

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

- $V_{DSS}=30V$, $I_D=62A$.
- Low Drain to Source On-state Resistance.
 - : $R_{DS(ON)}=7.8m\Omega$ (Max.) @ $V_{GS}=10V$
 - : $R_{DS(ON)}=14.2m\Omega$ (Max.) @ $V_{GS}=4.5V$

MAXIMUM RATING ($T_j=25^\circ C$ Unless otherwise Noted)

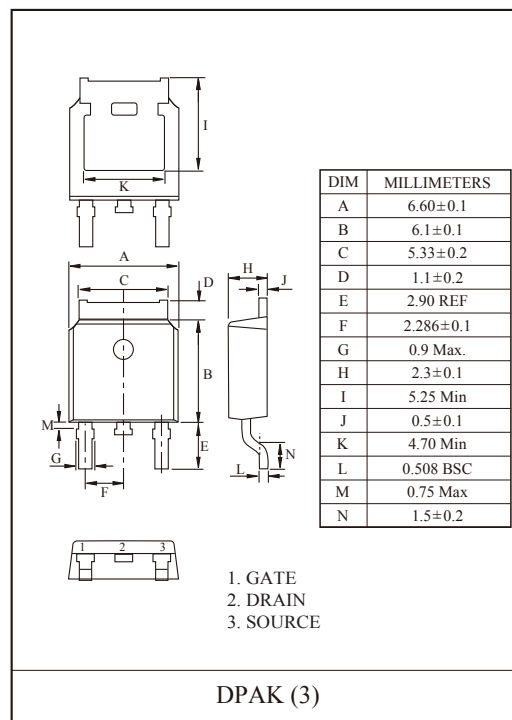
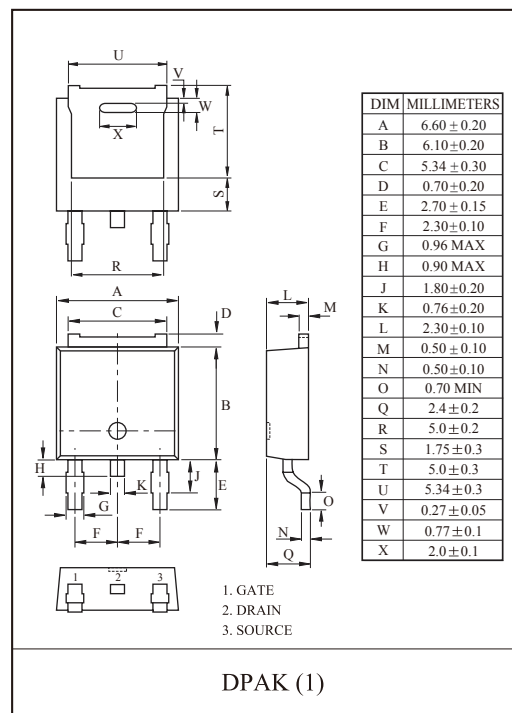
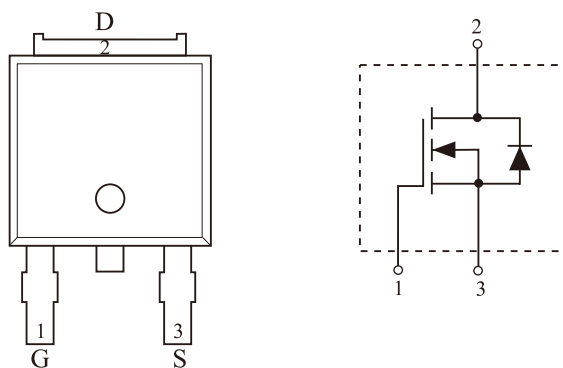
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain to Source Voltage		V_{DSS}	30	V
Gate to Source Voltage		V_{GSS}	± 20	V
Drain Current	DC@ $T_C=25^\circ C$ (Note1)	I_D	62	A
	Pulsed (Note2)	I_{DP}	248	
Single Pulsed Avalanche Energy (Note3)		E_{AS}	130	mJ
Drain Power Dissipation	@ $T_C=25^\circ C$ (Note1)	P_D	52	W
	@ $T_a=25^\circ C$ (Note2)		3.8	
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}	2.4	$^\circ C/W$
Thermal Resistance, Junction to Ambient (Note2)		R_{thJA}	40	$^\circ C/W$

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

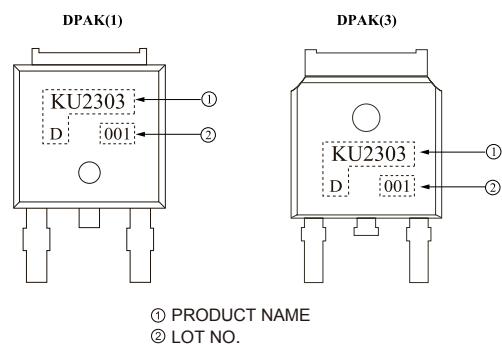
Note 2) Surface Mounted on $1'' \times 1''$ Pad of 2 oz copper.

Note 3) $L=27.3 \mu H$, $I_{AS}=68A$, $V_{DD}=15V$, $V_{GS}=10V$, Starting $T_j=25^\circ C$

PIN CONNECTION (TOP VIEW)



Marking



KU2303D

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 =250μA	30	-	-	V
Drain Cut-off Current		I _{DSS}	V _{GS} =0V, V _{DS} =30V	-	-	1	μA
Gate to Source Leakage Current		I _{GSS}	V _{GS} =± 20V, V _{DS} =0V	-	-	±100	nA
Gate to Source Threshold Voltage		V _{th}	V _{DS} =V _{GS} , I _D =250μA	1.0	-	3.0	V
Drain to Source On Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =30A (Note4)	-	5.7	7.8	mΩ
			V _{GS} =4.5V, I _D =20A (Note4)	-	11.0	14.2	
Forward Transconductance		g _{fs}	V _{DS} =5V, I _D =30A (Note4)	-	50	-	S
Dynamic							
Input Capacitance		C _{iss}	V _{DS} =15V, f=1MHz, V _{GS} =0V	-	937	-	pF
Ouput Capacitance		C _{oss}		-	311	-	
Reverse Transfer Capacitance		C _{rss}		-	154	-	
Gate Resistance		R _g	f=1MHz	-	1.3	-	Ω
Total Gate Charge	V _{GS} =10V	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =30A (Note4)	-	18.4	-	nC
	V _{GS} =4.5V	Q _g		-	9.6	-	
Gate to Source Charge		Q _{gs}		-	3.2	-	
Gate to Drain Charge		Q _{gd}		-	5.0	-	
Turn-On Delay Time		t _{d(on)}	V _{DD} =15V, V _{GS} =10V I _D =30A, R _G =1.6Ω (Note4)	-	6.4	-	ns
Turn-On Rise Time		t _r		-	7.2	-	
Turn-Off Delay Time		t _{d(off)}		-	20.0	-	
Turn-Off Fall Time		t _f		-	5.8	-	
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/μs	-	18.6	-	ns
Reverse Recovered Charge		Q _{rr}	I _S =30A, dI/dt=100A/μs	-	9.2	-	nC

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

Fig1. $I_D - V_{DS}$

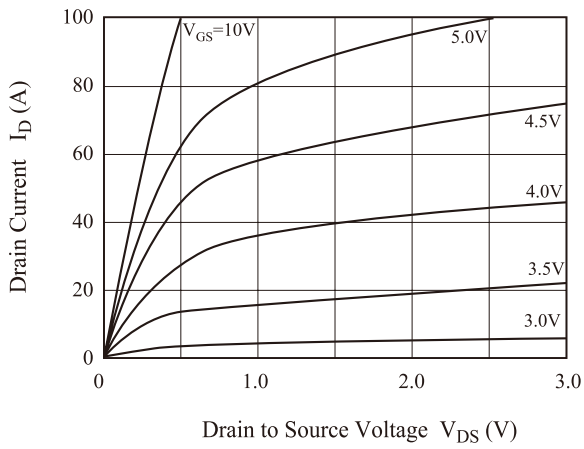


Fig2. $R_{DS(on)} - I_D$

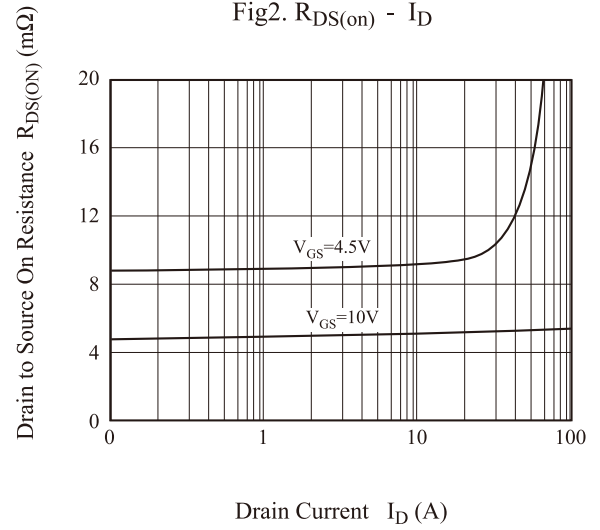


Fig3. $I_D - V_{GS}$

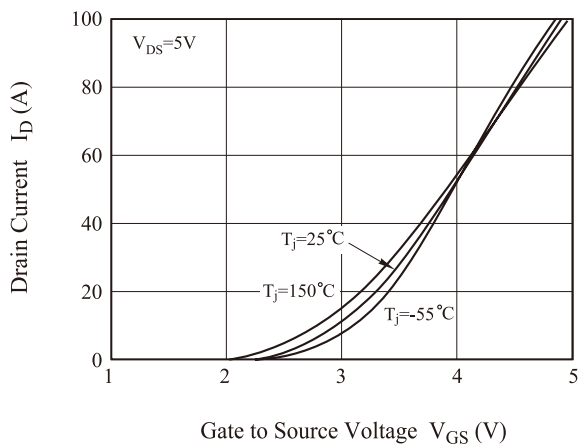


Fig4. $R_{DS(on)} - T_j$

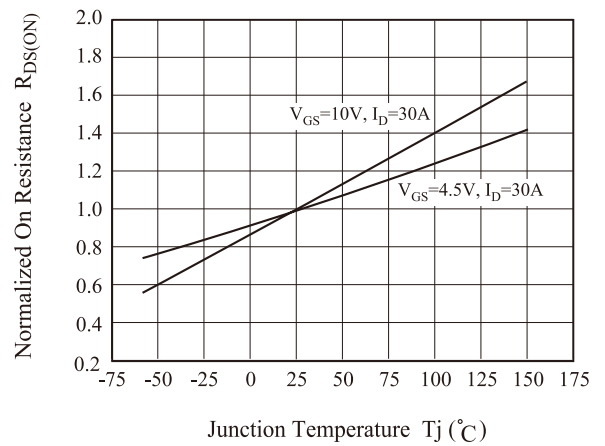


Fig5. $V_{th} - T_j$

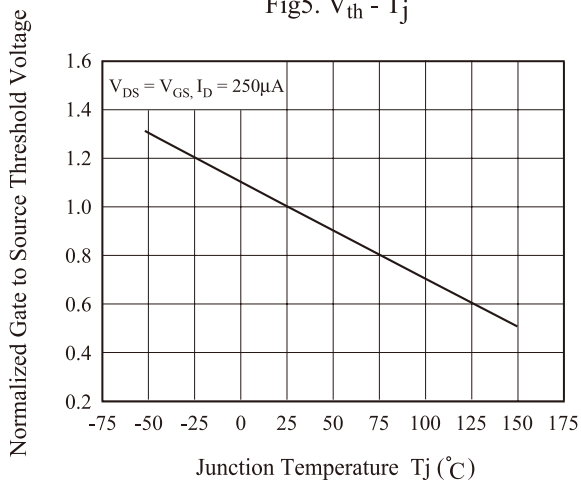


Fig6. $I_S - V_{SD}$

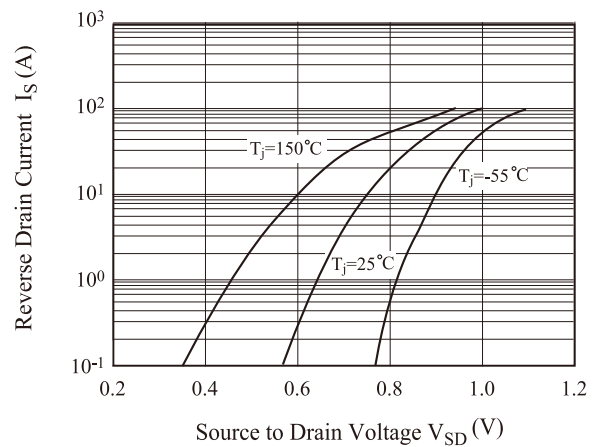


Fig7. $R_{DS(ON)} - V_{GS}$

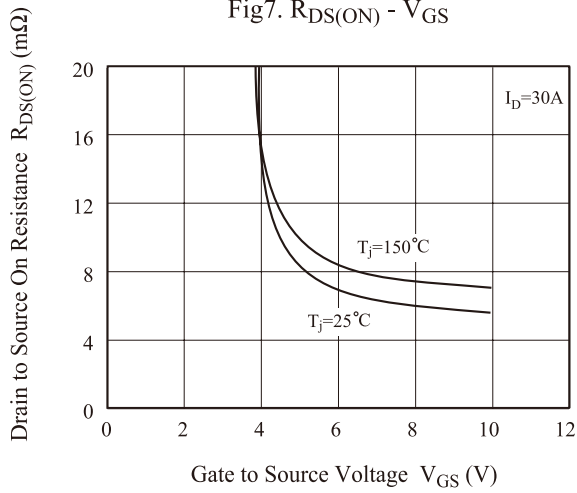


Fig8. $C - V_{DS}$

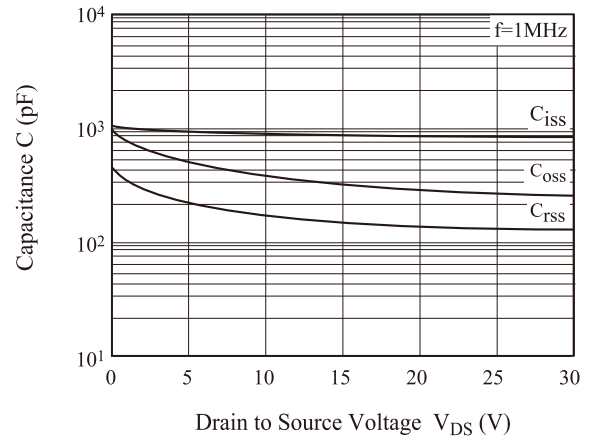


Fig9. $Q_g - V_{GS}$

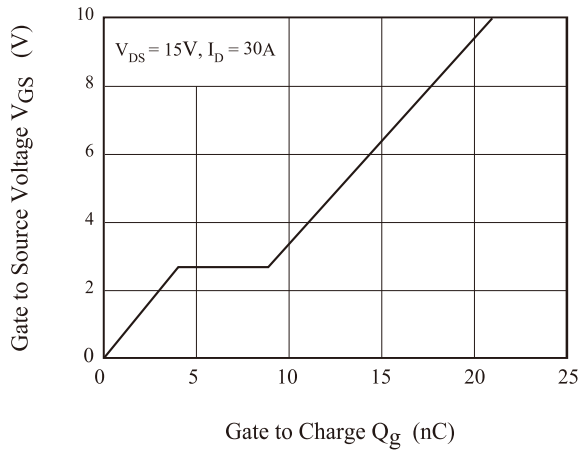


Fig10. Safe Operation Area

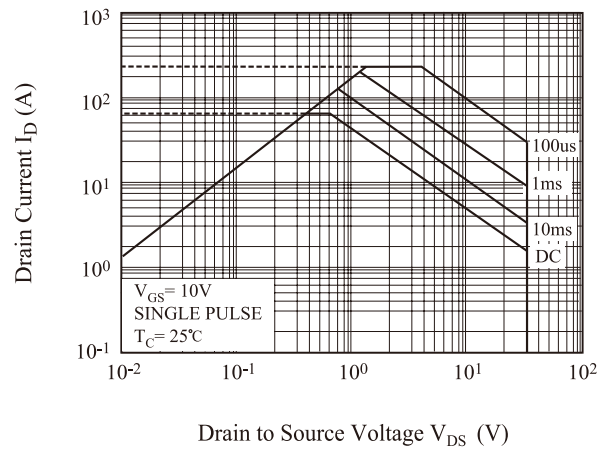


Fig11. Transient Thermal Response Curve

