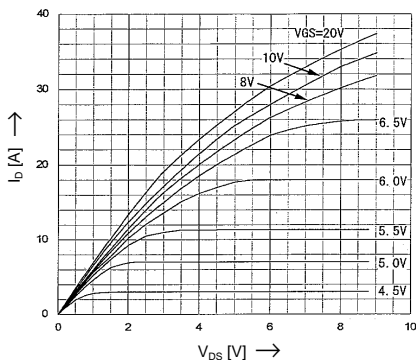
## FAP-II Series



### > Characteristics

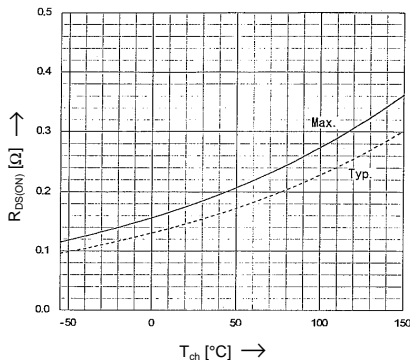
Typical Output Characteristics

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



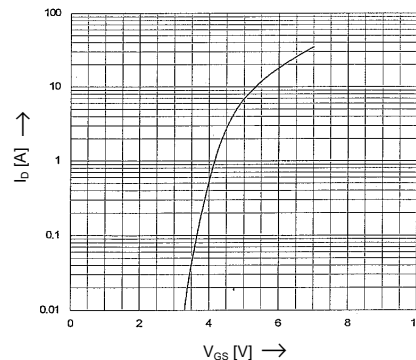
Drain-Source On-State Resistance

$R_{DS(on)} = f(T_{ch})$ ;  $I_D = 9\text{A}$ ;  $V_{GS} = 10\text{V}$



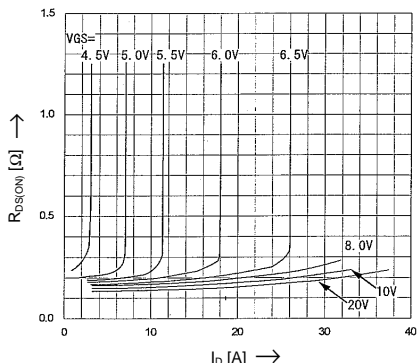
Typical Transfer Characteristics

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



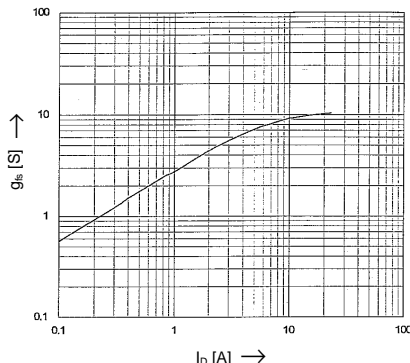
Typical Drain-Source On-State-Resistance

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



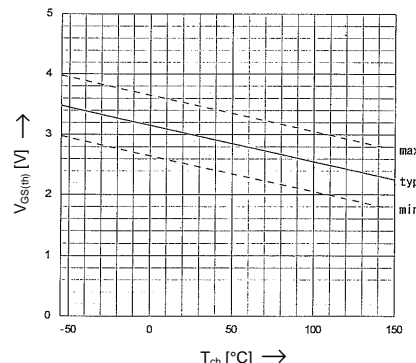
Typical Transconductance

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



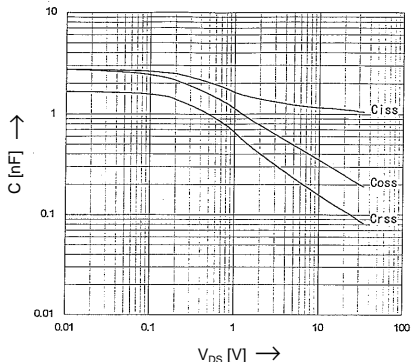
Gate Threshold Voltage vs.  $T_{ch}$

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



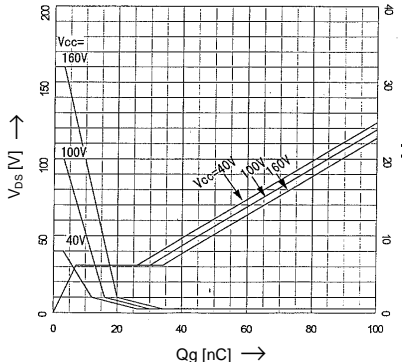
Typical Capacitances

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



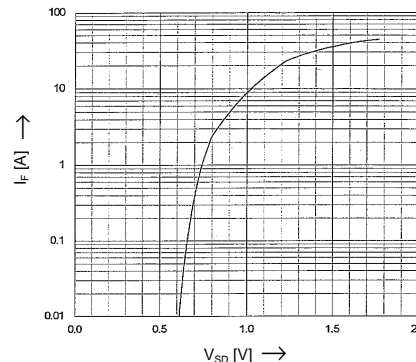
Typical Gate Charge Characteristics

$V_{GS} = f(Q_g)$ ;  $I_D = 18\text{A}$



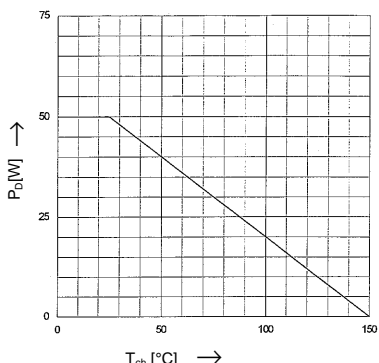
Forward Characteristics of Reverse Diode

$I_F = f(V_{SD})$ ; 80μs pulse test  $T_{ch} = 25^\circ\text{C}$ ;  $V_{GS} = 0\text{V}$



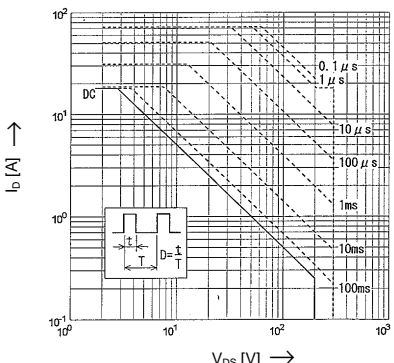
Power Dissipation

$P_D = f(T_C)$



Safe Operation Area

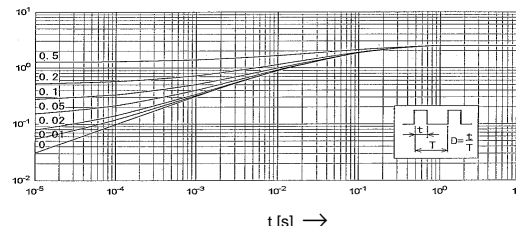
$I_D = f(V_{DS})$ ;  $D = 0.01$ ;  $T_C = 25^\circ\text{C}$



Transient Thermal Impedance

Transient Thermal Impedance

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



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[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.