

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

- $V_{DS}=30V$, $I_D=79A$.
- Low Drain to Source On-state Resistance.
: $R_{DS(ON)}=5.4m\Omega(\text{Max.}) @ V_{GS}=10V$
: $R_{DS(ON)}=10.1m\Omega(\text{Max.}) @ V_{GS}=4.5V$

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

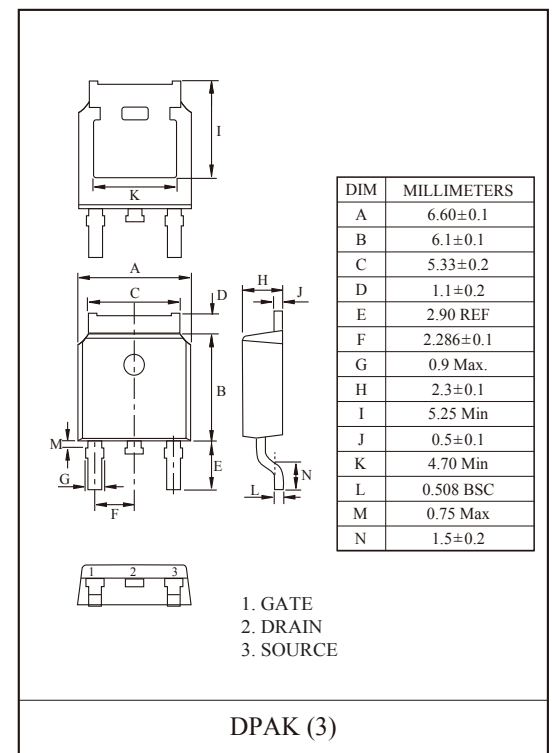
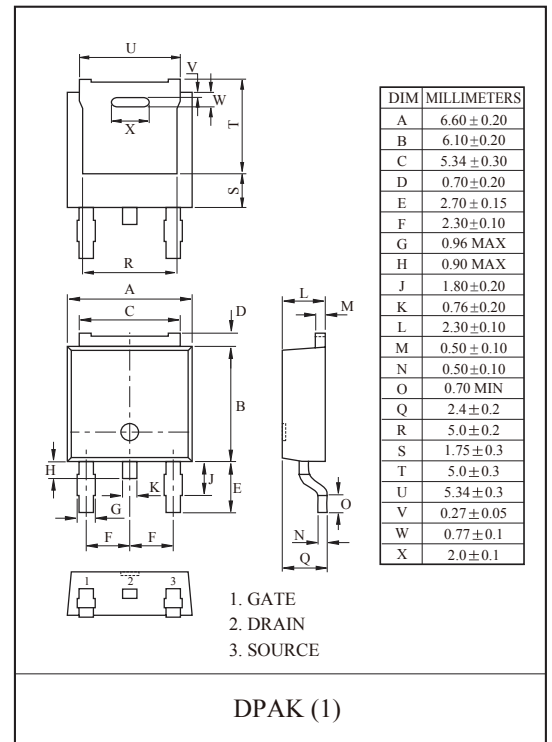
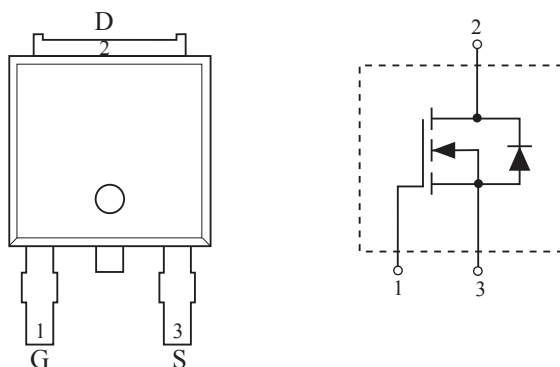
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain to Source Voltage		V _{DSS}	30	V
Gate to Source Voltage		V _{GSS}	± 20	V
Drain Current	DC@T _C =25℃ (Note1)	I _D	79	A
	Pulsed (Note2)	I _{DP}	316	
Single Pulsed Avalanche Energy (Note3)		E _{AS}	203	mJ
Drain Power Dissipation	@T _C =25℃ (Note1)	P _D	57	W
	@Ta=25℃ (Note2)		3.8	
Maximum Junction Temperature		T _j	150	℃
Storage Temperature Range		T _{stg}	-55 ~ 150	℃
Thermal Resistance, Junction to Case (Note1)		R _{thJC}	2.2	℃/W
Thermal Resistance, Junction to Ambient (Note2)		R _{thJA}	40	℃/W

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

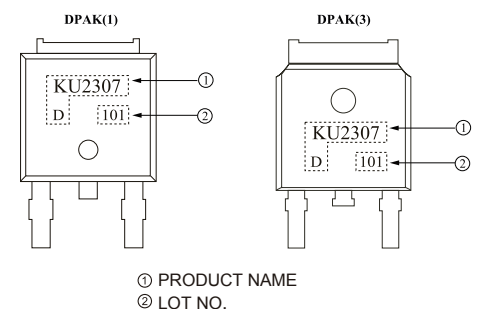
Note 2) Surface Mounted on 1"×1" Pad of 2 oz copper.

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

PIN CONNECTION (TOP VIEW)



Marking



KU2307D

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static							
Drain to Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =250 μ A	30	-	-	V
Drain Cut-off Current		I _{DSS}	V _{GS} =0V, V _{DS} =30V	-	-	1	μ A
Gate to Source Leakage Current		I _{GSS}	V _{GS} = $\pm$ 20V, V _{DS} =0V	-	-	$\pm$ 100	nA
Gate to Source Threshold Voltage		V _{th}	V _{DS} =V _{GS} , I _D =250 μ A	1.0	-	3.0	V
Drain to Source On Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =30A (Note4)	-	4.5	5.4	m Ω
			V _{GS} =4.5V, I _D =30A (Note4)	-	8.4	10.1	
Forward Transconductance		g _{fs}	V _{DS} =5V, I _D =30A (Note4)	-	65	-	S
Dynamic							
Input Capacitance		C _{iss}	V _{DS} =15V, f=1MHz, V _{GS} =0V	-	1313	-	pF
Ouput Capacitance		C _{oss}		-	422	-	
Reverse Transfer Capacitance		C _{rss}		-	212	-	
Gate Resistance		R _g	f=1MHz	-	1.1	-	Ω
Total Gate Charge	V _{GS} =10V	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =30A (Note4)	-	24.6	-	nC
	V _{GS} =4.5V	Q _g		-	13.1	-	
Gate to Source Charge		Q _{gs}		-	3.9	-	
Gate to Drain Charge		Q _{gd}		-	7.3	-	
Turn-On Delay Time		t _{d(on)}	V _{DD} =15V, V _{GS} =10V I _D =30A, R _G =1.6 Ω (Note4)	-	6.7	-	ns
Turn-On Rise Time		t _r		-	8.5	-	
Turn-Off Delay Time		t _{d(off)}		-	23.5	-	
Turn-Off Fall Time		t _f		-	6.9	-	
Source to Drain Diode Ratings							
Source to Drain Forward Voltage		V _{SD}	V _{GS} =0V, I _S =30A (Note4)	-	0.8	1.2	V
Reverse Recovery time		t _{rr}	I _S =30A, dI/dt=100A/ μ s	-	22.8	-	ns
Reverse Recovered charge		Q _{rr}	I _S =30A, dI/dt=100A/ μ s	-	9.6	-	nC

Note 4) Pulse Test : Pulse width $<300\mu s$, Duty cycle $<2\%$

Fig1. $I_D - V_{DS}$

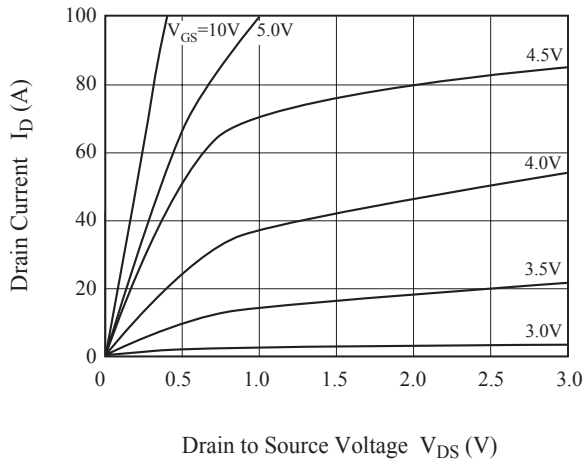


Fig2. $R_{DS(on)} - I_D$

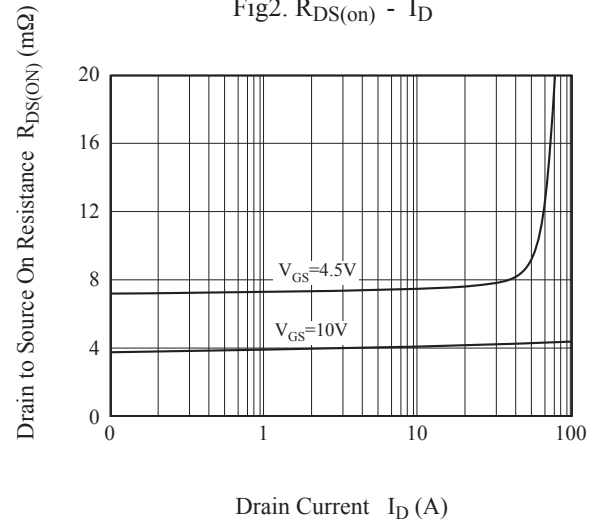


Fig3. $I_D - V_{GS}$

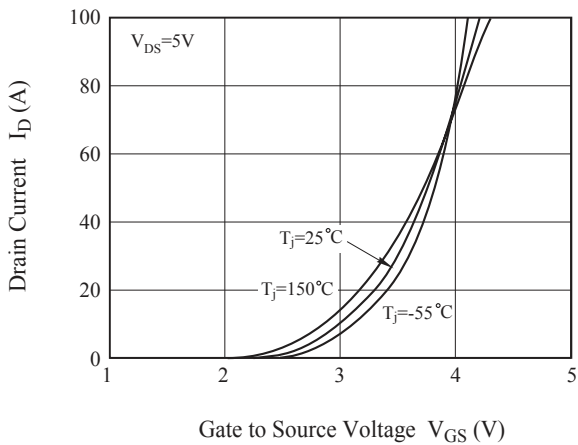


Fig4. $R_{DS(on)} - T_J$

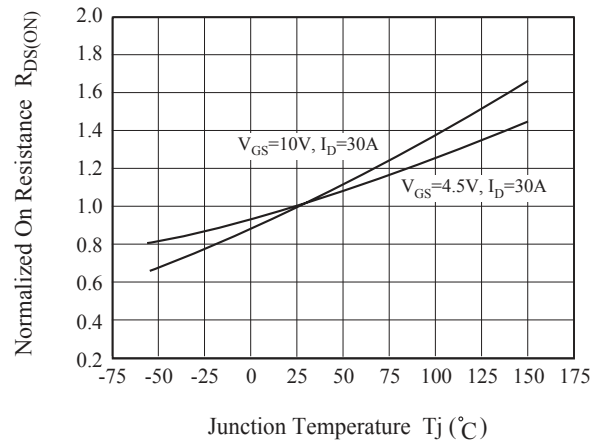


Fig5. $V_{th} - T_J$

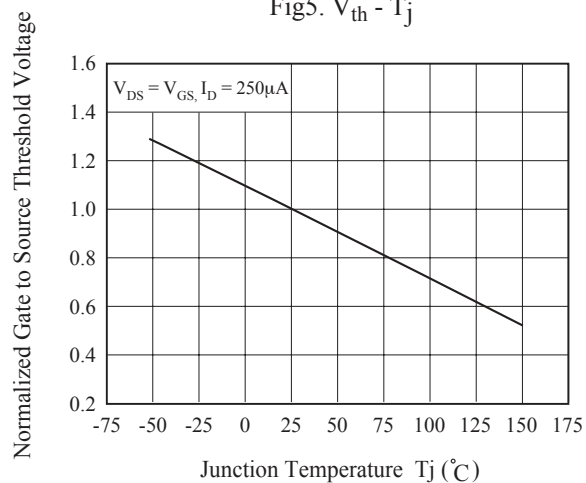


Fig6. $I_S - V_{SD}$

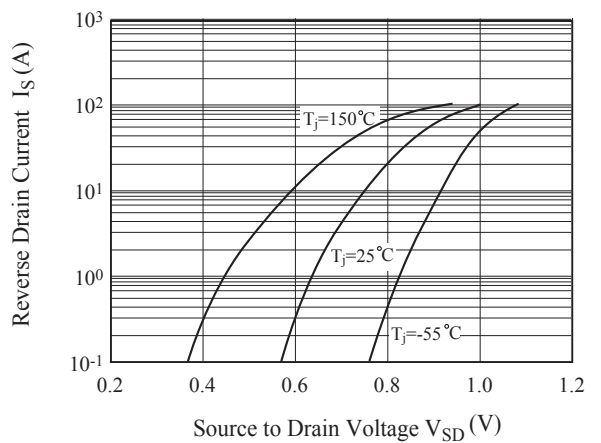


Fig7. $R_{DS(ON)} - V_{GS}$

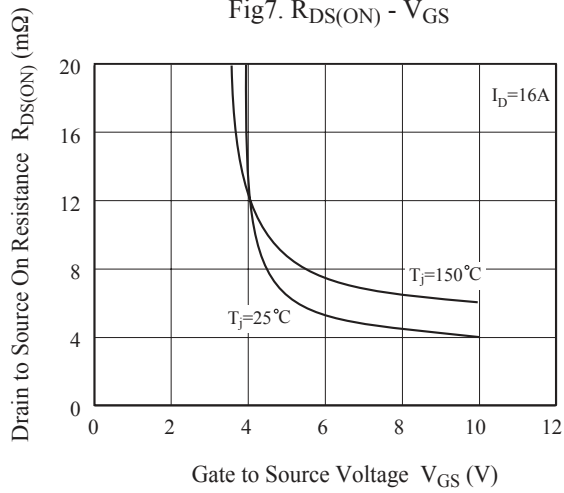


Fig8. $C - V_{DS}$

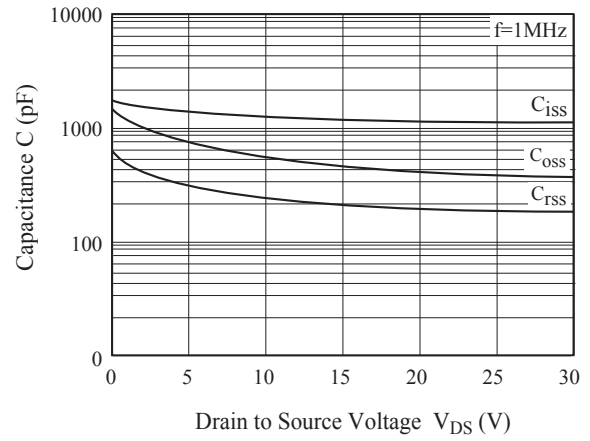


Fig9. $Q_g - V_{GS}$

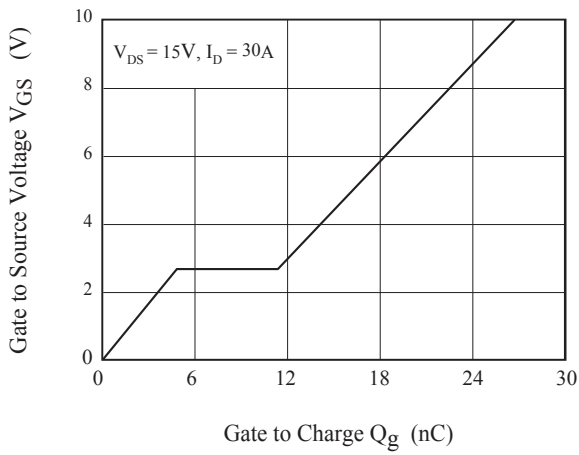


Fig10. Safe Operation Area

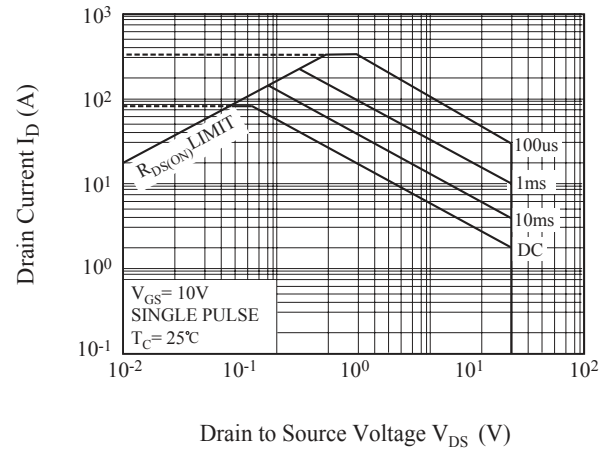


Fig11. Transient Thermal Response Curve

