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April 1st, 2010 Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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MOS FIELD EFFECT TRANSISTOR

2SK3432

SWITCHING

N-CHANNEL POWER MOS FET

DESCRIPTION

The 2SK3432 is N-channel MOS Field Effect Transistor designed for high current switching applications.

FEATURES

- Super low on-state resistance:
- $R_{DS(on)1} = 4.0 \text{ m}\Omega \text{ MAX.} (V_{GS} = 10 \text{ V}, \text{ ID} = 42 \text{ A})$
- $R_{\text{DS(on)2}}$ = 6.9 m Ω MAX. (Vgs = 4 V, ID = 42 A)
- Low Ciss: $C_{iss} = 9500 \, pF \, TYP$.
- Built-in gate protection diode

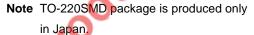
ABSOLUTE MAXIMUM RATINGS (TA = 25°C)

	•	·	
Drain to Source Voltage (VGs = 0 V)	VDSS	40 _ 🤇	V
Gate to Source Voltage (VDS = 0 V)	Vgss	±20	V
Drain Current (DC) (Tc = 25°C)	D(DC)	±83	А
Drain Current (pulse) Note1	D(pulse)	±332	А
Total Power Dissipation (Tc = 25°C)	Рт	100	W
Total Power Dissipation ($T_A = 25^{\circ}C$)	PT	1.5	W
Channel Temperature	Tch	150	°C
Storage Temperature	Tstg	–55 to +150	°C
Single Avalanche Current Note2	/ IAS	69	А
Single Avalanche Energy Note2	Eas	476	mJ
Notes 1. PW \leq 10 μ s, Duty cycle \leq 1	%		

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

ORDERING INFORMATION

PART NUMBER	PACKAGE
2SK3432	TO-220AB
2SK3432-S	TO-262
2SK3432-ZJ	ТО-263
2SK3432-Z	TO-220SMD ^{Note}





(TO-262)



(TO-263, TO-220SMD)

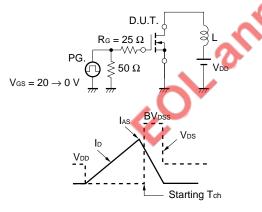


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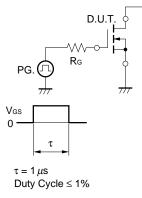
ELECTRICAL CHARACTERISTICS (TA = 25°C)

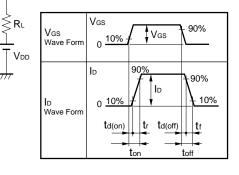
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	IDSS	V _{DS} = 40 V, V _{GS} = 0 V			10	μA
Gate Leakage Current	lgss	$V_{GS} = \pm 20 \text{ V}, \text{ V}_{DS} = 0 \text{ V}$			±10	μA
Gate Cut-off Voltage	V _{GS(off)}	V _{DS} = 10 V, I _D = 1 mA	1.5	2.0	2.5	V
Forward Transfer Admittance	y _{fs}	V _{DS} = 10 V, I _D = 42 A	40	80		S
Drain to Source On-state Resistance	RDS(on)1	V _{GS} = 10 V, I _D = 42 A		3.2	4.0	mΩ
	RDS(on)2	V _{GS} = 4 V, I _D = 42 A		4.8	6.9	mΩ
Input Capacitance	Ciss	V _{DS} = 10 V		9500		pF
Output Capacitance	Coss	V _{GS} = 0 V		2200		pF
Reverse Transfer Capacitance	Crss	f = 1 MHz		920		pF
Turn-on Delay Time	td(on)	V _{DD} = 20 V, I _D = 42 A		140		ns
Rise Time	tr	V _{GS} = 10 V		1800		ns
Turn-off Delay Time	td(off)	R _G = 10 Ω	5	470		ns
Fall Time	tr			410		ns
Total Gate Charge	QG	VDD = 32 V		150		nC
Gate to Source Charge	QGS	V _{GS} = 10 V		29		nC
Gate to Drain Charge	Qgd	ID = 83 A		45		nC
Body Diode Forward Voltage	VF(S-D)	IF = 83 A, VGS = 0 V		1.0		V
Reverse Recovery Time	trr	IF = 83 A, VGS = 0 V		69		ns
Reverse Recovery Charge	Qrr	di/dt = 100 A/ μ s		130		nC

TEST CIRCUIT 1 AVALANCHE CAPABILITY

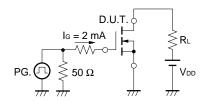


TEST CIRCUIT 2 SWITCHING TIME

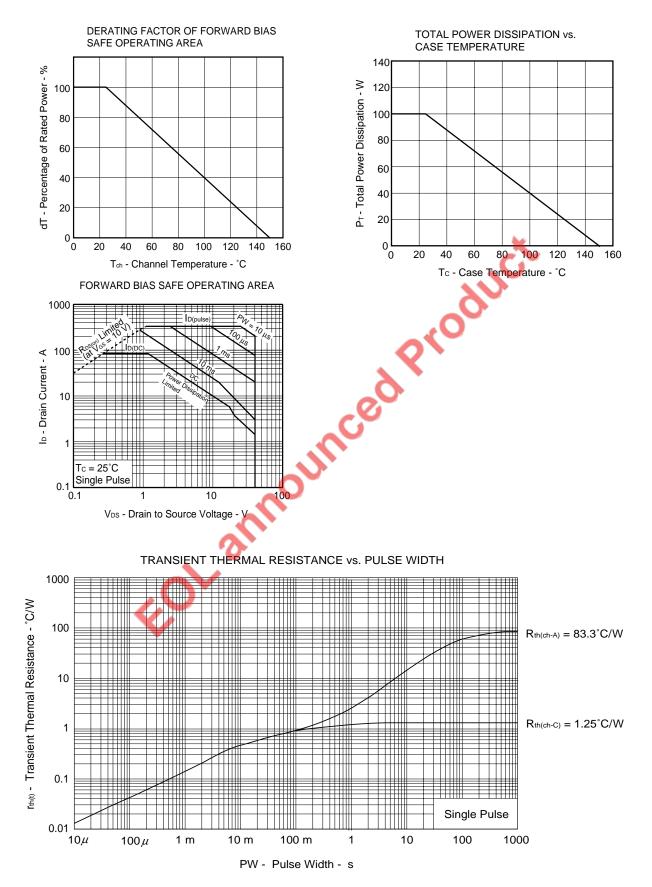




TEST CIRCUIT 3 GATE CHARGE

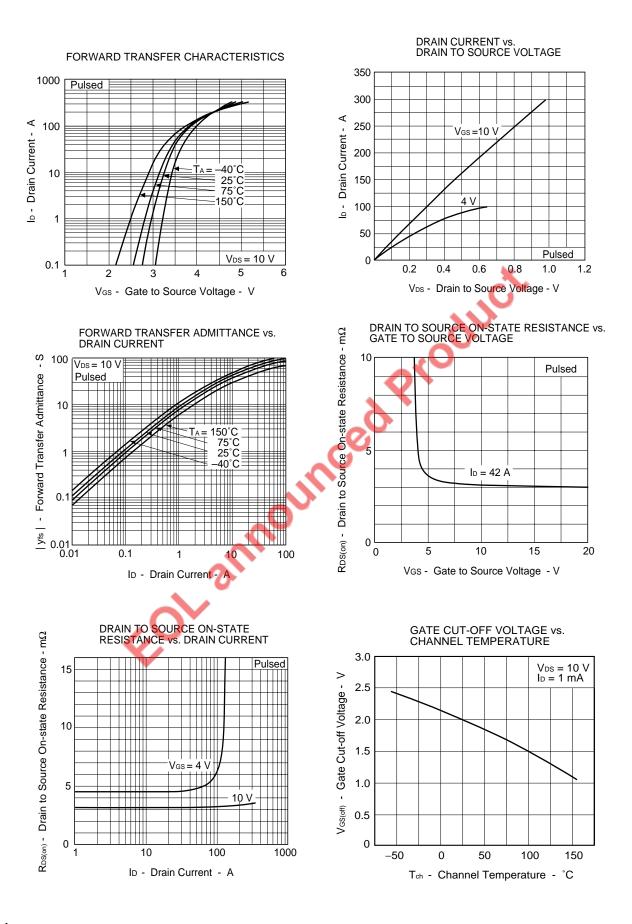


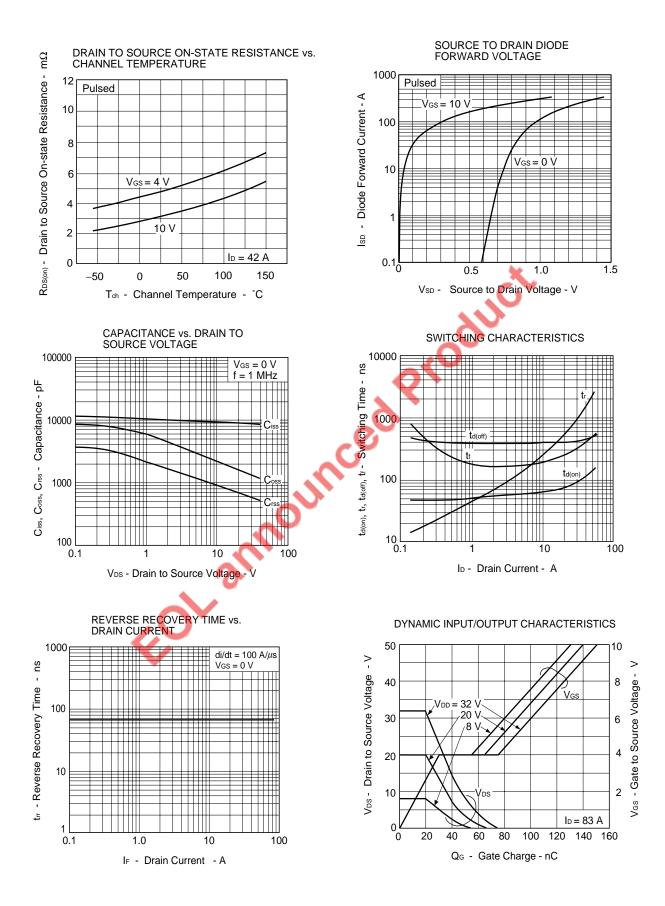
TYPICAL CHARACTERISTICS ($T_A = 25^{\circ}C$)

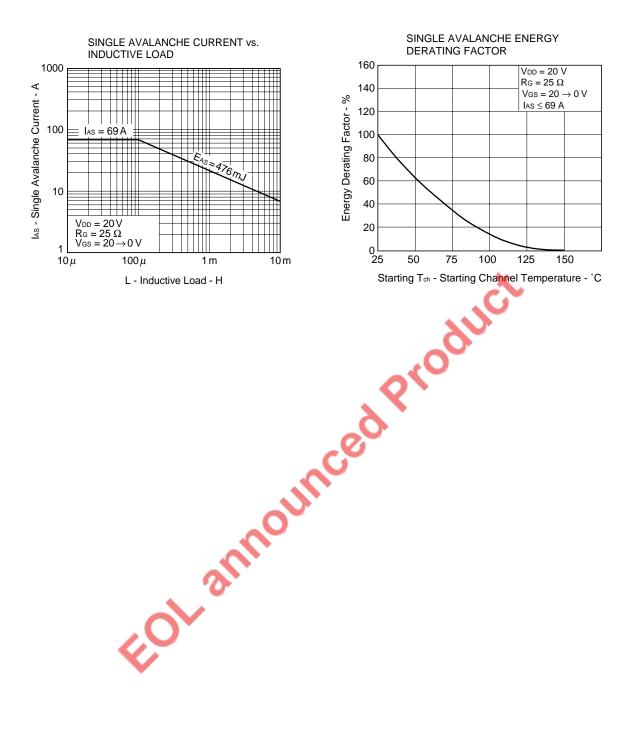


Data Sheet D14601EJ4V0DS



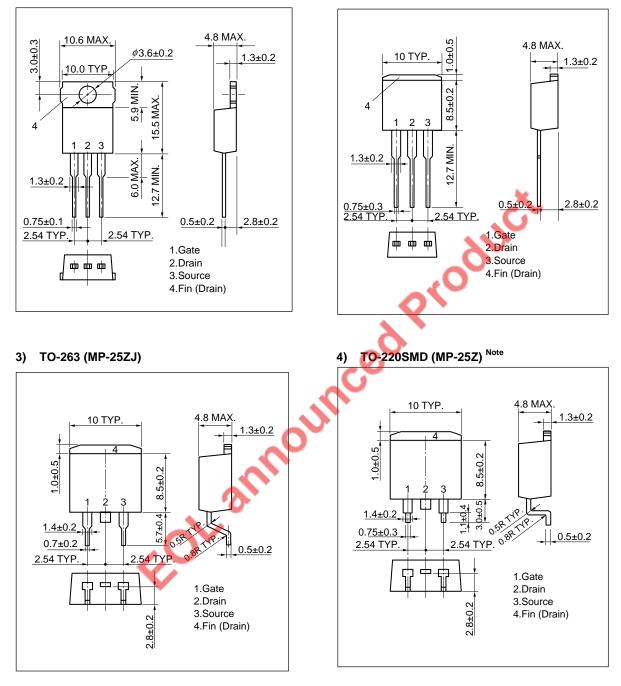




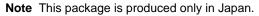


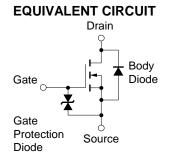
* PACKAGE DRAWINGS (Unit: mm)

1) TO-220AB (MP-25)



2) TO-262 (MP-25 Fin Cut)





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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