

MOS FIELD EFFECT TRANSISTOR **2SK3367**

SWITCHING N-CHANNEL POWER MOS FET INDUSTRIAL USE

DESCRIPTION

The 2SK3367 is N-Channel MOS Field Effect Transistor designed for DC/DC converter application of notebook computers.

FEATURES

· Low on-resistance

 $R_{DS(on)1}$ = 9.0 $m\Omega$ MAX. (Vgs = 10 V, Ip = 18 A)

 $R_{\text{DS(on)2}}$ = 12.0 $m\Omega$ MAX. (Vgs = 4.5 V, Ip = 18 A)

 $R_{DS(on)3} = 14.0 \text{ m}\Omega$ MAX. (Vgs = 4.0 V, ID = 18 A)

- Low C_{iss} : $C_{iss} = 2800 pF TYP$.
- Built-in gate protection diode

ORDERING INFORMATION

PART NUMBER	PACKAGE
2SK3367	TO-251
2SK3367-Z	TO-252

ABSOLUTE MAXIMUM RATINGS (TA = 25 °C)

Drain to Source Voltage (Vss = 0 V)	VDSS	30	V
Gate to Source Voltage (VDS = 0 V)	Vgss	±20	V
Drain Current (DC)	I _{D(DC)}	±36	Α
Drain Current (Pulse) Note	D(pulse)	±144	Α
Total Power Dissipation (Tc = 25 °C)	PT	40	W
Total Power Dissipation (TA = 25 °C)	Рт	1.0	W
Channel Temperature	Tch	150	°C
Storage Temperature	Tstg	-55 to + 150	°C

Note PW \leq 10 μ s, Duty cycle \leq 1 %

THERMAL RESISTANCE

Channel to case	Rth(ch-C)	3.13	°C/W
Channel to ambient	Rth(ch-A)	125	°C/W

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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

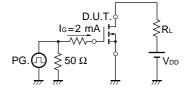


ELECTRICAL CHARACTERISTICS (TA = 25 °C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain to Source On-state Resistance	RDS(on)1	Vgs = 10 V, ID = 18 A		7.3	9.0	mΩ
	RDS(on)2	V _G S = 4.5 V, I _D = 18 A		9.0	12.0	mΩ
	RDS(on)3	V _G S = 4.0 V, I _D = 18 A		9.7	14.0	mΩ
Gate to Source Cut-off Voltage	V _{GS(off)}	V _{DS} = 10 V, I _D = 1 mA	1.5	2.0	2.5	V
Forward Transfer Admittance	yfs	Vps = 10 V, Ip = 18 A	13	26		S
Drain Leakage Current	Ipss	Vps = 30 V, Vgs = 0 V			10	μΑ
Gate to Source Leakage Current	lgss	Vgs = ±20 V, Vps = 0 V			±10	μΑ
Input Capacitance	Ciss	V _{DS} = 10 V, V _{GS} = 0 V, f = 1 MHz		2800		pF
Output Capacitance	Coss			880		pF
Reverse Transfer Capacitance	Crss			400		pF
Turn-on Delay Time	td(on)	ID = 18 A, VGS(on) = 10 V, VDD = 15 V,		75		ns
Rise Time	tr	$R_G = 10 \Omega$		1130		ns
Turn-off Delay Time	td(off)			165		ns
Fall Time	tf			210		ns
Total Gate Charge	Q _G	ID = 36 A, VDD = 24 V, VGS = 10 V		49		nC
Gate to Source Charge	Qgs			10		nC
Gate to Drain Charge	Q _{GD}			14		nC
Body Diode forward Voltage	V _F (S-D)	IF = 36 A, VGS = 0 V		0.95		V
Reverse Recovery Time	trr	IF = 36 A, VGS = 0 V		45		ns
Reverse Recovery Charge	Qrr	di/dt = 100 A/μs		50		nC

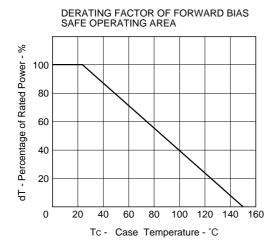
TEST CIRCUIT 1 SWITCHING TIME

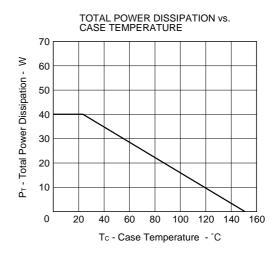
TEST CIRCUIT 2 GATE CHARGE

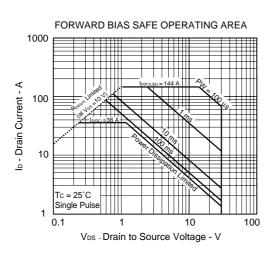


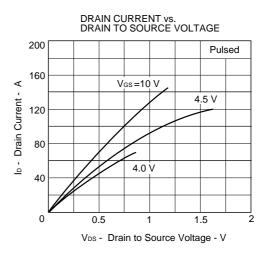


TYPICAL CHARACTERISTICS (TA = 25 °C)

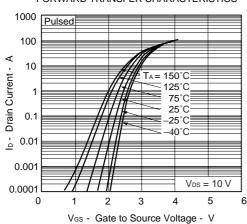




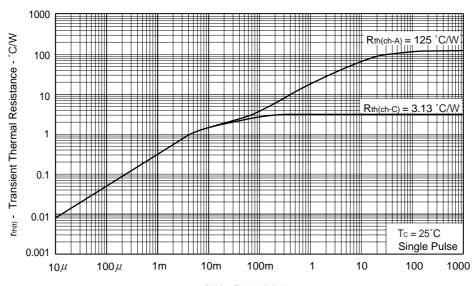




FORWARD TRANSFER CHARACTERISTICS

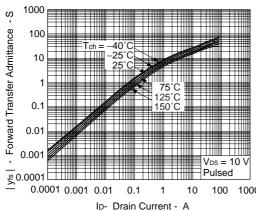


TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH

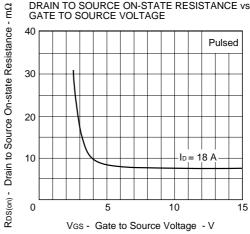


PW - Pulse Width - s

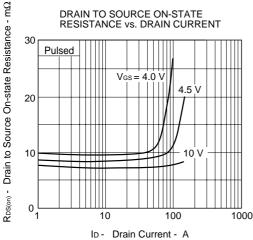


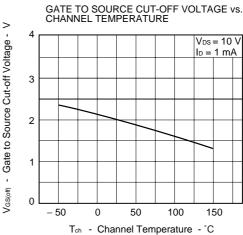


DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE

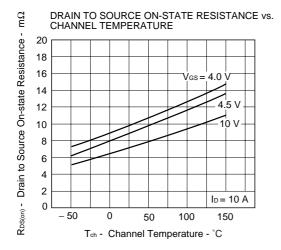


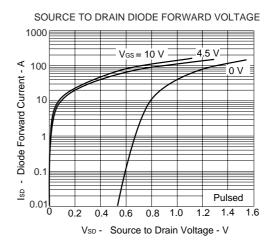
DRAIN TO SOURCE ON-STATE

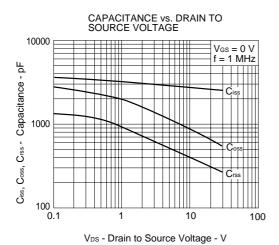


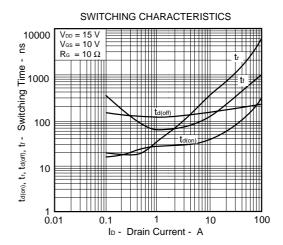


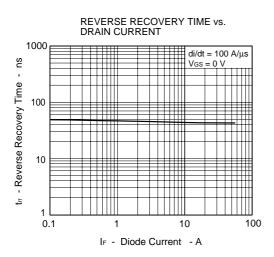


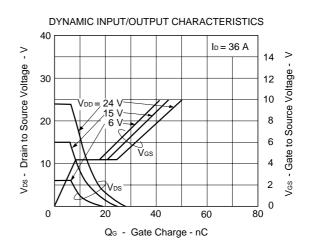










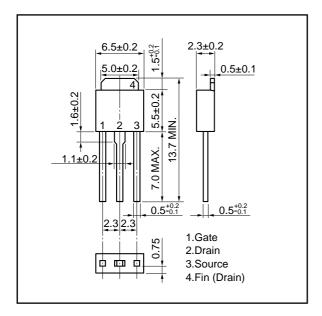


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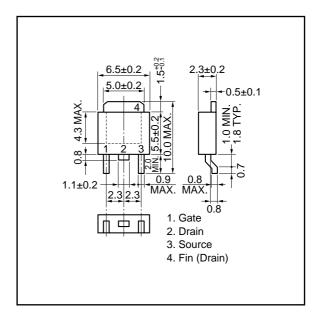


PACKAGE DRAWINGS (Unit: mm)

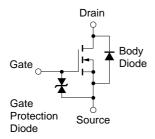
1) TO-251 (MP-3)



2) TO-252 (MP-3Z)



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.

[MEMO]

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