

# PRELIMINARY

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## INK0103AU1

High speed switching  
Silicon N-channel MOSFET

### DESCRIPTION

INK0103AU1 is a Silicon N-channel MOSFET.

This product is most suitable for low voltage use such as portable machinery, because of low voltage drive and low resistance.

### FEATURE

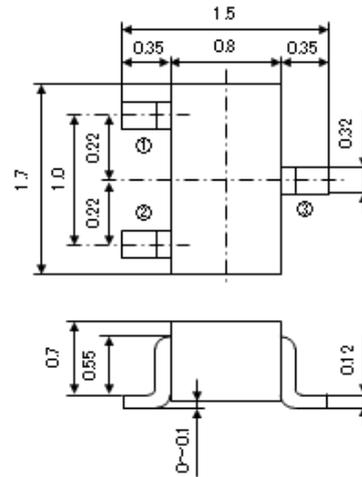
- Input impedance is high, and not necessary to consider a drive electric current.
- Drive voltage 1.8V
- Low on Resistance.  
 $R_{DS(ON)}=0.33\ \Omega$  (TYP) @ $I_D=0.5A, V_{GS}=4.5V$   
 $R_{DS(ON)}=0.46\ \Omega$  (TYP) @ $I_D=0.5A, V_{GS}=2.5V$   
 $R_{DS(ON)}=0.64\ \Omega$  (TYP) @ $I_D=0.3A, V_{GS}=1.8V$
- High speed switching.
- Small packing for easy mounting.

### APPLICATION

Inductive loads switching

### OUTLINE DRAWING

Unit: mm



TERMINAL CONNECTOR

- ①: GATE
- ②: SOURCE
- ③: DRAIN

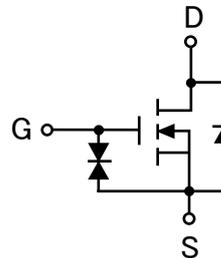
JEITA: SC-75A  
JEDEC: -

### MAXIMUM RATINGS (Ta=25°C)

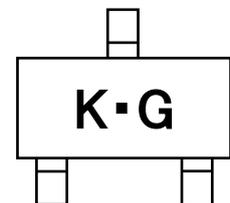
Parameter	Symbol	Rating	Unit
Drain-Source voltage	V <sub>DSS</sub>	20	V
Gate-Source voltage	V <sub>GS</sub>	±8	V
Drain current(DC)	I <sub>D</sub>	0.6	A
Drain current(Pulse)	I <sub>DP</sub>	1.2(※1)	A
Total power dissipation	P <sub>D</sub>	150	mW
Channel temperature	T <sub>ch</sub>	+150	°C
Storage temperature	T <sub>stg</sub>	-55~+150	°C

※1: Pw ≤ 10 μs, Duty cycle ≤ 1%

### EQUIVALENT CIRCUIT



### MARKING



### ELECTRICAL CHARACTERISTICS (Ta=25°C)

Parameter	Symbol	Test Condition	Limit			Unit
			MIN	TYP	MAX	
Drain-Source breakdown voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =100μA, V <sub>GS</sub> =0V	20	-	-	V
Gate-Source leak current	I <sub>GS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V	-	-	±10	μA
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V	-	-	1	μA
Gate threshold voltage	V <sub>th</sub>	I <sub>D</sub> =250μA, V <sub>DS</sub> =V <sub>GS</sub>	0.5	-	1.0	V
Static Drain-Source on-state resistance	R <sub>DS(ON)</sub>	I <sub>D</sub> =0.5A, V <sub>GS</sub> =4.5V	-	0.33	-	Ω
		I <sub>D</sub> =0.5A, V <sub>GS</sub> =2.5V	-	0.46	-	
		I <sub>D</sub> =0.3A, V <sub>GS</sub> =1.8V	-	0.64	-	
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =5V, V <sub>GS</sub> =0V, f=1MHz	-	64	-	pF
Output capacitance	C <sub>oss</sub>		-	16	-	
Switching time	t <sub>on</sub>	V <sub>DD</sub> =5V, I <sub>D</sub> =0.5A	-	22	-	ns
	t <sub>off</sub>	V <sub>GS</sub> =5V	-	30	-	

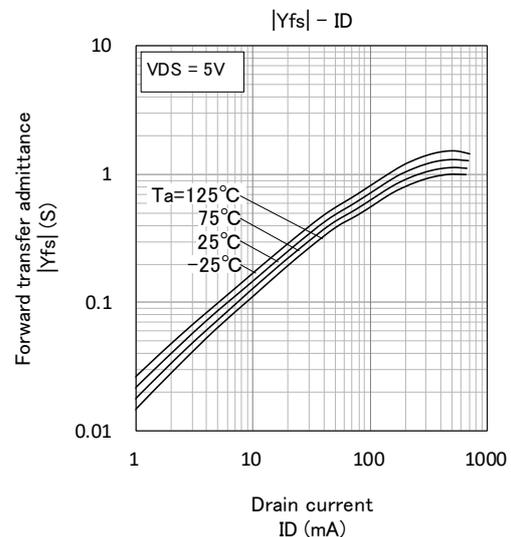
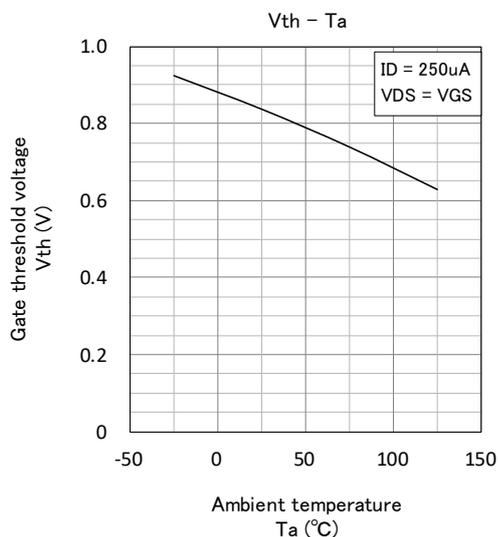
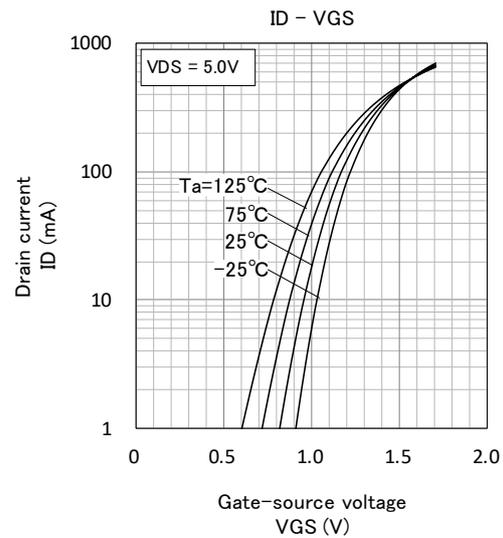
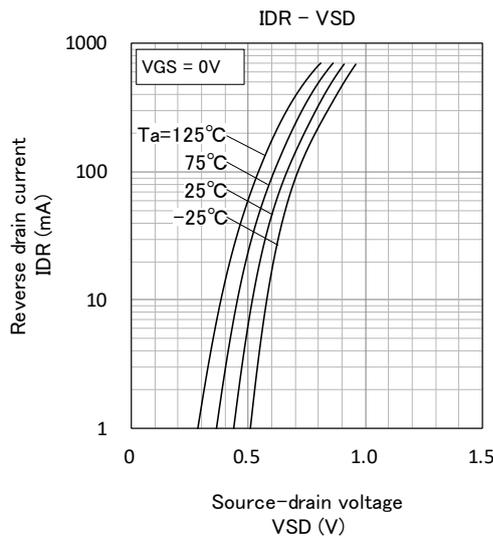
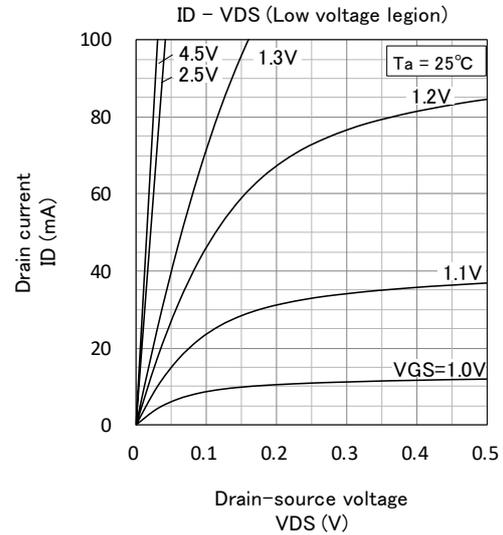
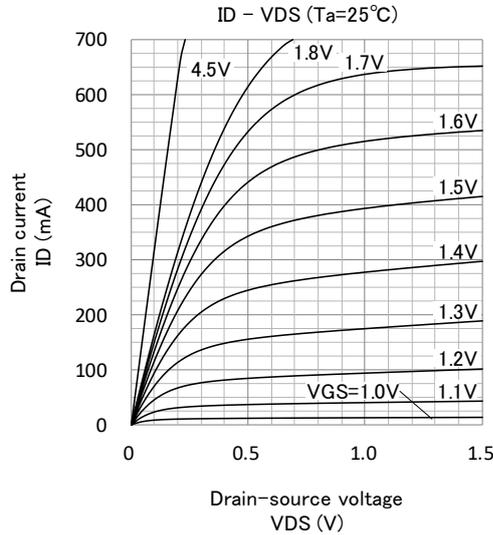
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### TYPICAL CHARACTERISTICS

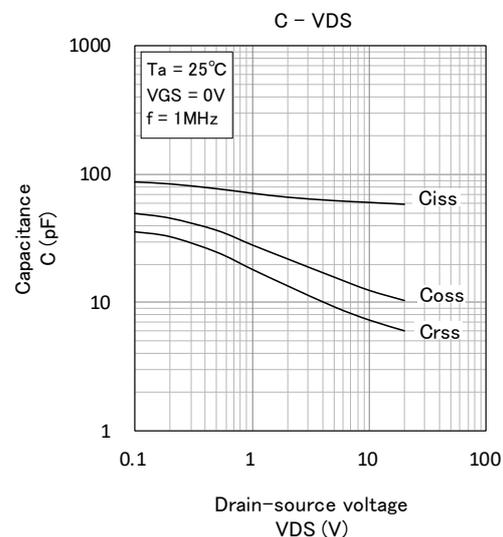
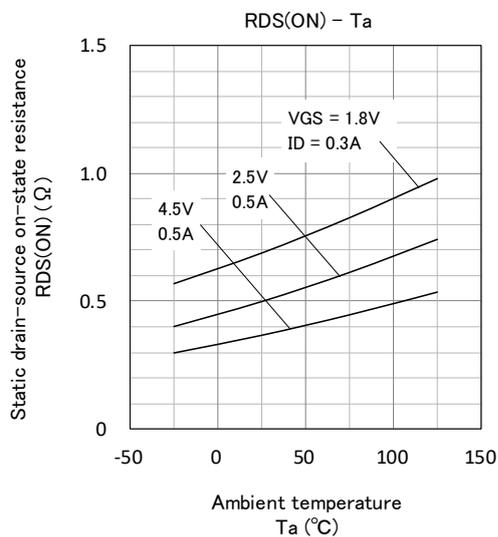
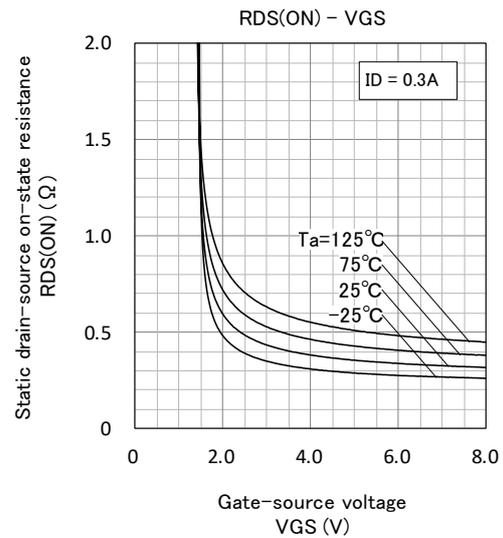
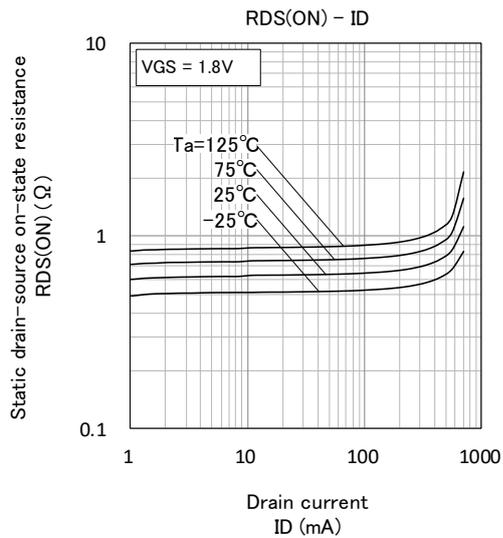
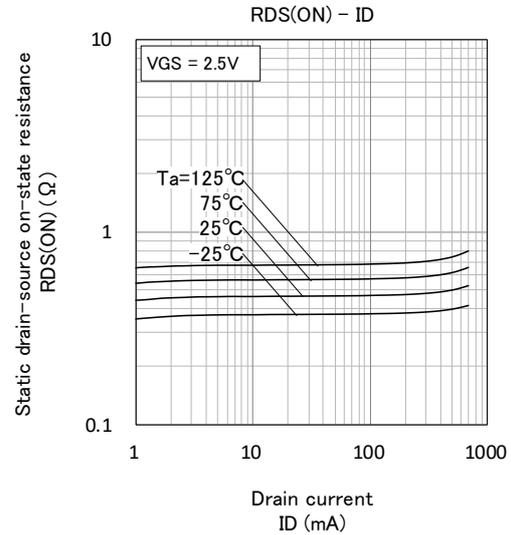
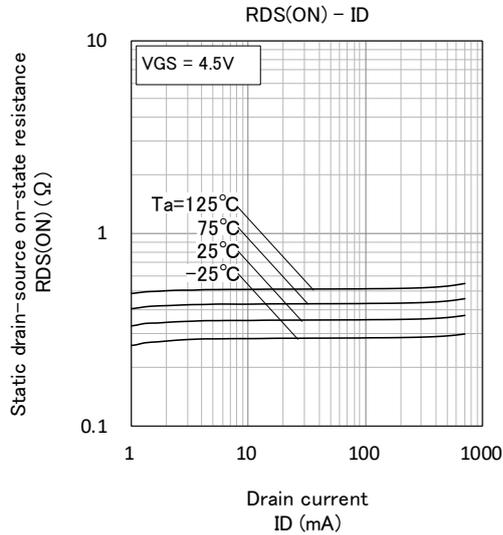


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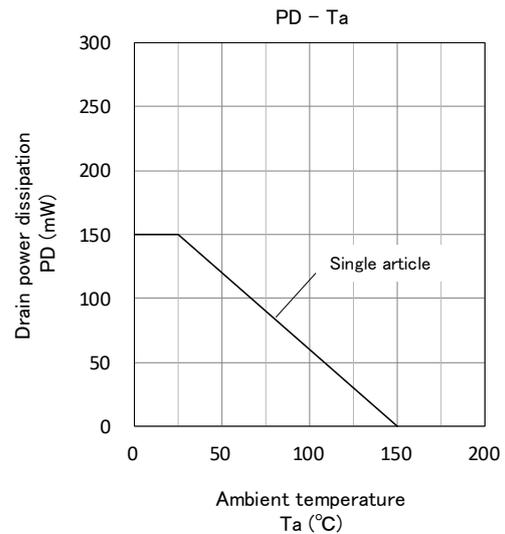
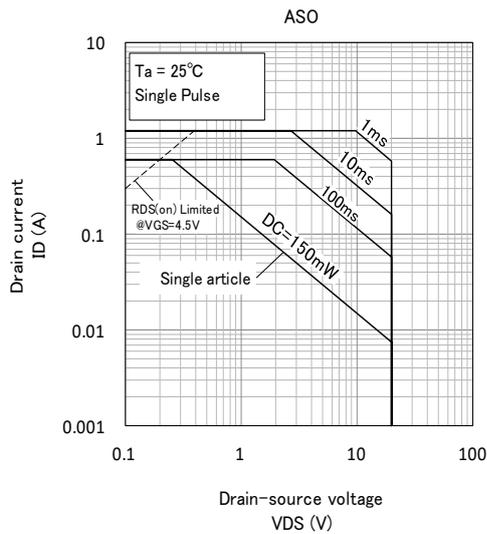
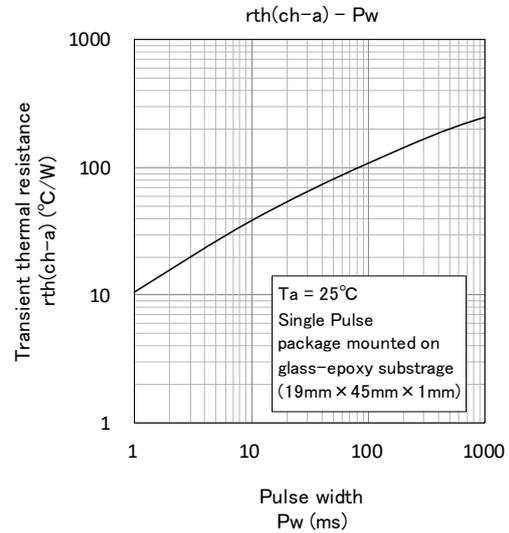
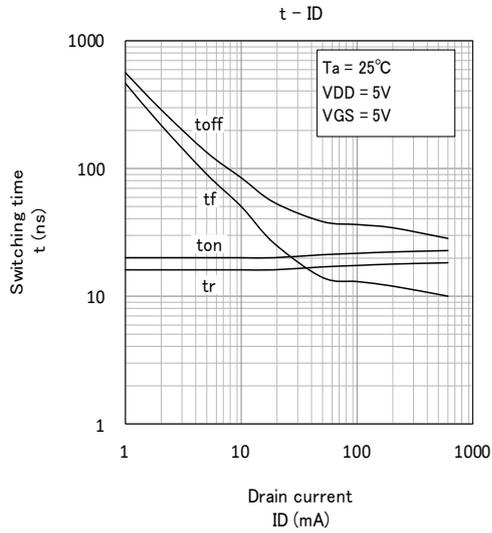


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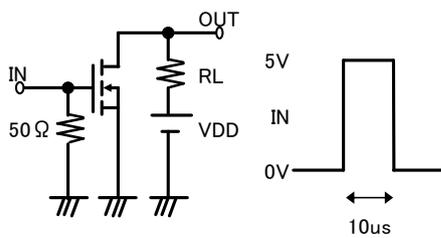
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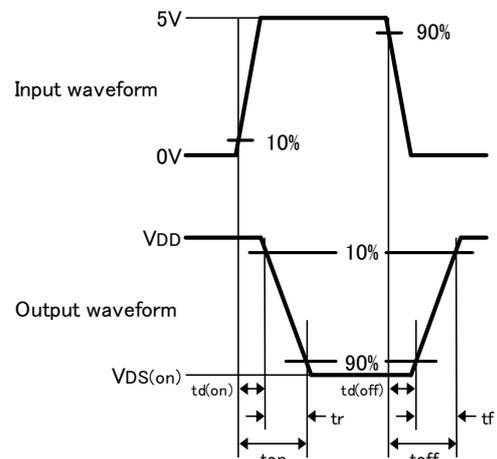
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### Switching time test condition



Duty  $\leq 1\%$   
Input:  $t_r, t_f < 10\text{ns}$   
 $V_{DD} = 5\text{V}$   
Common source  
 $T_a = 25^\circ\text{C}$



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**Keep safety first in your circuit designs!**

·ISAHAYA Electronics Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (1) placement of substitutive, auxiliary, (2) use of non-flammable material or (3) prevention against any malfunction or mishap.

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