2SK1815

SIPMOS® FUJI POWER MOS-FET

N-CHANNEL SILICON POWER MOS-FET

F-III SERIES

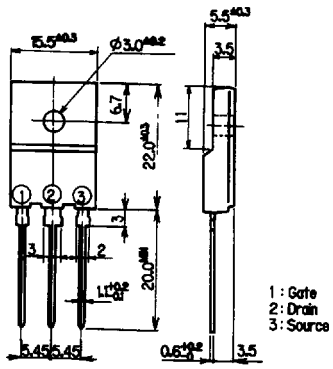
■ Features

- High current
- Low no-resistance
- No secondary breakdown
- Low driving power
- High forward Transconductance

■ Applications

- Motor controllers
- Genaral purpose power amplifier
- DC-DC converters

■ Outline Drawings



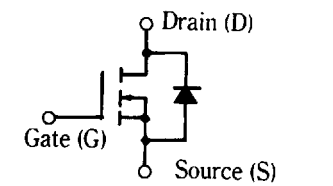
JEDEC	———
EIAJ	———

■ Max. Ratings and Characteristics

●Absolute Maximum Ratings(Tc=25°C)

Items	Symbols	Ratings	Units
Drain-source voltage	V_{DSS}	60	V
Continuous drain current	I_D	35	A
Pulsed drain current	$I_{D(puls)}$	140	A
Continuous reverse drain current	I_{DR}	35	A
Gate-source peak voltage	V_{GSS}	±20	V
Max. power dissipation	P_D	50	W
Operating and storage temperature range	T_{ch}	150	°C
	T_{stg}	−55～+150	°C

■ Equivalent Circuit Schematic



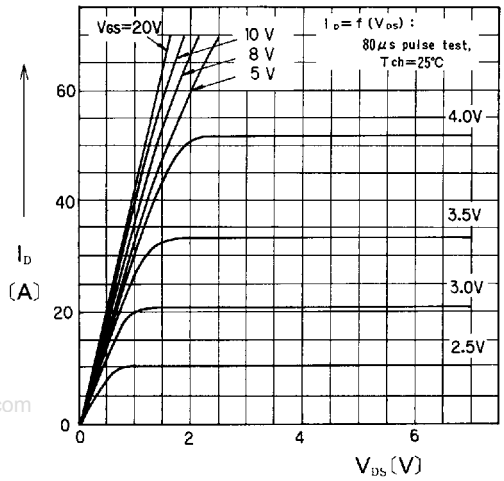
●Electrical Characteristics(Tc=25°C)

Items	Symbols	Test Conditions		Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	I_D=1mA V_{GS}=0V		60			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}=60V V_{GS}=0V	T_{ch}=25°C		10	500	μA
			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=17.5A V_{GS}=4V			37	56	mΩ
		I_D=17.5A V_{GS}=10V			25	35	mΩ
Forward transconductance	g_{fs}	I_D=17.5A V_{DS}=25V		10	18		S
Input capacitance	C_{iss}	V_{DS}=25V V_{GS}=0V f=1MHz			1800	2700	pF
Output capacitance	C_{oss}				620	930	
Reverse transfer capacitance	C_{rss}				240	360	
Turn-on time t_{on} ($t_{on}=t_{d(on)}+t_r$)	$td_{(on)}$	V_{CC}=30V I_D=35A V_{GS}=10V R_G=25Ω			6	9	ns
	t_r				60	90	
Turn-off time t_{off} ($t_{off}=t_{d(off)}+t_f$)	$td_{(off)}$				350	530	
	t_f				150	230	
Diode forward on-voltage	V_{SD}	I_F=2×I_{DR} V_{GS}=0V T_{ch}=25°C			1.35	2.0	V
Reverse recovery time	t_{rr}	I_F=I_{DR} d_I/d_t=100A/μs T_{ch}=25°C			60		ns

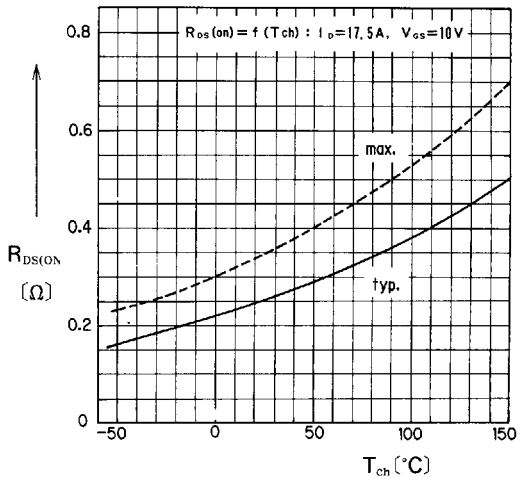
●Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-a)}$	channel to air			30.0	°C/W
	$R_{th(ch-c)}$	channel to case			3.125	°C/W

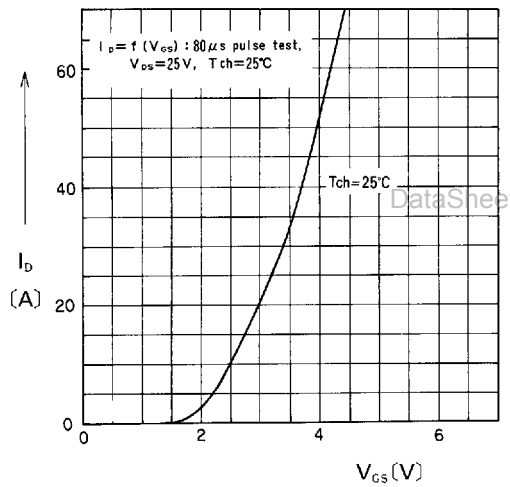
■Characteristics



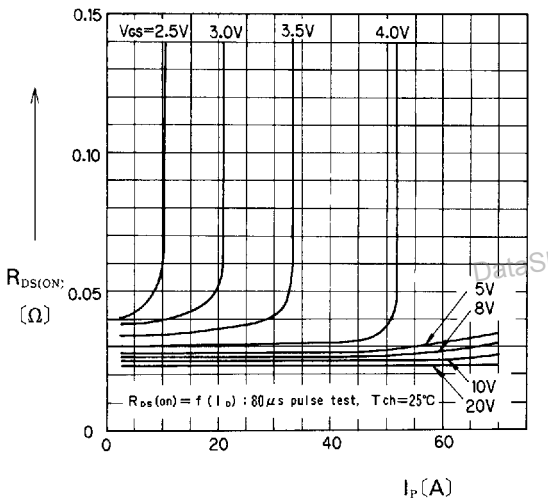
Typical Output Characteristics



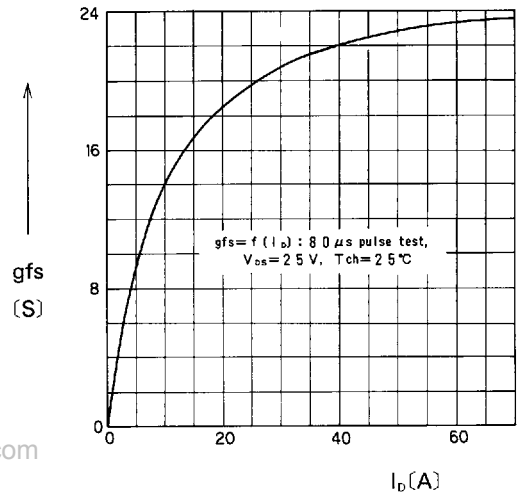
On State Resistance vs. T_{ch}



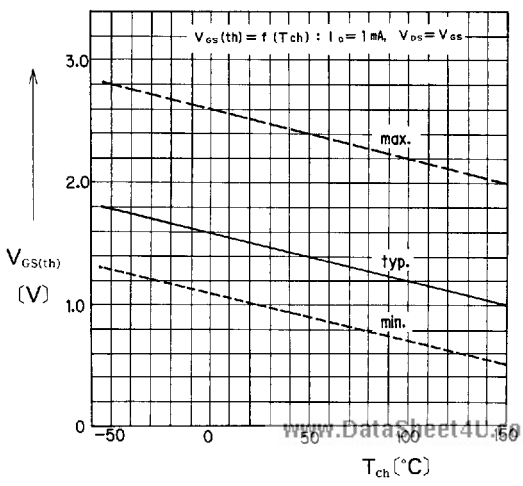
Typical Transfer Characteristics



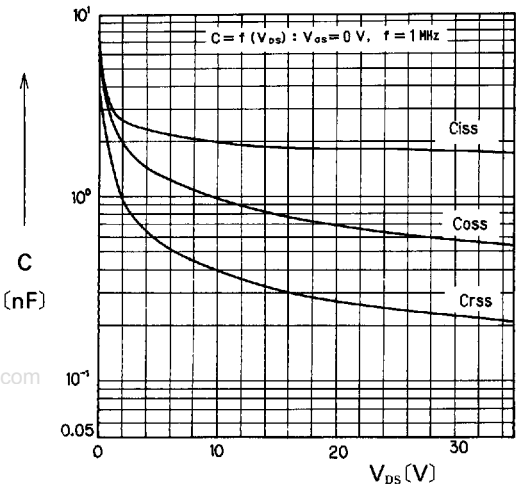
Typical Drain-Source on State Resistance vs. I_D



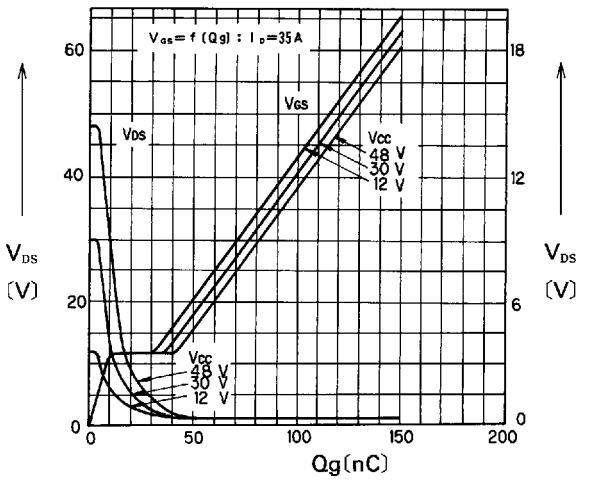
Typical Forward Transconductance vs. I_D



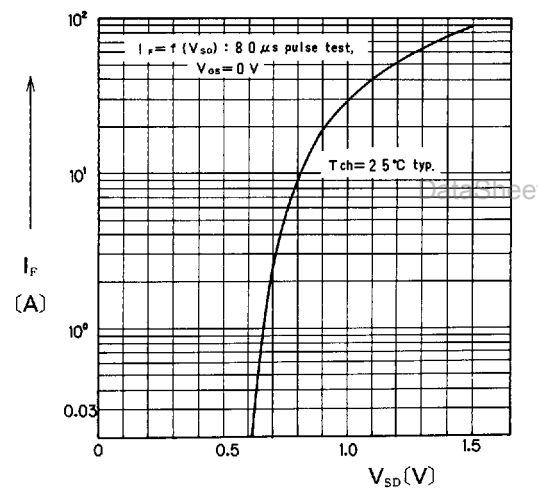
Gate Threshold Voltage vs. T_{ch}



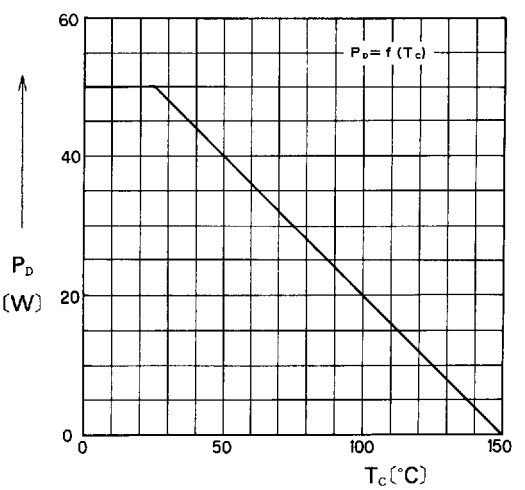
Typical Capacitance vs. V_{DS}



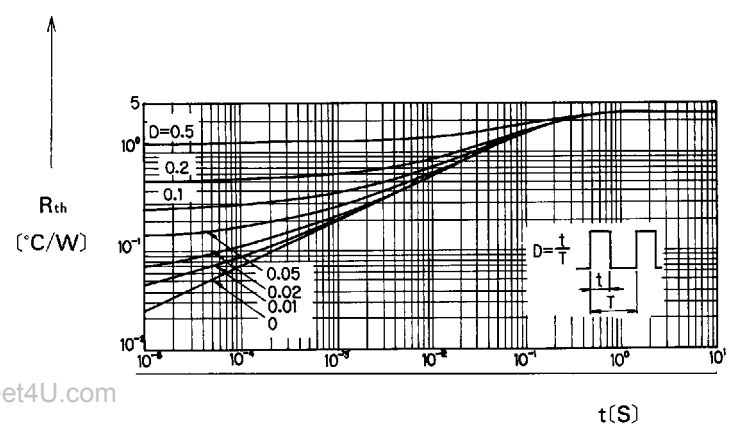
Typical Input Charge



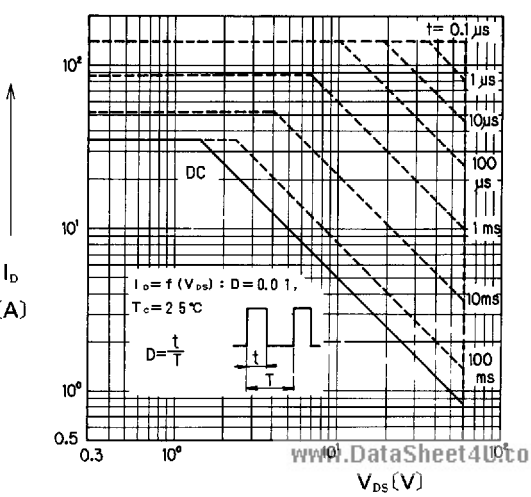
Forward Characteristics of Reverse Diode



Allowable Power Dissipation vs. T_C



Transient Thermal Impedance



Safe Operating Area