

2SK2642-01MR

FUJI POWER MOS-FET

N-CHANNEL SILICON POWER MOS-FET

■ Features

- High speed switching
- Low on-resistance
- No secondary breakdown
- Low driving power
- High voltage
- V_{GS}=±35V Guarantee
- Avalanche-proof

■ Applications

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

■ Maximum ratings and characteristic Absolute maximum ratings

● (T_c=25°C unless otherwise specified)

Item	Symbol	Rating	Unit
Drain-source voltage	V _{DS}	500	V
Continuous drain current	I _D	±15	A
Pulsed drain current	I _{D(puls)}	±60	A
Gate-source voltage	V _{GS}	±35	V
Maximum Avalanche Energy	E _{AV*1}	88.7	mJ
Max. power dissipation	P _D	50	W
Operating and storage temperature range	T _{ch} T _{stg}	+150 -55 to +150	°C °C

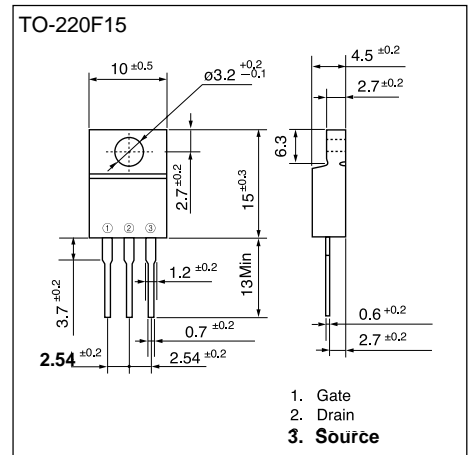
*1 L=0.72mH, V_{cc}=50V

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

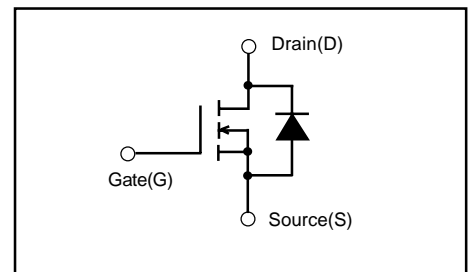
Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V _{(BR)DSS}	I _D =1mA V _{GS} =0V	500			V
Gate threshold voltage	V _{GS(th)}	I _D =1mA V _{DS} =V _{GS}	3.5	4.0	4.5	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =500V V _{GS} =0V		10	500	μA
		V _{GS} =0V		0.2	1.0	mA
Gate-source leakage current	I _{GSS}	V _{GS} =±35V V _{DS} =0V		10	100	nA
Drain-source on-state resistance	R _{DS(on)}	I _D =7.5A V _{GS} =10V		0.44	0.55	Ω
Forward transconductance	g _{fs}	I _D =7.5A V _{DS} =25V	4.5	9.0		S
Input capacitance	C _{iss}	V _{DS} =25V		1400	2100	pF
Output capacitance	C _{oss}	V _{GS} =0V		250	380	
Reverse transfer capacitance	C _{rss}	f=1MHz		110	170	
Turn-on time t _{on}	td(on)	V _{CC} =300V I _D =15A		30	50	ns
	t _r	V _{GS} =10V		110	170	
Turn-off time t _{off}	td(off)	R _{GS} =10 Ω		90	140	
	t _f			55	90	
Avalanche capability	I _{AV}	L=100μH T _{ch} =25°C	15			A
Diode forward on-voltage	V _{SD}	I _F =2I _D V _{GS} =0V T _{ch} =25°C		1.1	1.65	V
Reverse recovery time	t _{rr}	I _F =I _D V _{GS} =0V		500		ns
Reverse recovery charge	Q _{rr}	-di/dt=100A/μs T _{ch} =25°C		8.0		μC

● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	R _{th(ch-c)}	channel to case			2.50	°C/W
	R _{th(ch-a)}	channel to ambient			62.5	°C/W

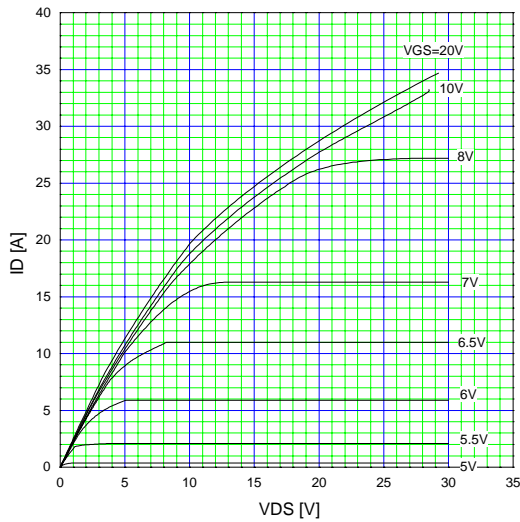


■ Equivalent circuit schematic

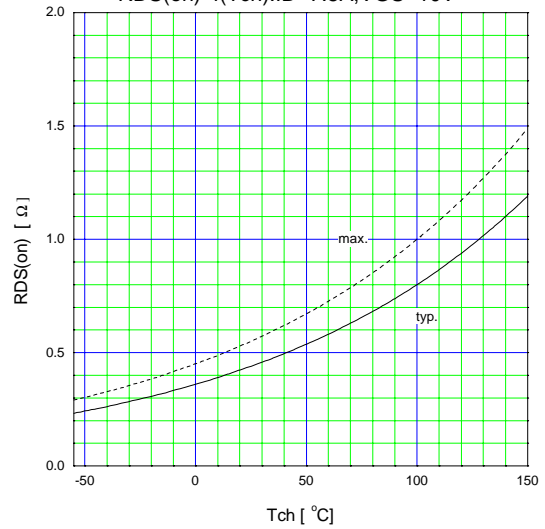


Characteristics

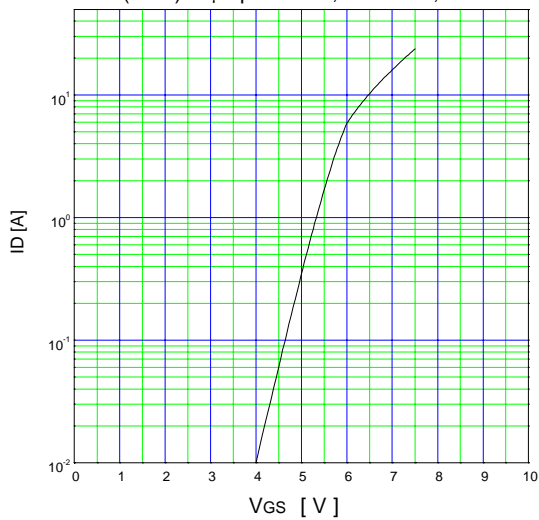
Typical output characteristics
 $I_D=f(V_{DS})$:80 μ s pulse test, $T_c=25^\circ\text{C}$



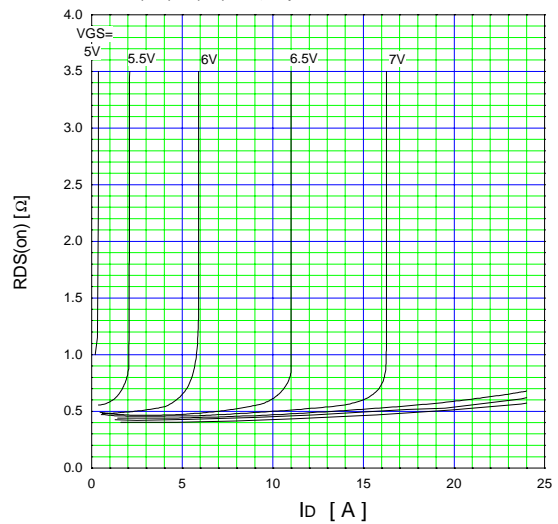
Drain-source on-state resistance
 $R_{DS(on)}=f(T_{ch})$: $I_D=7.5\text{A}$, $V_{GS}=10\text{V}$



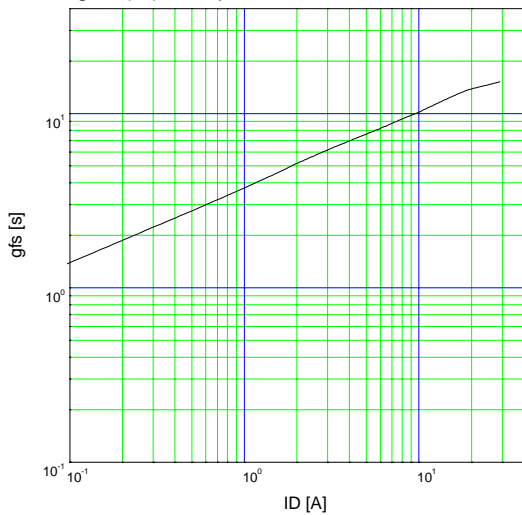
Typical transfer characteristic
 $I_D=f(V_{GS})$:80 μ s pulse test, $V_{DS}=25\text{V}$, $T_{ch}=25^\circ\text{C}$



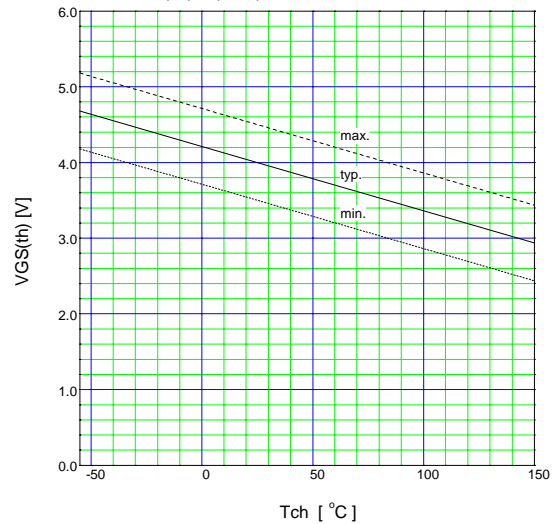
Typical drain-source on-state resistance
 $R_{DS(on)}=f(I_D)$:80 μ s pulse test, $T_c=25^\circ\text{C}$



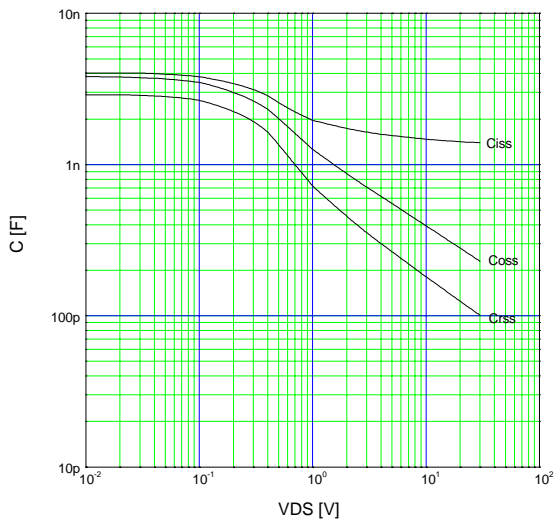
Typical forward transconductance
 $g_{fs}=f(I_D)$:80 μ s pulse test, $V_{DS}=25\text{V}$, $T_{ch}=25^\circ\text{C}$



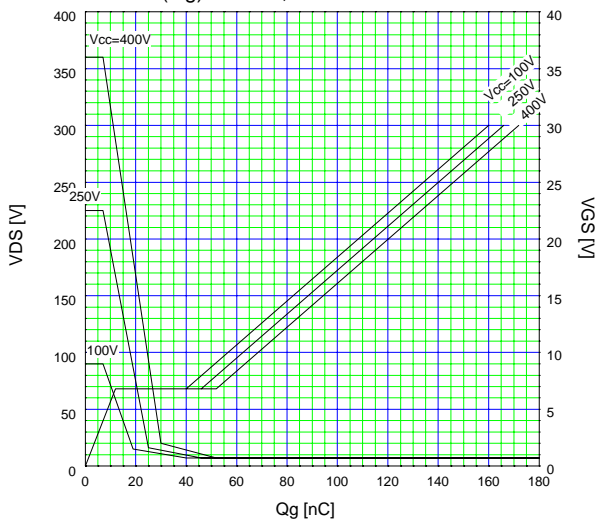
Gate threshold voltage
 $V_{GS(th)}=f(T_{ch})$: $I_D=1\text{mA}$, $V_{DS}=V_{GS}$



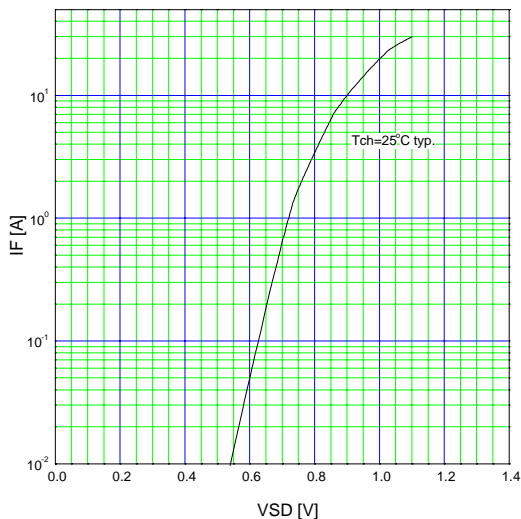
Typical capacitances
 $C=f(V_{DS}): V_{GS}=0V, f=1MHz$



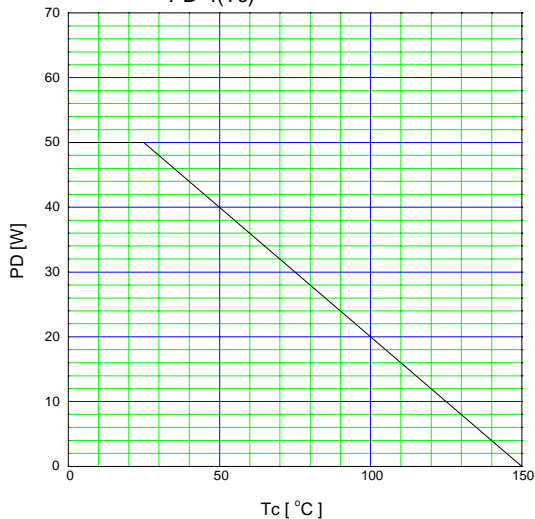
Typical gate charge characteristic
 $V_{GS}=f(Q_g): I_D=15A, T_c=25^\circ C$



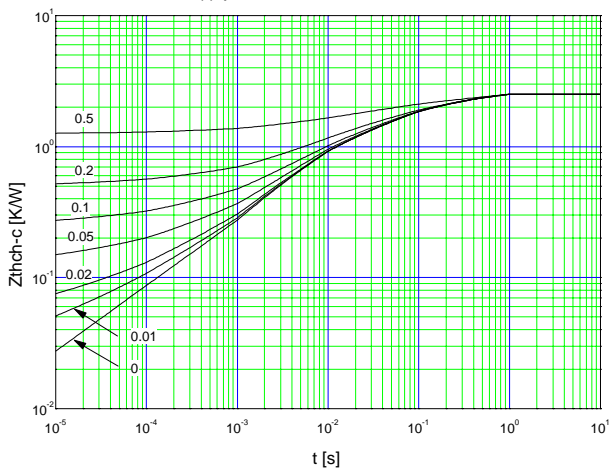
Forward characteristic of reverse of diode
 $I_F=f(V_{SD}): 80\mu s \text{ pules test}, V_{GS}=0V$



Power Dissipation
 $PD=f(T_c)$



Transient thermal impedance
 $Z_{thc-c}=f(t)$ parameter: $D=t/T$



Safe operating area
 $I_D=f(V_{DS}): D=0.01, T_c=25^\circ C$

