

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

- $V_{DSS}=30V$, $I_D=66A$.
- Low Drain to Source On-state Resistance.
 - : $R_{DS(ON)}=7.4m$ (Max.) @ $V_{GS}=10V$
 - : $R_{DS(ON)}=13.8m$ (Max.) @ $V_{GS}=4.5V$

MAXIMUM RATING (Ta=25 Unless otherwise Noted)

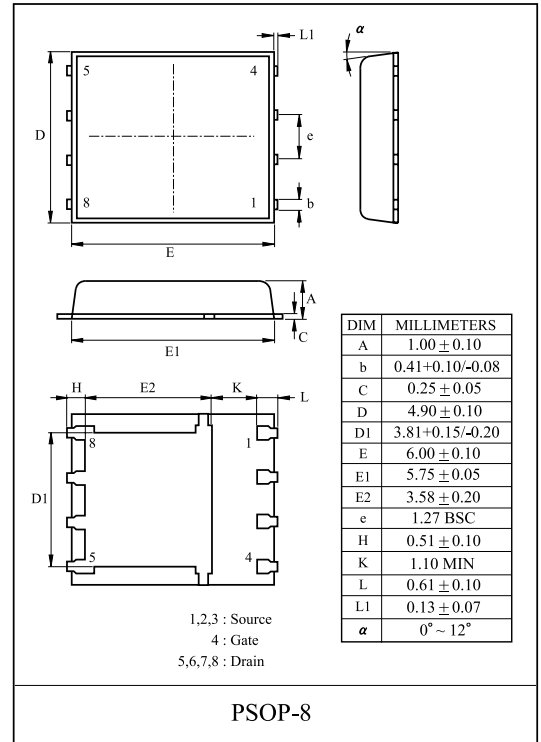
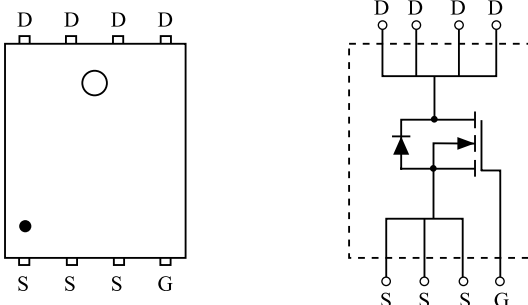
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain to Source Voltage		V_{DSS}	30	V
Gate to Source Voltage		V_{GSS}	± 20	V
Drain Current	DC@ $T_C=25$ (Note1)	I_D	66	A
	Pulsed (Note2)	I_{DP}	264	
Single Pulsed Avalanche Energy (Note3)		E_{AS}	130	mJ
Drain Power Dissipation	@ $T_C=25$ (Note1)	P_D	54	W
	@ $T_a=25$ (Note2)		2.5	
Maximum Junction Temperature		T_j	150	
Storage Temperature Range		T_{stg}	-55 150	
Thermal Resistance, Junction to Case (Note1)		R_{thJC}	2.3	/W
Thermal Resistance, Junction to Ambient (Note2)		R_{thJA}	50	/W

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

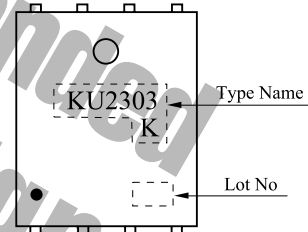
Note 2) Surface Mounted on 1 × 1 Pad of 2 oz copper.

Note 3) $L=29.8 \mu H$, $I_{AS}=66A$, $V_{DD}=15V$, $V_{GS}=10V$, Starting $T_j=25$

PIN CONNECTION (TOP VIEW)



MARKING



KU2303K

ELECTRICAL CHARACTERISTICS (Ta=25 °C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Static							
Drain to Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V	
Drain Cut-off Current	I_{DSS}	$V_{GS}=0V, V_{DS}=30V$	-	-	1	μA	
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA	
Gate to Source Threshold Voltage	V_{th}	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	-	3.0	V	
Drain to Source On Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$ (Note4)	-	6.2	7.4	m	
		$V_{GS}=4.5V, I_D=20A$ (Note4)	-	11.5	13.8		
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=20A$ (Note4)	-	48	-	S	
Dynamic							
Input Capacitance	C_{iss}	$V_{DS}=15V, f=1MHz, V_{GS}=0V$	-	937	-	pF	
Output Capacitance	C_{oss}		-	311	-		
Reverse Transfer Capacitance	C_{rss}		-	154	-		
Gate Resistance	R_g	$f=1MHz$	-	1.3	-		
Total Gate Charge	$V_{GS}=10V$ Q_g	$V_{DS}=15V, V_{GS}=10V, I_D=20A$ (Note4)	-	18.4	-	nC	
	$V_{GS}=4.5V$ Q_g		-	9.6	-		
Gate to Source Charge	Q_{gs}		-	3.1	-		
Gate to Drain Charge	Q_{gd}		-	5.0	-		
Turn-On Delay Time	$t_{d(on)}$		-	6.2	-		ns
Turn-On Rise Time	t_r		$V_{DD}=15V, V_{GS}=10V$	-	7.1		
Turn-Off Delay Time	$t_{d(off)}$	$I_D=20A, R_G=1.6$ (Note4)	-	20.1	-		
Turn-Off Fall Time	t_f	-	-	5.9	-		
Source to Drain Diode Ratings							
Source to Drain Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=20A$ (Note4)	-	0.8	1.2	V	
Reverse Recovery Time	t_{rr}	$I_S=20A, dI/dt=100A/\mu s$ (Note4)	-	18.0	-	ns	
Reverse Recovered Charge	Q_{rr}	$I_S=20A, dI/dt=100A/\mu s$ (Note4)	-	7.5	-	nC	

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

Fig1. $I_D - V_{DS}$

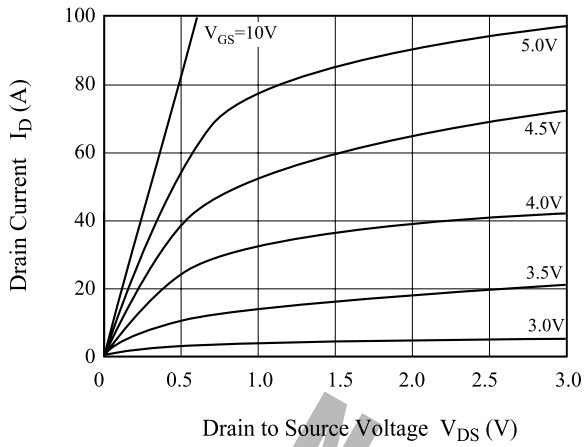


Fig2. $R_{DS(on)} - I_D$

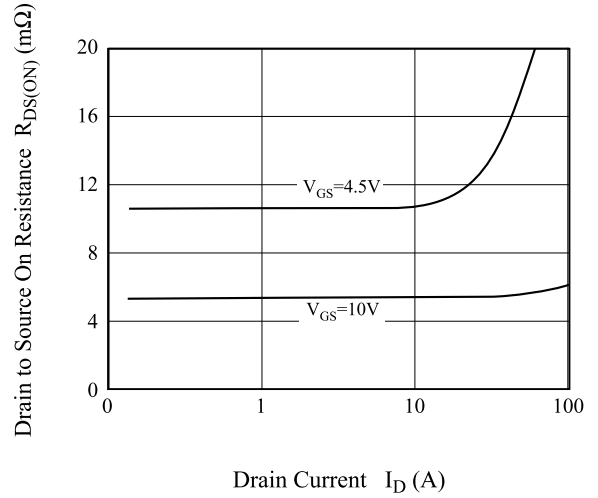


Fig3. $I_D - V_{GS}$

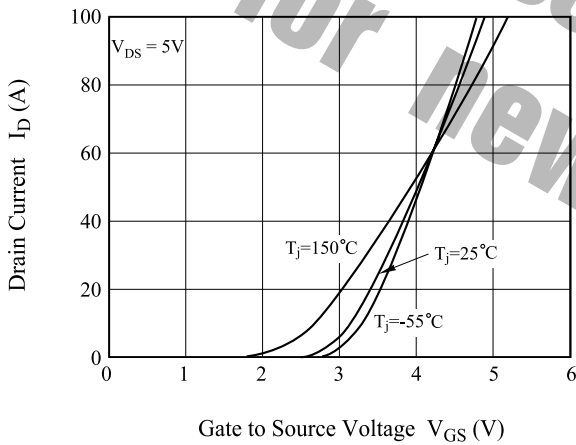


Fig4. $R_{DS(ON)} - T_j$

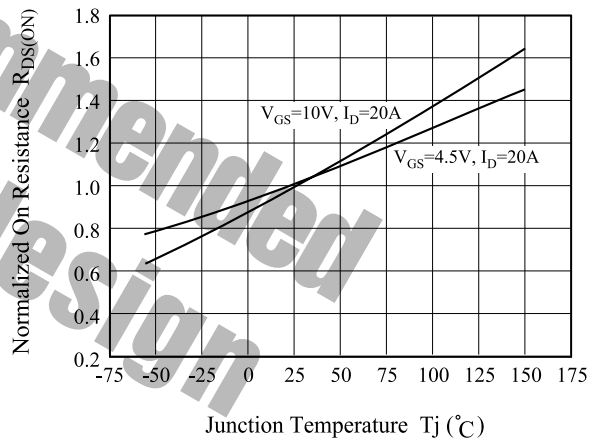


Fig5. $V_{th} - T_j$

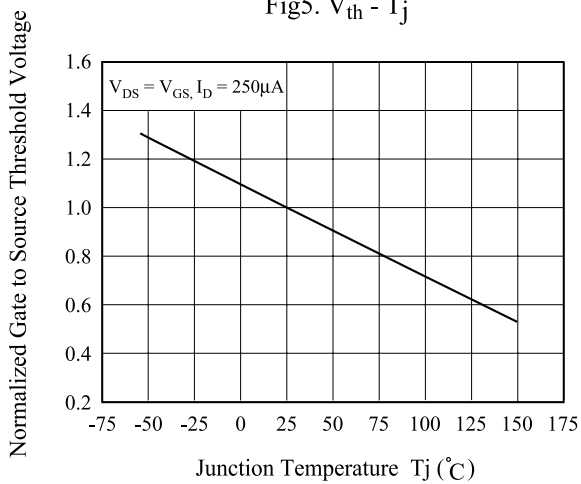


Fig6. $I_S - V_{SD}$

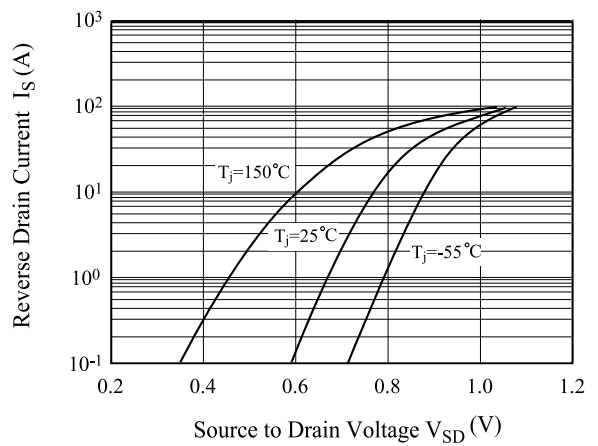


Fig7. $R_{DS(ON)} - V_{GS}$

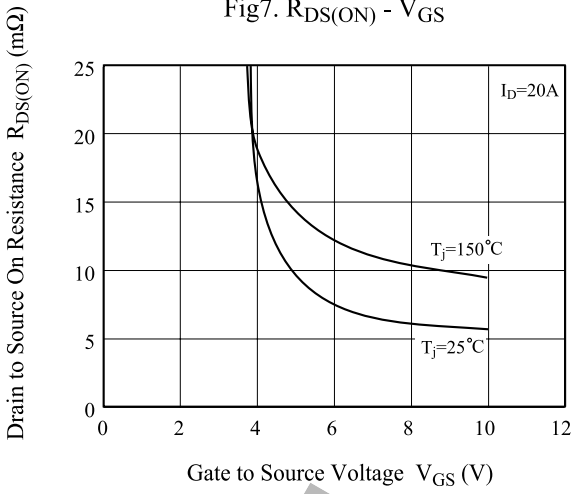


Fig8. C - V_{DS}

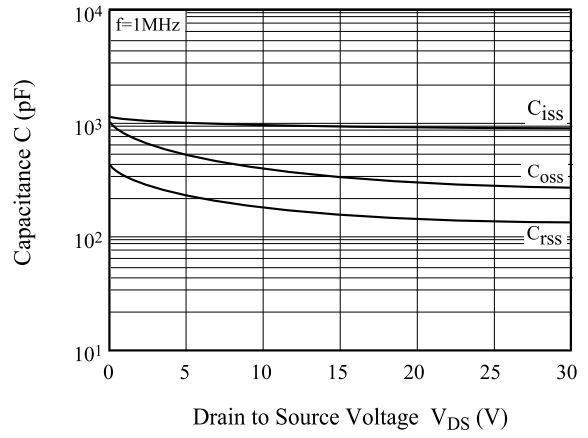


Fig9. $Q_g - V_{GS}$

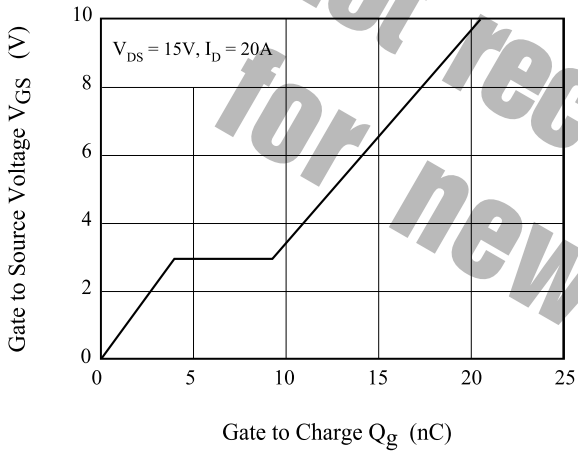


Fig10. Safe Operation Area

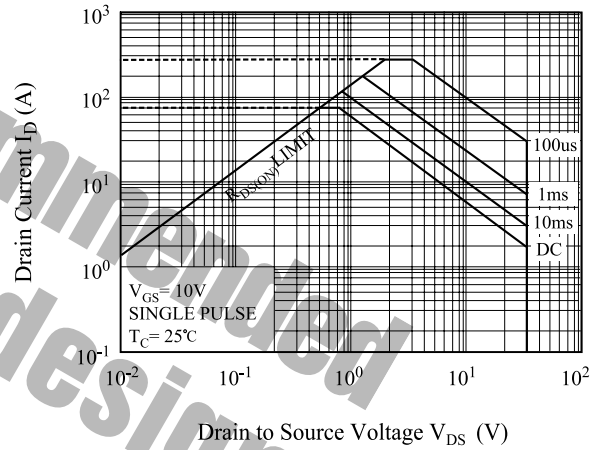


Fig11. Transient Thermal Response Curve

