

MOS FIELD EFFECT TRANSISTOR **2SK3361**

SWITCHING N-CHANNEL POWER MOS FET INDUSTRIAL USE

DESCRIPTION

The 2SK3361 is N-Channel MOS Field Effect Transistor designed for high current switching application.

FEATURES

- Low on-state resistance $R_{DS(on)1} = 20 \text{ m}\Omega \text{ MAX.}$ (Vgs = 10 V, Ip = 20 A) $R_{DS(on)2} = 28 \text{ m}\Omega \text{ MAX.}$ (Vgs = 4.5 V, Ip = 20 A)
- Low Ciss: Ciss = 4900 pF TYP.
 - Built-in gate protection diode
 - Isolated TO-220 package

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Drain to Source Voltage	VDSS	100	V
Gate to Source Voltage	VGSS(AC)	±20	V
Gate to Source Voltage	VGSS(DC)	+20, -10	V
Drain Current (DC)	D(DC)	±40	А
Drain Current (pulse) ^{Note1}	D(pulse)	±160	А
Total Power Dissipation (Tc = 25°C)	Рт	35	W
Total Power Dissipation (TA = 25°C)	Рт	2.0	W
Channel Temperature	Tch	150	°C
Storage Temperature	Tstg	–55 to +150	°C
Single Avalanche Current Note2	AS	40	А
Single Avalanche Energy Note2	Eas	160	mJ

Notes 1. PW \leq 10 μ s, Duty Cycle \leq 1 %

2. Starting T_{ch} = 25 °C, R_G = 25 Ω , V_{GS} = 20 V \rightarrow 0 V

THERMAL RESISTANCE			
Channel to Case	Rth(ch-C)	3.57	°C/W
Channel to Ambient	Rth(ch-A)	62.5	°C/W

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Document No. D14319EJ1V0DS00 (1st edition) Date Published April 2000 NS CP(K) Printed in Japan

The mark \star shows major revised points.

ORDERING INFORMATION

PART NUMBER	PACKAGE	
2SK3361	Isolated TO-220	



(Isolated TO-220)

or

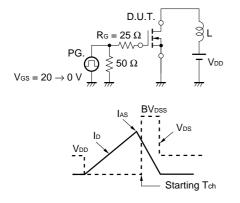
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	CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
	Drain to Source On-state Resistance	RDS(on)1	$V_{GS} = 10 V$, $I_D = 20 A$		14	20	mΩ
		RDS(on)2	$V_{GS} = 4.5 V, I_{D} = 20 A$		19	28	mΩ
★	Gate to Source Cut-off Voltage	V _{GS(off)}	$V_{DS} = 10 V, I_D = 250 \mu A$	1.5	2.0	2.5	V
*	Forward Transfer Admittance	y fs	Vds = 10 V, Id = 20 A	18	36		S
	Drain Leakage Current	loss	$V_{DS} = 100 V, V_{GS} = 0 V$			10	μA
	Gate to Source Leakage Current	lgss	$V_{GS} = \pm 20 \text{ V}, \text{ V}_{DS} = 0 \text{ V}$			±10	μA
*	Input Capacitance	Ciss	V _{DS} = 10 V		4900		pF
	Output Capacitance	Coss	Vgs = 0 V		990		pF
	Reverse Transfer Capacitance	Crss	f = 1 MHz		580		pF
	Turn-on Delay Time	td(on)	ID = 20 A		44		ns
	Rise Time	tr	$V_{GS(on)} = 10 V$		230		ns
	Turn-off Delay Time	td(off)	Vdd = 50 V		360		ns
	Fall Time	tr	$R_G = 10 \Omega$		250		ns
*	Total Gate Charge	QG	ID = 40 A		130		nC
	Gate to Source Charge	QGS	Vdd = 80 V		14		nC
	Gate to Drain Charge	Qgd	VGS(on) = 10 V		50		nC
*	Body Diode Forward Voltage	VF(S-D)	IF = 40 A, VGS = 0 V		0.92		V
	Reverse Recovery Time	trr	IF = 40 A, VGS = 0 V		170		ns
	Reverse Recovery Charge	Qrr	di/dt = 100 A/μs		870		nC

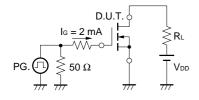
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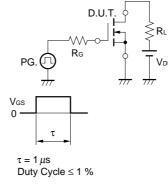
TEST CIRCUIT 1 AVALANCHE CAPABILITY

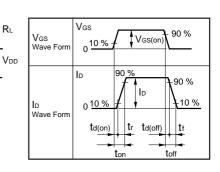
TEST CIRCUIT 2 SWITCHING TIME



TEST CIRCUIT 3 GATE CHARGE



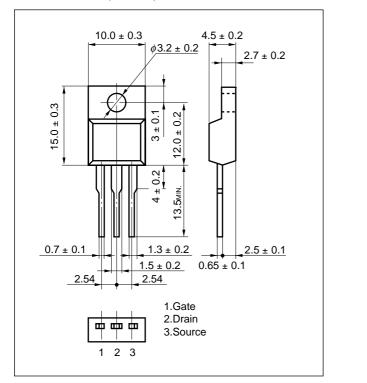




Preliminary Data Sheet D14319EJ1V0DS00

PACKAGE DRAWING (Unit : mm)

Isolated TO-220 (MP-45F)



Drain (D) Gate (G) Gate (G) Gate Protection Diode Source (S)

EQUIVALENT CIRCUIT

Remark The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

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