PRELIMINARY

Notice : This is not a final specification
Some parametric are subject to change.

# INK0602BC1

High Speed Switching
Silicon N-channel MOSFET

## DESCRIPTION

INK0602BC1 is a Silicon N-channel MOSFET.
This product is most suitable for use such as portable machinery, because of low voltage drive and low on resistance.

## FEATURE

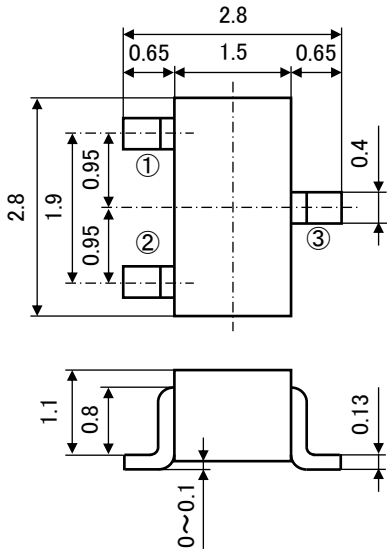
・Input impedance is high, and not necessary to consider a drive electric current.
・High drain current ID=6.2A
・Drive voltage 1.8V
・Low on Resistance. RDS(ON)=18mΩtyp(@VGS=4.5V)
RDS(ON)=21mΩtyp(@VGS=2.5V.
RDS(ON)=25mΩtyp(@VGS=1.8V)
・High speed switching.

## APPLICATION

High speed switching, Analog switching

## OUTLINE DRAWING

Unit : mm




TERMINAL CONNECTOR

①: GATE
②: SOURCE
③: DRAIN

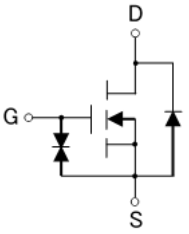
JEITA: SC-59
JEDEC: Similar to TO-236

## MAXIMUM RATINGS (Ta=25℃)

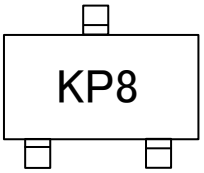
| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DSS}$ | 20 | V |
| Gate-Source Voltage | $V_{GSS}$ | ±10 | V |
| Drain Current(DC)(※1) | $I_D$ | 6.2 | A |
| Drain Current(Pulse) (※2) | $I_{DP}$ | 12 | A |
| Total Power Dissipation (※1) | $P_D$ | 0.9 | W |
| Channel Temperature | $T_{ch}$ | +150 | ℃ |
| Storage Temperature | $T_{stg}$ | −55～+150 | ℃ |

※1 package mounted on glass-epoxy substrate.
(39mm×39mm×1.6mm,Cu pad 1500mm$^2$)
※2 Pw≦10ms , Duty cycle≦1%

## EQUIVALENT CIRCUIT




## MARKING

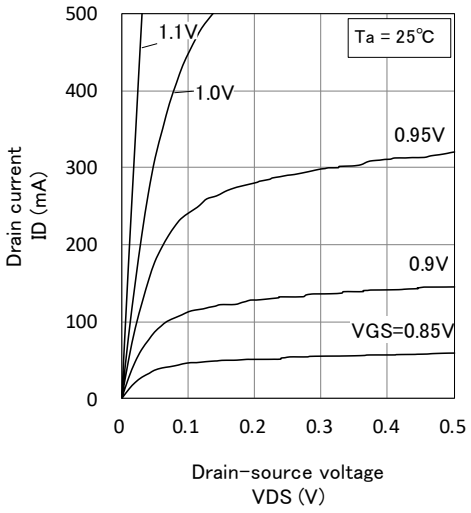



## ELECTRICAL CHARACTERISTICS (Ta=25℃)

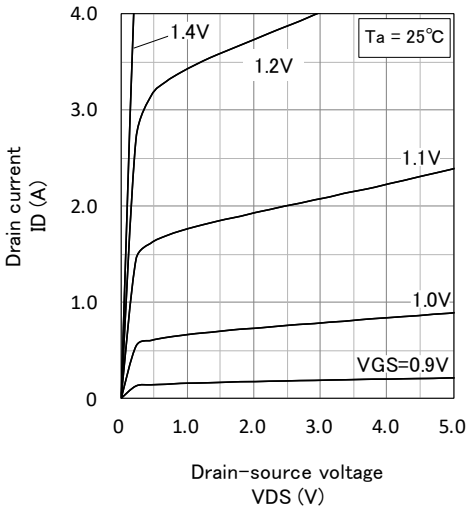
| Parameter | Symbol | Test Condition | Limit | | | Unit |
|---|---|---|---|---|---|---|
| | | | MIN | TYP | MAX | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D$=250μA, $V_{GS}$=0V | 20 | − | − | V |
| Gate-Source Leak Current | $I_{GSS}$ | $V_{GS}$=±10V, $V_{DS}$=0V | − | − | ±10 | μA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=20V, $V_{GS}$=0V | − | − | 1.0 | μA |
| Gate Threshold Voltage | $V_{th}$ | $I_D$=250μA, $V_{DS}$=$V_{GS}$ | 0.3 | − | 1.0 | V |
| Static Drain-Source On-State Resistance | $R_{DS(ON)}$ | $I_D$=6.2A, $V_{GS}$=4.5V | − | 18 | 23 | mΩ |
| | | $I_D$=4.0A, $V_{GS}$=2.5V | − | 21 | 29 | |
| | | $I_D$=3.0A, $V_{GS}$=1.8V | − | 25 | 31 | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=10V, $V_{GS}$=0V, f=1MHz | − | 1050 | − | pF |
| Output Capacitance | $C_{oss}$ | | − | 145 | − | |
| Feedback Capacitance | $C_{rss}$ | | − | 10 | − | |
| Switching Time | $t_{on}$ | $V_{DD}$=20V, $I_D$=200mA, $V_{GS}$=5V | − | 30 | − | ns |
| | $t_{off}$ | | − | 290 | − | |

## TYPICAL CHARACTERISTICS

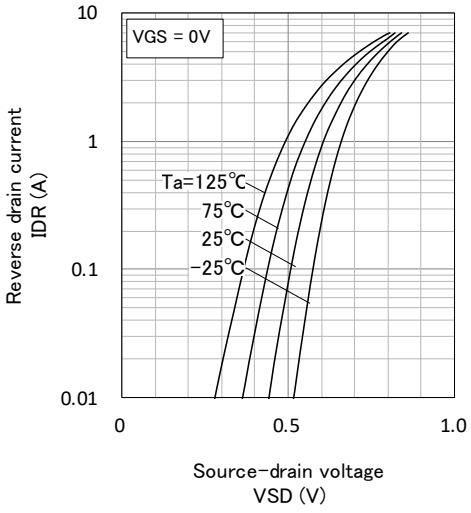
ID – VDS



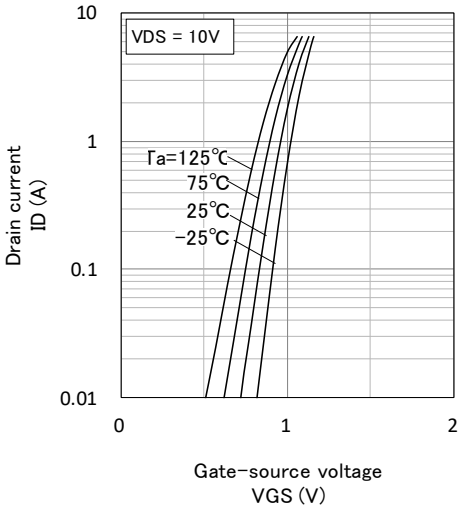

ID – VDS



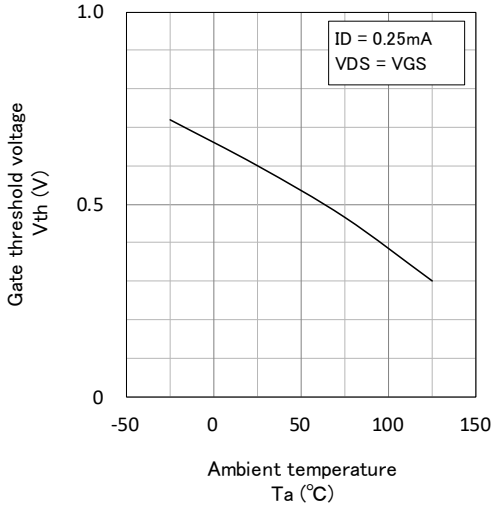

IDR – VSD



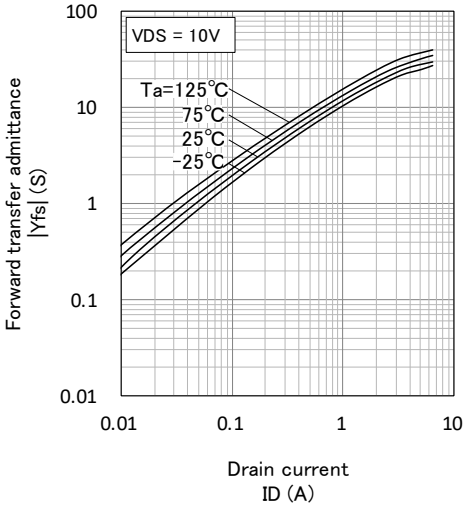

ID – VGS



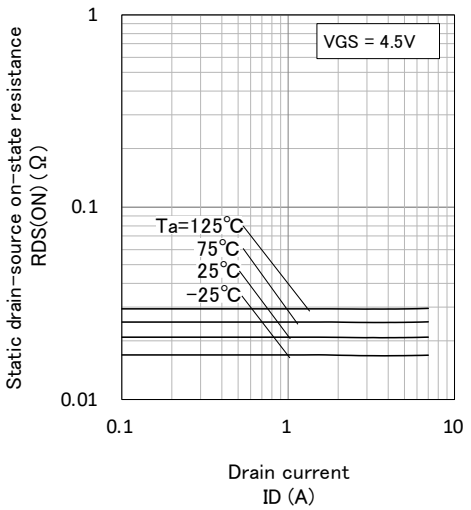

Vth – Ta



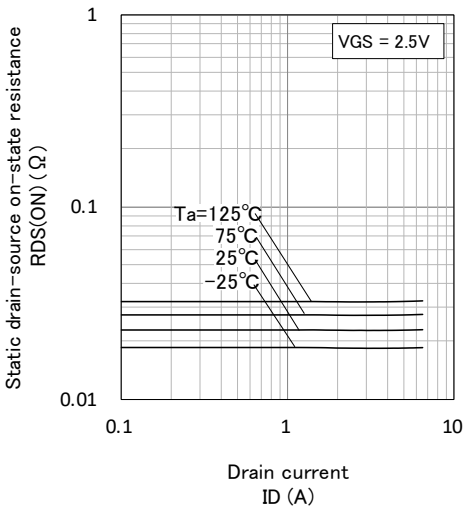

|Yfs| – ID



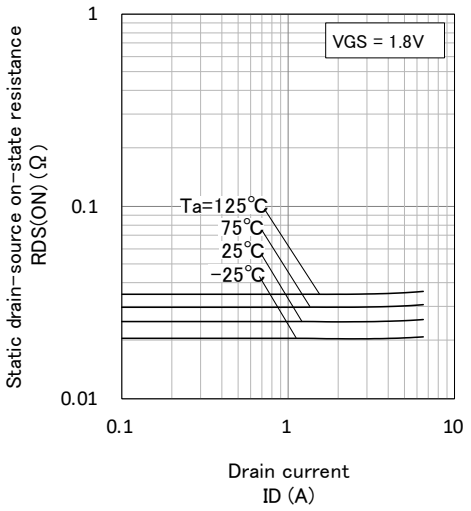
RDS(ON) – ID



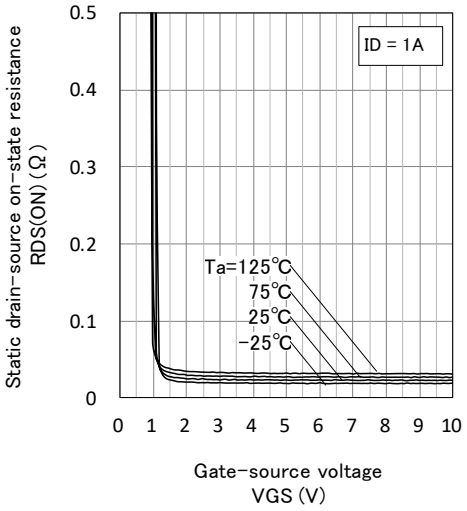

RDS(ON) – ID



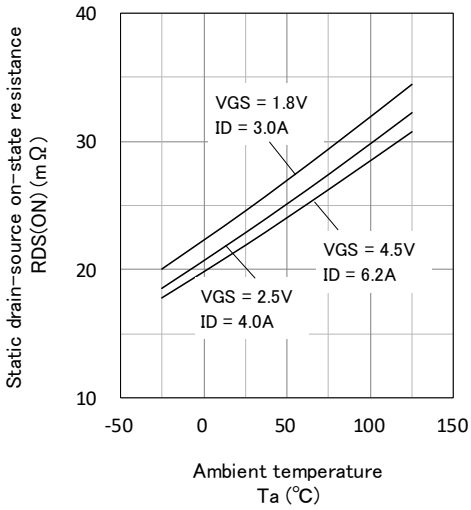

RDS(ON) – ID



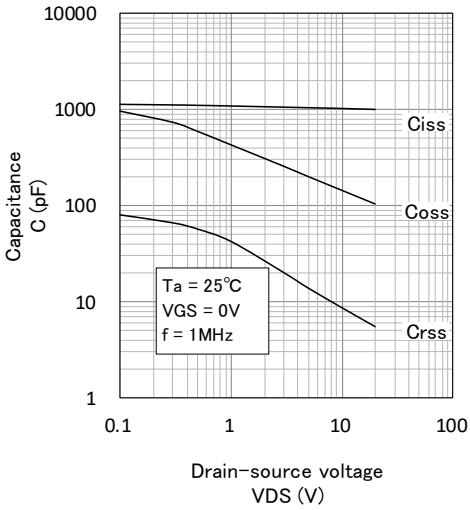

RDS(ON) – VGS




RDS(ON) – Ta




C – VDS



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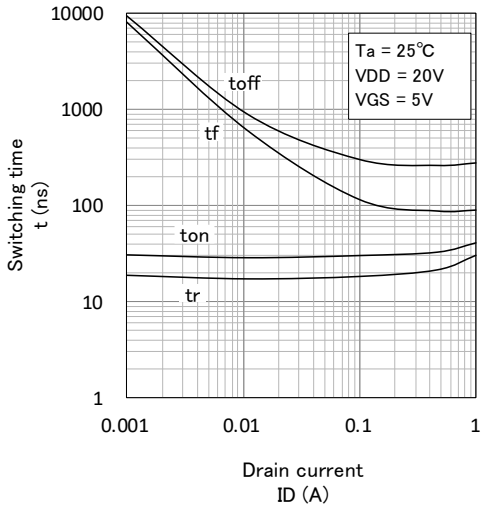
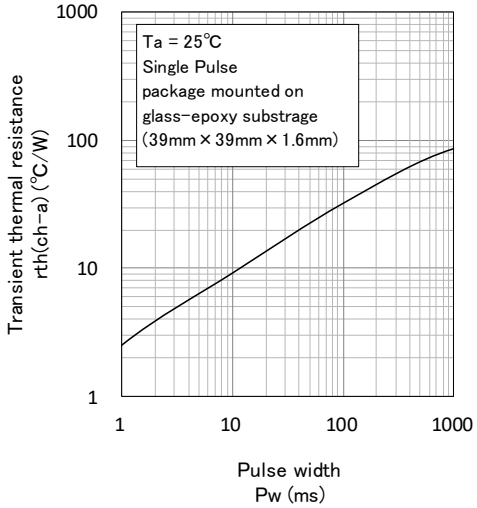
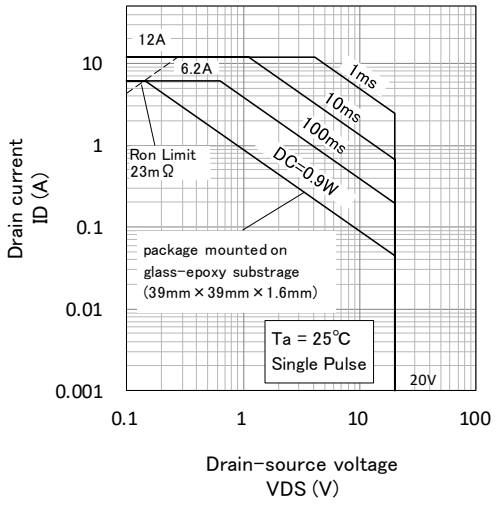
t – ID



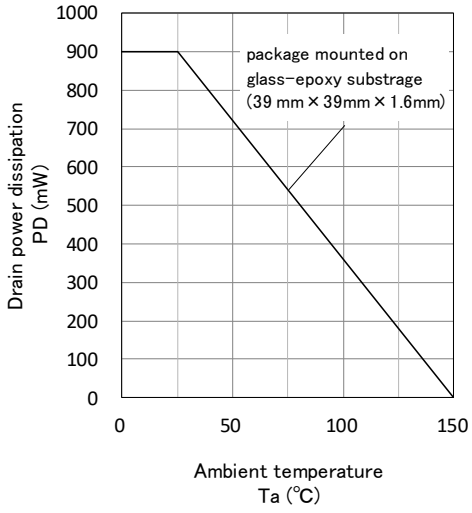

rth(ch-a) – Pw



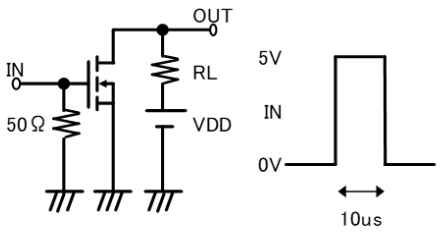

ASO



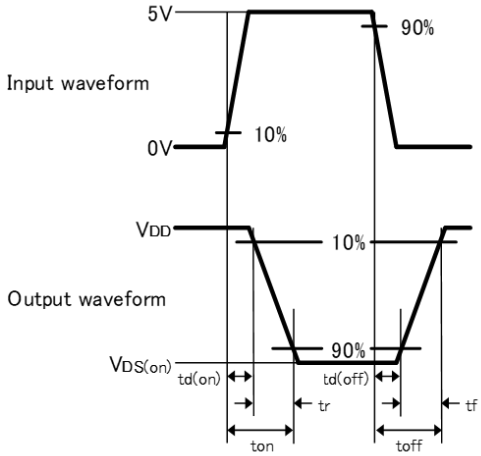

PD – Ta




Switching time test condition




Duty ≦ 1%
Input : tr, tf < 10ns
VDD = 20V
Common source
Ta = 25℃



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