

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 and Battery pack..

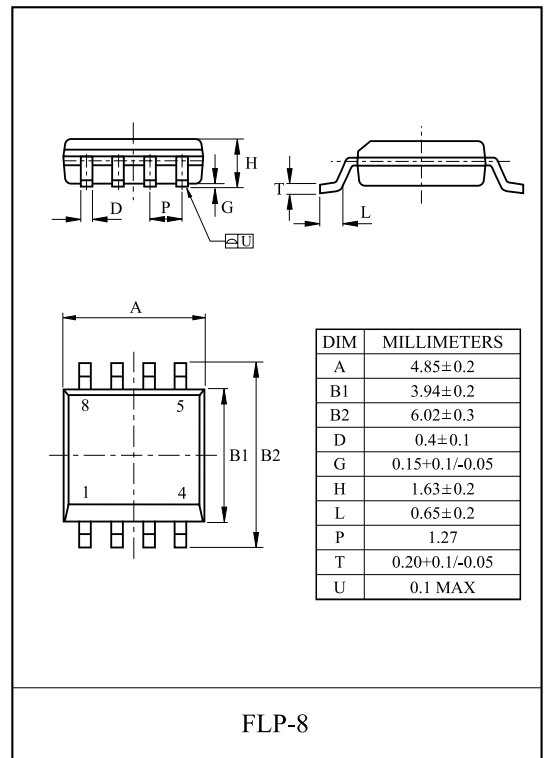
FEATURES

- $V_{DS}=30V$, $I_D=16A$.
- Drain to Source On Resistance.
 $R_{DS(ON)}=6.3m\Omega(\text{Max.}) @ V_{GS}=10V$
 $R_{DS(ON)}=10.7m\Omega(\text{Max.}) @ V_{GS}=4.5V$

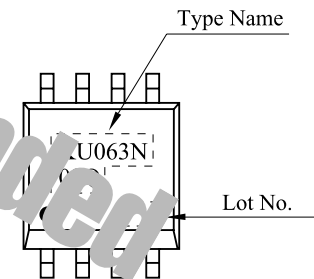
MOSFET Maximum Ratings ($T_a=25^\circ\text{C}$ Unless otherwise noted)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain to Source Voltage		V_{DS}	30	V
Gate to Source Voltage		V_{GS}	± 20	V
Drain Current	DC@ $T_a=25^\circ\text{C}$ (Note 1)	I_D	16	A
	Pulse	I_{pD}	64	A
Drain Power Dissipation	@ $T_a=25^\circ\text{C}$ (Note 1)	P_D	7	W
Maximum Junction Temperature		T_j	150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55~150	$^\circ\text{C}$
Thermal Resistance, Junction to Ambient (Note 1)		$R_{\theta JA}$	50	$^\circ\text{C/W}$

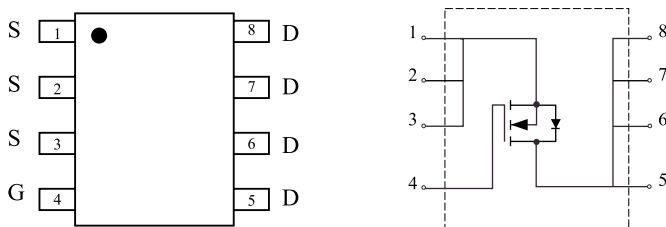
Note1) Surface Mounted on 1"×1" FR4 Board, $t \leq 10\text{sec}$.



Marking



PIN CONNECTION (TOP VIEW)



KU063N03Q

ELECTRICAL CHARACTERISTICS (Ta=25°C) UNLESS OTHERWISE NOTED

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 =16A (Note2)	-	5.3	6.3	mΩ
			V _{GS} =4.5V, I _D =13A (Note2)	-	8.9	10.7	
Forward Transconductance		g _{fs}	V _{DS} =5V, I _D =16A (Note2)	-	52	-	S
Dynamic							
Input Capacitance		C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz (Note2)	-	1751	-	pF
Ouput Capacitance		C _{oss}		-	350	-	
Reverse Transfer Capacitance		C _{rss}		-	253	-	
Gate Resistance		R _g	f=1MHz	-	2.8	-	Ω
Total Gate Charge	V _{GS} =10V	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =16A (Note2)	-	39.7	-	nC
	V _{GS} =4.5V			-	20.1	-	
Gate to Source Charge		Q _{gs}		-	6.8	-	
Gate to Drain Charge		Q _{gd}		-	8.2	-	
Turn-On Delay Time		t _{d(on)}	V _{DS} =15V, V _{GS} =10V, I _D =16A, R _G =1.6Ω (Note2)	-	10.1	-	ns
Turn-On Rise Time		t _r		-	10.5	-	
Turn-Off Delay Time		t _{d(off)}		-	31.2	-	
Turn-Off Fall Time		t _f		-	11.0	-	
Source to Drain Diode Ratings							
Source to Drain Forward Voltage		V _{SD}	V _{GS} =0V, I _S =16A (Note2)	-	1.5	1.2	V
Reverse Recovery Time		t _{rr}	I _S =16A, dI/dt=100A/ μs	-	6.5	-	ns
Reverse Recovered Charge		Q _{rr}	I _S =16A, dI/dt=100A/ μs	-	9.5	-	nC
Note2) Pulse Test : Pulse Width≤300μs, Duty Cycle≤2%							

Fig1. $I_D - V_{DS}$

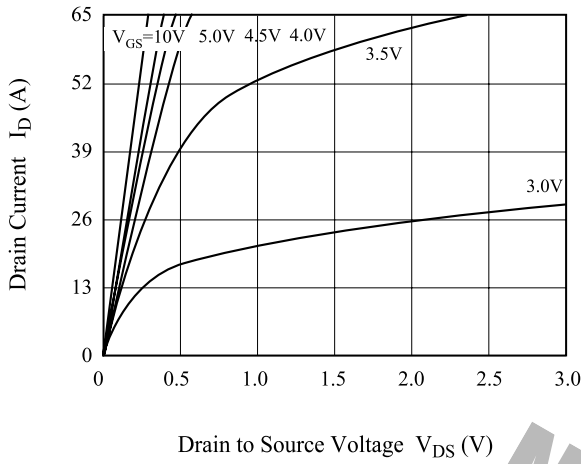


Fig2. $R_{DS(on)} - I_D$

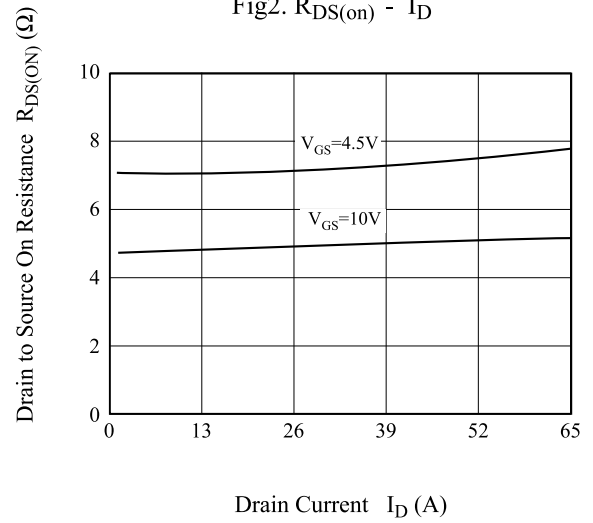


Fig3. $I_D - V_{GS}$

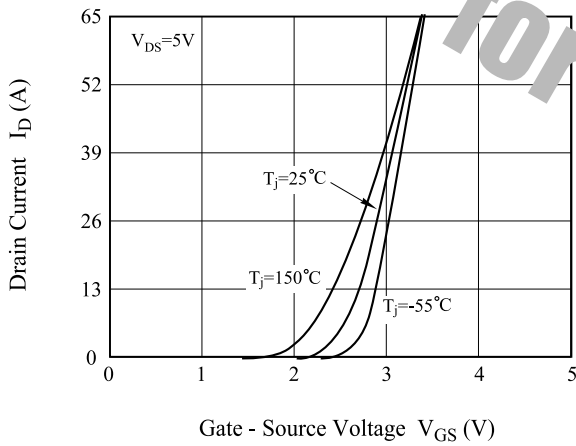


Fig4. $R_{DS(ON)} - T_J$

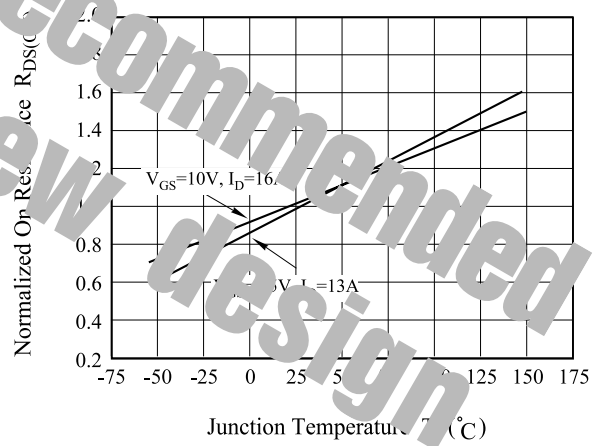


Fig5. $V_{th} - T_J$

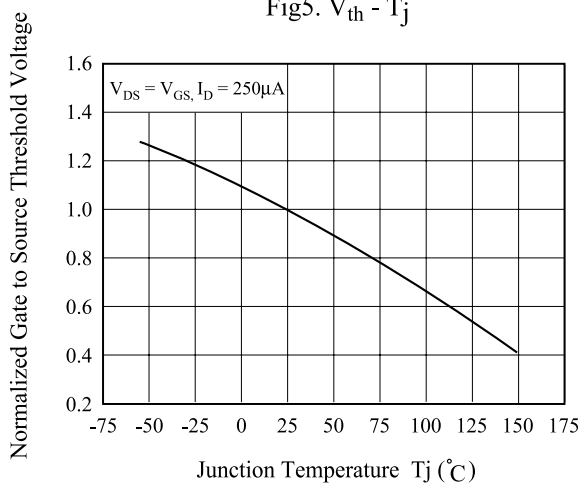


Fig6. $I_S - V_{SD}$

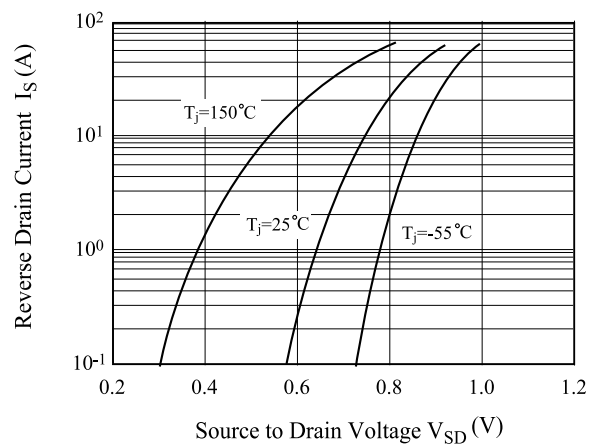


Fig7. $R_{DS(ON)} - V_{GS}$

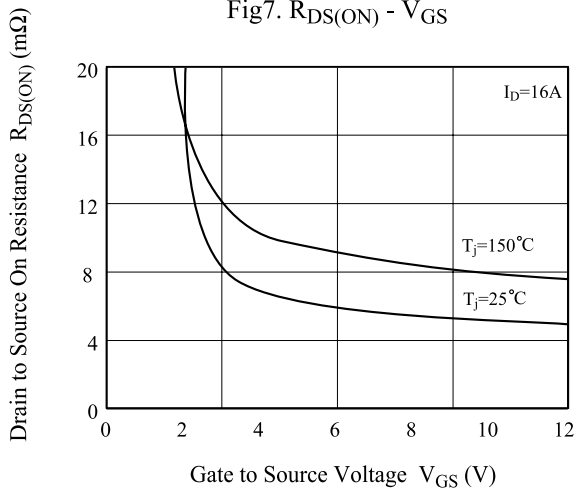


Fig8. $C - V_{DS}$

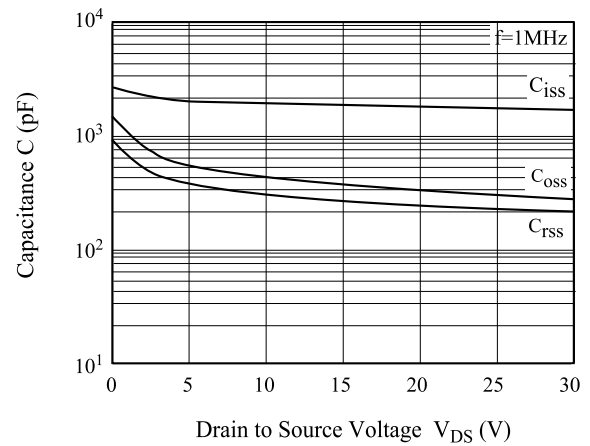


Fig9. $Q_g - V_{GS}$

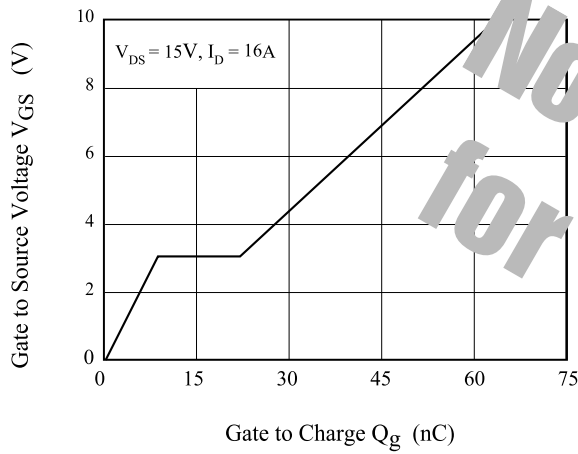


Fig10. Safe Operation Area

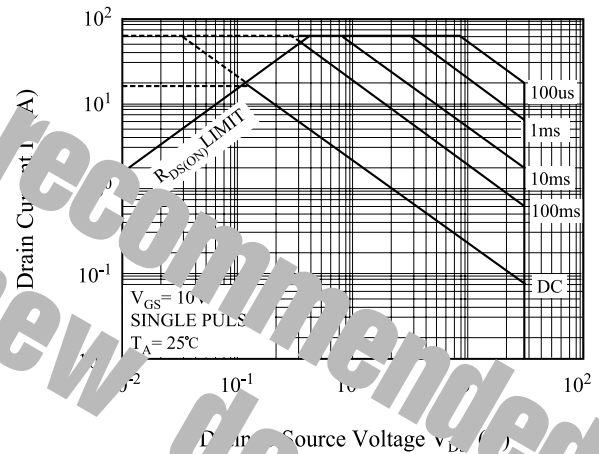


Fig11. Transient Thermal Response Curve

