2SK948

SIPMOS® FUJI POWER MOS-FET

N-CHANNEL SILICON POWER MOS-FET

F-I SERIES

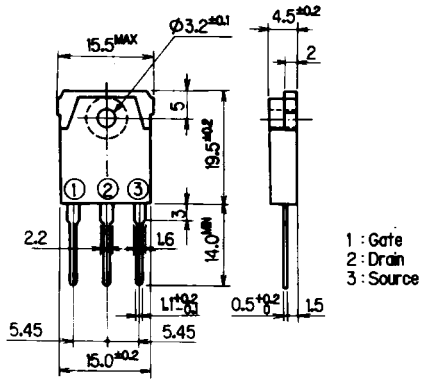
■Features

- High speed switching
- Low on-resistance
- No secondary breakdown
- Low driving power

■Applications

- UPS
- DC-DC converters
- General purpose power amplifier

■Outline Drawings



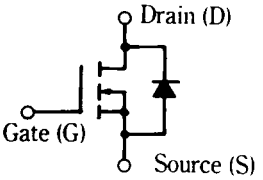
JEDEC	———
EIAJ	SC-65

■Max. Ratings and Characteristics

●Absolute Maximum Ratings(Tc=25°C)

Items	Symbols	Ratings	Units
Drain-source voltage	V_{DSS}	250	V
Continuous drain current	I_D	12	A
Pulsed drain current	$I_{D(puls)}$	48	A
Continuous reverse drain current	I_{DR}	12	A
Gate-source peak voltage	V_{GSS}	±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 Schematic



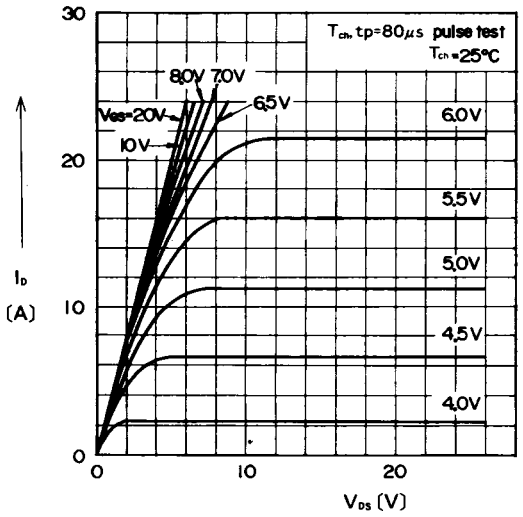
●Electrical Characteristics(Tc=25°C)

Items	Symbols	Test Conditions		Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	I_D=1mA V_{GS}=0V		250			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}=250V	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}=±20V V_{DS}=0V			10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	I_D=6A V_{GS}=10V			0.25	0.30	Ω
Forward transconductance	g_{fs}	I_D=6A V_{DS}=25V		4.0	9.0		S
Input capacitance	C_{iss}	V_{DS}=25V			1200	1800	pF
Output capacitance	C_{oss}	V_{GS}=0V			200	300	
Reverse transfer capacitance	C_{rss}	f =1MHz			60	90	
Turn-on time t_{on} (t_{on}=$t_{d(on)}$+t_r)	$t_{d(on)}$	V_{CC}=30V I_D=3A V_{GS}=10V R_G=50Ω			25	40	ns
	t_r				50	80	
Turn-off time t_{off} ($t_{d(off)}$+t_f)	$t_{d(off)}$				200	300	
	t_f				60	90	
Diode foward on-voltage	V_{SD}	I_F=2×I_{DR} V_{GS}=0V T_{ch}=25°C			1.1	1.5	V
Reverse recovery time	t_{rr}	I_F=I_{DR} di/dt=100A/μs T_{ch}=25°C			150		ns

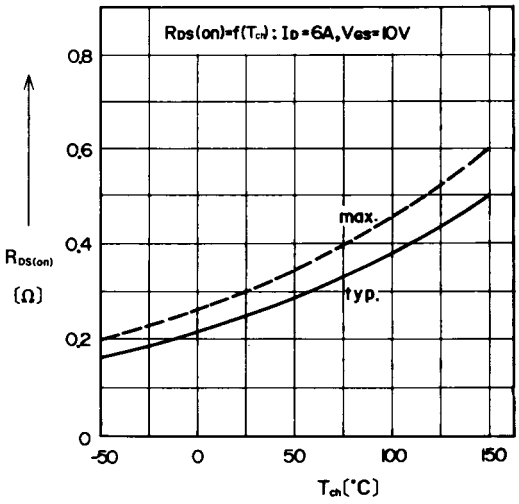
●Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	$R_{th(ch-a)}$	channel to air			35	°C/W
	$R_{th(ch-c)}$	channel to case			1.25	°C/W

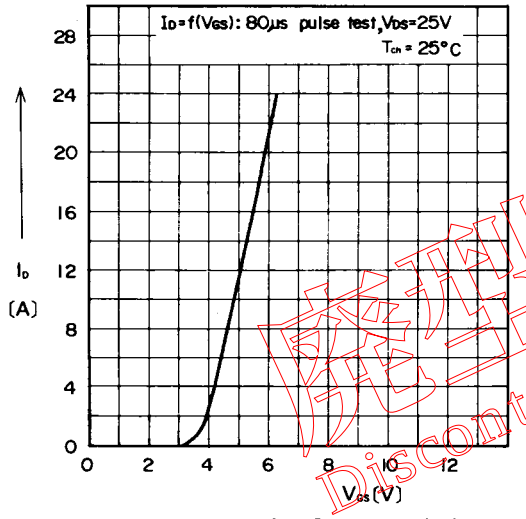
■Characteristics



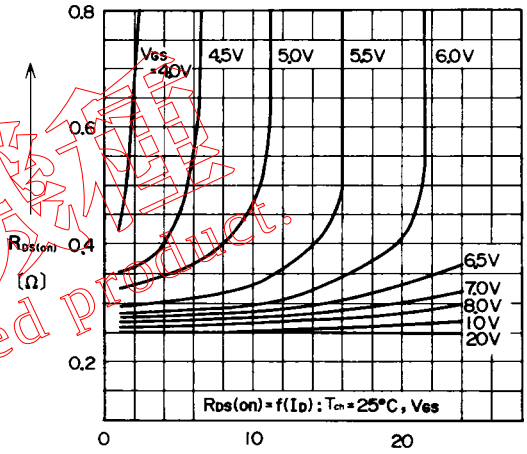
Typical Output Characteristics



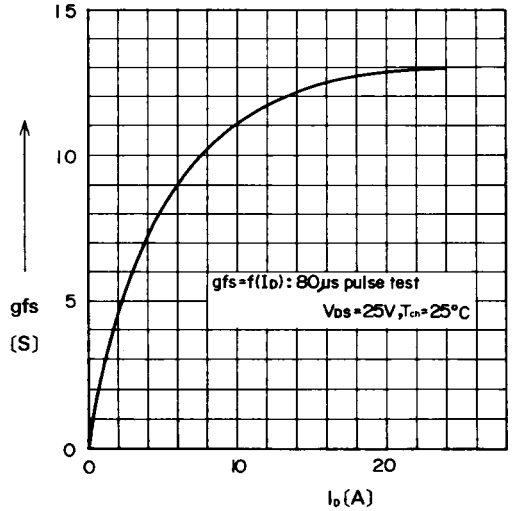
On State Resistance vs. T_{ch}



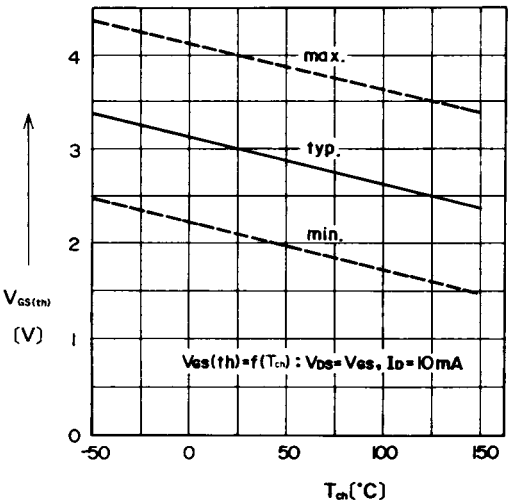
Typical Transfer Characteristic



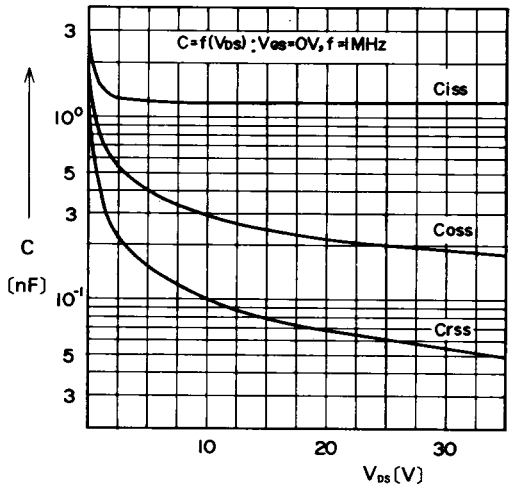
Typical Drain-Source on State Resistance vs. I_D



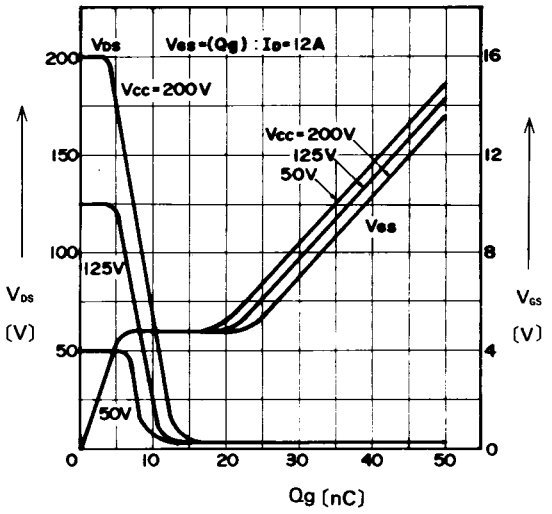
Typical Forward Transconductance vs. I_D



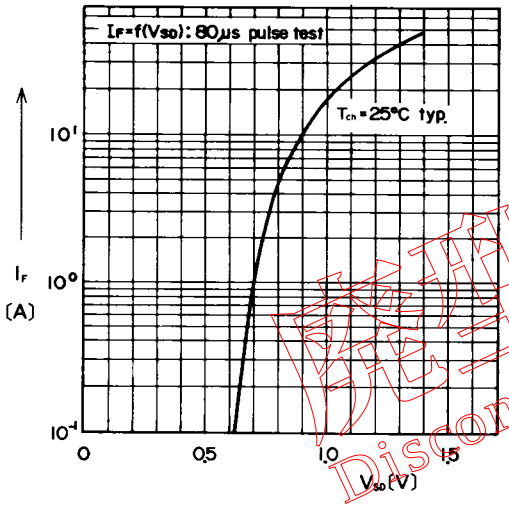
Gate Threshold Voltage vs. T_{ch}



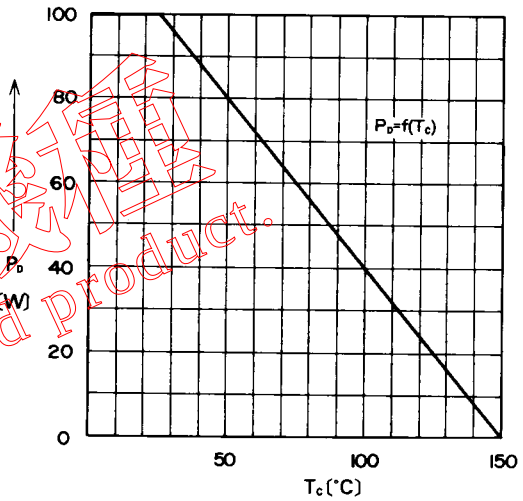
Typical Capacitance vs. V_{DS}



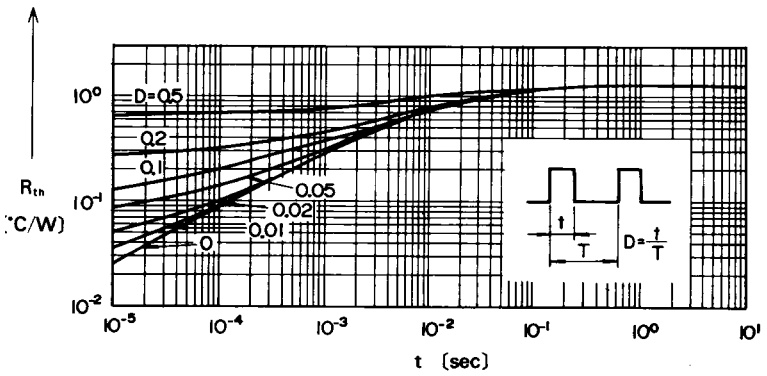
Typical Input Charge



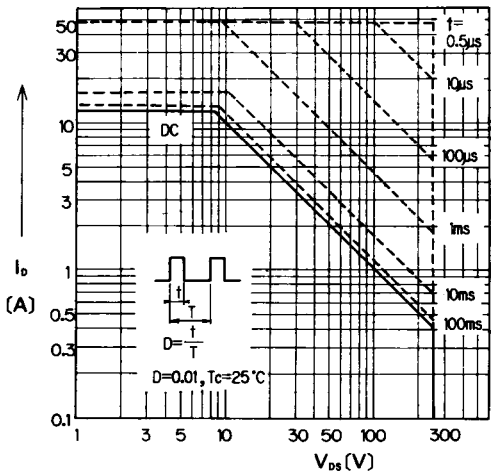
Forward Characteristic of Reverse Diode



Allowable Power Dissipation vs. T_c



Transient Thermal Impedance



Safe Operating Area