INKE211AC1

Built-in Zener Diode
MOS field-effect transistor
Silicon N-channel

DESCRIPTION

INKE211AC1 is a silicon N-channel MOS transistors with built-in Zener diode between drain and source, and small package (SC-59).

FEATURE

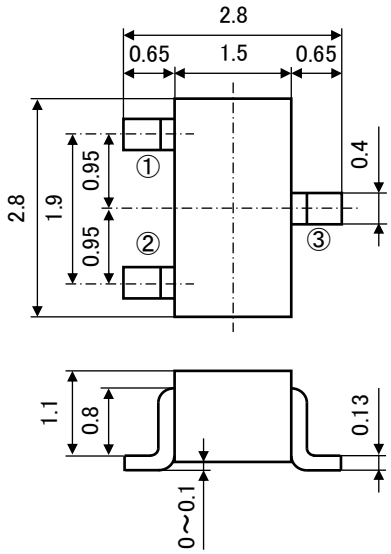
- Low on Resistance.
  $R_{DS(ON)}$=250mΩ(TYP) @I_D=500mA,V_{GS}=4.5V
  $R_{DS(ON)}$=200mΩ(TYP) @I_D=500mA,V_{GS}=10V
- High speed switching.
- Drive voltage 4V
- Built-in Zener diode between drain and source.
- Large avalanche resistance.
- Small package for High-density packaging.

APPLICATION

Motor drive, High-speed switching
Analog switching, and others.

OUTLINE DRAWING

UNIT : mm



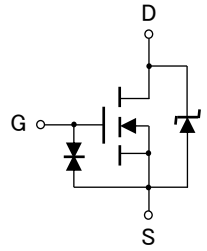
TERMINAL CONNECTER
①: GATE
②: SOURCE
③: DRAIN

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

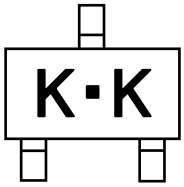
MAXIMUM RATINGS (Ta=25℃)

Symbol	Parameter	Rating	Unit
V_{GSS}	Gate-Source Voltage	±20	V
I_D	Drain Current(DC)	1	A
I_{DP}	Drain Current(Pulse) ※1	2	A
P_D	Total Power Dissipation	200	mW
		550 (※2)	mW
I_{AV}	Avalanche Current ※3,4	1.0	A
E_{AV}	Avalanche Energy ※3,4	0.06	mJ
T_{ch}	Channel Temperature	+150	℃
T_{stg}	Storage Temperature	−55～+150	℃

EQUIVALENT CIRCUIT



MARKING



※1 : P_W≦1ms, Duty≦1%

※2 : Package mounted on glass-epoxy substrate (20mm×20mm×1mm, Cu pad 100mm²)

※3 : Consecutive pulses P_W≦20μs, Duty≦0.2%

※4 : L=100μH

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【MOSFET】 ELECTRICAL CHARACTERISTICS (Ta=25℃)

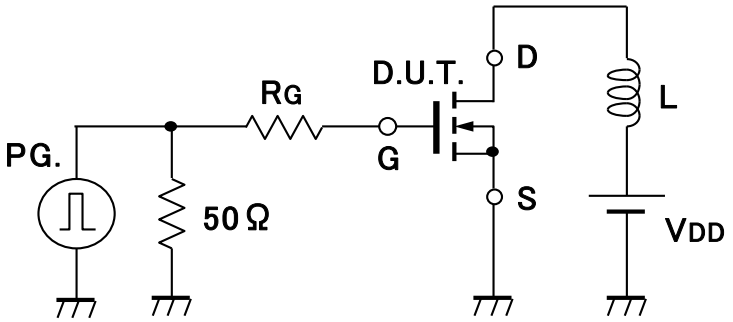
Symbol	Parameter	Test Condition	Limit			Unit
			MIN.	TYP.	MAX.	
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D=100μA, V_{GS}=0V	40	–	60	V
I_{GSS}	Gate-Source Leak current	V_{GS}=±20V, V_{DS}=0V	–	–	±10	μA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=40V, V_{GS}=0V	–	–	1	μA
V_{th}	Gate Threshold Voltage	I_D=250μA, V_{DS}=V_{GS}	1.0	–	2.0	V
| Y_{fs} |	Forward Transfer Admittance	V_{DS}=10V, I_D=500mA	–	1.5	–	S
$R_{DS(ON)}$	Static Drain-Source On-State Resistance	I_D=500mA, V_{GS}=4.5V	–	250	–	mΩ
		I_D=500mA, V_{GS}=10V	–	200	–	
C_{iss}	Input Capacitance	V_{DS}=5V, V_{GS}=0V, f=1MHz	–	170	–	pF
C_{oss}	Output Capacitance		–	40	–	
t_{on}	Switching Time	V_{DD}=5V, I_D=250mA V_{GS}=0～5V	–	170	–	ns
t_{off}			–	85	–	

【Zener Diode】 ELECTRICAL CHARACTERISTICS (Ta=25℃)

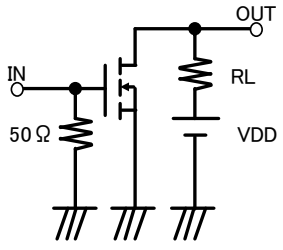
Zener Voltage V_Z(V)			Reverse current I_R(μA)	
MIN	MAX	I_Z(mA)	MAX	V_R(V)
40	60	0.1	1.0	40

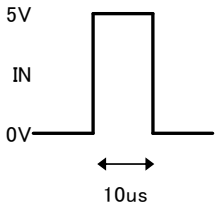
Avalanche current test condition

Ta=25℃
RG=25Ω
VDD=20V
VGS=10→0V

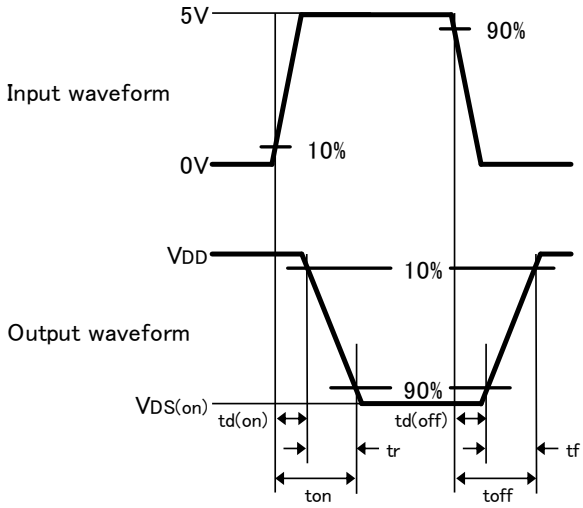


Switching time test condition



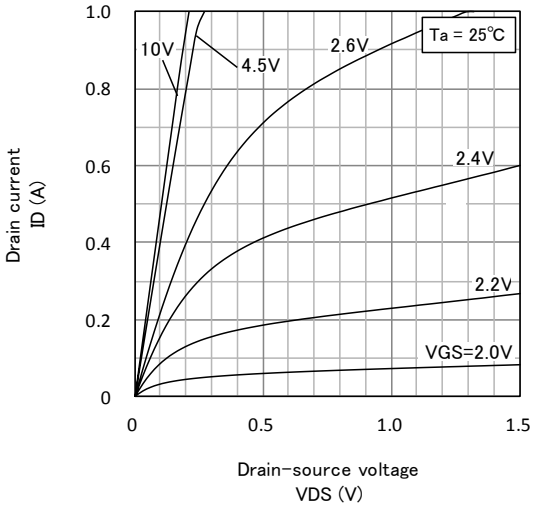


Duty ≦ 1%
Input : tr, tf < 10ns
VDD = 5V
Common source
Ta = 25℃

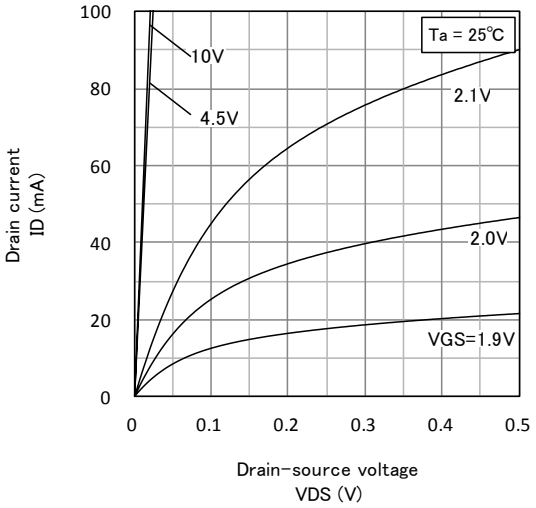


TYPICAL CHARACTERISTICS

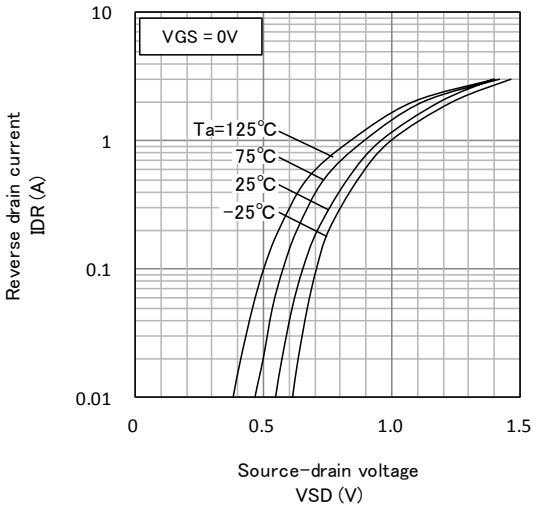
ID – VDS



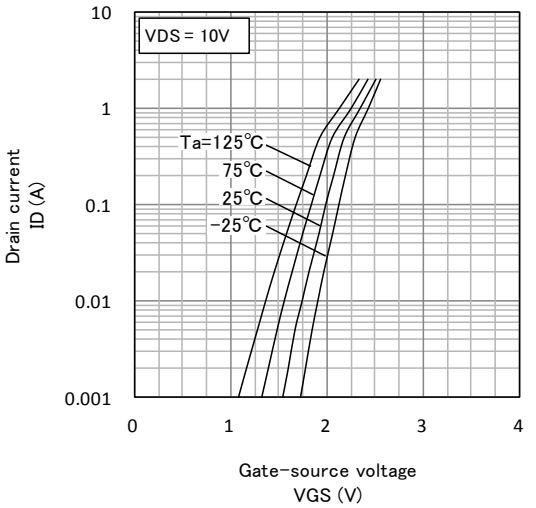
ID – VDS (Low voltage legion)



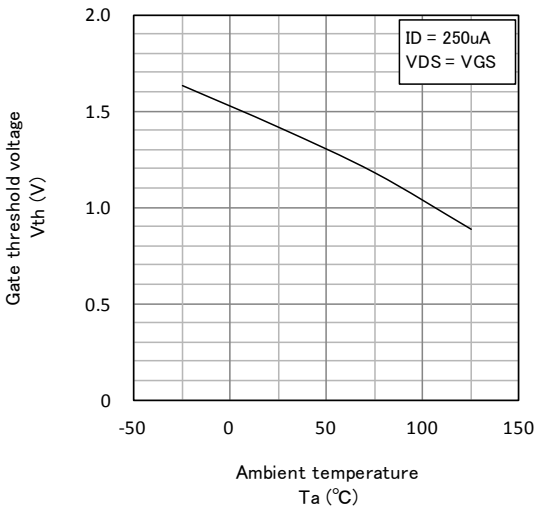
IDR – VSD



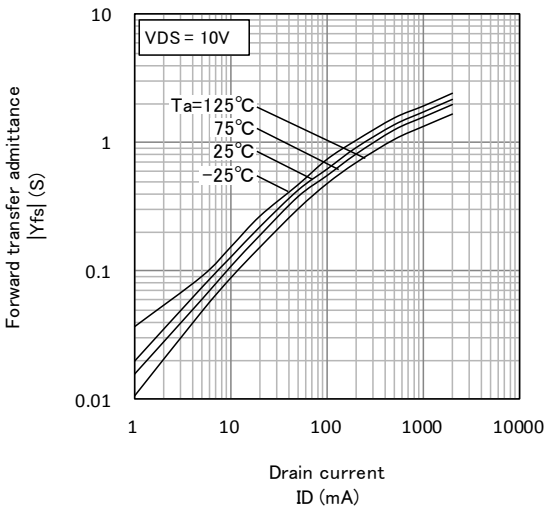
ID – VGS



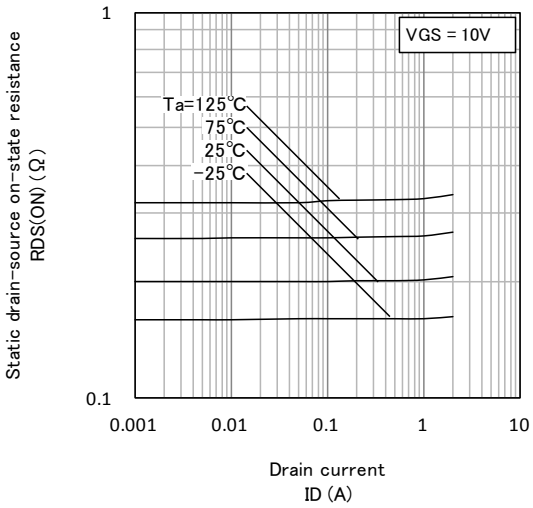
Vth – Ta



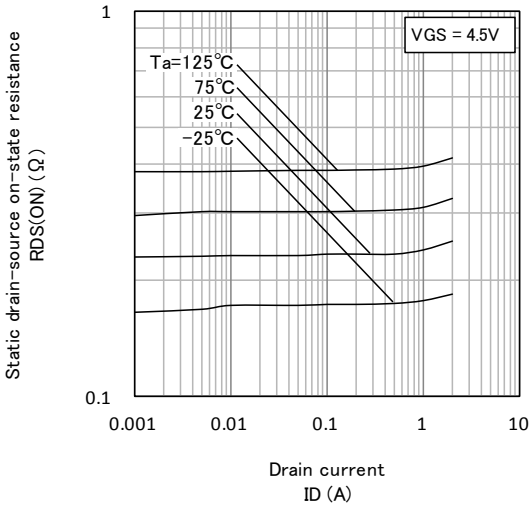
|Yfs| – ID



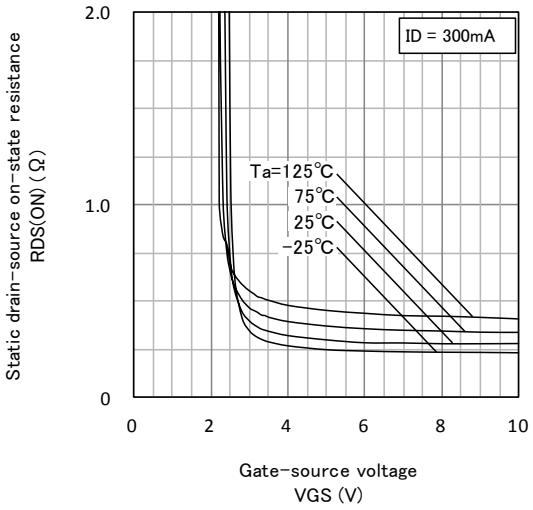
RDS(ON) – ID



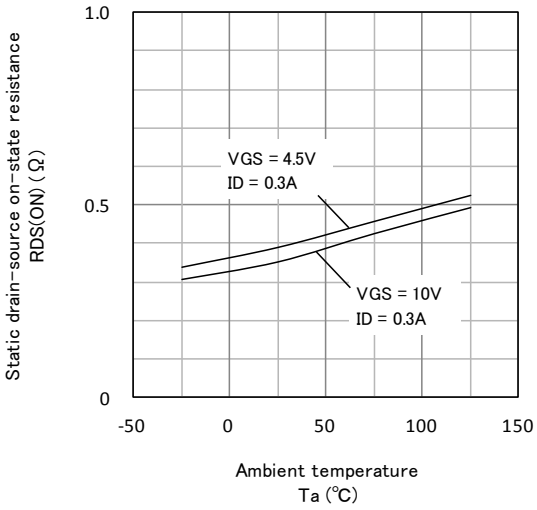
RDS(ON) – ID



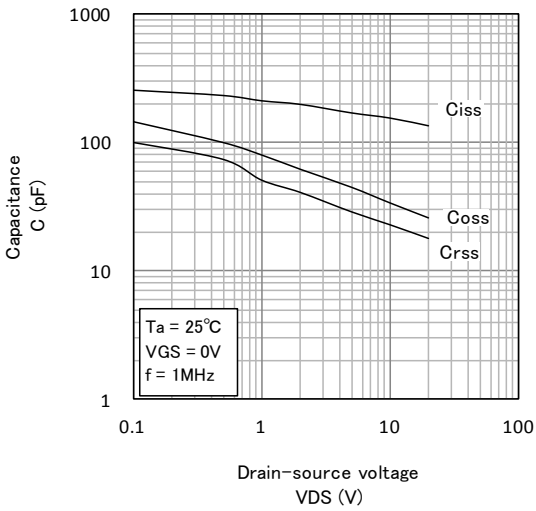
RDS(ON) – VGS



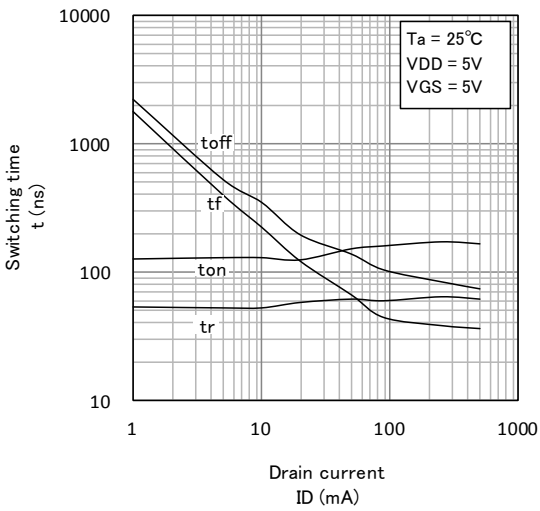
RDS(ON) – VGS



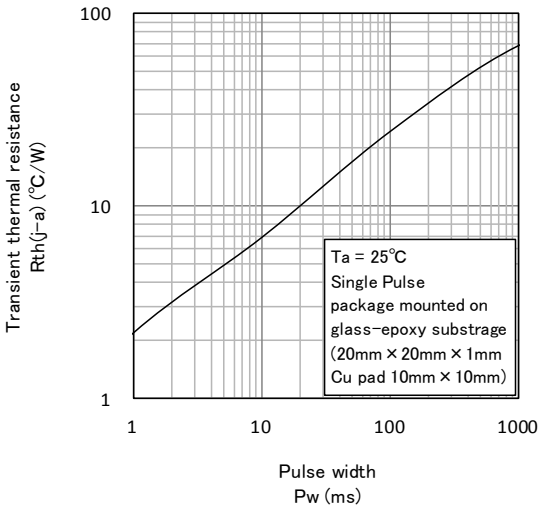
C – VDS



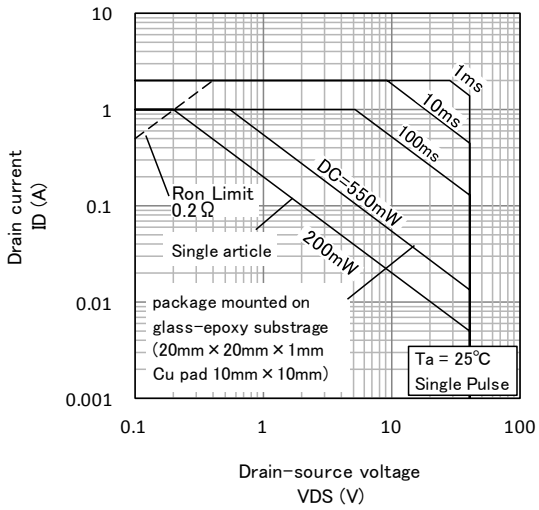
t – ID



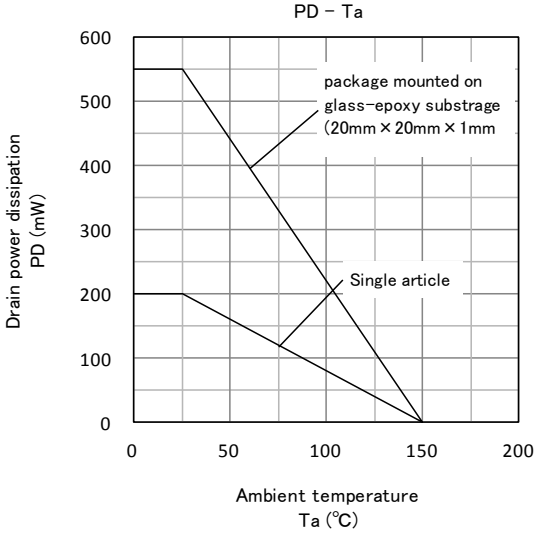
Rth(j-a) - Pw



ASO



PD - Ta



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