

MOS FIELD EFFECT TRANSISTOR 2SK3225

SWITCHING N-CHANNEL POWER MOS FET INDUSTRIAL USE

DESCRIPTION

This product is N-Channel MOS Field Effect Transistor designed for high current switching applications.

FEATURES

• Low On-State Resistance

 $R_{\text{DS(on)1}}$ = 18 $m\Omega$ MAX. (Vgs = 10 V, Ip = 17 A)

 $R_{DS(on)2} = 27 \text{ m}\Omega \text{ MAX.} \text{ (Vgs} = 4.0 \text{ V, Ip} = 17 \text{ A)}$

- Low Ciss: Ciss = 2100 pF TYP.
- Built-in Gate Protection Diode
- TO-251/TO-252 package

ORDERING INFORMATION

PART NUMBER	PACKAGE
2SK3225	TO-251
2SK3225-Z	TO-252

ABSOLUTE MAXIMUM RATINGS (TA = 25 °C)

Drain to Source Voltage	VDSS	60	V
Gate to Source Voltage	VGSS(AC)	±20	V
Gate to Source Voltage	VGSS(DC)	+20, -10	V
Drain Current (DC)	ID(DC)	±34	Α
Drain Current (Pulse) Note	ID(pulse)	±136	Α
Total Power Dissipation (Tc = 25°C)	Рт	40	W
Total Power Dissipation (T _A = 25°C)	PT	2.0	W
Channel Temperature	Tch	150	°C
Storage Temperature	T _{stg}	-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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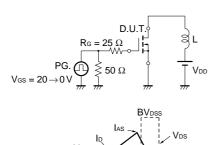
Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.



ELECTRICAL CHARACTERISTICS (TA = 25 °C)

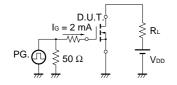
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CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain to Source On-state Resistance	RDS(on)1	Vgs = 10 V, lp = 17 A		13	18	mΩ
	RDS(on)2	Vgs = 4.0 V, ID = 17 A		18	27	mΩ
Gate to Source Cut-off Voltage	V _{GS(off)}	V _{DS} = 10 V, I _D = 1 mA	1.0	1.5	2.0	V
Forward Transfer Admittance	y fs	V _{DS} = 10 V, I _D = 17 A	13	27		S
Drain Leakage Current	Inss	Vps = 60 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		2100		pF
Output Capacitance	Coss	V _G s = 0 V		550		pF
Reverse Transfer Capacitance	Crss	f = 1 MHz		220		pF
Turn-on Delay Time	td(on)	ID = 17 A		32		ns
Rise Time	t r	V _{GS(on)} = 10 V		300		ns
Turn-off Delay Time	td(off)	V _{DD} = 30 V		110		ns
Fall Time	tf	$R_G = 10 \Omega$		140		ns
Total Gate Charge	Q _G	ID = 34 A		45		nC
Gate to Source Charge	Qgs	V _{DD} = 48 V		7		nC
Gate to Drain Charge	Q _{GD}	V _{GS(on)} = 10 V		13		nC
Body Diode Forward Voltage	V _F (S-D)	IF = 34 A, VGS = 0 V		0.94		V
Reverse Recovery Time	trr	If = 34 A, V _G s = 0 V		60		ns
Reverse Recovery Charge	Qrr	di/dt = 100 A/μs		95		nC

TEST CIRCUIT 1 AVALANCHE CAPABILITY

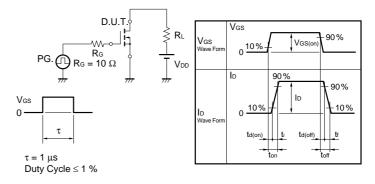


-Starting Tch

TEST CIRCUIT 3 GATE CHARGE



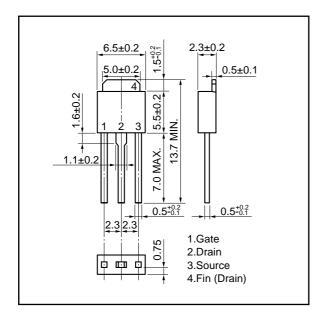
TEST CIRCUIT 2 SWITCHING TIME



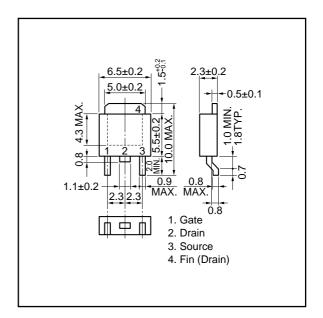


PACKAGE DRAWINGS (Unit: mm)

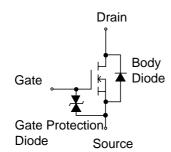
1)TO-251 (MP-3)



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.

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