

# 2SK3728-01MR

**FUJI**  
**ELECTRIC**

200305

## FUJI POWER MOSFET Super FAP-G Series

N-CHANNEL SILICON POWER MOSFET

### ■ Features

High speed switching

Low on-resistance

No secondary breakdown

Low driving power

Avalanche-proof

### ■ Applications

Switching regulators

UPS (Uninterruptible Power Supply)

DC-DC converters

### ■ Maximum ratings and characteristic

( $T_c=25^\circ\text{C}$  unless otherwise specified)

Item	Symbol	Ratings	Unit	
Drain-source voltage	$V_{DS}$	900	V	
	$V_{DSX}^*$	900	V	
Continuous drain current	$I_D$	$\pm 2.2$	A	
Pulsed drain current	$I_D(\text{puls})$	$\pm 8.8$	A	
Gate-source voltage	$V_{GS}$	$\pm 30$	V	
Repetitive or non-repetitive	$I_{AR}^*$	2.2	A	
Maximum Avalanche Energy	$E_{AS}^*$	127.2	mJ	
Maximum Drain-Source dV/dt	$dV_{DS}/dt^*$	40	kV/ $\mu\text{s}$	
Peak Diode Recovery dV/dt	$dV/dt^*$	5	kV/ $\mu\text{s}$	
Max. power dissipation	$P_D$	$T_a=25^\circ\text{C}$	2.16	W
		$T_c=25^\circ\text{C}$	26	
Operating and storage temperature range	$T_{ch}$	+150	$^\circ\text{C}$	
	$T_{stg}$	-55 to +150	$^\circ\text{C}$	
Isolation Voltage	$V_{ISO}^*$	2000	Vrms	

\*1  $L=48.2\text{mH}$ ,  $V_{cc}=90\text{V}$ ,  $T_{ch}=25^\circ\text{C}$  See to Avalanche Energy Graph \*2  $T_{ch}\leq 150^\circ\text{C}$

\*3  $|I_F| \leq -I_D$ ,  $-di/dt=50\text{A}/\mu\text{s}$ ,  $V_{cc} \leq BV_{DSS}$ ,  $T_{ch} \leq 150^\circ\text{C}$  \*4  $V_{DS} \leq 900\text{V}$  \*5  $V_{GS}=-30\text{V}$  \*6  $f=60\text{Hz}$ ,  $t=6\text{-sec.}$

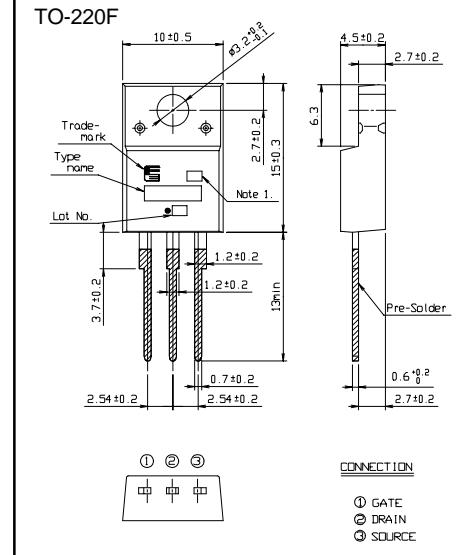
### ● Electrical characteristics ( $T_c=25^\circ\text{C}$ unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D=250\mu\text{A}$ $V_{GS}=0\text{V}$	900			V
Gate threshold voltage	$V_{GS(\text{th})}$	$I_D=250\mu\text{A}$ $V_{DS}=V_{GS}$	3.0		5.0	V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS}=900\text{V}$ $V_{GS}=0\text{V}$ $V_{DS}=720\text{V}$ $V_{GS}=0\text{V}$	$T_{ch}=25^\circ\text{C}$	25		$\mu\text{A}$
				250		
Gate-source leakage current	$I_{GSS}$	$V_{GS}=\pm 30\text{V}$ $V_{DS}=0\text{V}$			100	nA
Drain-source on-state resistance	$R_{DS(\text{on})}$	$I_D=1.1\text{A}$ $V_{GS}=10\text{V}$		6.15	8.00	$\Omega$
Forward transconductance	$g_{fs}$	$I_D=1.1\text{A}$ $V_{DS}=25\text{V}$	1.1	2.2		S
Input capacitance	$C_{iss}$	$V_{DS}=25\text{V}$ $V_{GS}=0\text{V}$ $f=1\text{MHz}$	250	375		pF
Output capacitance	$C_{oss}$		36	55		
Reverse transfer capacitance	$C_{rss}$		2.2	3.3		
Turn-on time $t_{on}$	$t_{d(on)}$	$V_{cc}=600\text{V}$ $I_D=1.1\text{A}$ $V_{GS}=10\text{V}$	17	26		ns
	$t_r$		6	9		
Turn-off time $t_{off}$	$t_{d(off)}$	$R_{GS}=10\Omega$	26	39		
	$t_f$		28	42		
Total Gate Charge	$Q_G$	$V_{cc}=450\text{V}$ $I_D=2.2\text{A}$ $V_{GS}=10\text{V}$		8.3	12.5	nC
Gate-Source Charge	$Q_{GS}$			3.4	5.1	
Gate-Drain Charge	$Q_{GD}$			2.2	3.3	
Avalanche capability	$I_{AV}$	$L=48.2\text{mH}$ $T_{ch}=25^\circ\text{C}$	2.2			A
Diode forward on-voltage	$V_{SD}$	$I_F=2.2\text{A}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$		0.90	1.50	V
Reverse recovery time	$t_{rr}$	$I_F=2.2\text{A}$ $V_{GS}=0\text{V}$ $-di/dt=100\text{A}/\mu\text{s}$ $T_{ch}=25^\circ\text{C}$		0.8		$\mu\text{s}$
Reverse recovery charge	$Q_{rr}$			2.2		$\mu\text{C}$

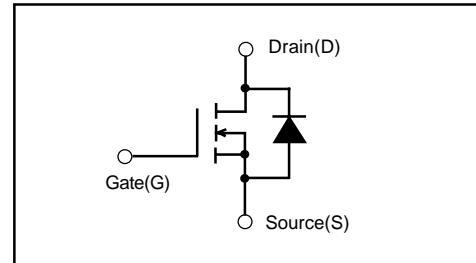
### ● Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			4.808	$^\circ\text{C}/\text{W}$
	$R_{th(ch-a)}$	channel to ambient			58.0	$^\circ\text{C}/\text{W}$

### ■ Outline Drawings [mm]



### ■ Equivalent circuit schematic



## ■ Characteristics

