2SK2052

SIPMOS® FUJI POWER MOS-FET

N-CHANNEL SILICON POWER MOS-FET

F-V SERIES

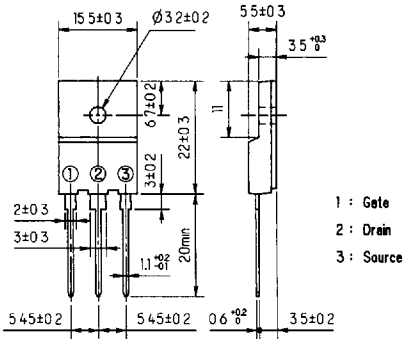
■ Features

- Include fast recovery diode
- High voltage
- Low driving power

■ Applications

- Motor controllers
- Inverters
- Choppers

■ Outline Drawings



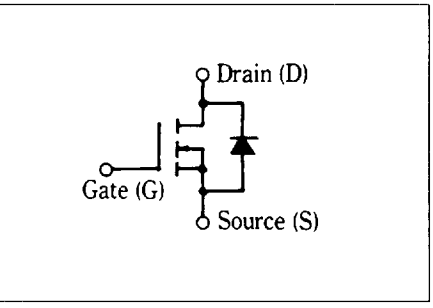
JEDEC	———
EIAJ	———

■ Max. Ratings and Characteristics

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

Items	Symbols	Ratings	Units
Drain-source voltage	V_{DS}	500	V
Drain-gate voltage(R_{GS}=20KΩ)	V_{DGR}	500	V
Continuous drain current	I_D	10	A
Pulsed drain current	$I_{D(puls)}$	40	A
Gate-source voltage	V_{GS}	±20	V
Max. power dissipation	P_D	80	W
Operating and storage temperature range	T_{ch}	150	°C
	T_{stg}	−55～+150	°C

■ Equivalent Circuit Schematic



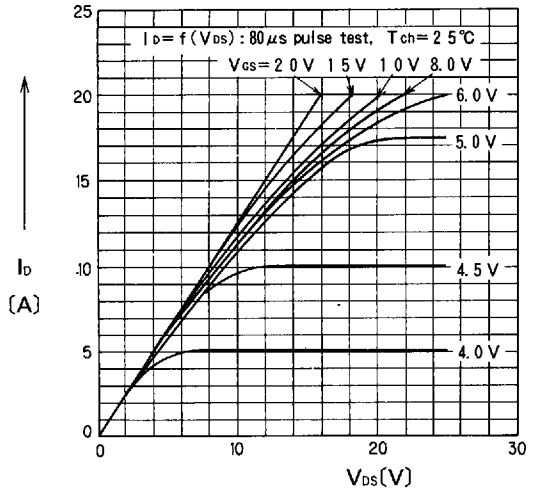
●Electrical Characteristics(Tc=25°C) (unless otherwise specified)

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	I_D=1mA V_{GS}=0V	500			V
Gate threshold voltage	$V_{GS(th)}$	I_D=10mA V_{DS}=V_{GS}	2.1	3.0	4.0	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=500V V_{GS}=0V T_{ch}=25°C		10	500	μA
		V_{DS}=500V V_{GS}=0V T_{ch}=125°C		0.5	2.0	mA
Gate-source leakage current	I_{GSS}	V_{GS}=±20V V_{DS}=0V		10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	I_D=5A V_{GS}=10V		0.80	1.10	Ω
Forward transconductance	g_{fs}	I_D=5A V_{DS}=25V	4.0	8.0		S
Input capacitance	C_{iss}	V_{DS}=25V V_{GS}=0V f=1MHz		1100	1600	pF
Output capacitance	C_{oss}			140	210	
Reverse transfer capacitance	C_{rss}			75	110	
Turn-on time t_{on} (t_{on}=$t_{d(on)}$+t_r)	$t_{d(on)}$	V_{CC}=300V I_D=10A V_{GS}=10V R_{GS}=25Ω		25	40	ns
	t_r			60	90	
Turn-off time t_{off} (t_{off}=$t_{d(off)}$+t_f)	$t_{d(off)}$			200	300	
	t_f			90	140	
Continuous reverse drain current	I_{DR}				10	A
Pulsed reverse drain current	I_{DRM}				40	A
Diode forward on-voltage	V_{SD}	I_F=2×I_{DR} V_{GS}=0V T_{ch}=25°C		0.95	1.80	V
Reverse recovery time	t_{rr}	I_F=I_{DR} V_{GS}=0V		150	200	ns
Reverse recovery charge	Q_{rr}	$-dI_F/d_t$=100A/μs T_{ch}=25°C		0.75		μC

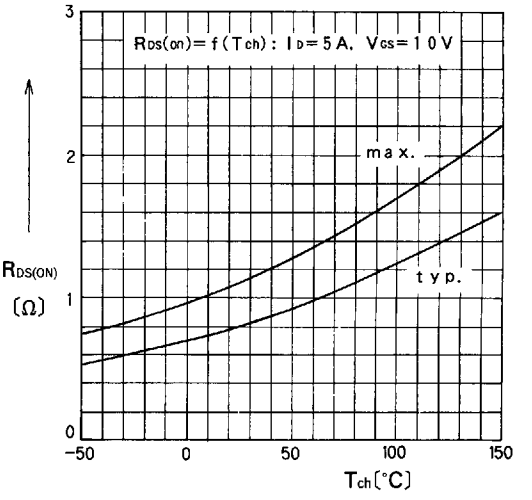
●Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-a)}$	channel to air			30	°C/W
	$R_{th(ch-c)}$	channel to case			1.56	°C/W

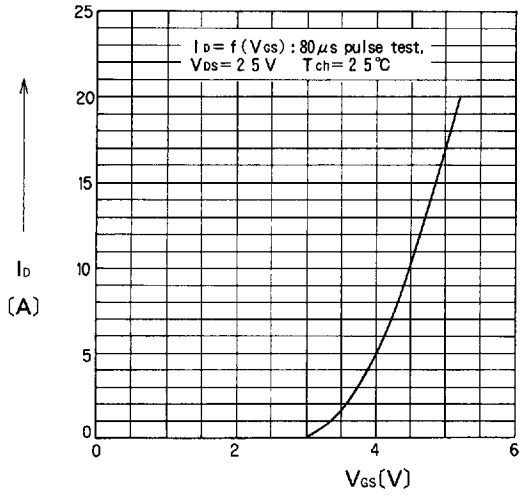
■ Characteristics



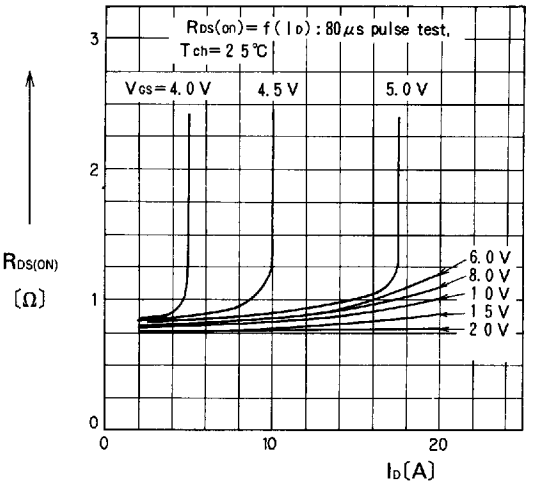
Typical Output Characteristics



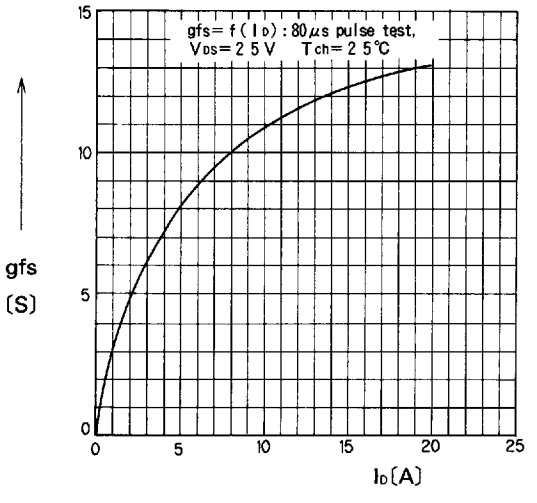
Drain-Source on-State Resistance vs. Tch



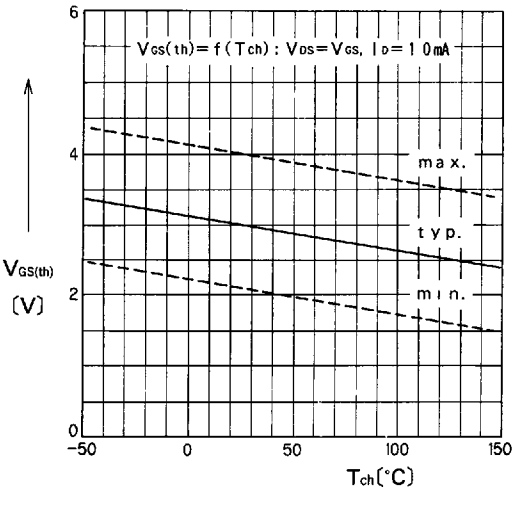
Typical Transfer Characteristics



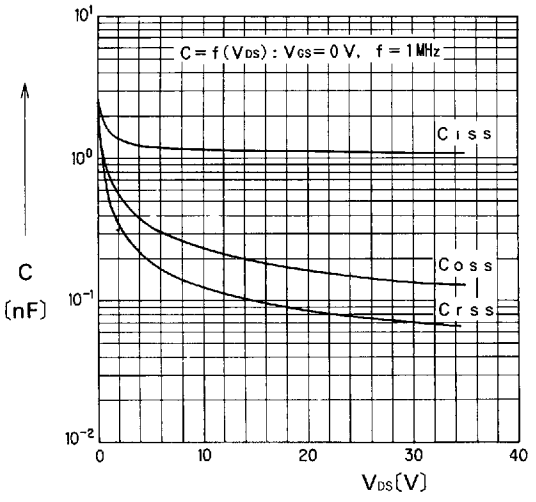
Typical Drain-Source on-State Resistance vs. ID



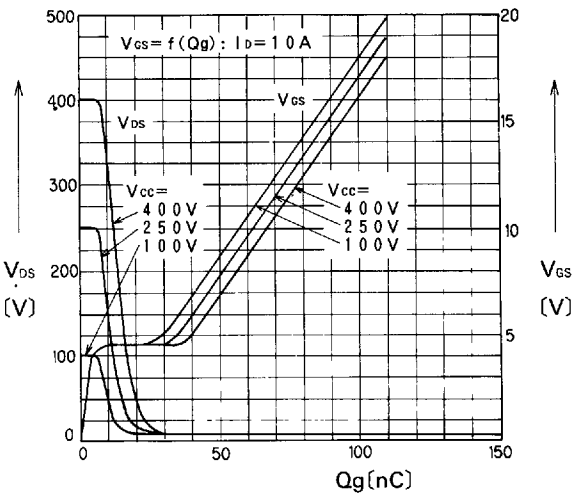
Typical Forward Transconductance vs. ID



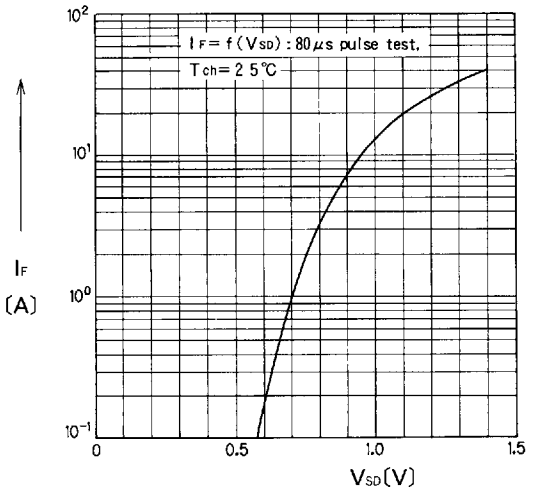
Gate Threshold Voltage vs. Tch



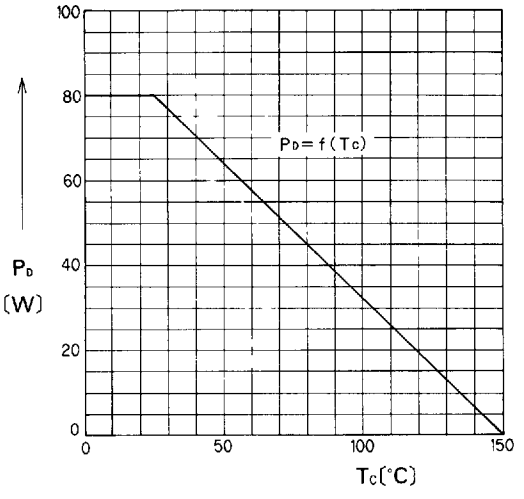
Typical Capacitance vs. V_{DS}



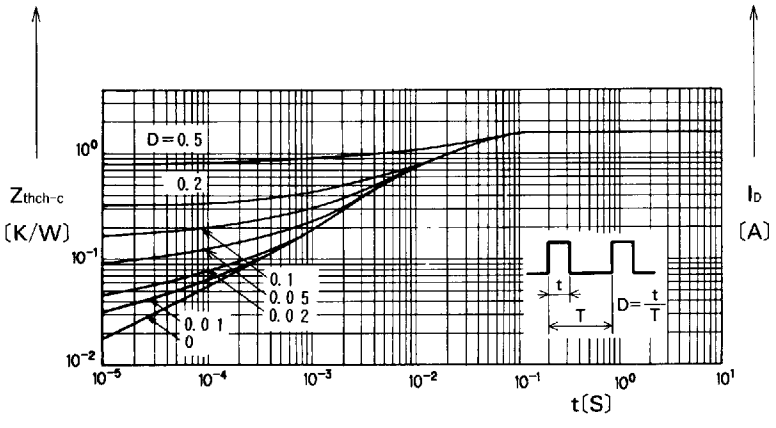
Typical Input Charge



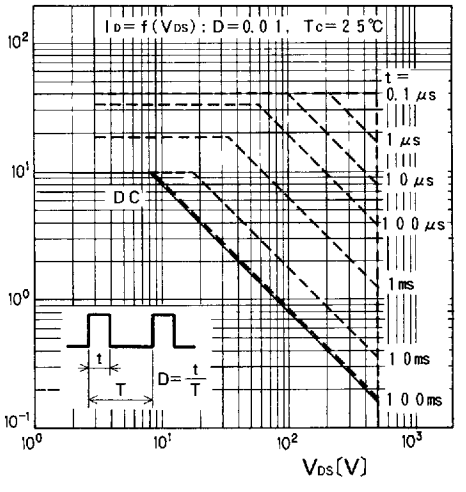
Forward Characteristics of Reverse Diode



Allowable Power Dissipation vs. T_C



Transient Thermal Impedance



Safe Operating Area