

MOS FIELD EFFECT TRANSISTOR 2SK3294

SWITCHING N-CHANNEL POWER MOS FET INDUSTRIAL USE

DESCRIPTION

The 2SK3294 is N-Channel MOS FET device that features a low on-state resistance and excellent switching characteristics, designed for high voltage applications such as DC/DC converter, actuator driver.

FEATURES

- Gate voltage rating ± 30 V
- Low on-state resistance
 $R_{DS(on)} = 160 \text{ m}\Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 10 \text{ A)}$
- Low input capacitance
 $C_{iss} : C_{iss} = 1500 \text{ pF TYP. (} V_{DS} = 10 \text{ V, } V_{GS} = 0 \text{ V)}$
- Built-in gate protection diode

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Drain to Source Voltage ($V_{GS} = 0 \text{ V}$)	V_{DSS}	250	V
Gate to Source Voltage ($V_{DS} = 0 \text{ V}$)	V_{GSS}	± 30	V
Drain Current (DC) ($T_C = 25^\circ\text{C}$)	$I_{D(DC)}$	± 20	A
Drain Current (Pulse) ^{Note}	$I_{D(pulse)}$	± 80	A
Total Power Dissipation ($T_A = 25^\circ\text{C}$)	P_{T1}	1.5	W
Total Power Dissipation ($T_C = 25^\circ\text{C}$)	P_{T2}	70	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Note $PW \leq 10 \mu\text{s}$, Duty Cycle $\leq 1\%$

ORDERING INFORMATION

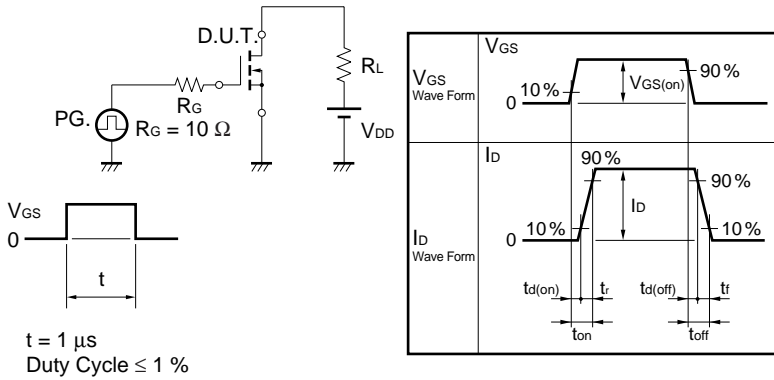
PART NUMBER	PACKAGE
2SK3294	TO-220AB
2SK3294-S	TO-262
2SK3294-ZJ	TO-263

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

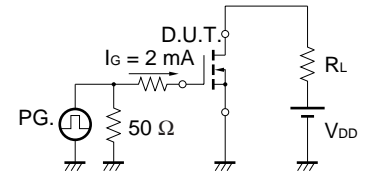
ELECTRICAL CHARACTERISTICS(T_A = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain Leakage Current	I _{DSS}	V _{DS} = 250 V, V _{GS} = 0 V			100	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±30 V, V _{DS} = 0 V			±10	nA
Gate Cut-off Voltage	V _{GS(off)}	V _{DS} = 10 V, I _D = 1 mA	2.5		4.5	V
Forward Transfer Admittance	y _{fs}	V _{DS} = 10 V, I _D = 10 A	8.0			S
Drain to Source On-state Resistance	R _{DS(on)}	V _{GS} = 10 V, I _D = 10 A		0.12	0.16	Ω
Input Capacitance	C _{iss}	V _{DS} = 10 V		1500		pF
Output Capacitance	C _{oss}	V _{GS} = 0 V		450		pF
Reverse Transfer Capacitance	C _{rss}	f = 1 MHz		200		pF
Turn-on Delay Time	t _{d(on)}	I _D = 10 A		50		ns
Rise Time	t _r	V _{GS(on)} = 10 V		120		ns
Turn-off Delay Time	t _{d(off)}	V _{DD} = 125 V		150		ns
Fall Time	t _f	R _G = 10 Ω		80		ns
Total Gate Charge	Q _G	I _D = 20 A		60		nC
Gate to Source Charge	Q _{GS}	V _{DD} = 200 V		8		nC
Gate to Drain Charge	Q _{GD}	V _{GS} = 10 V		30		nC
Diode Forward Voltage	V _{F(S-D)}	I _F = 20 A, V _{GS} = 0 V		1.0		V
Reverse Recovery Time	t _{rr}	I _F = 20 A, V _{GS} = 0 V		1.5		μs
Reverse Recovery Charge	Q _{rr}	di/dt = 50 A/μs		4.5		μC

TEST CIRCUIT 1 SWITCHING TIME

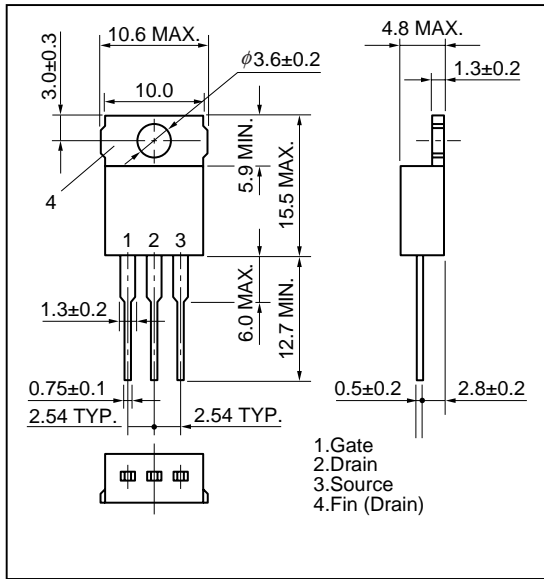


TEST CIRCUIT 2 GATE CHARGE

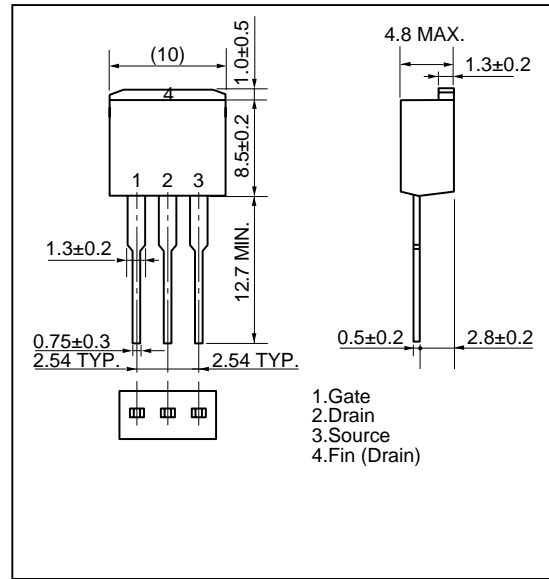


PACKAGE DRAWINGS (Unit : mm)

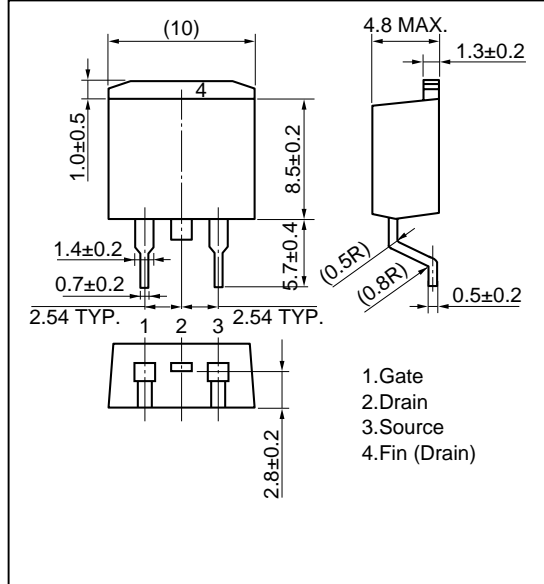
1) TO-220AB (MP-25)



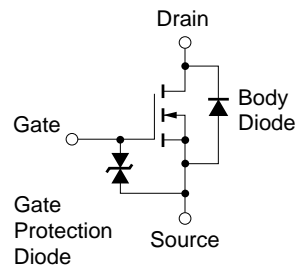
2) TO-262 (TO-220 Fin Cut)



3) TO-263 (JEDEC TYPE:MP-25ZJ)



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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