

N-CHANNEL MOS FET
FOR HIGH-SPEED SWITCHING

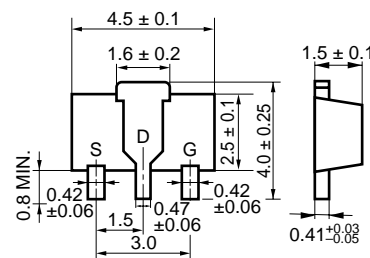
The 2SK2110 is a N-channel MOS FET of a vertical type and is a switching element that can be directly driven by the output of an IC operating at 5 V.

This product has a low ON resistance and superb switching characteristics and is ideal for driving the actuators, such as motors and DC/DC converters.

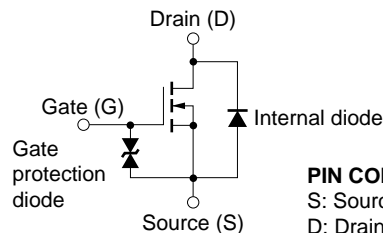
FEATURES

- Low ON resistance
 $R_{DS(on)} = 1.5 \Omega$ MAX. @ $V_{GS} = 4.0 V$, $I_D = 0.3 A$
- High switching speed
 $t_{on} + t_{off} < 100 ns$
- Low parasitic capacitance

PACKAGE DIMENSIONS (in mm)



EQUIVALENT CIRCUIT



PIN CONNECTIONS

- S: Source
- D: Drain
- G: Gate

Marking: NT

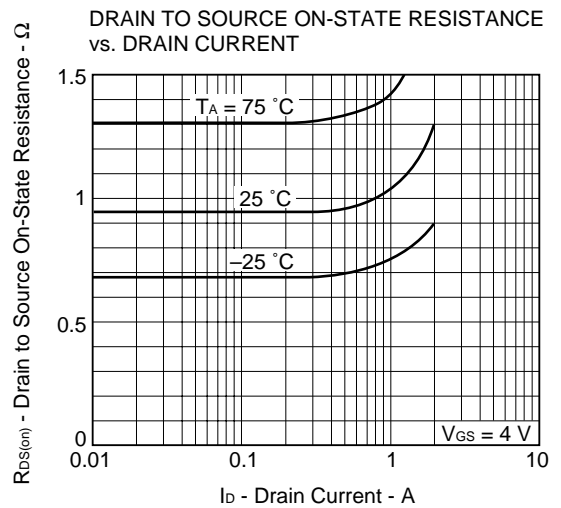
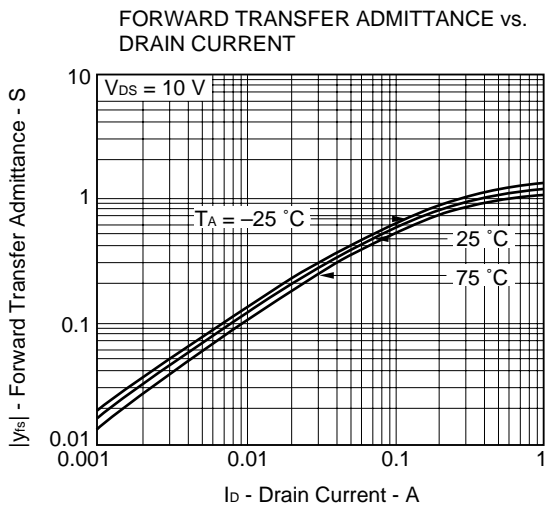
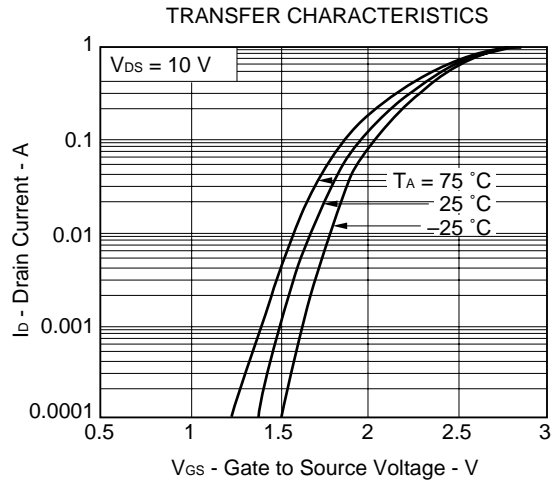
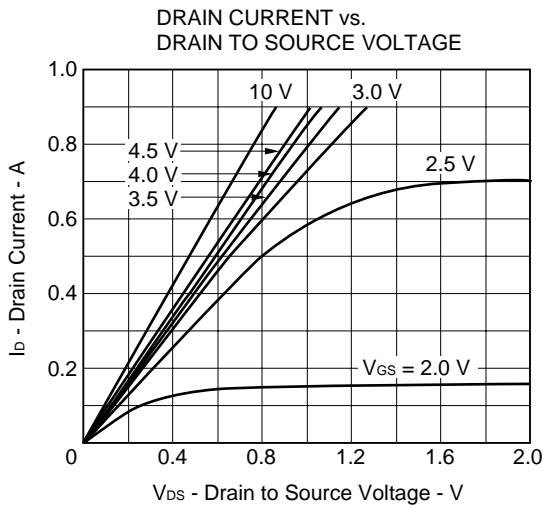
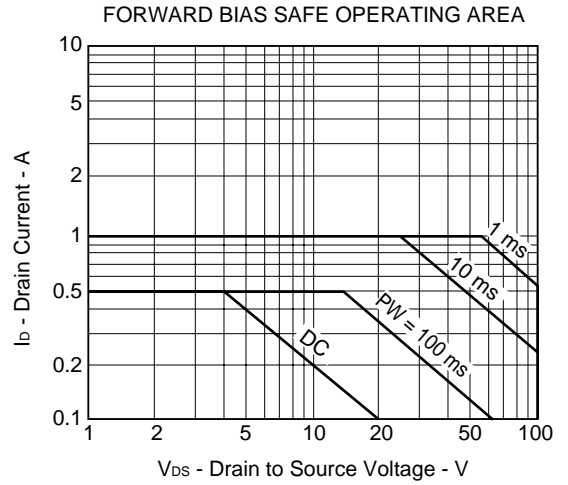
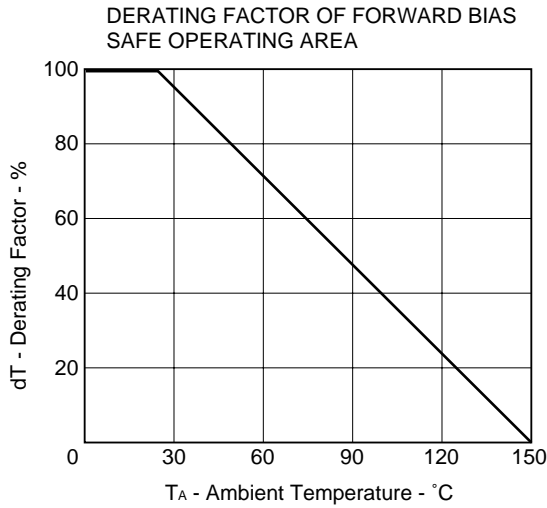
ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$)

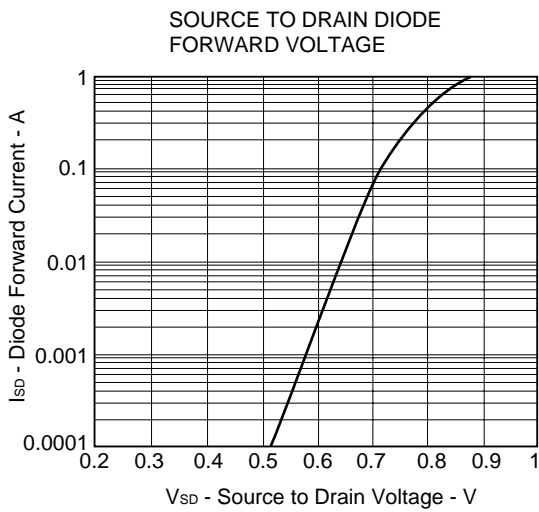
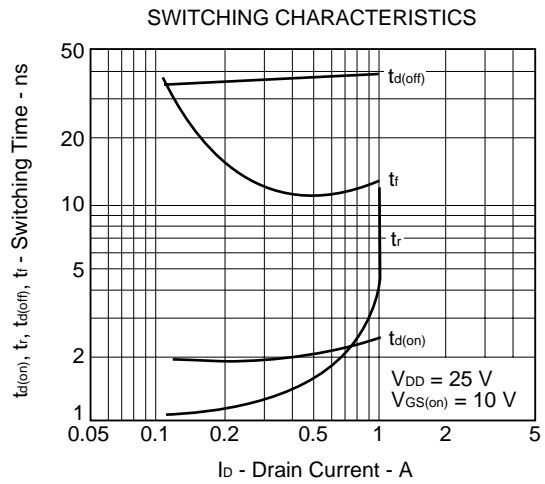
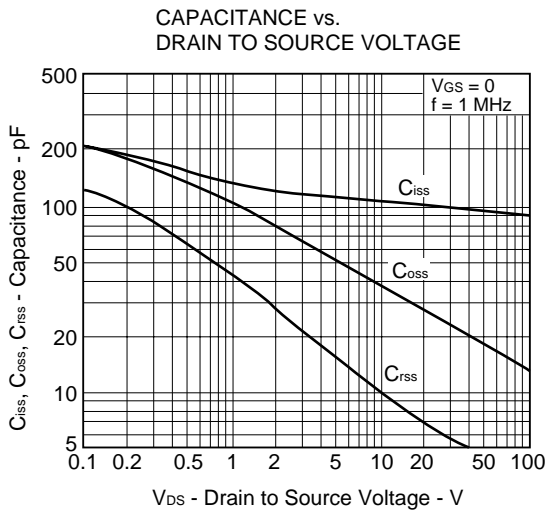
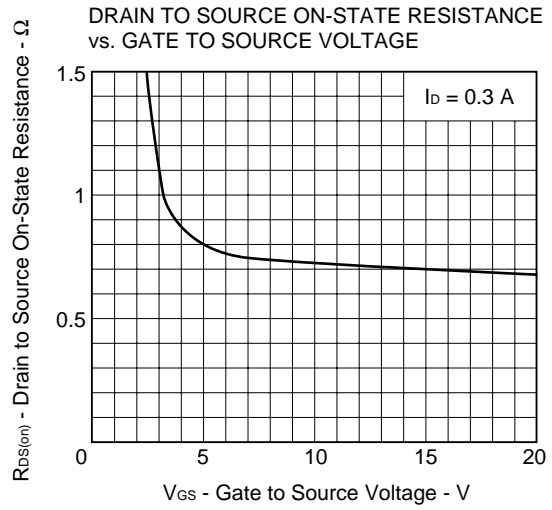
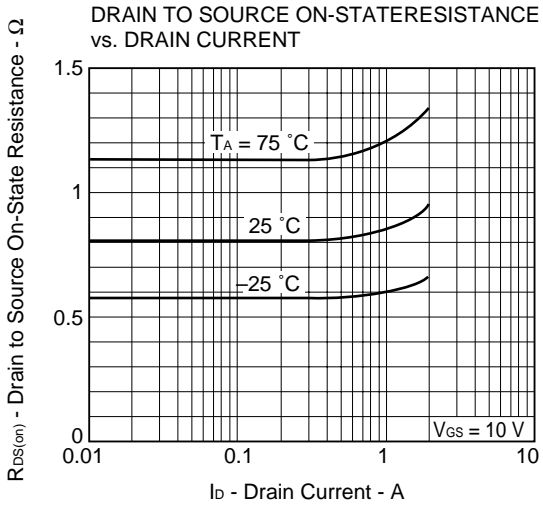
| PARAMETER | SYMBOL | TEST CONDITIONS | RATING | UNIT |
|-------------------------|----------------|--|-------------|------------|
| Drain to Source Voltage | V_{DSS} | $V_{GS} = 0$ | 100 | V |
| Gate to Source Voltage | V_{GSS} | $V_{DS} = 0$ | ± 20 | V |
| Drain Current (DC) | $I_{D(DC)}$ | | ± 0.5 | A |
| Drain Current (Pulse) | $I_{D(pulse)}$ | $PW \leq 10 ms$, Duty cycle $\leq 50 \%$ | ± 1.0 | A |
| Total Power Dissipation | P_T | $16 cm^2 \times 0.7 mm$, ceramic substrate used | 2.0 | W |
| Channel Temperature | T_{ch} | | 150 | $^\circ C$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ C$ |

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-------------------------------------|----------------------|--|------|------|------|------|
| Drain Cut-Off Current | I _{DSS} | V _{DS} = 100 V, V _{GS} = 0 | | | 1.0 | μA |
| Gate Leakage Current | I _{GSS} | V _{GS} = ±20 V, V _{DS} = 0 | | | ±10 | μA |
| Gate Cut-Off Voltage | V _{GS(off)} | V _{DS} = 10 V, I _D = 1 mA | 0.8 | 1.5 | 2.0 | V |
| Forward Transfer Admittance | y _{ts} | V _{DS} = 10 V, I _D = 0.3 A | 0.4 | | | S |
| Drain to Source On-State Resistance | R _{DS(on)1} | V _{GS} = 4.0 V, I _D = 0.3 A | | 0.95 | 1.5 | Ω |
| Drain to Source On-State Resistance | R _{DS(on)2} | V _{GS} = 10 V, I _D = 0.3 A | | 0.82 | 1.2 | Ω |
| Input Capacitance | C _{iss} | V _{DS} = 10 V, V _{GS} = 0, f = 1.0 MHz | | 100 | | pF |
| Output Capacitance | C _{oss} | | | 38 | | pF |
| Reverse Transfer Capacitance | C _{rss} | | | 10 | | pF |
| Turn-On Delay Time | t _{d(on)} | V _{DD} = 25 V, I _D = 0.3 A V _{GS(on)} = 10 V, R _G = 10 Ω R _L = 83 Ω | | 2 | | ns |
| Rise Time | t _r | | | 1.3 | | ns |
| Turn-Off Delay Time | t _{d(off)} | | | 38 | | ns |
| Fall Time | t _f | | | 13 | | ns |

TYPICAL CHARACTERISTICS (T_A = 25 °C)





REFERENCE

| Document Name | Document No. |
|---|--------------|
| NEC semiconductor device reliability/quality control system | TEI-1202 |
| Quality grade on NEC semiconductor devices | IEI-1209 |
| Semiconductor device mounting technology manual | C10535E |
| Guide to quality assurance for semiconductor devices | MEI-1202 |
| Semiconductor selection guide | X10679E |

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Anti-radioactive design is not implemented in this product.



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