FUJI ELECTRIC

2SK2165-01

FAP-IIIA Series

N-channel MOS-FET			
60V	0,03Ω	40A	100W

> Features

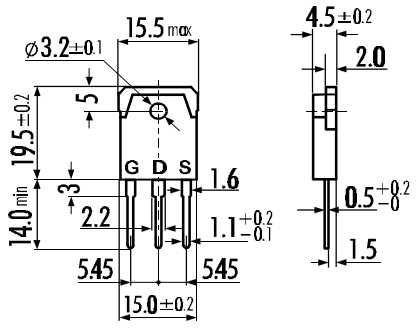
- High Current
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- High Forward Transconductance
- Avalanche Proof
- Including G-S Zener-Diode

> Applications

- Motor Control
- General Purpose Power Amplifier
- DC-DC Converters

> Outline Drawing

TO-3P

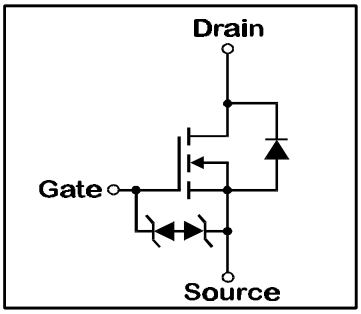


> Maximum Ratings and Characteristics

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

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V_{DS}	60	V
Drain-Gate-Voltage (R_{GS}=20KΩ)	V_{DGR}	60	V
Continous Drain Current	I_D	40	A
Pulsed Drain Current	$I_{D(puls)}$	160	A
Gate-Source-Voltage	V_{GS}	±20	V
Max. Power Dissipation	P_D	100	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	60			V
Gate Threshhold Voltage	$V_{GS(th)}$	I_D=1mA V_{DS}=V_{GS}	1,0	1,5	2,0	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V T_{ch}=25°C			500	µA
		V_{GS}=0V T_{ch}=125°C			1,0	mA
Gate Source Leakage Current	I_{GSS}	V_{GS}=±16V V_{DS}=0V			10,0	µA
Drain Source On-State Resistance	$R_{DS(on)}$	I_D=20A V_{GS}=4V		0,03	0,05	Ω
		I_D=20A V_{GS}=10V		0,02	0,03	Ω
Forward Transconductance	g_{fs}	I_D=20A V_{DS}=25V	13	25		S
Input Capacitance	C_{iss}	V_{DS}=25V		1600	2400	pF
Output Capacitance	C_{oss}	V_{GS}=0V		580	870	pF
Reverse Transfer Capacitance	C_{rss}	f=1MHz		320	480	pF
Turn-On-Time t_{on} (t_{on}=$t_{d(on)}$+t_r)	$t_{d(on)}$	V_{CC}=30V		15	23	ns
	t_r	I_D=40A		90	140	ns
Turn-Off-Time t_{off} (t_{on}=$t_{d(off)}$+t_f)	$t_{d(off)}$	V_{GS}=10V		300	450	ns
	t_f	R_{GS}=25Ω		190	290	ns
Avalanche Capability	I_{AV}	L = 100µH T_{ch}=25°C	40			A
Continous Reverse Drain Current	I_{DR}				40	A
Pulsed Reverse Drain Current	I_{DRM}				160	A
Diode Forward On-Voltage	V_{SD}	I_F=2xI_{DR} V_{GS}=0V T_{ch}=25°C		1,4		V
Reverse Recovery Time	t_{rr}	I_F=I_{DR} V_{GS}=0V		80		ns
Reverse Recovery Charge	Q_{rr}	-dI_F/dt=100A/µs T_{ch}=25°C		0,17		µC

- Thermal Characteristics

Item	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Thermal Resistance	$R_{th(ch-a)}$	channel to air			35	°C/W
	$R_{th(ch-c)}$	channel to case			1,25	°C/W

N-channel MOS-FET			
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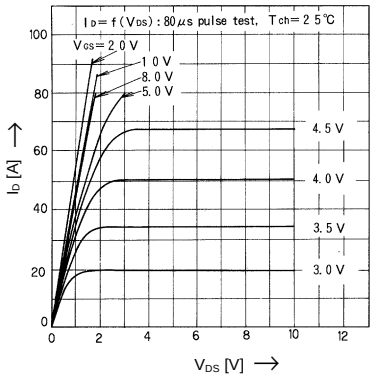
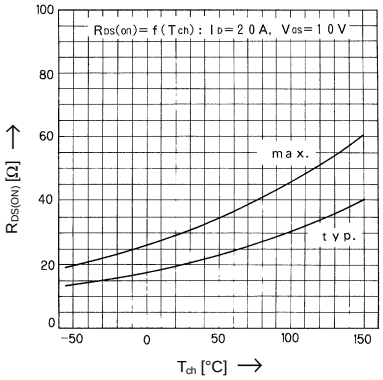
> Characteristics

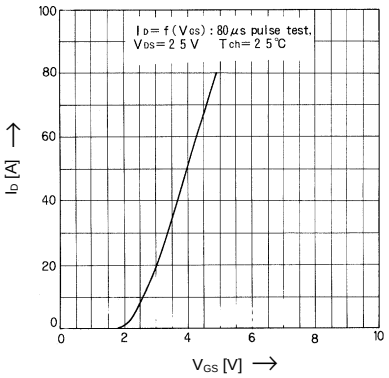
Typical Output Characteristics



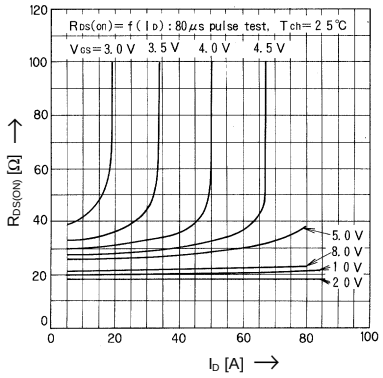
Drain-Source-On-State Resistance vs. T_{ch}



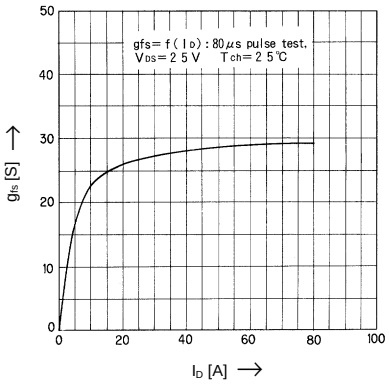
Typical Transfer Characteristics



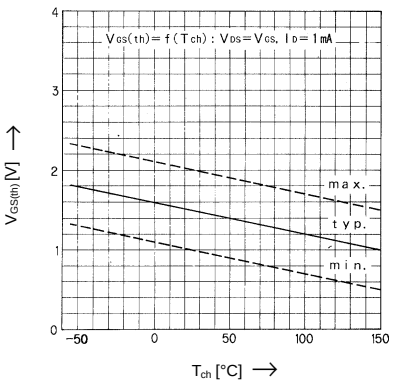
Typical Drain-Source-On-State-Resistance vs. I_D



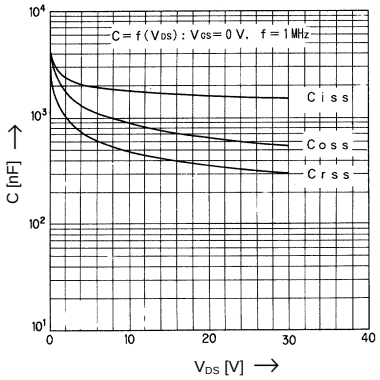
Typical Forward Transconductance vs. I_D



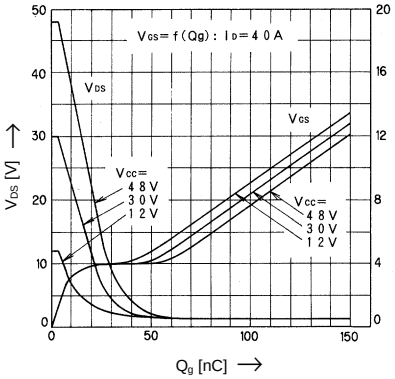
Gate Threshold Voltage vs. T_{ch}



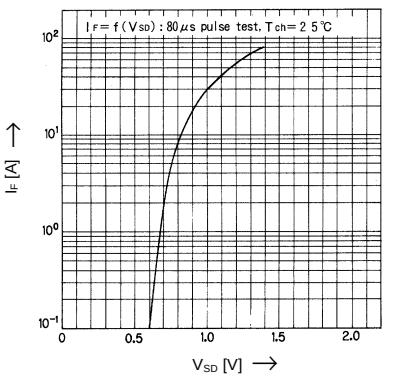
Typical Capacitance vs. V_{DS}



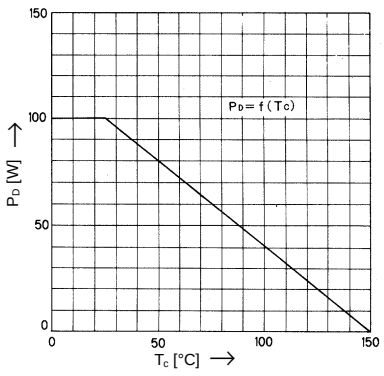
Typical Input Charge



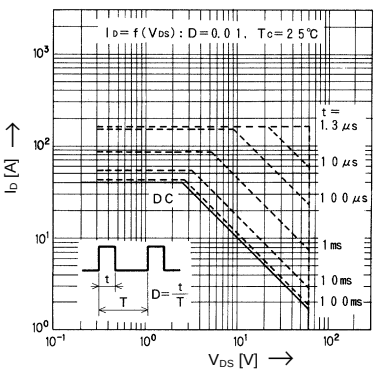
Forward Characteristics of Reverse Diode



Allowable Power Dissipation vs. T_C



Safe operation area



Transient Thermal impedance