PRELIMINARY

This product is currently under development
and may be subject to change at a later date.

INKA214AS1

Active Clamp
Silicon N-channel MOSFET

DESCRIPTION

INKA214AS1 is a Silicon N-channel Active Clamp MOSFET.
The built in clamp diode connected between drain and gate protects the MOS-FET from the counter electromotive force in switching drive of the inductance load.

FEATURE

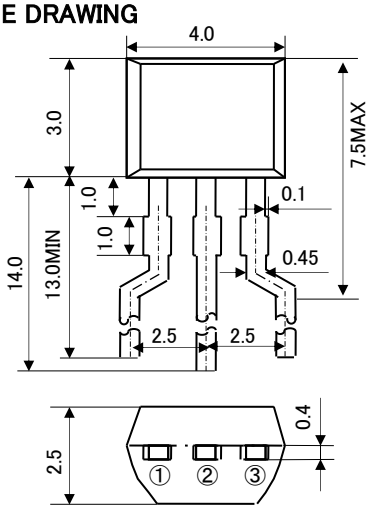
・The built in clamp diode connected between drain and gate.
・Built in bias resistor enables reduction of parts count.
・Drive voltage 4V.

APPLICATION

Motor, Solenoid drive etc

OUTLINE DRAWING

Unit : mm



TERMINAL CONNECTER
①:SOURCE
②:DRAIN
③:GATE

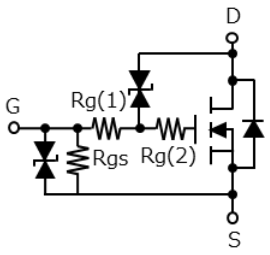
JEITA : —
JEDEC : TO-92S

MAXIMUM RATINGS (Ta=25℃)

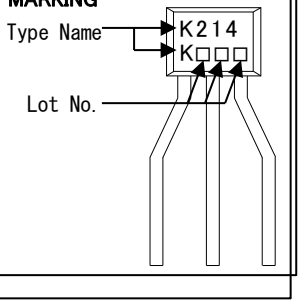
Symbol	Parameter	Rating	Unit
V_{GSS}	Gate-Source Voltage	10	V
I_D	Drain Current(DC)	2	A
I_{DP}	Drain current(Pulse)	8(※1)	A
P_D	Total Power Dissipation	0.95	W
T_{ch}	Channel Temperature	+150	℃
T_{stg}	Storage temperature	−55～+150	℃

※1 Pw≦1ms , Duty cycle≦1%

EQUIVALENT CIRCUIT



MARKING

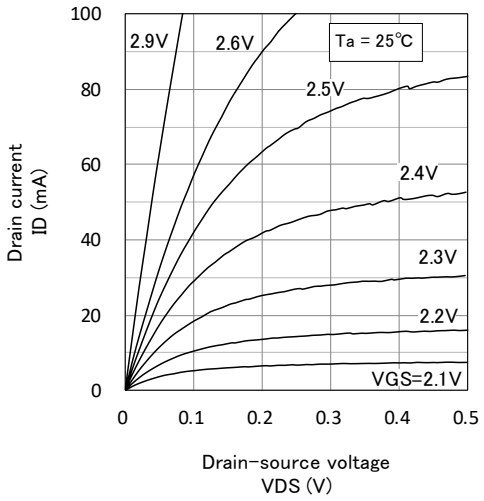


ELECTRICAL CHARACTERISTICS (Ta=25℃)

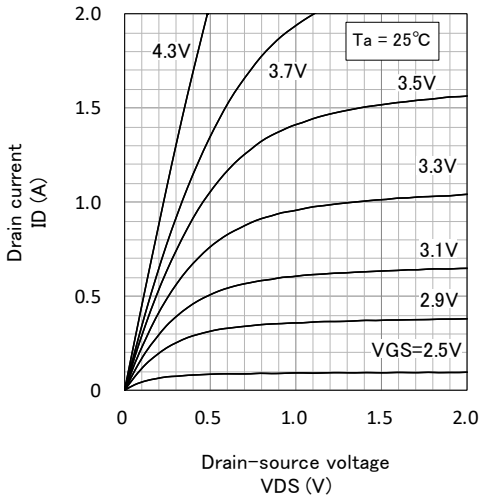
Parameter	Symbol	Test Condition	Limit			Unit
			MIN	TYP	MAX	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=10mA, V_{GS}=0V	38	−	62	V
Gate-Source Leak current	I_{GSS}	V_{GS}=±5V, V_{DS}=0V	−	−	±90	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V ,V_{GS}=0V	−	−	1.0	μA
Gate Threshold Voltage	V_{th}	I_D=1mA, V_{DS}= V_{GS}	1.2	−	2.3	V
Forward Transfer Admittance	$\|Y_{fs}\|$	V_{DS}=10V, I_D=1A	−	2	−	S
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	I_D=1A, V_{GS}=10V	−	125	−	mΩ
		I_D=1A, V_{GS}=4.5V	−	175	−	mΩ
Gate-Source Resistance	R_{gs}	—	−	100	−	kΩ
Gate Resistance1	$R_g(1)$		−	1.5	−	kΩ
Gate Resistance2	$R_g(2)$		−	500	−	Ω
Input Capacitance	C_{iss}	V_{DS}=10V, V_{GS}=0V, f=1MHz	−	20	−	pF
Output Capacitance	C_{oss}		−	55	−	pF
Switching Time	t_{on}	V_{DD}=30V, I_D=1A V_{GS}=0～10V	−	2.8	−	μs
	t_{off}		−	0.8	−	μs

TYPICAL CHARACTERISTICS

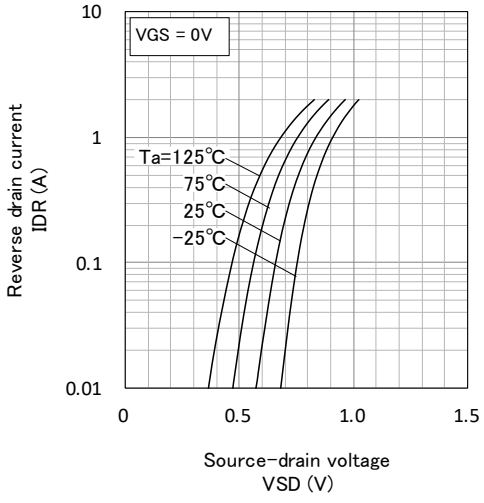
ID – VDS



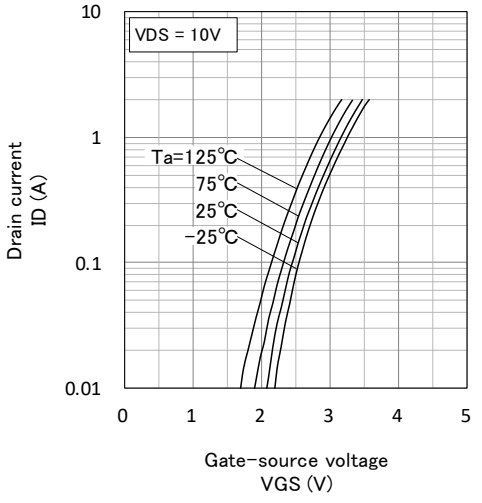
ID – VDS



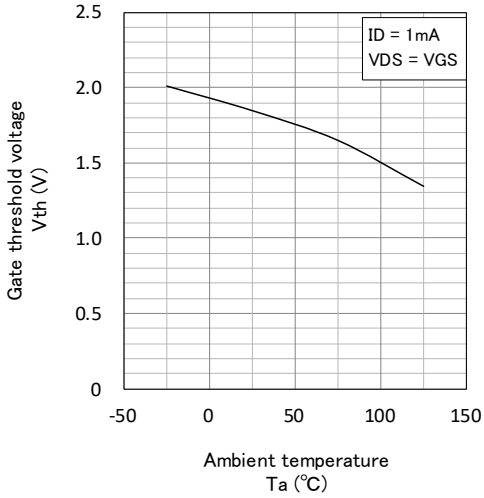
IDR – VSD



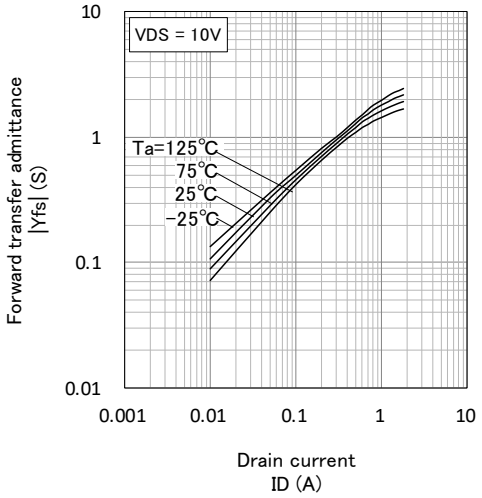
ID – VGS



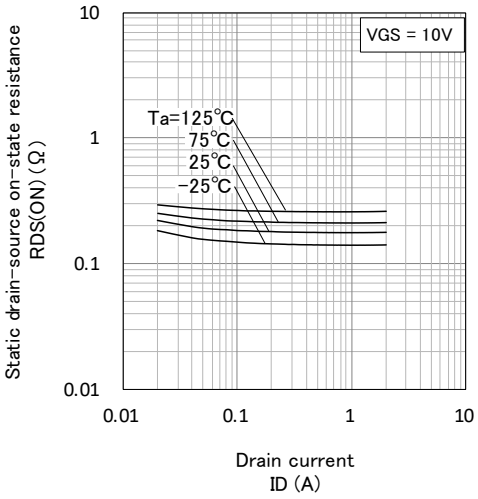
Vth – Ta



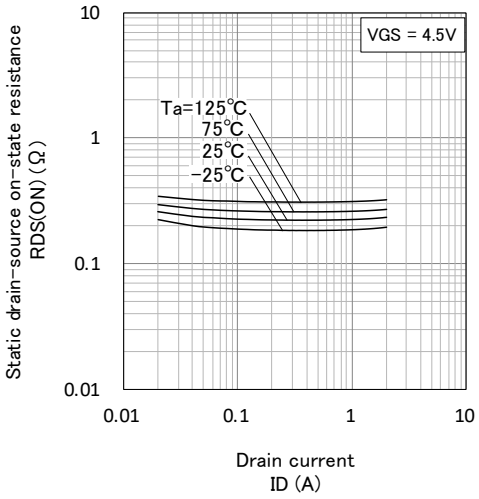
|Yfs| – ID



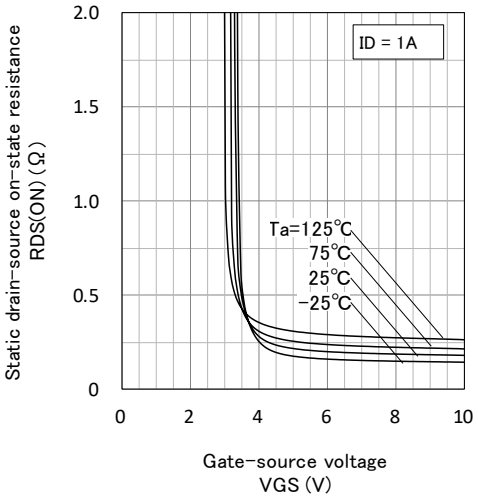
RDS(ON) – ID



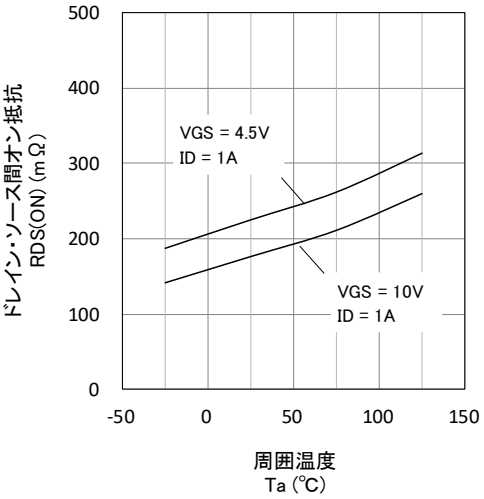
RDS(ON) – ID



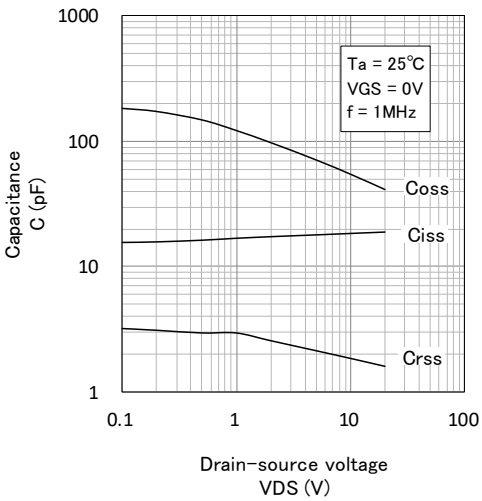
RDS(ON) – VGS



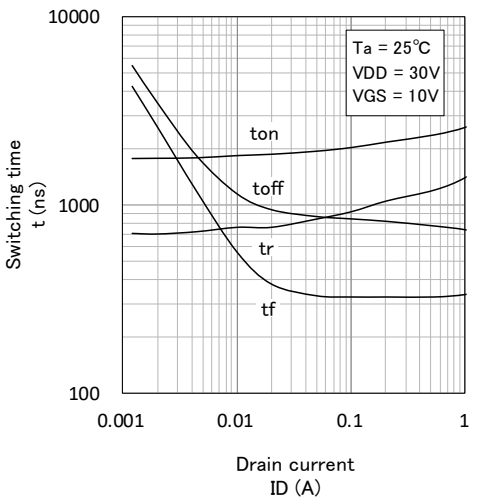
RDS(ON) – Ta



C – VDS



t – ID



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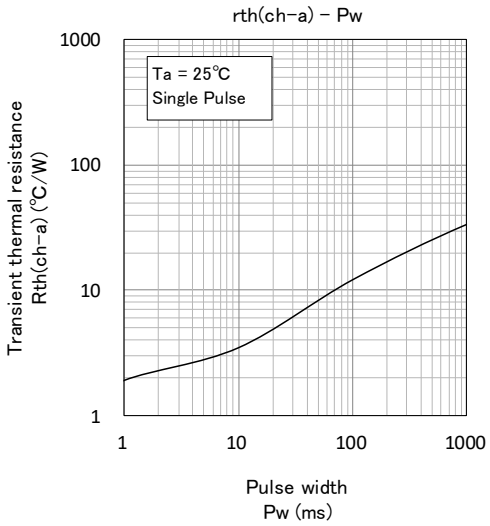
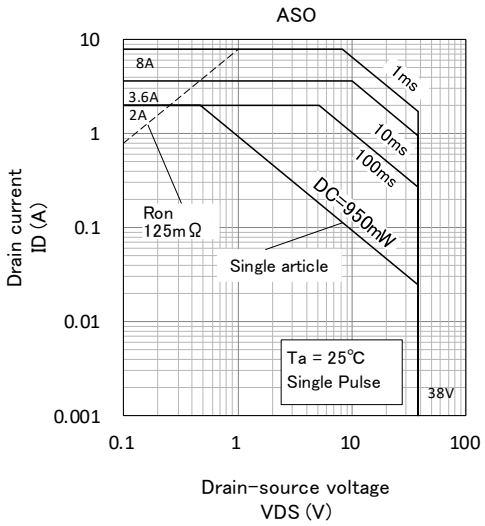
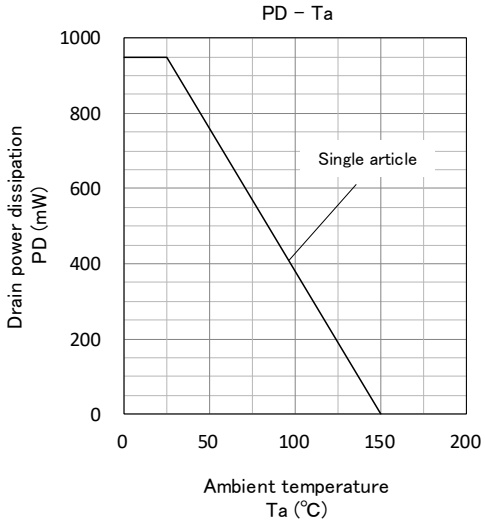
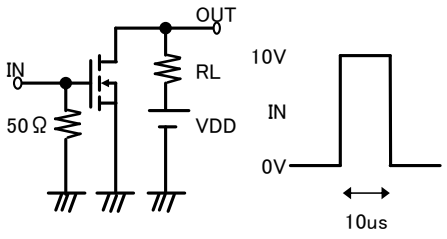


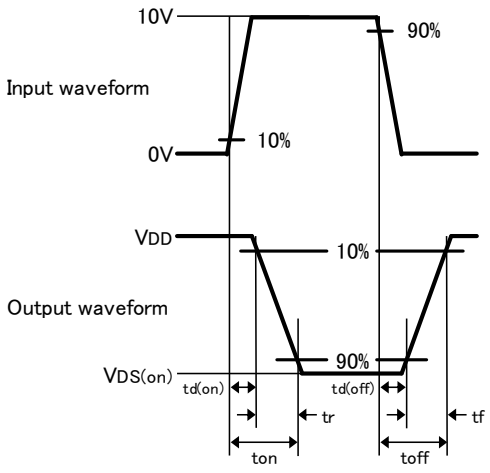




Switching time test condition



Duty ≦ 1%
Input : tr, tf < 10ns
VDD=30V
Common source
Ta = 25°C



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