

2SK3677-01MR (700V/0.93Ω/12A)

1) Package TO-220F

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

Items	Symbols	Ratings	Units
Drain-Source Voltage	V_{DS}	700	V
Continuous Drain Current	I_D	±12	A
Pulsed Drain Current	$I_{D(pulse)}$	±48	A
Gate-Source Voltage	V_{GS}	±30	V
Repetitive and Non-Repetitive Maximum Avalanche Current	I_{AR}	12	A
Non-Repetitive Maximum Avalanche Energy	E_{AS}	276.7	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	$P_D @ T_c=25$	70	W
	$P_D @ T_a=25$	2.16	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}	$I_D=250\mu A$ $V_{GS}=0V$	700	---	---	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}	$V_{DS}=700V$ $T_{ch}=25$	---	---	25	μA
		$V_{GS}=0V$ $T_{ch}=125$	---	---	250	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30V$ $V_{DS}=0V$	---	---	100	nA
Drain-Source On-State Resistance	$R_{DS(on)}$	$I_D=6A$ $V_{GS}=10V$	---	---	0.93	
Input Capacitance	C_{iss}	$V_{DS}=25V$	---	1200	---	pF
Output Capacitance	C_{oss}	$V_{GS}=0V$	---	150	---	
Reverse Transfer Capacitance	C_{rss}	$f=1MHz$	---	7	---	
Total Gate Charge	Q_g	$V_{CC}=350V$	---	34	---	nC
Gate to Source Charge	Q_{gs}	$I_D=12A$	---	11	---	
Gate to Drain (Miller) Charge	Q_{gd}	$V_{GS}=10V$	---	10	---	
Avalanche Capability	I_{AV}	$L=3.52mH$ $T_{ch}=25$	12	---	---	A
Diode Forward On-Voltage	V_{SD}	$I_F=12A, V_{GS}=0V, T_{ch}=25$	---	1.0	1.5	V

4) Thermal Characteristics

Items	Symbols	Test Conditions	min.	typ.	max.	Units
Channel to Case	$R_{th(ch-c)}$				1.786	/W
Channel to Ambient	$R_{th(ch-a)}$				58.0	/W

*1 L=3.52mH, Vcc=70V

*2 $I_F \leq -I_D$, $-di/dt=50A/\mu s$, $V_{CC} \leq BV_{DSS}$, $T_{ch} \leq 150^\circ C$

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