

2SK3680-01 (500V/0.11Ω/52A)

1) Package TO-247

2) Absolute Maximum Ratings (Tc=25 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	$P_D @ T_c=25$	600	W
	$P_D @ T_a=25$	2.50	W
Operating and Storage Temperature range	T_{ch} T_{stg}	150 -55 ~ +150	

3) Electrical Characteristics (Tch=25 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}	$V_{DS}=500V$ $T_{ch}=25$	---	---	25	μA
		$V_{GS}=0V$ $T_{ch}=125$	---	---	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	Qg	$V_{CC}=250V$	---	118	177	nC
Gate to Source Charge	Qgs	$I_D=52A$	---	40	60	
Gate to Drain (Miller) Charge	Qgd	$V_{GS}=10V$	---	44	66	
Avalanche Capability	I_{AV}	L=544μH Tch=25	52	---	---	A
Diode Forward On-Voltage	V_{SD}	$I_F=52A, V_{GS}=0V, Tch=25$	---	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 $I_F \leq -I_D, -di/dt=50A/\mu s, V_{CC} \leq BV_{DSS}, Tch \leq 150^\circ C$

DATE	NAME	APPROVED	Fuji Electric Co.,Ltd.	
DRAWN Sep.-03-'02	H. Tokunishi		DWG. NO.	MT5F12591 1/1
CHECKED Sep.-03-'02	T. Yamada	T. HOSEN		
REVISIONS				