

Fuji Power MOSFET SuperFAP-G series Target Specification

PRELIMINARY

2SK3680-01 (500V/0.11Ω/52A)

1) Package

TO-247

2) Absolute Maximum Ratings (Tc=25°C unless otherwise specified)

Items	Symbols	Ratings	Units
Drain-Source Voltage	V_{DS}	500	V
Continuous Drain Current	I_D	±52	A
Pulsed Drain Current	$I_{D(pulse)}$	±208	A
Gate-Source Voltage	V_{GS}	±30	V
Non-Repetitive Maximum Avalanche Current	I_{AS}	52	A
Repetitive Maximum Avalanche Current	I_{AR}	26	A
Non-Repetitive Maximum Avalanche Energy	E_{AS}	802.7	mJ ^{*1}
Maximum Drain-Source dV/dt	dV _{DS} /dt	20	kV/us
Peak Diode recovery dV/dt	dV/dt	5	kV/us ^{*2}
Maximum Power Dissipation	P_D @Tc=25°C	600	W
	P_D @Ta=25°C	2.50	W
Operating and Storage Temperature range	T_{ch}	150	°C
	T_{stg}	-55 ~ +150	°C

3)Electrical Characteristics (Tch=25°C unless otherwise specified)

Items	Symbols	Test Conditions	min.	typ.	max.	Units
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu A$ $V_{GS}=0V$	500	---	---	V
Gate Threshold Voltage	$V_{GS(th)}$	$I_D=250\mu A$ $V_{DS}=V_{GS}$	3.0	---	5.0	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=500V$ $T_{ch}=25^\circ C$	---	---	25	μA
		$V_{GS}=0V$ $T_{ch}=125^\circ C$	---	---	250	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30V$ $V_{DS}=0V$	---	---	100	μA
Drain-Source On-State Resistance	$R_{DS(on)}$	$I_D=26A$ $V_{GS}=10V$	---	---	0.11	Ω
Input Capacitance	C_{iss}	$V_{DS}=25V$	---	5060	7590	pF
Output Capacitance	C_{oss}	$V_{GS}=0V$	---	770	1155	
Reverse Transfer Capacitance	C_{rss}	f=1MHz	---	50	75	
Total Gate Charge	Q_g	$V_{cc}=250V$	---	118	177	nC
Gate to Source Charge	Q_{gs}	$I_D=52A$	---	40	60	
Gate to Drain (Miller) Charge	Q_{gd}	$V_{GS}=10V$	---	44	66	
Avalanche Capability	I_{AV}	$L=544\mu H$ $T_{ch}=25^\circ C$	52	---	---	A
Diode Forward On-Voltage	V_{SD}	$I_F=52A, V_{GS}=0V, T_{ch}=25^\circ C$	---	1.00	1.50	V

4) Thermal Characteristics

Items	Symbols	Test Conditions	min.	typ.	max.	Units
Channel to Case	$R_{th(ch-c)}$				0.2083	°C/W
Channel to Ambient	$R_{th(ch-a)}$				50.0	°C/W

*1 L=544μH, Vcc=50V

*2 $I_F \leq -I_D$, -di/dt=50A/μs, Vcc≤BV_{DSS}, Tch≤150°C

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