

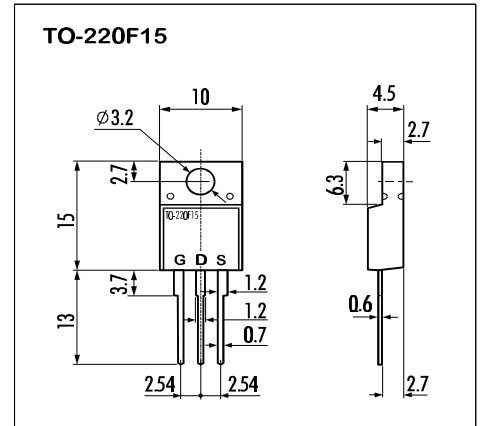
> **Features**

- 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**

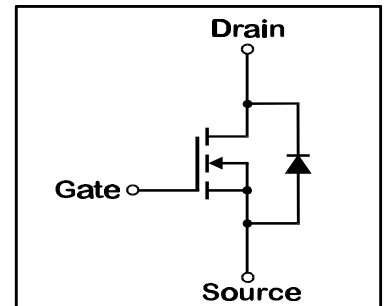


> **Maximum Ratings and Characteristics**

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

Item	Symbol	Rating	Unit
Drain-Source-Voltage	$V_{DS}$	300	V
Drain-Gate-Voltage( $R_{GS}=20K\Omega$ )	$V_{DGR}$	300	V
Continous Drain Current	$I_D$	10	A
Pulsed Drain Current	$I_{D(puls)}$	40	A
Gate-Source-Voltage	$V_{GS}$	30	V
Max. Power Dissipation	$P_D$	40	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	$V_{(BR)DSS}$	$I_D=1mA$ $V_{GS}=0V$	300			V
Gate Threshold Voltage	$V_{GS(th)}$	$I_D=1mA$ $V_{DS}=V_{GS}$	3,5	4	4,5	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=300V$ $T_{ch}=25^\circ C$		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	$R_{DS(on)}$	$I_D=5A$ $V_{GS}=10V$		0,4	0,53	$\Omega$
Forward Transconductance	$g_{fs}$	$I_D=5A$ $V_{DS}=25V$	2,5	5,0		S
Input Capacitance	$C_{iss}$	$V_{DS}=25V$		700	1100	pF
Output Capacitance	$C_{oss}$	$V_{GS}=0V$		150	230	pF
Reverse Transfer Capacitance	$C_{rss}$	$f=1MHz$		65	100	pF
Turn-On-Time $t_{on}$ ( $t_{on}=t_{d(on)}+t_r$ )	$t_{d(on)}$	$V_{CC}=150V$		15	25	ns
	$t_r$	$I_D=10A$		30	45	ns
Turn-Off-Time $t_{off}$ ( $t_{off}=t_{d(off)}+t_f$ )	$t_{d(off)}$	$V_{GS}=10V$		35	55	ns
	$t_f$	$R_{GS}=10\Omega$		20	30	ns
Avalanche Capability	$I_{AV}$	$L=100\mu H$ $T_{ch}=25^\circ C$	10			A
Diode Forward On-Voltage	$V_{SD}$	$I_F=2I_{DR}$ $V_{GS}=0V$ $T_{ch}=25^\circ C$		1,3	1,9	V
Reverse Recovery Time	$t_{rr}$	$I_F=I_{DR}$ $V_{GS}=0V$		230		ns
Reverse Recovery Charge	$Q_{rr}$	$-dI_F/dt=100A/\mu s$ $T_{ch}=25^\circ C$		2,5		$\mu C$

- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	$R_{th(ch-a)}$	channel to air			62,5	$^\circ C/W$
	$R_{th(ch-c)}$	channel to case			3,125	$^\circ C/W$

# N-channel MOS-FET

300V | 0,53Ω | 10A | 40W

# 2SK2470-01MR

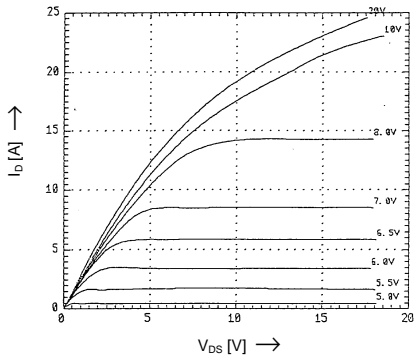
## FAP-II Series



### > Characteristics

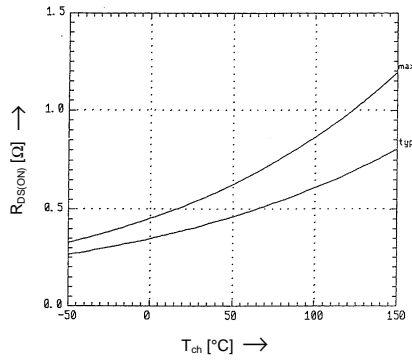
Typical Output Characteristics

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



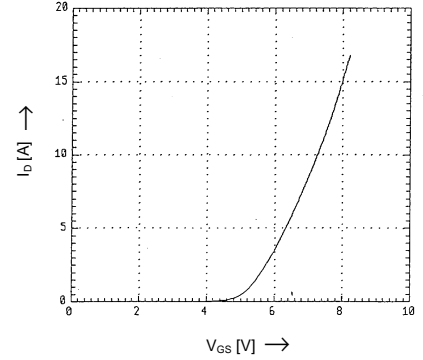
Drain-Source On-State Resistance

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



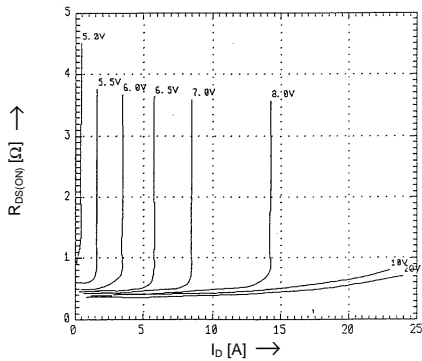
Typical Transfer Characteristics

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



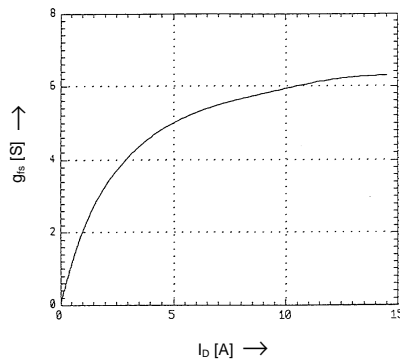
Typical Drain-Source On-State-Resistance

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



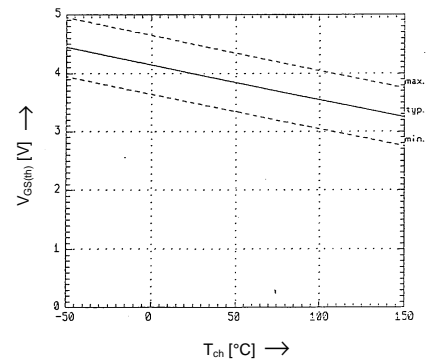
Typical Transconductance

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



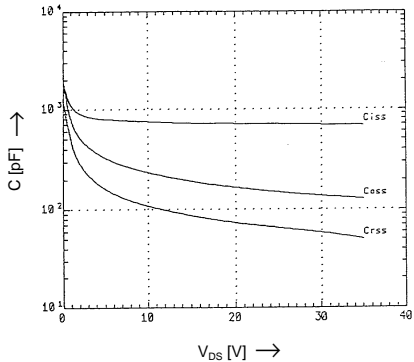
Gate Threshold Voltage vs. Tch

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



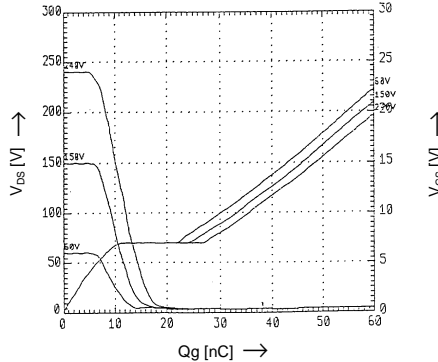
Typical Capacitances

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



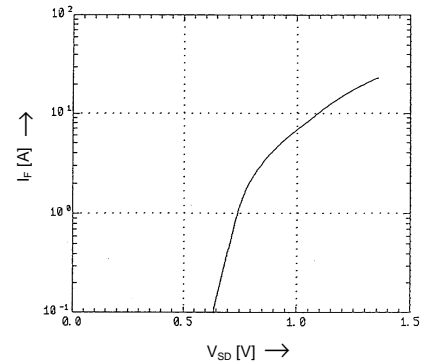
Typical Gate Charge Characteristics

$V_{GS} = f(Q_g)$ ;  $I_D = 10\text{A}$



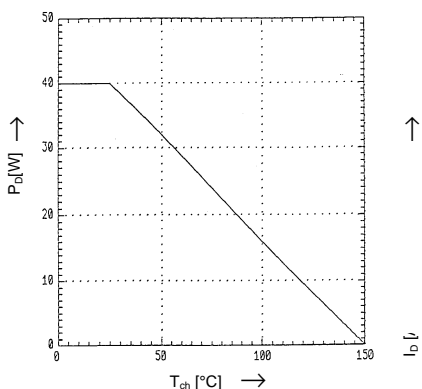
Forward Characteristics of Reverse Diode

$I_F = f(V_{SD})$ ; 80μs pulse test



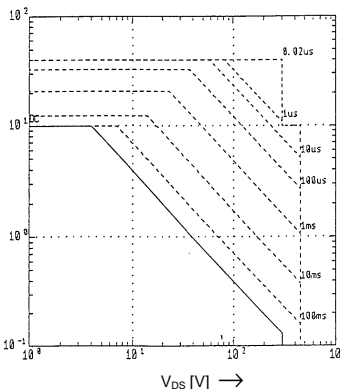
Power Dissipation

$P_D = f(T_C)$



Safe Operation Area

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



Transient Thermal Impedance

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

