

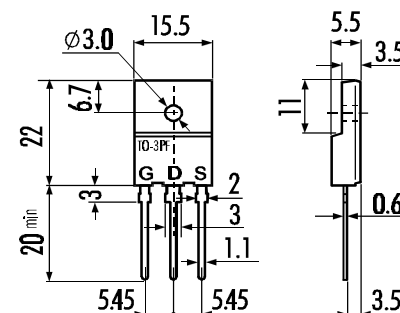
> Features

- 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

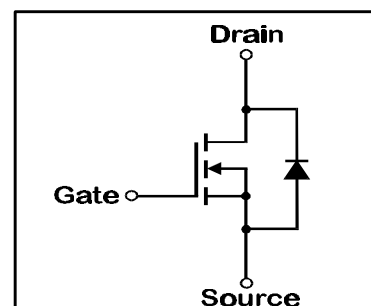
TO-3PF


> 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}	500	V
Drain-Gate-Voltage ($R_{GS}=20K\Omega$)	V_{DGR}	500	V
Continuous 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	80	W
Operating and Storage Temperature Range	T_{ch}	150	$^\circ\text{C}$
	T_{stg}	-55 ~ +150	$^\circ\text{C}$

> 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	$V_{(BR)DSS}$	$I_D=1\text{mA}$ $V_{GS}=0V$	500			V
Gate Threshold Voltage	$V_{GS(th)}$	$I_D=1\text{mA}$ $V_{DS}=V_{GS}$	2,5	3,0	3,5	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=500V$ $T_{ch}=25^\circ\text{C}$		10	500	μA
		$V_{GS}=0V$ $T_{ch}=125^\circ\text{C}$		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	$R_{DS(on)}$	$I_D=5A$ $V_{GS}=10V$		0,6	0,76	Ω
Forward Transconductance	g_{fs}	$I_D=5A$ $V_{DS}=25V$	5	10		S
Input Capacitance	C_{iss}	$V_{DS}=25V$		1500	2200	pF
Output Capacitance	C_{oss}	$V_{GS}=0V$		160	240	pF
Reverse Transfer Capacitance	C_{rss}	$f=1\text{MHz}$		35	50	pF
Turn-On-Time t_{on} ($t_{on}=t_{d(on)}+t_r$)	$t_{d(on)}$	$V_{CC}=300V$ $I_D=10A$		15	25	ns
	t_r			40	60	ns
Turn-Off-Time t_{off} ($t_{off}=t_{d(off)}+t_f$)	$t_{d(off)}$	$V_{GS}=10V$ $R_{GS}=10\Omega$		70	100	ns
	t_f			60	90	ns
Avalanche Capability	I_{AV}	$L=100\mu\text{H}$ $T_{ch}=25^\circ\text{C}$	10			A
Continuous Reverse Drain Current	I_{DR}	$T_C=25^\circ\text{C}$			10	A
Pulsed Reverse Drain Current	I_{DRM}	$T_C=25^\circ\text{C}$			40	A
Diode Forward On-Voltage	V_{SD}	$I_F=2I_{DR}$ $V_{GS}=0V$ $T_{ch}=25^\circ\text{C}$		1,12	1,7	V
Reverse Recovery Time	t_{rr}	$I_F=I_{DR}$ $V_{GS}=0V$		450		ns
Reverse Recovery Charge	Q_{rr}	$-dI_F/dt=100A/\mu\text{s}$ $T_{ch}=25^\circ\text{C}$		3		μC

- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	$R_{th(ch-a)}$	channel to air			30	$^\circ\text{C/W}$
	$R_{th(ch-c)}$	channel to case			1,56	$^\circ\text{C/W}$

N-channel MOS-FET			
500V	0,76Ω	10A	80W

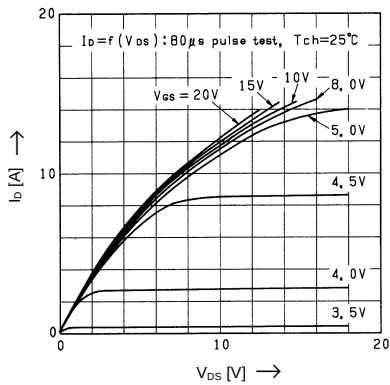
2SK2223-01R

FAP-IIA Series

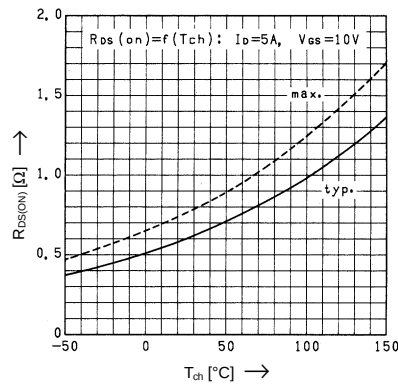
FUJI
ELECTRIC

> Characteristics

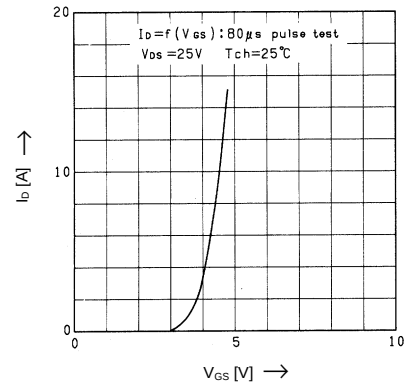
Typical Output Characteristics



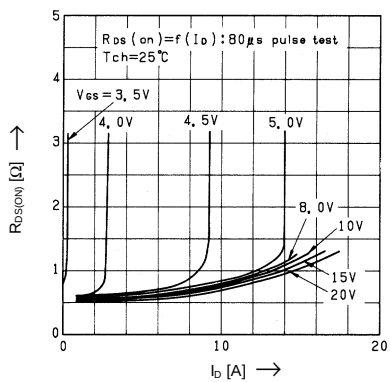
Drain-Source-On-State Resistance vs. T_{ch}



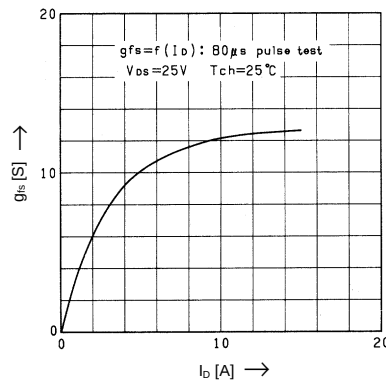
Typical Transfer Characteristics



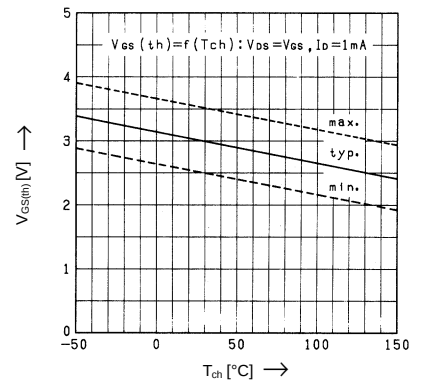
Typical Drain-Source-On-State-Resistance vs. I_D



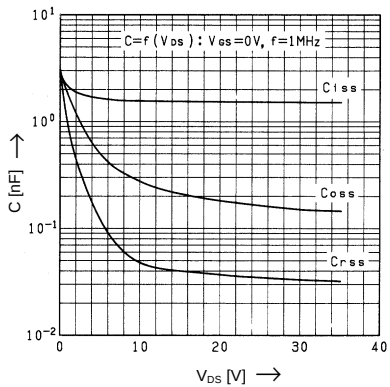
Typical Forward Transconductance vs. I_D



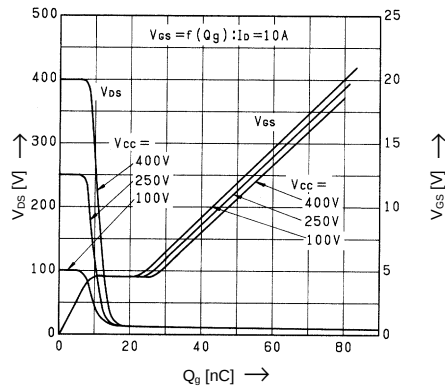
Gate Threshold Voltage vs. T_{ch}



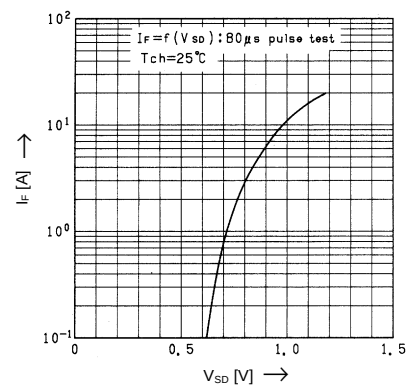
Typical Capacitance vs. V_{DS}



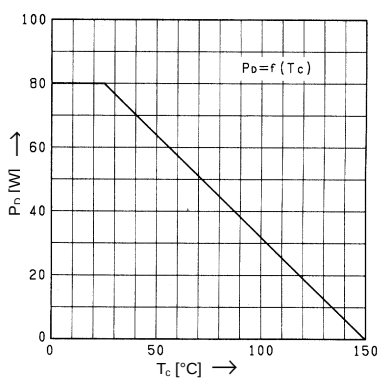
Typical Input Charge



Forward Characteristics of Reverse Diode



Allowable Power Dissipation vs. T_c



Safe operation area

