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FUJI ELECTRIC

2SK2019-01

FAP-IIA Series

N-channel MOS-FET			
500V	3Ω	3,5A	40W

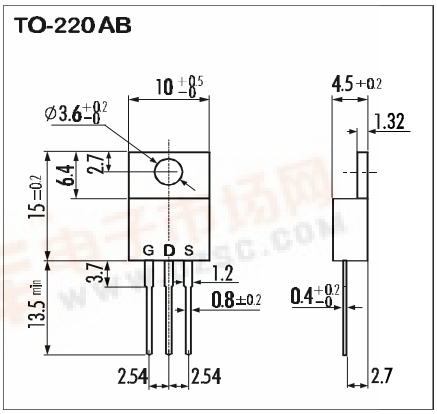
> Features

- High Speed Switching
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- High Voltage
- VGS = ± 30V Guarantee
- Avalanche Proof

> Applications

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

> Outline Drawing

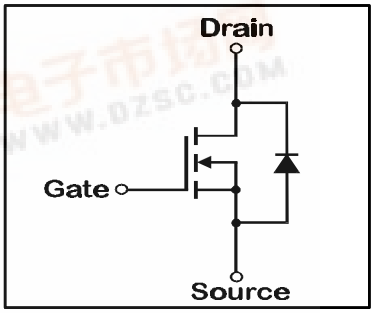


> Maximum Ratings and Characteristics

- Absolute Maximum Ratings (T_C=25°C), unless otherwise specified

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V_{DS}	500	V
Drain-Gate-Voltage (R_{GS}=20KΩ)	V_{DGR}	500	V
Continous Drain Current	I_D	3,5	A
Pulsed Drain Current	$I_{D(puls)}$	14	A
Gate-Source-Voltage	V_{GS}	±30	V
Max. Power Dissipation	P_D	40	W
Operating and Storage Temperature Range	T_{ch}	150	°C
	T_{stg}	-55 ~ +150	°C

> Equivalent Circuit



- Electrical Characteristics (T_C=25°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	500			V
Gate Threshhold 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}=500V	T_{ch}=25°C		10	500	µA
		V_{GS}=0V	T_{ch}=125°C		0,2	1,0	mA
Gate Source Leakage Current	I_{GSS}	V_{GS}=±30V	V_{DS}=0V		10	100	nA
Drain Source On-State Resistance	$R_{DS(on)}$	I_D=1,5A	V_{GS}=10V		2,0	3,0	Ω
Forward Transconductance	g_{fs}	I_D=1,5A	V_{DS}=25V	1,5	3,0		S
Input Capacitance	C_{iss}	V_{DS}=25V			600	900	pF
Output Capacitance	C_{oss}	V_{GS}=0V			50	75	pF
Reverse Transfer Capacitance	C_{rss}	f=1MHz			10	15	pF
Turn-On-Time t_{on} (t_{on}=$t_{d(on)}$+t_r)	$t_{d(on)}$	V_{CC}=300V			15	25	ns
	t_r	I_D=3,5A			10	15	ns
Turn-Off-Time t_{off} (t_{on}=$t_{d(off)}$+t_f)	$t_{d(off)}$	V_{GS}=10V			40	60	ns
	t_f	R_{GS}=10 Ω			15	25	ns
Avalanche Capability	I_{AV}	L = 100µH	T_{ch}=25°C	3,5			A
Continous Reverse Drain Current	I_{DR}					3,5	A
Pulsed Reverse Drain Current	I_{DRM}					14	A
Diode Forward On-Voltage	V_{SD}	I_F=2xI_{DR} V_{GS}=0V	T_{ch}=25°C		1,1	1,65	V
Reverse Recovery Time	t_{rr}	I_F=I_{DR} V_{GS}=0V			400		ns
Reverse Recovery Charge	Q_{rr}	-dI_F/dt=100A/µs T_{ch}=25°C			1,5		µC

- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	$R_{th(ch-a)}$	channel to air			75	°C/W
	$R_{th(ch-c)}$	channel to case			3,125	°C/W

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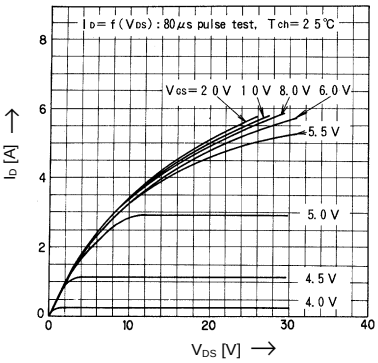
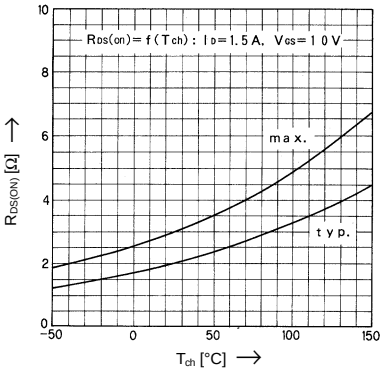
> Characteristics

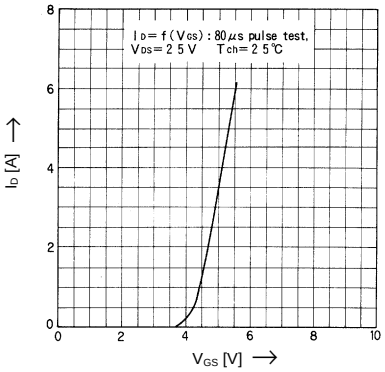
Typical Output Characteristics



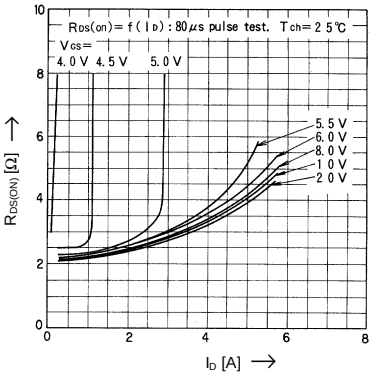
Drain-Source-On-State Resistance vs. T_{ch}



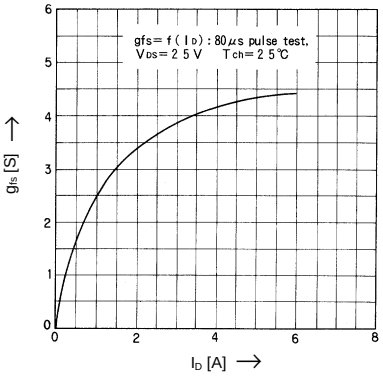
Typical Transfer Characteristics



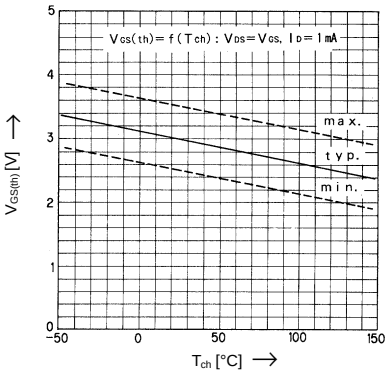
Typical Drain-Source-On-State-Resistance vs. I_D



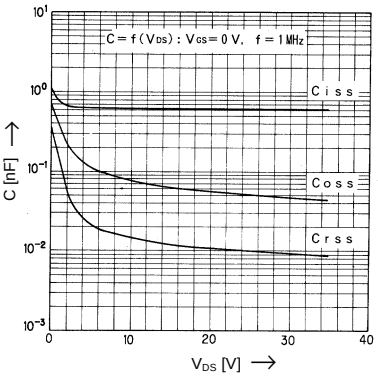
Typical Forward Transconductance vs. I_D



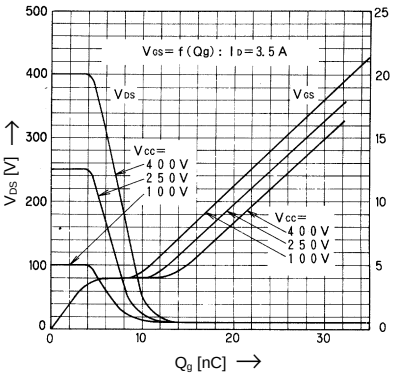
Gate Threshold Voltage vs. T_{ch}



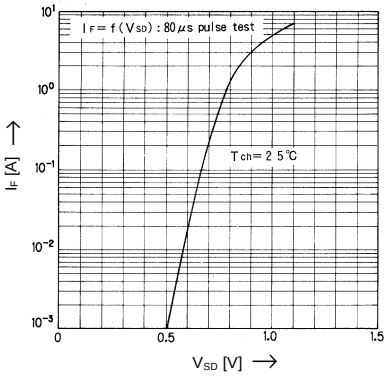
Typical Capacitance vs. V_{DS}



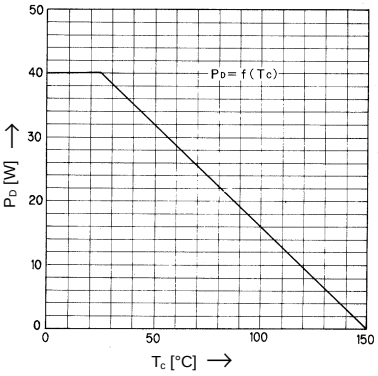
Typical Input Charge



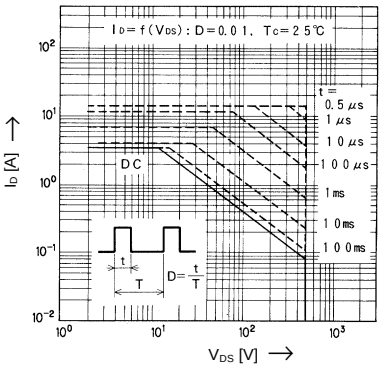
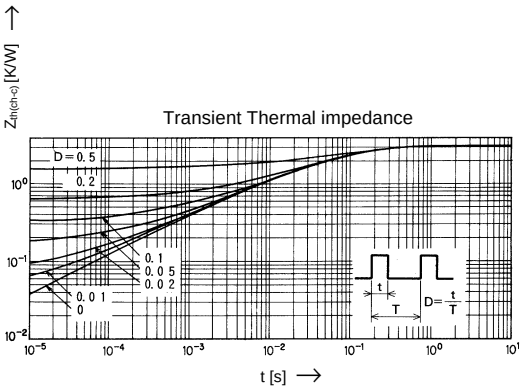
Forward Characteristics of Reverse Diode



Allowable Power Dissipation vs. T_C



Safe operation area



Transient Thermal impedance