2SK1280

FUJI POWER MOSFET

N-CHANNEL SILICON POWER MOSFET

F- V SERIES

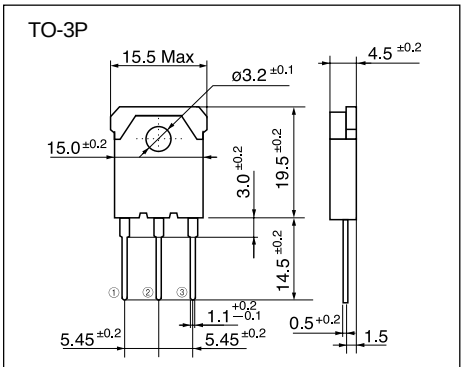
■ Features

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

■ Applications

- Motor controllers
- Inverters
- Choppers

■ Outline Drawings



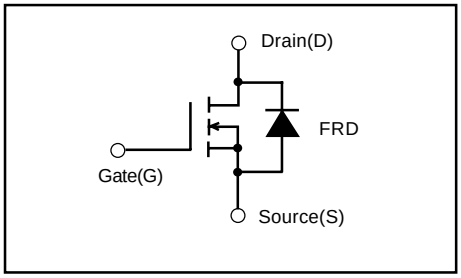
JEDEC	——
EIAJ	SC-65

■ Maximum ratings and characteristics

● **Absolute maximum ratings (Tc=25°C unless otherwise specified)**

Item	Symbol	Rating	Unit
Drain-source voltage	V_{DS}	500	V
Continuous drain current	I_D	18	V
Pulsed drain current	$I_{D(puls)}$	72	A
Continuous reverse drain current	$I_{DR(puls)}$	18	A
Gate-source peak voltage	V_{GS}	±20	V
Max. power dissipation	P_D	150	W
Operating and storage temperature range	T_{ch}	+150	℃
	T_{stg}	-55 to +150	℃

■ Equivalent circuit schematic



● **Electrical characteristics (T_c =25°C unless otherwise specified)**

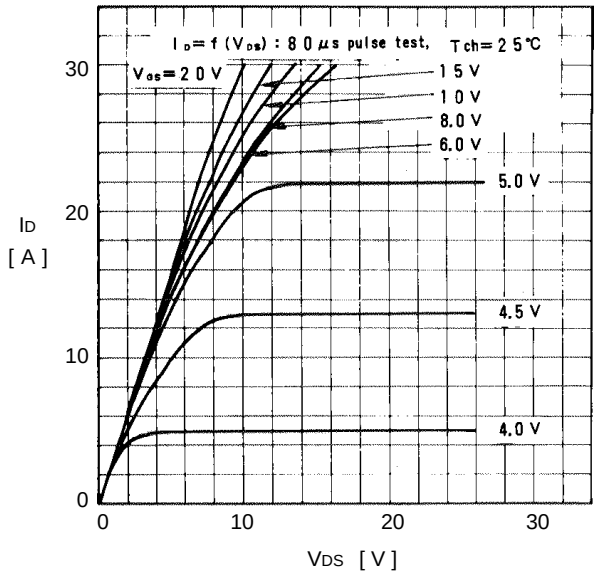
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	I_D=1mA V_{GS}=0V	500			V
Gate threshold voltage	$V_{GS(th)}$	I_D=10mA V_{DS}=V_{GS}	2.1	3.0	4.0	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=500V V_{GS}=0V T_{ch}=25°C		10	500	μA
Gate-source leakage current	I_{GSS}	V_{GS}=±20V V_{DS}=0V		10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	I_D=9A V_{GS}=10V		0.35	0.5	Ω
Forward transconductance	g_{fs}	I_D=9A V_{DS}=25V	8.0	15.0		S
Input capacitance	C_{iss}	V_{DS}=25V		2400	3600	pF
Output capacitance	C_{oss}	V_{GS}=0V		300	450	
Reverse transfer capacitance	C_{rss}	f=1MHz		150	220	
Turn-on time t_{on}	$t_{d(on)}$	V_{CC}=300V R_G=25 Ω		35	50	ns
(t_{on}=$t_{d(on)}$+t_r)	t_r	I_D=18A		150	220	
Turn-off time t_{off}	$t_{d(off)}$	V_{GS}=10V		450	650	
(t_{off}=$t_{d(off)}$+t_f)	t_f			180	270	
Diode forward on-voltage	V_{SD}	I_F=I_{DR} V_{GS}=0V T_{ch}=25°C		0.85	1.6	V
Reverse recovery time	t_{rr}	I_F=I_{DR} di/dt=100A/μs T_{ch}=25°C		150	200	ns

● **Thermal characteristics**

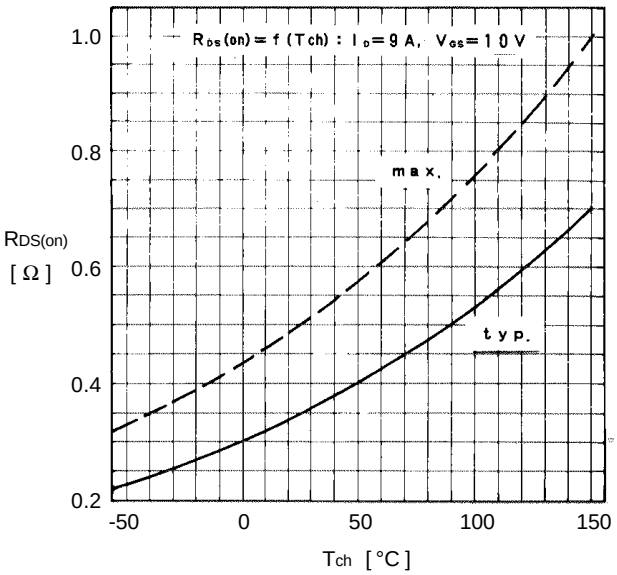
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-a)}$	channel to ambient			35.0	°C/W
	$R_{th(ch-c)}$	channel to case			0.83	°C/W

Characteristics

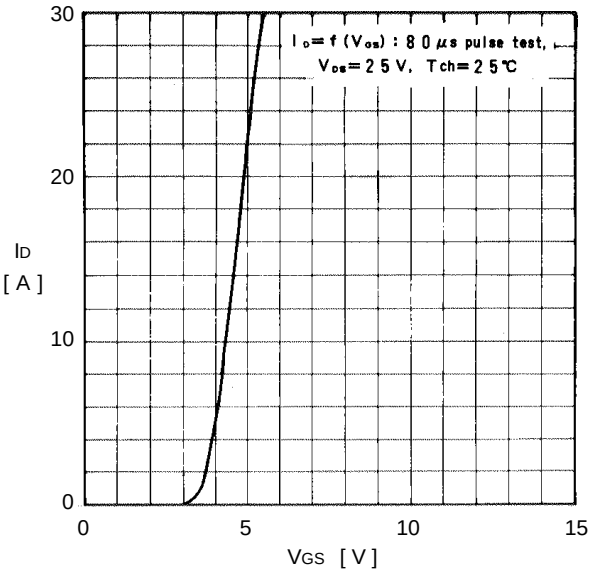
Typical output characteristics



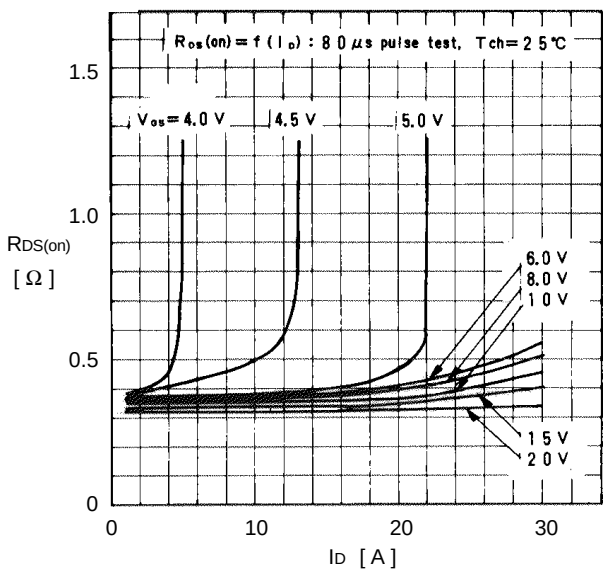
On state resistance vs. Tch



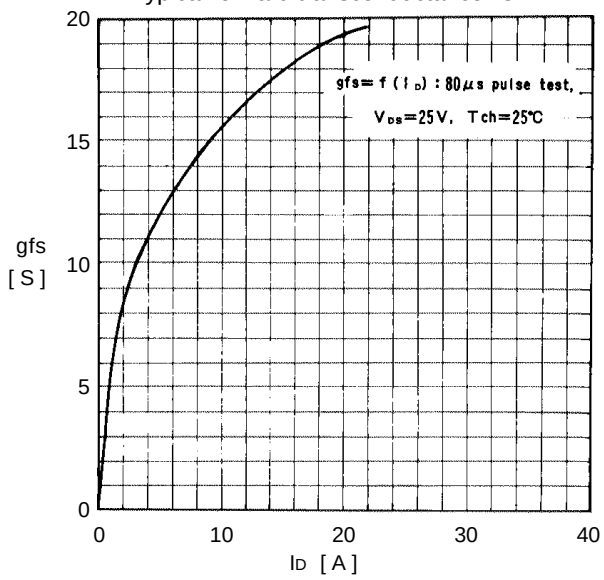
Typical transfer characteristics



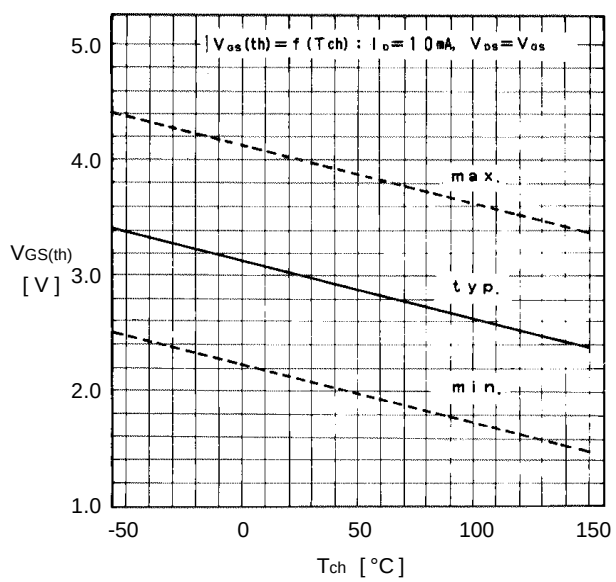
Typical Drain-Source on state resistance vs. ID



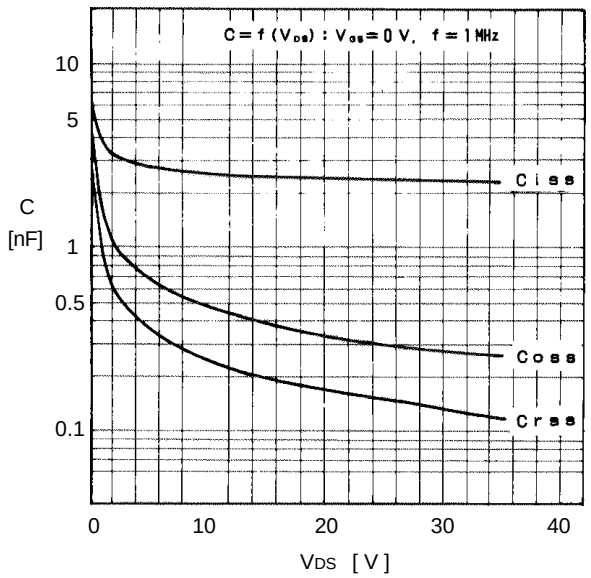
Typical forward transconductance vs. ID



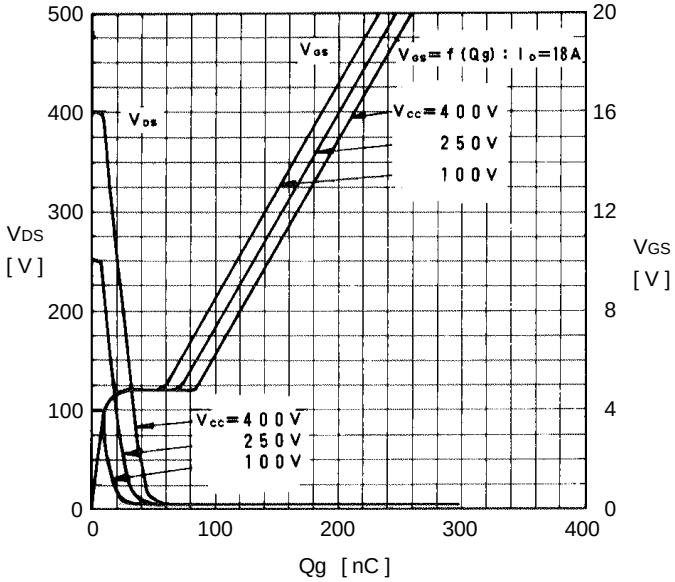
Gate threshold voltage vs. Tch



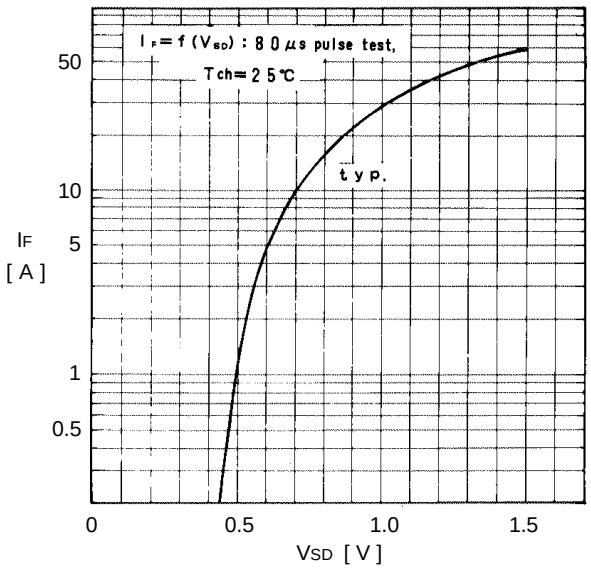
Typical capacitance vs. V_{DS}



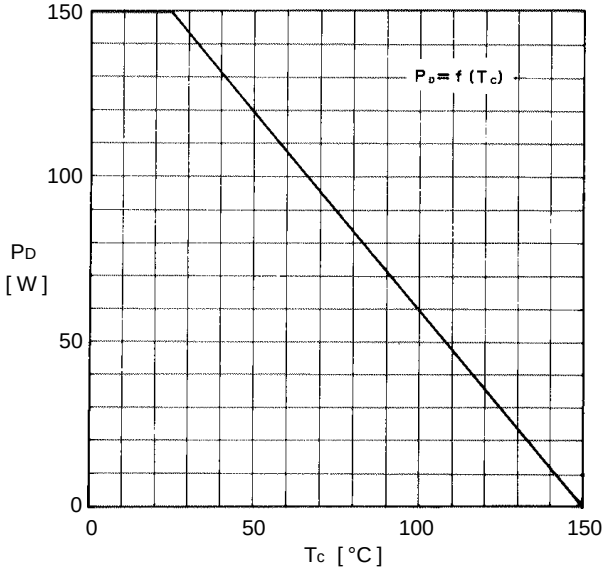
Typical input charge



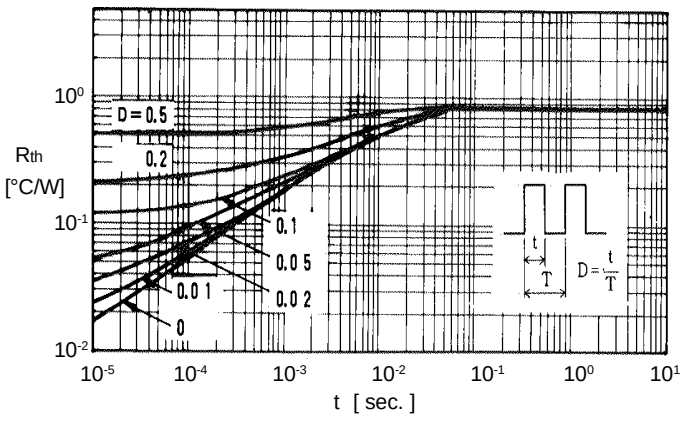
Forward characteristics of reverse diode



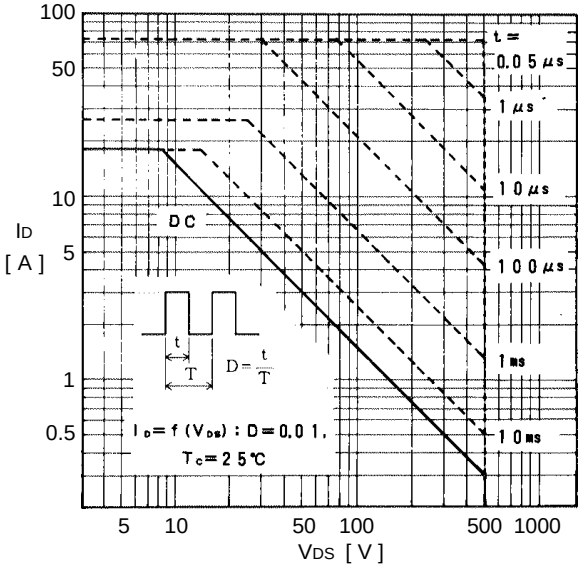
Allowable power dissipation vs. T_c



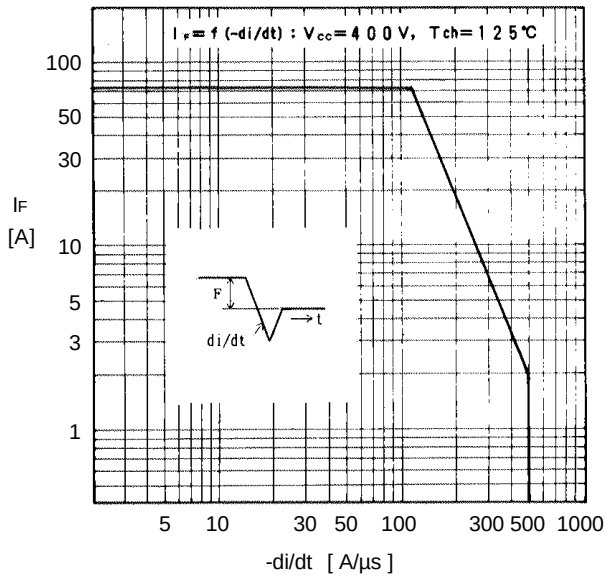
Transient thermal impedance



Safe operating area



IF-di/dt characteristics of reverse diode



Reverse recovery characteristics