KODENSHI AUK

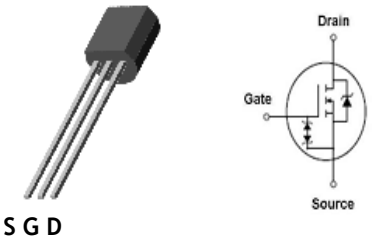
KCK2N7000K

N-Channel Enhancement Mode MOSFET

High Speed Switching Application

Features

- ESD rating: 1000V (HBM)
- Low On-Resistance: $R_{DS(on)}$ < 3Ω @ V_{GS} = 10V
- High power and current handling capability
- Very fast switching
- Halogen free and RoHS compliant device



S G D

TO-92

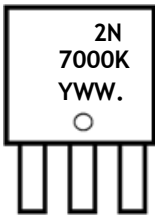
Applications

- High speed line driver

Ordering Information

Part Number	Marking Code	Package	Packaging
KCK2N7000K	**2N 7000K YWW.**	**TO-92**	**Tape**

Marking Information



Column 1,2 : Device Code
Column 3 : Production Information
e.g.) YWW.
-. YWW : Date Code(year,week)
-. . : Dalian

Absolute Maximum Ratings (T_{amb}=25℃, Unless otherwise specified)

Characteristic	Symbol	Ratings	Unit
Drain-Source voltage	V_{DS}	60	V
Gate-Source voltage	V_{GS}	±20	V
Maximum drain current (Note 1)	I_D	500	mA
Pulsed drain current (Note 1)	I_{DP}	2	A
Power dissipation (Note 2)	P_D	625	mW
Operating junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55 ~ 150	°C
Thermal resistance junction to ambient (Note 2)	$R_{th(j-a)}$	400	°C/W

Note 1) Limited only maximum junction temperature

Note 2) Device mounted on FR-4 board with recommended pad layout.

Electrical Characteristics (T_{amb}=25℃, Unless otherwise specified)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Drian-Source breakdown voltage	BV_{DSS}	I_D=250μA, V_{GS}=0	60	-	-	V
Gate-Source breakdown voltage	BV_{GSS}	I_G=250μA, V_{DS}=0	±20	-	-	V
Gate-Threshold voltage	$V_{GS(th)}$	I_D=250uA, V_{DS}=V_{GS}	1	-	2.5	V
Zero Gate voltage drain current	I_{DSS}	V_{DS}=60V, V_{GS}=0	-	-	1	μA
Gate-body leakage	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±10	μA
Drain-Source on-resistance (Note 3)	$R_{DS(ON)}$	V_{GS}=10V, I_D=0.5A	-	-	3	Ω
		V_{GS}=5V, I_D=0.05A	-	-	3.5	
Forward trans-conductance (Note 3)	g_{fs}	V_{DS}=10V, I_D=0.2A	0.08	-	-	S
Input capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0, f=1MHz	-	30	50	pF
Output capacitance	C_{oss}		-	7	-	
Reverse Transfer capacitance	C_{rss}		-	4	-	
Turn-on delay time (Note 3, 4)	$t_{d(on)}$	V_{DD}=30V, I_D=0.2A, V_{GS}=10V, R_G=10Ω	-	2	-	ns
Rise time (Note 3, 4)	t_r		-	15	-	
Turn-off delay time (Note 3, 4)	$t_{d(off)}$		--	8	-	
Fall time (Note 3, 4)	t_f		-	11	-	
Total gate charge (Note 3, 4)	Q_g	V_{DS}=10V, I_D=0.25A, V_{GS}=4.5V	-	0.6	0.8	nC
Gate-Source charge (Note 3, 4)	Q_{gs}		-	0.2	-	
Gate-Drain charge (Note 3, 4)	Q_{gd}		-	0.2	-	
Diode forward voltage (Note 3)	V_{SD}	V_{GS}=0V, I_S=0.2A	-	-	1.3	V

Note 3) Pulse test: Pulse width≤300us, Duty cycle≤2%

Note 4) Essentially independent of operating temperature typical characteristics.

Electrical Characteristics Curves

Fig. 1 I_D - V_{DS}

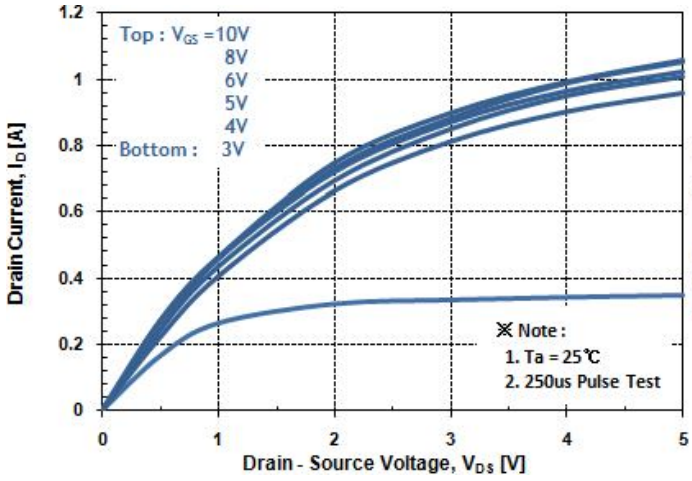


Fig. 2 I_D – V_{GS}

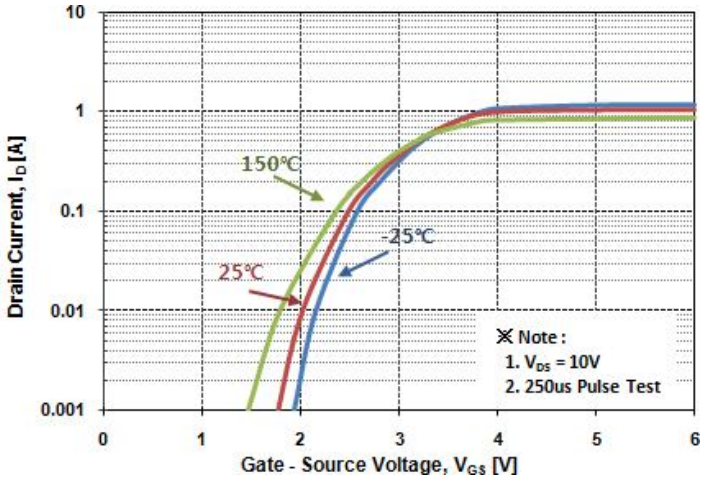


Fig. 3 $R_{DS(ON)}$ - I_D

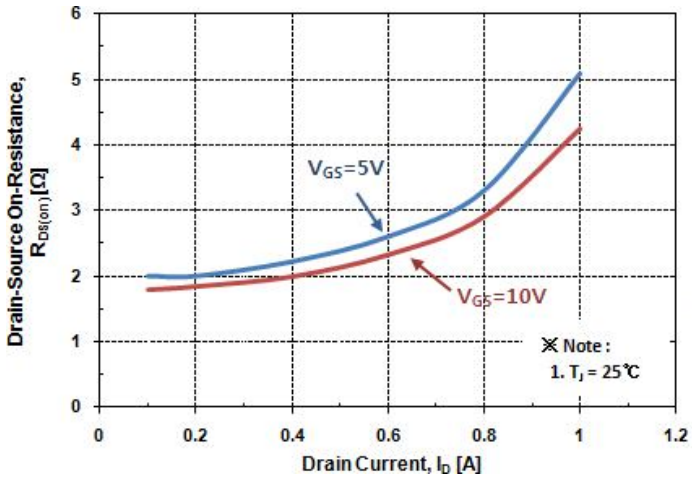


Fig. 4 I_S - V_{SD}

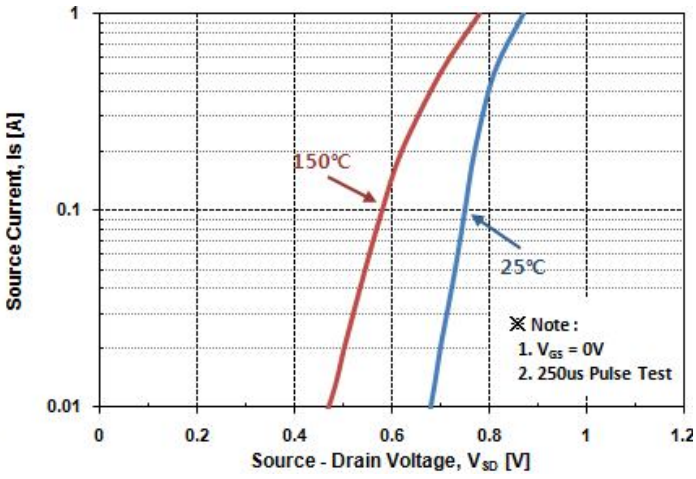


Fig. 5 Capacitance - V_{DS}

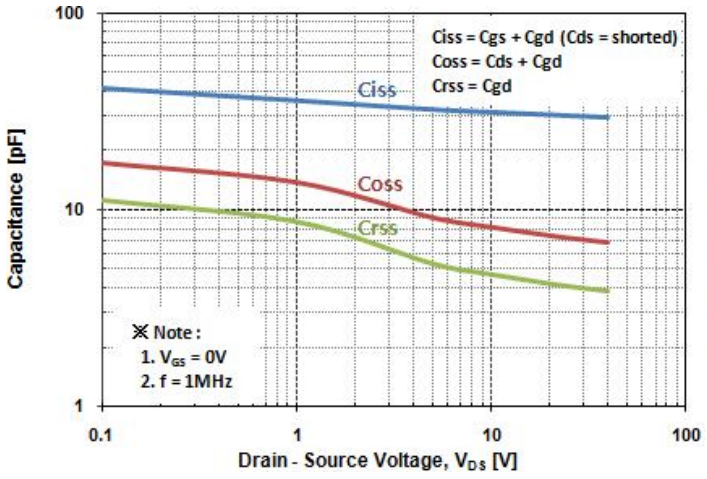


Fig. 6 V_{GS} - Q_G

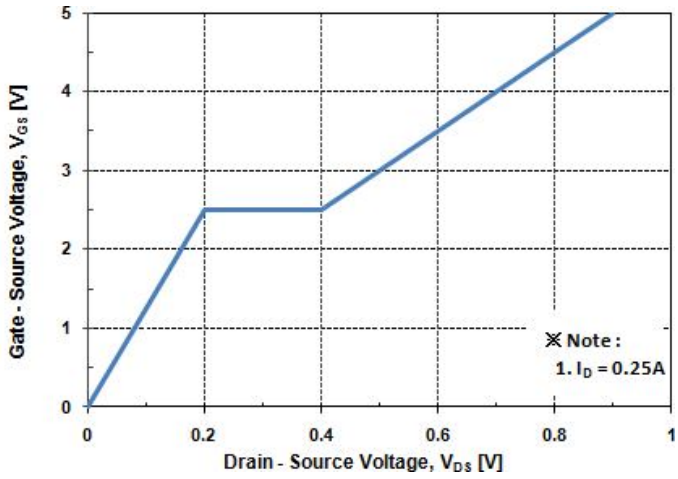


Fig. 7 V_{DSS} - T_J

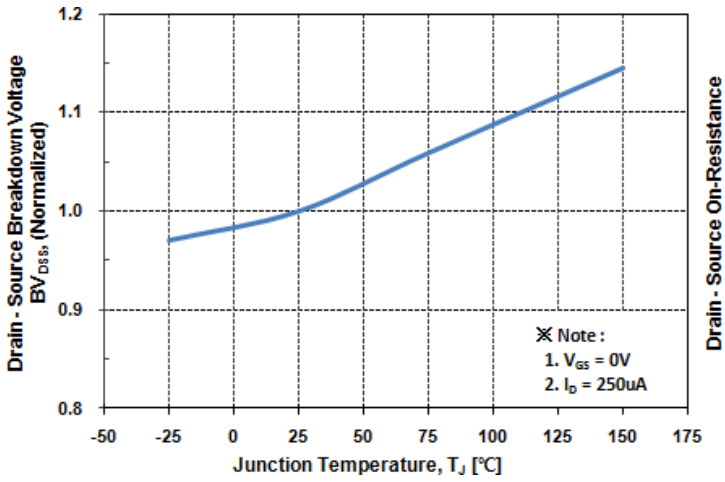


Fig. 8 $R_{DS(on)}$ – T_J

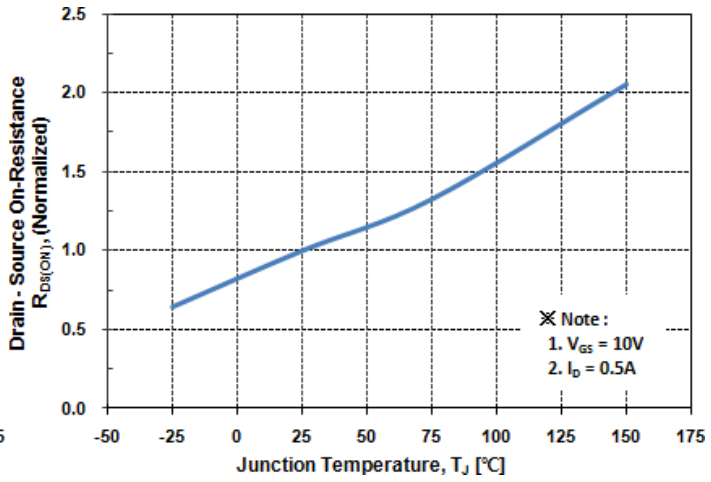


Fig. 9 I_D - T_C

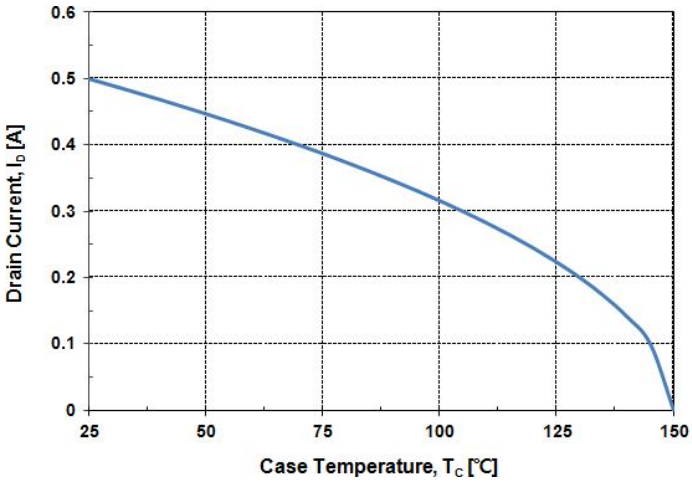
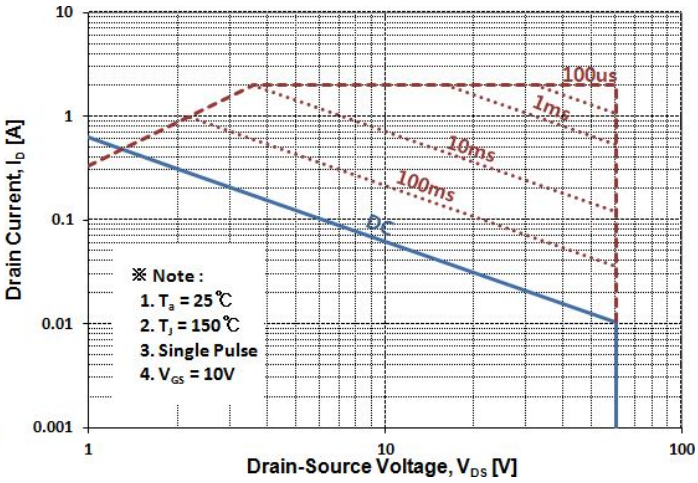
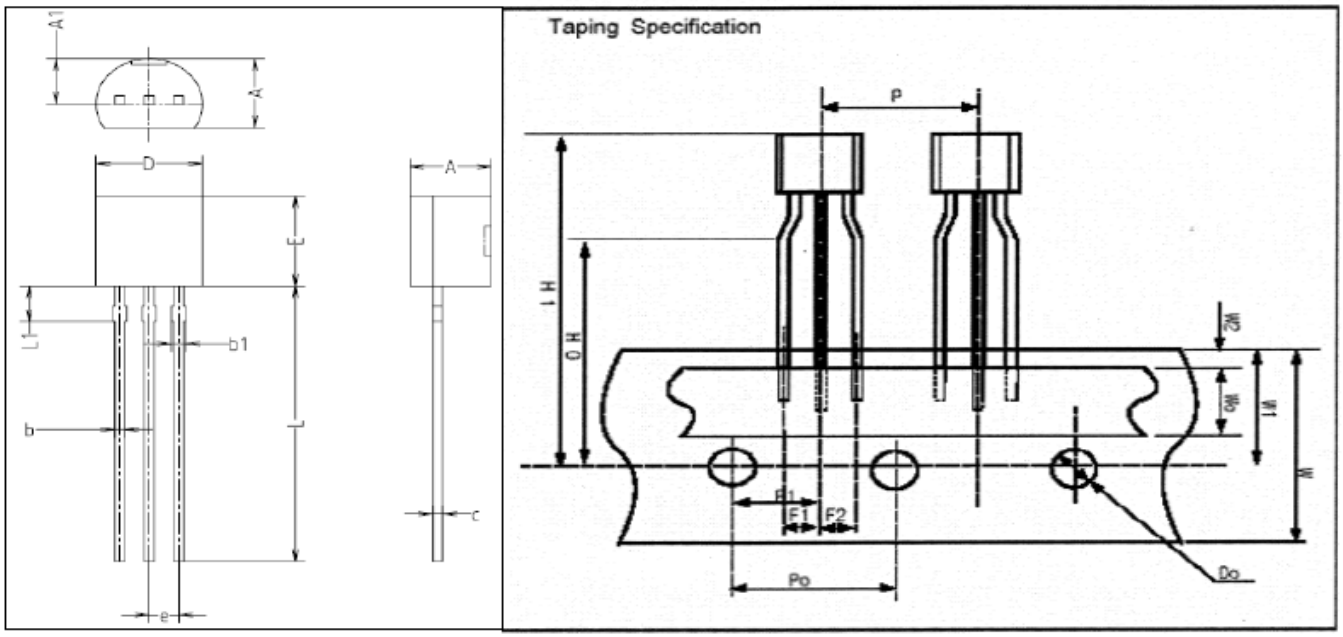


Fig. 10 Safe Operating Area



Package Outline Dimensions



Package Dimension(Unit : mm)				Taping Dimension(Unit : mm)			
Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	3.40	3.56	3.66	P	12.2	12.7	13.2
A1	2.46	2.54	2.59	P0	12.5	12.7	12.9
b	0.39	0.48	0.53	P1	5.85	6.35	6.85
b1	0.39	-	0.63	F1,F2	2.4	2.5	2.9
c	0.35	0.42	0.47	W	17.5	18.0	19.0
D	4.48	4.60	4.70	W0	5.5	6.0	6.5
E	4.48	4.60	4.70	W1	8.5	9.0	9.5
e	1.17	1.27	1.37	W2	-	-	1.0
L	13.70	14.47	14.77	H0	15.5	16.0	16.5
L1	1.55	1.70	2.15	H1	-	-	27.0
				D0	3.8	4.0	4.2

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