

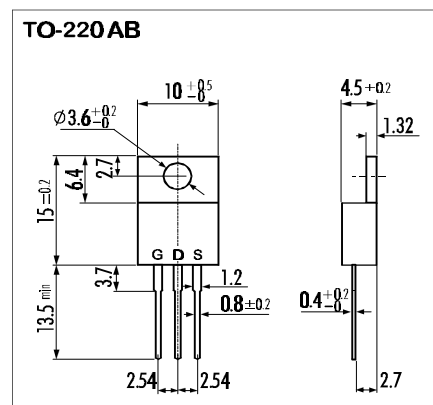
> Features

- High Current
- Low On-Resistance
- No Secondary Breakdown
- Low Driving Power
- High Forward Transconductance

> Applications

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

> Outline Drawing

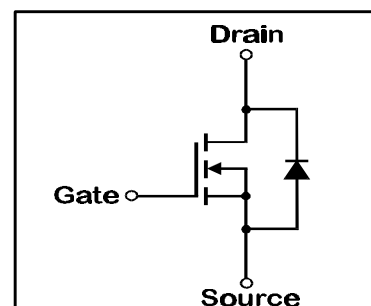


> Maximum Ratings and Characteristics

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

Item	Symbol	Rating	Unit
Drain-Source-Voltage	V_{DS}	100	V
Drain-Gate-Voltage ($R_{GS}=20K\Omega$)	V_{DGR}	100	V
Continuous Drain Current	I_D	30	A
Pulsed Drain Current	$I_{D(puls)}$	120	A
Gate-Source-Voltage	V_{GS}	± 20	V
Max. Power Dissipation	P_D	80	W
Operating and Storage Temperature Range	T_{ch}	150	$^{\circ}C$
	T_{sta}	-55 ~ +150	$^{\circ}C$

> 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	$V_{(BR)DSS}$	$I_D=1mA$ $V_{GS}=0V$	100			V
Gate Threshold Voltage	$V_{GS(th)}$	$I_D=1mA$ $V_{DS}=V_{GS}$	1,0	1,5	2,5	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V$ $T_{ch}=25^{\circ}C$		10	500	μA
		$V_{GS}=0V$ $T_{ch}=125^{\circ}C$		0,2	1,0	mA
Gate Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$		10	100	nA
Drain Source On-State Resistance	$R_{DS(on)}$	$I_D=15A$ $V_{GS}=4V$		0,04	0,07	Ω
		$I_D=15A$ $V_{GS}=10V$		0,03	0,055	Ω
Forward Transconductance	g_{fs}	$I_D=15A$ $V_{DS}=25V$	15	30		S
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$		2500	3700	pF
Output Capacitance	C_{oss}			500	750	pF
Reverse Transfer Capacitance	C_{rss}			250	380	pF
Turn-On-Time t_{on} ($t_{on}=t_{d(on)}+t_r$)	$t_{d(on)}$	$V_{CC}=30V$ $I_D=30A$		20	30	ns
	t_r			140	210	ns
Turn-Off-Time t_{off} ($t_{on}=t_{d(off)}+t_f$)	$t_{d(off)}$	$V_{GS}=10V$		500	750	ns
	t_f	$R_{GS}=25 \Omega$		260	390	ns
Continous Reverse Drain Current	I_{DR}				30	A
Pulsed Reverse Drain Current	I_{DRM}				120	A
Diode Forward On-Voltage	V_{SD}	$I_F=2xI_{DR}$ $V_{GS}=0V$ $T_{ch}=25^{\circ}C$		0,9	1,5	V
Reverse Recovery Time	t_{rr}	$I_F=I_{DR}$ $V_{GS}=0V$ $-di_F/dt=100A/\mu s$ $T_{ch}=25^{\circ}C$		130		ns
Reverse Recovery Charge	Q_{rr}			1		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			1,56	°C/W

N-channel MOS-FET			
100V	0,055Ω	30A	80W

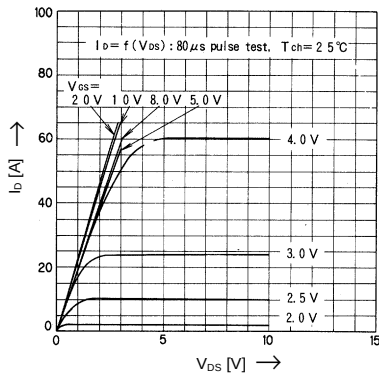
2SK2050

F-III Series

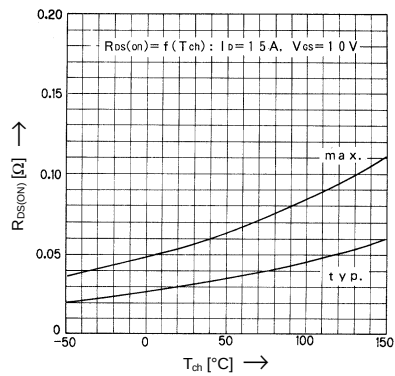
FUJI
ELECTRIC

> Characteristics

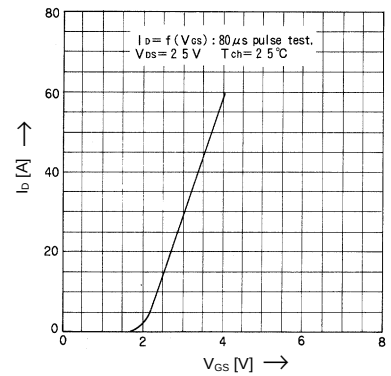
Typical Output Characteristics



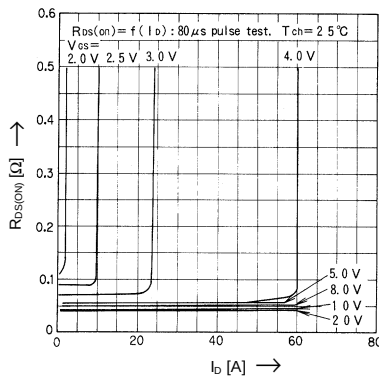
Drain-Source-On-State Resistance vs. T_{ch}



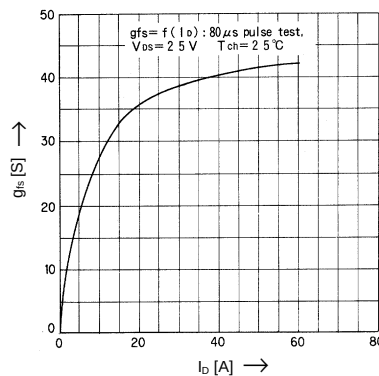
Typical Transfer Characteristics



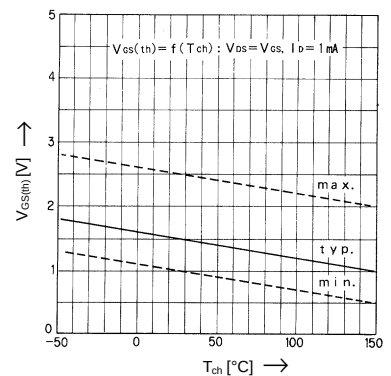
Typical Drain-Source-On-State-Resistance vs. Id



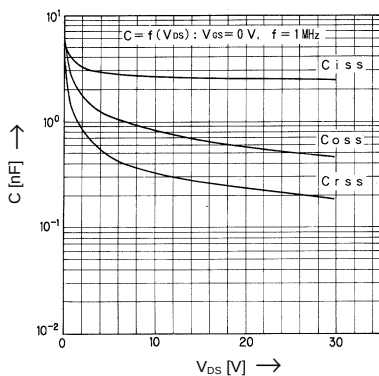
Typical Forward Transconductance vs. Id



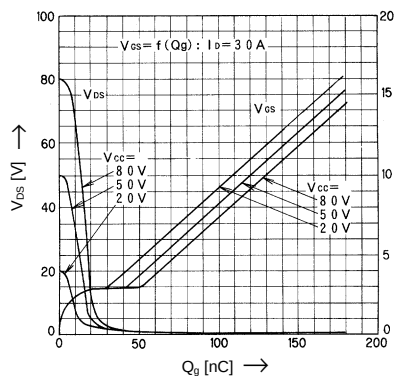
Gate Threshold Voltage vs. T_{ch}



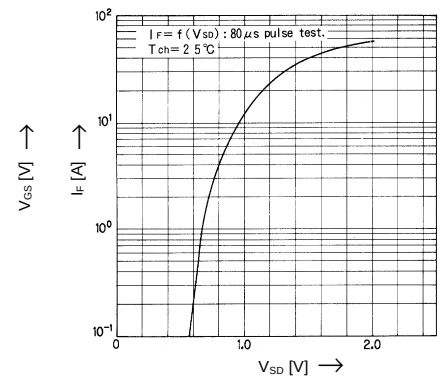
Typical Capacitance vs. V_{DS}



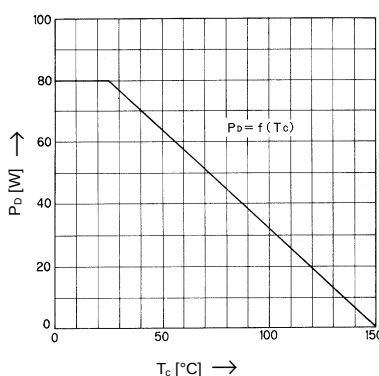
Typical Input Charge



Forward Characteristics of Reverse Diode



Allowable Power Dissipation vs. T_c



Safe operation area

