

MOS FIELD EFFECT TRANSISTOR 2SK3112

SWITCHING N-CHANNEL POWER MOS FET INDUSTRIAL USE

DESCRIPTION

The 2SK3112 is N channel MOS FET device that features a low on-state resistance and excellent switching characteristics, and designed for high voltage applications such as DC/DC converter, actuator driver.

FEATURES

- Gate voltage rating ± 30 V
- Low on-state resistance
 $R_{DS(on)} = 110 \text{ m}\Omega(\text{MAX.})$ @ $V_{GS} = 10 \text{ V}$, $I_D = 13 \text{ A}$
- Low input capacitance
 $C_{iss} = 1500 \text{ pF TYP.}$ @ $V_{DS} = 10 \text{ V}$, $V_{GS} = 0 \text{ V}$
- Built-in gate protection diode

ORDERING INFORMATION

Part number	Package
2SK3112	TO-220AB
2SK3112-S	TO-262
2SK3112-ZJ	TO-263

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

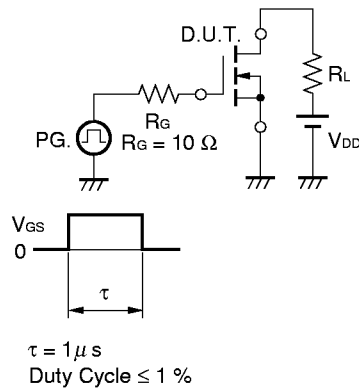
Drain to source voltage ($V_{GS} = 0 \text{ V}$)	V_{DSS}	200	V
Gate to source voltage ($V_{DS} = 0 \text{ V}$)	V_{GSS}	± 30	V
Drain current(DC) ($T_C = 25^\circ\text{C}$)	$I_{D(DC)}$	± 25	A
Drain current(pulse) ^{Note}	$I_{D(pulse)}$	± 75	A
Total power dissipation ($T_A = 25^\circ\text{C}$)	P_{T1}	1.5	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 $\leq 1\%$

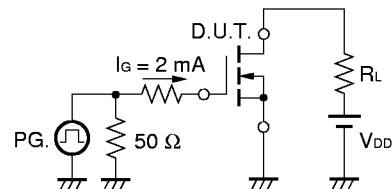
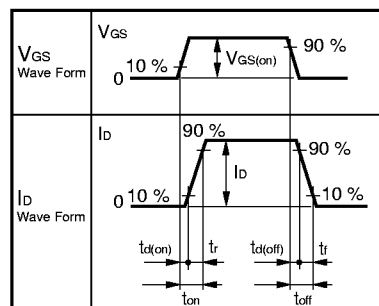
The information contained in this document is being issued in advance of the production cycle for the device. The parameters for the device may change before final production or NEC Corporation, at its own discretion, may withdraw the device prior to its production.

ELECTRICAL CHARACTERISTICS(T_A = 25°C)

Characteristics	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Drain leakage current	I _{DSS}	V _{DS} = 200 V, V _{GS} = 0 V			100	μA
Gate leakage current	I _{GSS}	V _{GS} = ±30 V, V _{DS} = 0 V			±10	μA
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 = 13 A	8.0			S
Drain to source on-State resistance	R _{DS(on)}	V _{GS} = 10 V, I _D = 13 A		80	110	mΩ
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)}	V _{DD} = 100 V, I _D = 13 A		50		ns
Rise time	t _r	V _{GS(on)} = 10 V		120		ns
Turn-off delay time	t _{d(off)}	R _G = 10 Ω		150		ns
Fall time	t _f			80		ns
Total gate charge	Q _G	V _{DD} = 160 V		60		nC
Gate to source charge	Q _{GS}	V _{GS} = 10 V		8		nC
Gate to drain charge	Q _{GD}	I _D = 25 A		30		nC
Diode forward voltage	V _{F(S-D)}	I _F = 25 A, V _{GS} = 0 V		1.0		V
Reverse recovery time	T _{rr}	I _F = 25 A, V _{GS} = 0 V		1.5		μs
Reverse recovery charge	Q _{rr}	di/dt = 50 A/μs		4.5		μC



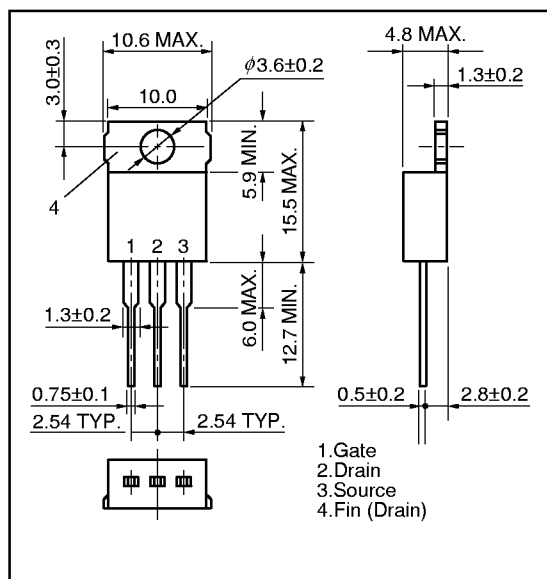
Test circuit 1 Switching time



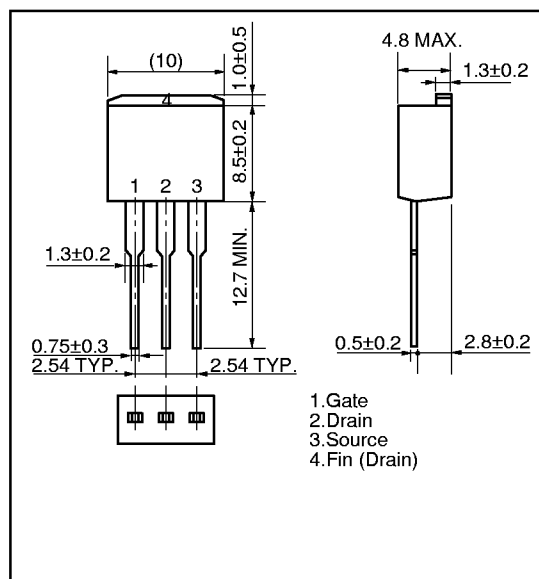
Test circuit 2 Gate charge

Package Drawing(Unit : mm)

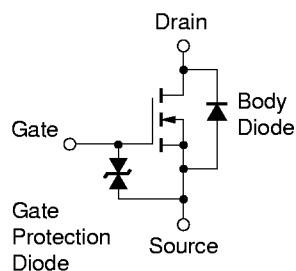
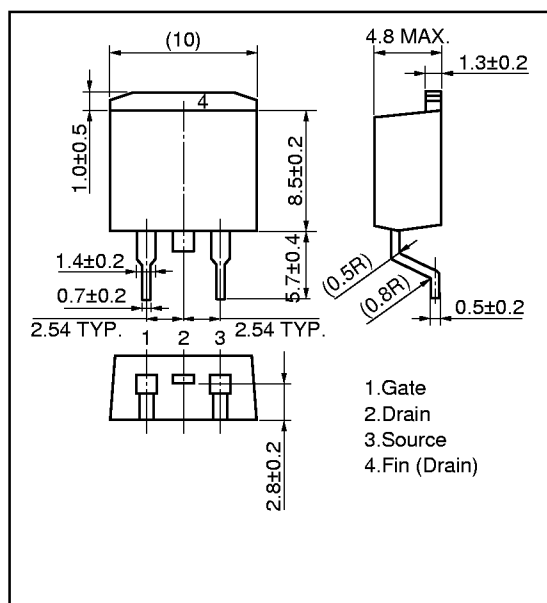
1)TO-220AB (MP-25)



2)TO-262 (TO-220 Fin Cut:MP-25S)



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



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.