

### General Description

This Trench MOSFET has better characteristics, such as fast switching time, low on resistance, low gate charge and excellent avalanche characteristics. It is mainly suitable for DC/DC Converter.

### FEATURES

- $V_{DSS}=30V$ ,  $I_D=79A$ .
- Low Drain to Source On-state Resistance.
  - :  $R_{DS(ON)}=6.0m$  (Max.) @  $V_{GS}=10V$
  - :  $R_{DS(ON)}=10.3m$  (Max.) @  $V_{GS}=4.5V$

### MAXIMUM RATING (Ta=25 °C Unless otherwise Noted)

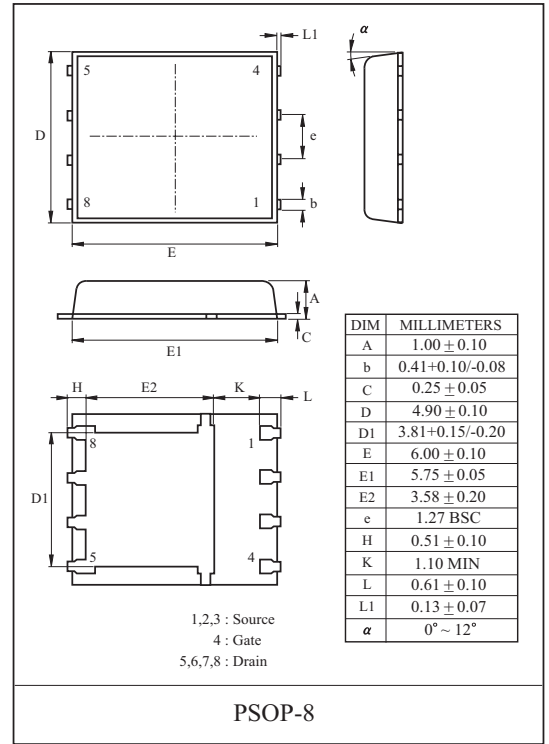
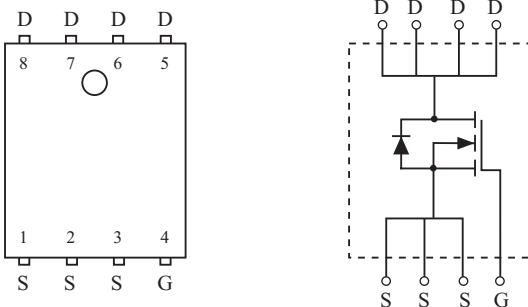
CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain to Source Voltage	$V_{DSS}$	30	V
Gate to Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current	DC@ $T_C=25^\circ C$ (Note1)	$I_D$	79
	Pulsed (Note2)	$I_{DP}$	316
Single Pulsed Avalanche Energy	(Note3)	$E_{AS}$	203
Drain Power Dissipation	@ $T_C=25^\circ C$ (Note1)	$P_D$	62.5
	@ $T_a=25^\circ C$ (Note2)		2.5
Maximum Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55 ~ 150	$^\circ C$
Thermal Resistance, Junction to Case	(Note1) $R_{thJC}$	2.0	$^\circ C/W$
Thermal Resistance, Junction to Ambient	(Note2) $R_{thJA}$	50	$^\circ C/W$

Note 1)  $R_{thJC}$  means that the infinite heat sink is mounted.

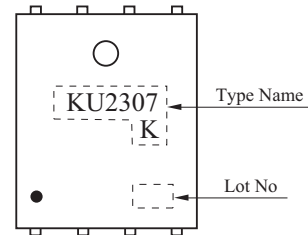
Note 2) Surface Mounted on  $1 \times 1$  Pad of 2 oz copper.

Note 3)  $L=32.5/\mu H$ ,  $I_{AS}=79A$ ,  $V_{DD}=15V$ ,  $V_{GS}=10V$ , Starting  $T_j=25^\circ C$

### PIN CONNECTION (TOP VIEW)



### MARKING



# KU2307K

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
<b>Static</b>							
Drain to Source Breakdown Voltage		BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30	-	-	V
Drain Cut-off Current		I <sub>DSS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =30V	-	-	1	μA
Gate to Source Leakage Current		I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
Gate to Source Threshold Voltage		V <sub>th</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	-	3.0	V
Drain to Source On Resistance		R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A (Note4)	-	5.0	6.0	m
			V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A (Note4)	-	8.6	10.3	
Forward Transconductance		g <sub>fs</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =20A (Note4)	-	54	-	S
<b>Dynamic</b>							
Input Capacitance		C <sub>iss</sub>	V <sub>DS</sub> =15V, f=1MHz, V <sub>GS</sub> =0V	-	1313	-	pF
Output Capacitance		C <sub>oss</sub>		-	422	-	
Reverse Transfer Capacitance		C <sub>rss</sub>		-	212	-	
Gate Resistance		R <sub>g</sub>	f=1MHz	-	1.1	-	
Total Gate Charge	V <sub>GS</sub> =10V	Q <sub>g</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =20A (Note4)	-	24.6	-	nC
	V <sub>GS</sub> =4.5V	Q <sub>g</sub>		-	13.1	-	
Gate to Source Charge		Q <sub>gs</sub>		-	3.3	-	
Gate to Drain Charge		Q <sub>gd</sub>		-	7.1	-	
Turn-On Delay Time		t <sub>d(on)</sub>		V <sub>DD</sub> =15V, V <sub>GS</sub> =10V I <sub>D</sub> =20A, R <sub>G</sub> =1.6 Ω (Note4)	-	6.5	
Turn-On Rise Time		t <sub>r</sub>	-		8.3	-	
Turn-Off Delay Time		t <sub>d(off)</sub>	-		24.0	-	
Turn-Off Fall Time		t <sub>f</sub>	-		7.0	-	
<b>Source to Drain Diode Ratings</b>							
Source to Drain Forward Voltage		V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =20A (Note4)	-	0.8	1.2	V
Reverse Recovery time		t <sub>rr</sub>	I <sub>S</sub> =20A, dI/dt=100A/μs (Note4)	-	22.0	-	ns
Reverse Recovered charge		Q <sub>rr</sub>	I <sub>S</sub> =20A, dI/dt=100A/μs (Note4)	-	9.40	-	nC

Note 4) Pulse Test : Pulse width <300 μs, Duty cycle < 2%

Fig1.  $I_D - V_{DS}$

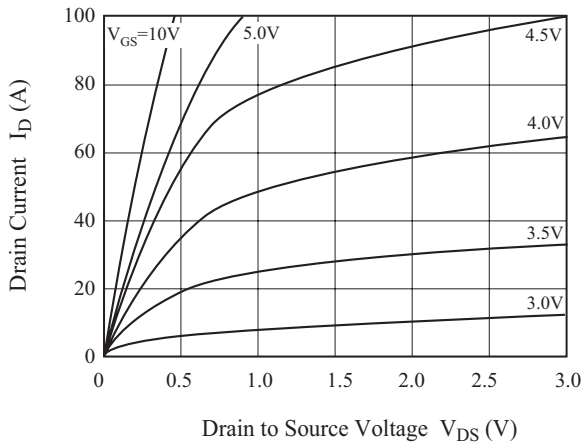


Fig2.  $R_{DS(on)} - I_D$

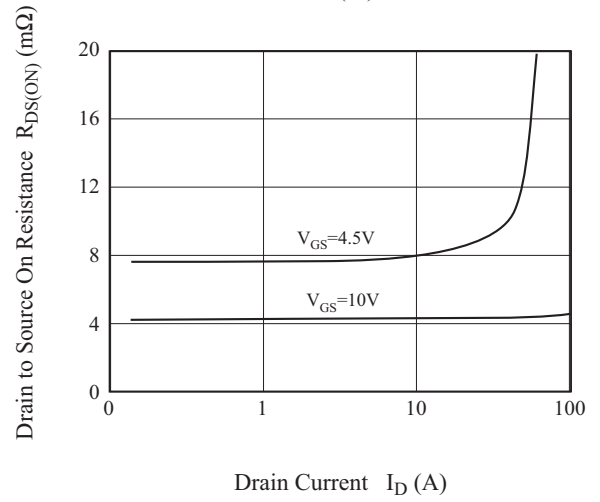


Fig3.  $I_D - V_{GS}$

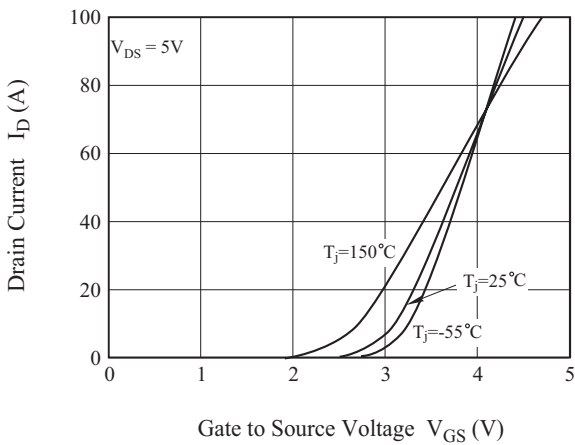


Fig4.  $R_{DS(on)} - T_j$

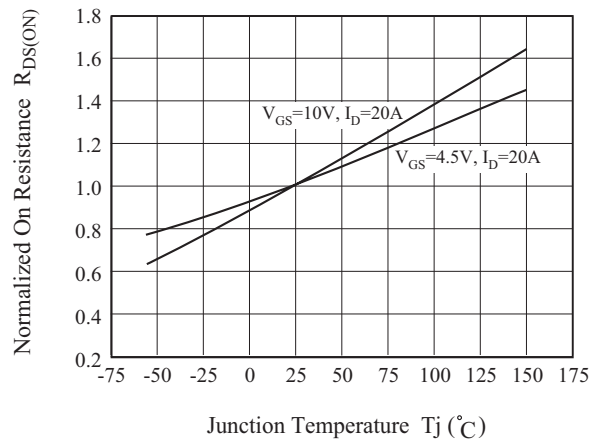


Fig5.  $V_{th} - T_j$

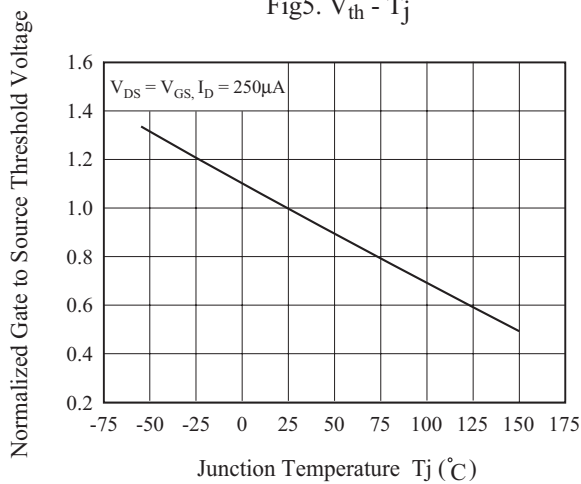


Fig6.  $I_S - V_{SD}$

