INKA114AS1

Active Clamp
Silicon N-channel MOSFET

DESCRIPTION

INKA114AS1 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

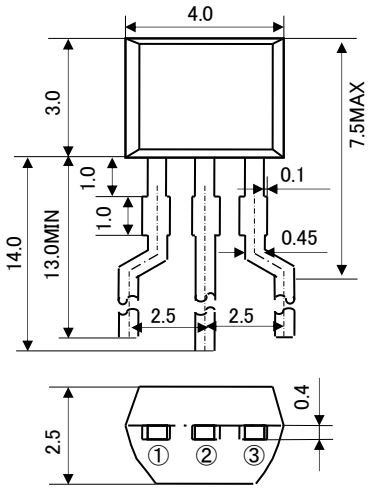
- The built in clamp diode connected between drain and gate.
- The ESD protection diodes and resistance for bias enables to reduce the peripheral components.
- Drive voltage 5V
- High power Dissipation. P_D=800mW

APPLICATION

Inductive loads switching

OUTLINE DRAWING

Unit : mm



TERMINAL CONNECTOR
①:SOURCE
②:DRAIN
③:GATE

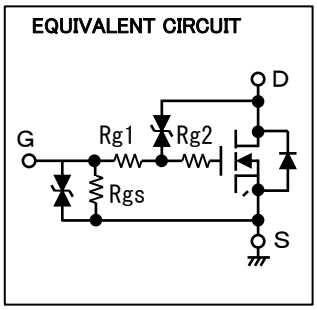
JEITA: —
JEDEC: —

MAXIMUM RATINGS (Ta=25℃)

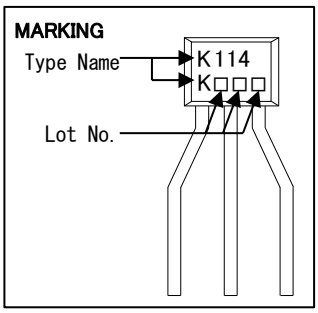
Symbol	Parameter	Rating	Unit
V_{GSS}	Gate-Source Voltage	±20	V
I_D	Drain Current(DC)	0.5	A
I_{DP}	Drain current(Pulse)	1(※1)	A
P_D	Total Power Dissipation	800	mW
T_{ch}	Channel Temperature	+150	℃
T_{stg}	Storage temperature	−55～+150	℃

※1 Single pulse Pw≦1ms , Duty cycle≦1%

EQUIVALENT CIRCUIT



MARKING

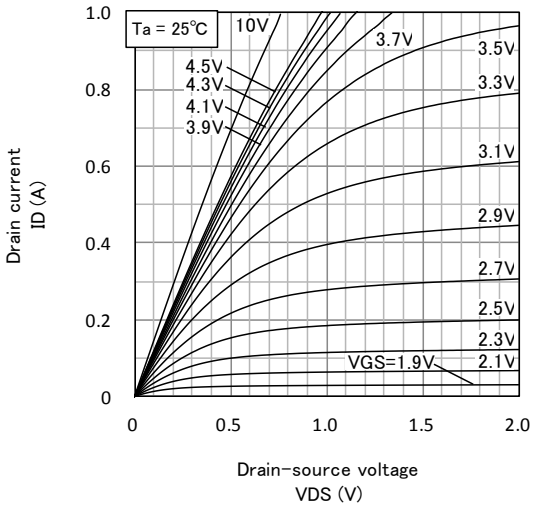


ELECTRICAL CHARACTERISTICS (Ta=25℃)

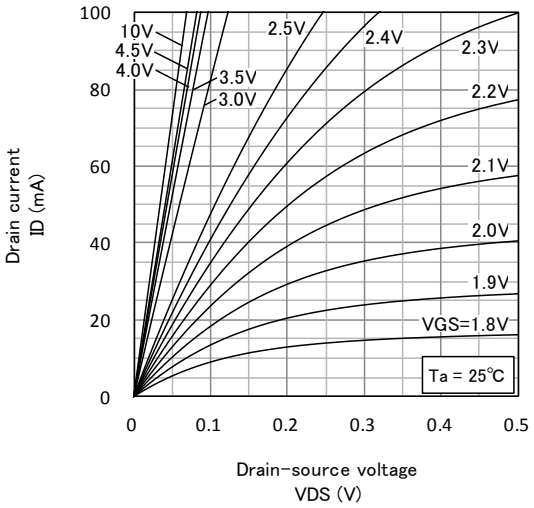
Parameter	Symbol	Test Condition	Limit			Unit
			MIN	TYP	MAX	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=10mA, V_{GS}=0V	38	−	62	V
Gate-Source Leak current	I_{GSS}	V_{GS}=±5V, V_{DS}=0V	−	−	±90	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V ,V_{GS}=0V	−	−	1.0	μA
Gate Threshold Voltage	V_{th}	I_D=1mA, V_{DS}= V_{GS}	1.0	−	2.5	V
Forward Transfer Admittance	| Yfs |	V_{DS}=12V, I_D=150mA	−	360	−	mS
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	I_D=150mA, V_{GS}=5V	−	1.1	1.8	Ω
Gate-Source Resistance	R_{gs}		−	100	−	kΩ
Gate Resistance1	R_{g1}		−	10	−	kΩ
Gate Resistance2	R_{g2}		−	500	−	Ω
Input Capacitance	C_{iss}	V_{DS}=10V, V_{GS}=0V,f=1MHz	−	9	−	pF
Output Capacitance	C_{oss}		−	20	−	pF
Switching Time	t_{on}	V_{DD}=30V , I_D=100mA V_{GS}=0～10V	−	2.1	−	μs
	t_{off}		−	0.9	−	μs

TYPICAL CHARACTERISTICS

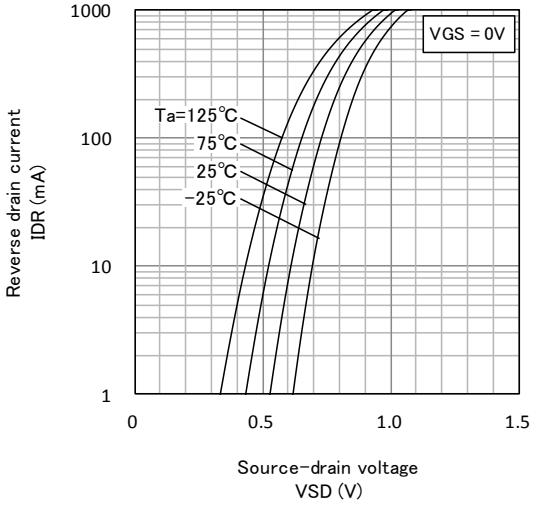
ID – VDS



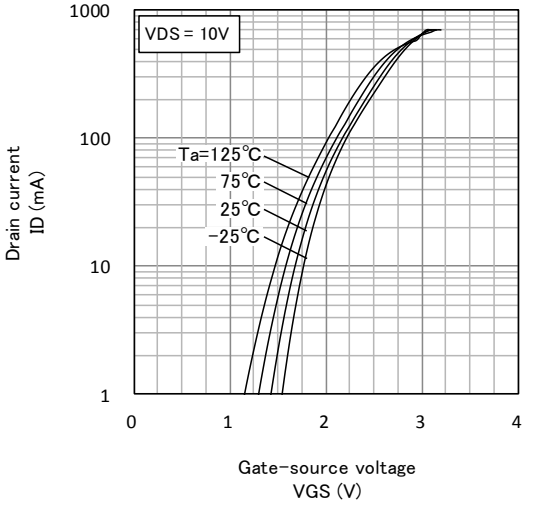
ID – VDS (Low voltage legion)



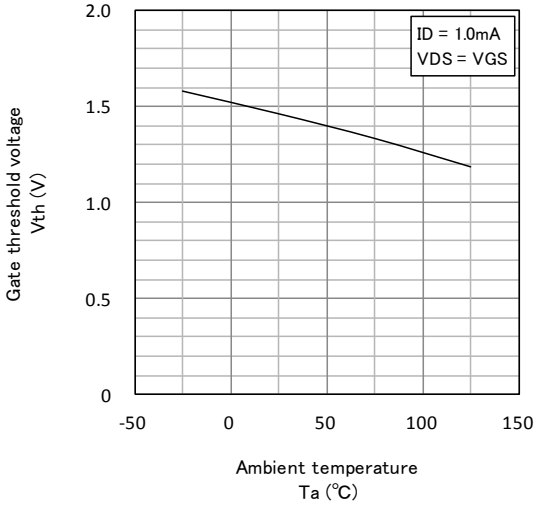
IDR – VSD



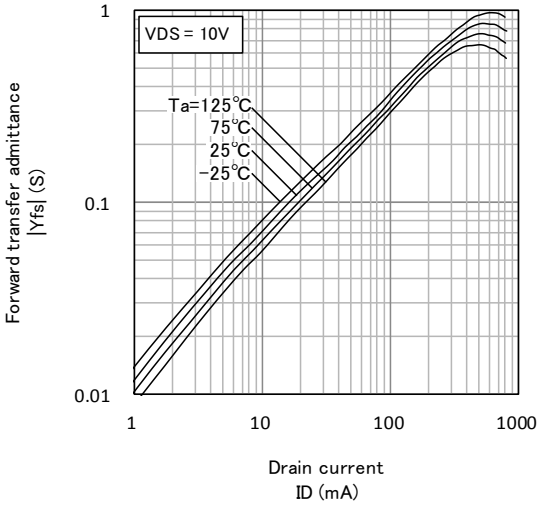
ID – VGS



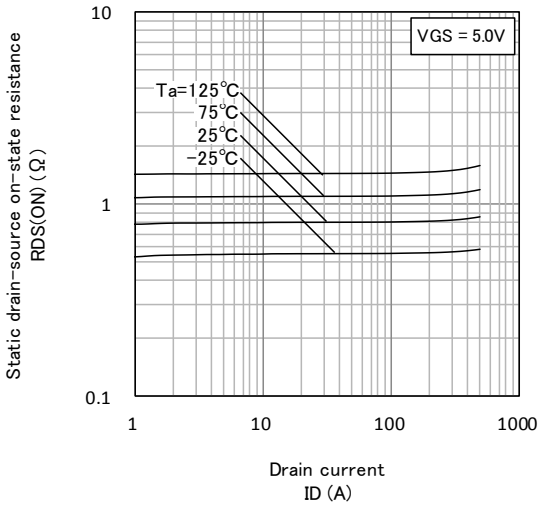
Vth – Ta



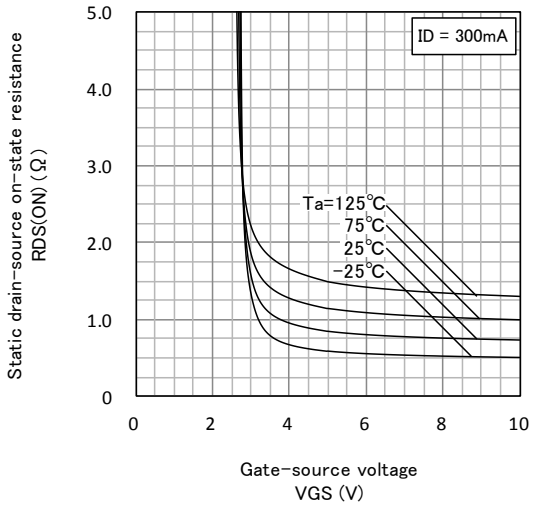
|Yfs| – ID



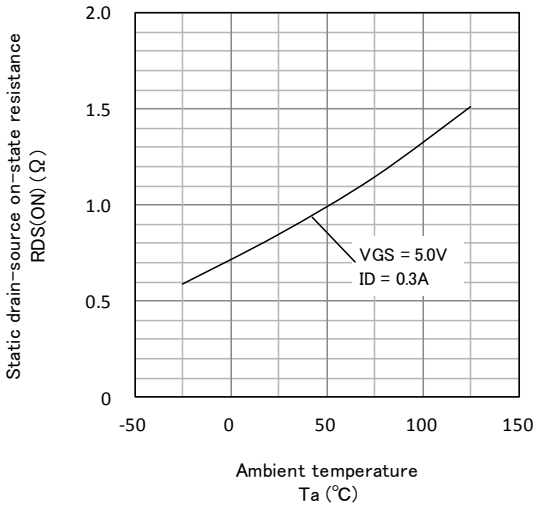
RDS(ON) – ID



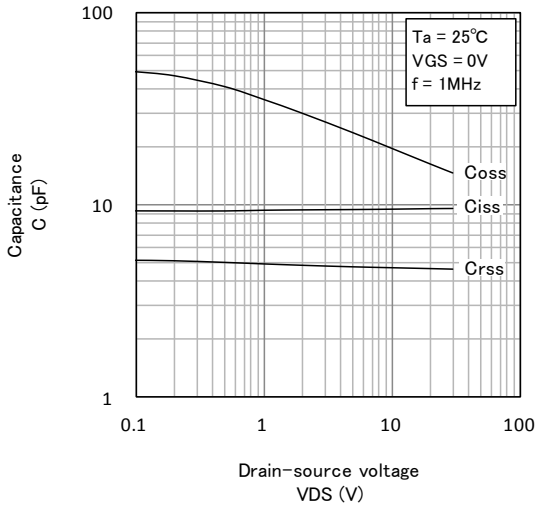
RDS(ON) – VGS



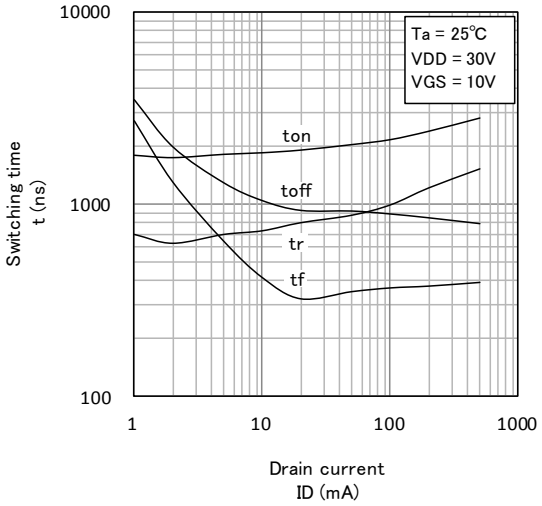
RDS(ON) – Ta



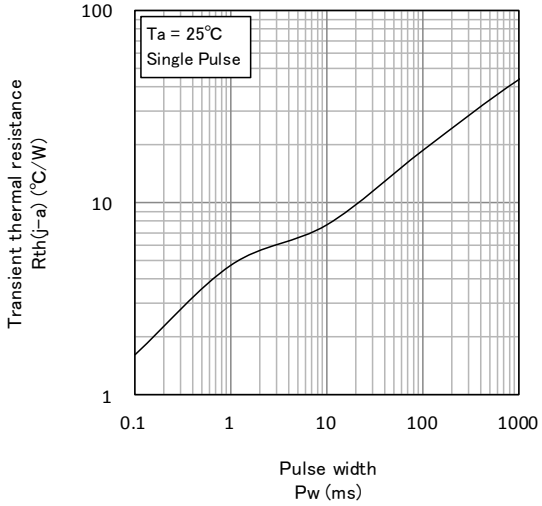
C – VDS



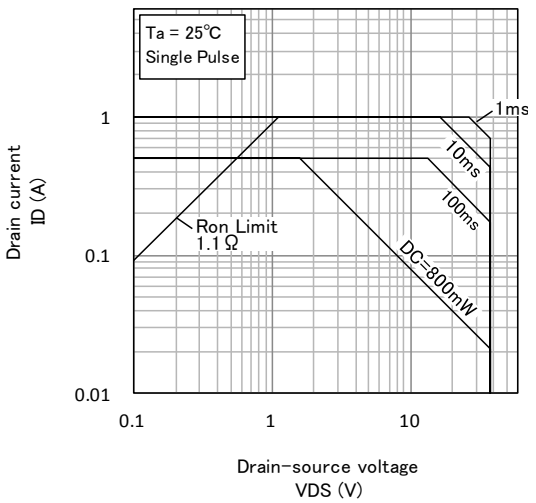
t – ID



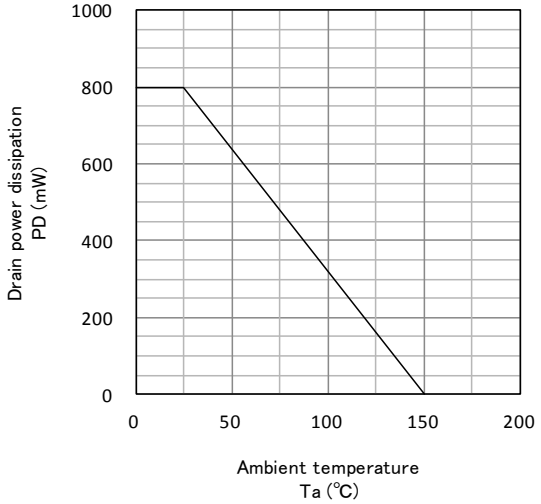
Rth(j-a) – Pw



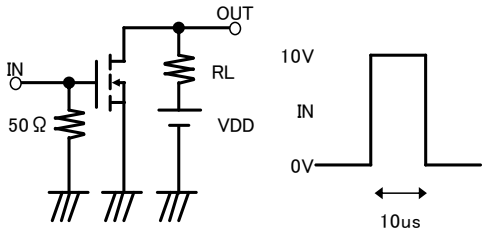
ASO



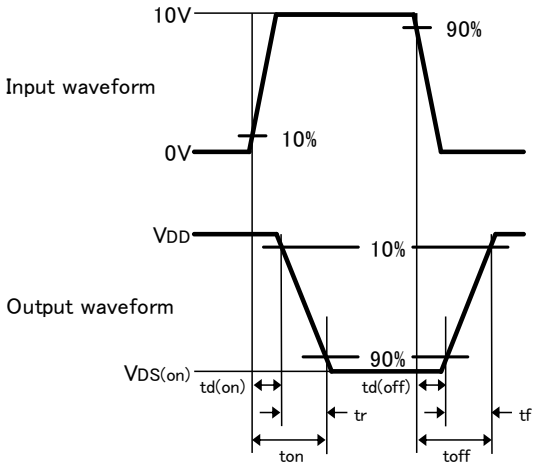
PD – Ta



Switching time test condition



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



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