

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

- $V_{DS}=30V$, $I_D=68A$.
- Low Drain to Source On-state Resistance.
 - : $R_{DS(ON)}=6.8m\Omega$ (Max.) @ $V_{GS}=10V$
 - : $R_{DS(ON)}=13.2m\Omega$ (Max.) @ $V_{GS}=4.5V$

MAXIMUM RATING (Ta=25 Unless otherwise Noted)

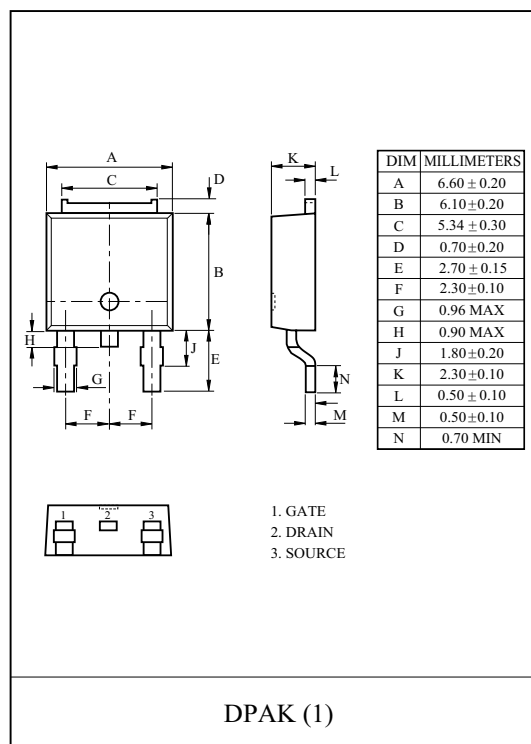
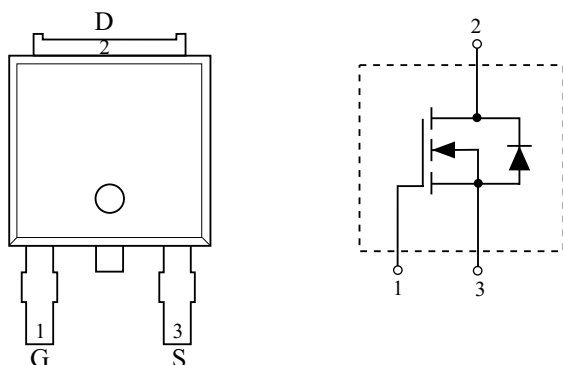
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain to Source Voltage		V_{DSS}	30	V
Gate to Source Voltage		V_{GSS}	± 20	V
Drain Current	DC@ $T_C=25$ (Note1)	I_D	68	A
	Pulsed (Note2)	I_{DP}	272	
Single Pulsed Avalanche Energy (Note3)		E_{AS}	89	mJ
Drain Power Dissipation	@ $T_C=25$ (Note1)	P_D	45	W
	@ $T_a=25$ (Note2)		3.8	
Maximum Junction Temperature		T_j	150	
Storage Temperature Range		T_{stg}	-55 150	
Thermal Resistance, Junction to Case (Note1)		R_{thJC}	2.8	/W
Thermal Resistance, Junction to Ambient (Note2)		R_{thJA}	40	/W

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

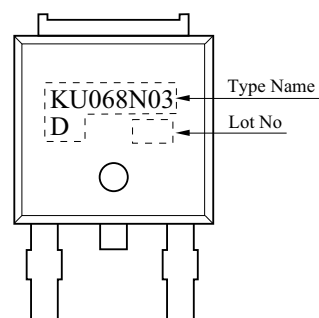
Note 2) Surface Mounted on 1 "× 1 "Pad of 2 oz copper.

Note 3) $L=20\mu H$, $I_{AS}=68A$, $V_{DD}=15V$, $V_{GS}=10V$, Starting $T_j=25$

PIN CONNECTION (TOP VIEW)



Marking



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 μA	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 =250 μA	1.0	-	3.0	V
Drain to Source On Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =30A (Note4)	-	5.7	6.8	mΩ
			V _{GS} =4.5V, I _D =30A (Note4)	-	11.0	13.2	
Forward Transconductance		g _{fs}	V _{DS} =5V, I _D =30A (Note4)	-	55	-	S
Dynamic							
Input Capacitance		C _{iss}	V _{DS} =15V, f=1MHz, V _{GS} =0V	-	1265	-	pF
Ouput Capacitance		C _{oss}		-	266	-	
Reverse Transfer Capacitance		C _{rss}		-	198	-	
Gate Resistance		R _g	f=1MHz	-	2.9	-	Ω
Total Gate Charge	V _{GS} =10V	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =30A (Note4)	-	29.9	-	nC
	V _{GS} =4.5V	Q _g		-	16.6	-	
Gate to Source Charge		Q _{gs}		-	4.6	-	
Gate to Drain Charge		Q _{gd}		-	7.2	-	
Turn-On Delay Time		t _{d(on)}	V _{DD} =15V, V _{GS} =10V I _D =30A, R _G =1.6Ω (Note4)	-	8.4	-	ns
Turn-On Rise Time		t _r		-	13.0	-	
Turn-Off Delay Time		t _{d(off)}		-	32.2	-	
Turn-Off Fall Time		t _f		-	9.2	-	
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	-	21.1	-	ns
Reverse Recovered Charge		Q _{rr}	I _S =30A, dI/dt=100A/μs	-	9.3	-	nC

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

Fig1. $I_D - V_{DS}$

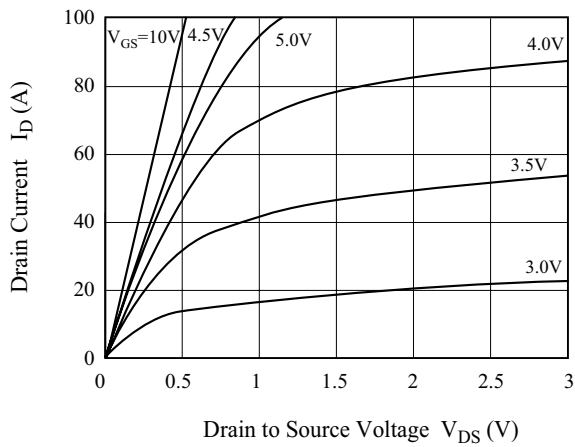


Fig2. $R_{DS(on)} - I_D$

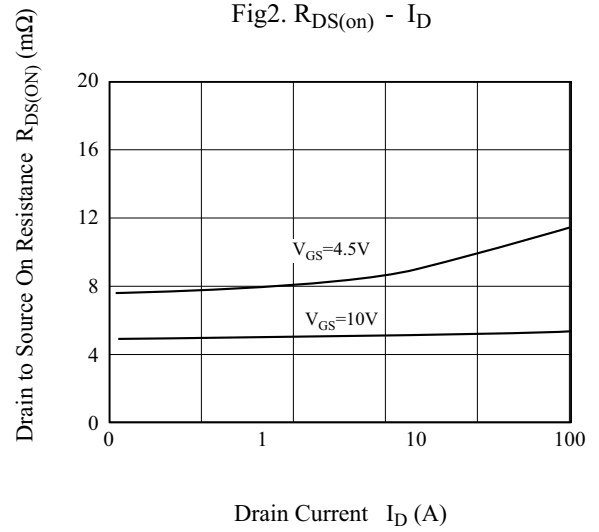


Fig3. $I_D - V_{GS}$

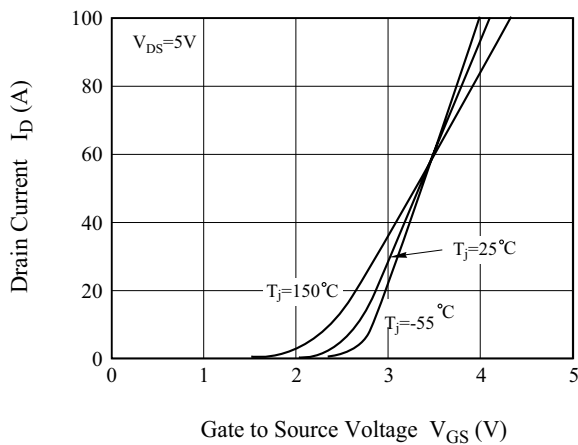


Fig4. $R_{DS(on)} - T_J$

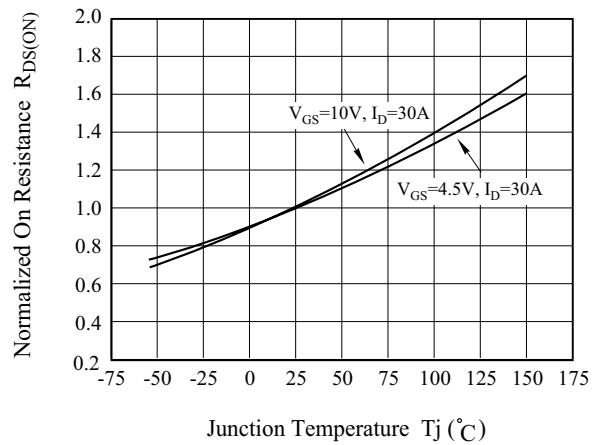


Fig5. $V_{th} - T_J$

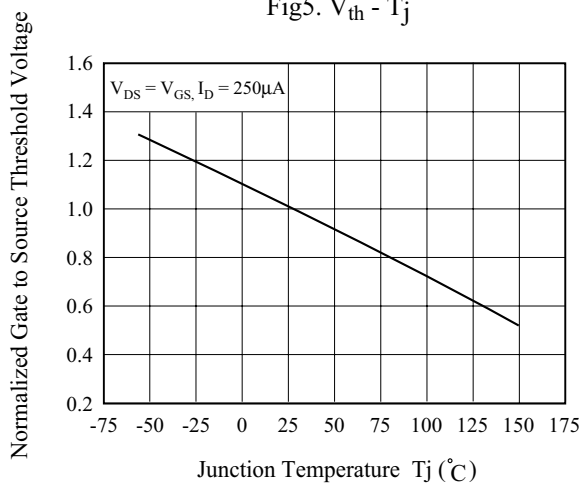


Fig6. $C - V_{SD}$

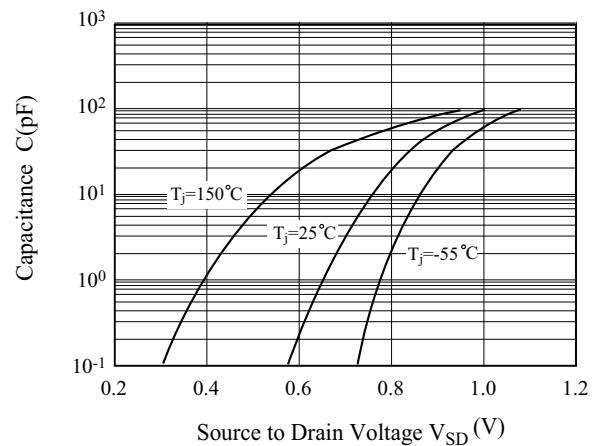


Fig7. $R_{DS(ON)} - V_{GS}$

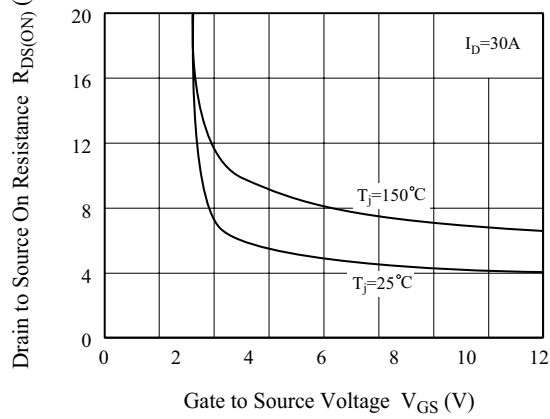


Fig8. $C - V_{DS}$

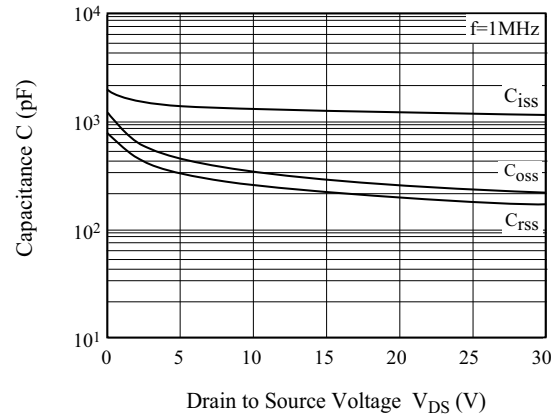


Fig9. $Q_g - V_{GS}$

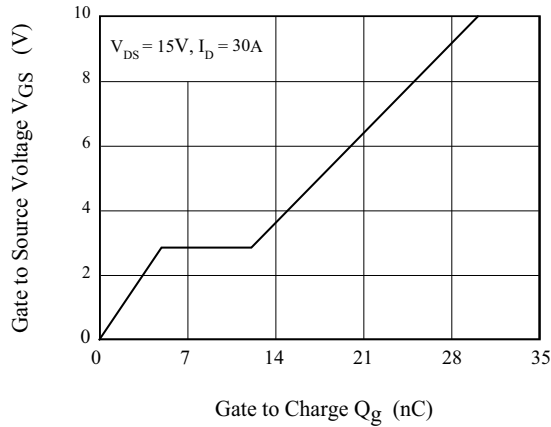


Fig10. Safe Operation Area

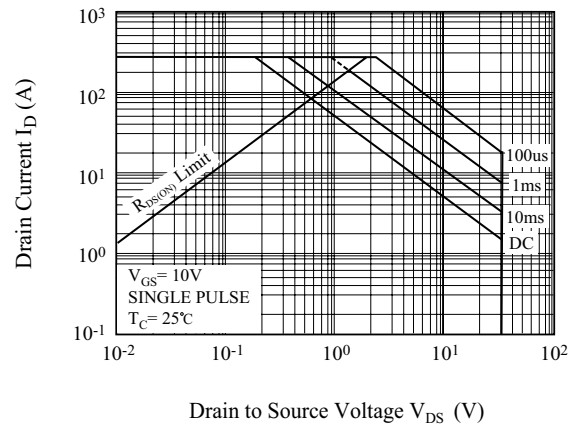


Fig11. Transient Thermal Response Curve

