KU056N03Q

N-Ch Trench MOSFET

GENERAL DESCRIPTION

This Trench MOSFET has better characteristics, such as fast switching time, low on resistance, low gate charge and excellent avalanche characteristiscs. It is mainly suitable for DC/DC Converter and Battery pack.

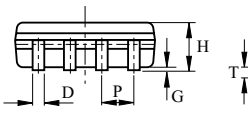
FEATURES

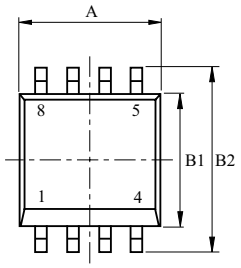
· V_{DSS}=30V, I_D=17A.

· Drain to Source On Resistance.

$R_{DS(ON)}$=5.6mΩ(Max.) @ V_{GS}=10V

$R_{DS(ON)}$=9.7mΩ(Max.) @ V_{GS}=4.5V





DIM	MILLIMETERS
A	4.85± 0.2
B1	3.94± 0.2
B2	6.02± 0.3
D	0.4± 0.1
G	0.15+0.1/-0.05
H	1.63± 0.2
L	0.65± 0.2
P	1.27
T	0.20+0.1/-0.05

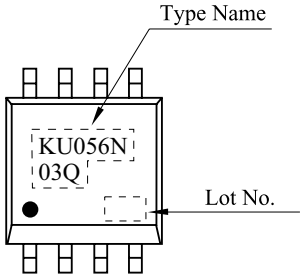
FLP-8

MOSFET Maximum Ratings (Ta=25℃ Unless otherwise noted)

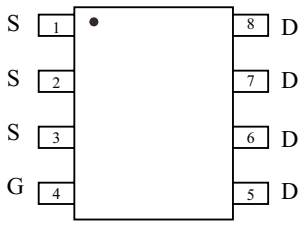
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain to Source Voltage		V_{DSS}	30	V
Gate to Source Voltage		V_{GSS}	±20	V
Drain Current	DC@Ta=25℃ (Note 1)	I_D	17	A
	Pulsed	I_{DP}	68	A
Drain Power Dissipation	@Ta=25℃ (Note 1)	P_D	2.5	W
Maximum Junction Temperature		T_j	150	℃
Storage Temperature Range		T_{stg}	-55~150	℃
Thermal Resistance, Junction to Ambient (Note 1)		R_{thJA}	50	℃/W

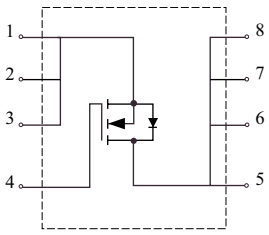
Note1) Surface Mounted on 1 ″×1 ″FR4 Board, t≤10sec.

Marking



PIN CONNECTION (TOP VIEW)





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=17A (Note2)	-	4.7	5.6	mΩ
			V_{GS}=4.5V, I_D=14A (Note2)	-	8.1	9.7	
Forward Transconductance		g_{fs}	V_{DS}=5V, I_D=17A (Note2)	-	68	-	S
Dynamic							
Input Capaclitance		C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1MHz (Note2)	-	2772	-	pF
Ouput Capacitance		C_{oss}		-	550	-	
Reverse Transfer Capacitance		C_{rss}		-	398	-	
Gate Resistance		R_g	f=1MHz	-	3.5	-	Ω
Total Gate Charge	V_{GS}=10V	Q_g	V_{DS}=15V, V_{GS}=10V, I_D=17A (Note2)	-	64.5	-	nC
	V_{GS}=4.5V			-	32.2	-	
Gate to Source Charge		Q_{gs}		-	8.0	-	
Gate to Drain Charge		Q_{gd}		-	14.3	-	
Turn-On Delay Time		$t_{d(on)}$	V_{DS}=15V, V_{GS}=10V, I_D=17A, R_G=1.6Ω (Note2)	-	11.0	-	ns
Turn-On Rise Time		t_r		-	15.8	-	
Turn-Off Delay Time		$t_{d(off)}$		-	58.2	-	
Turn-Off Fall Time		t_f		-	20.0	-	
Source to Drain Diode Ratings							
Source to Drain Forward Voltage		V_{SD}	V_{GS}=0V, I_S=17A (Note2)	-	0.8	1.2	V
Reverse Recovery Time		t_{rr}	I_S=17A, dI/dt=100A/μs	-	26.1	-	ns
Reverse Recovery Charge		Q_{rr}	I_S=17A, dI/dt=100A/μs	-	17.3	-	nC
Note2) Pulse Test : Pulse Width≤300μs, Duty Cycle≤2%							

Fig1. I_D - V_{DS}

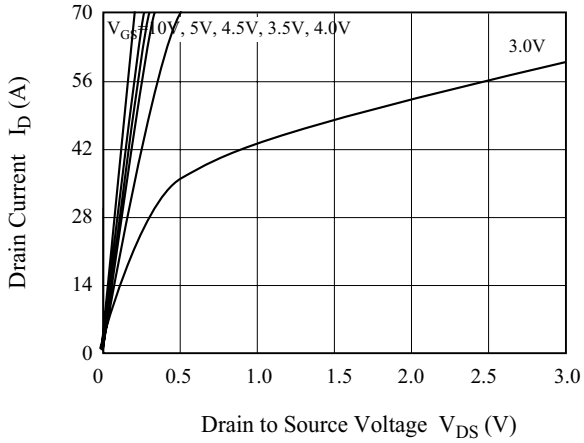


Fig2. $R_{DS(on)}$ - I_D

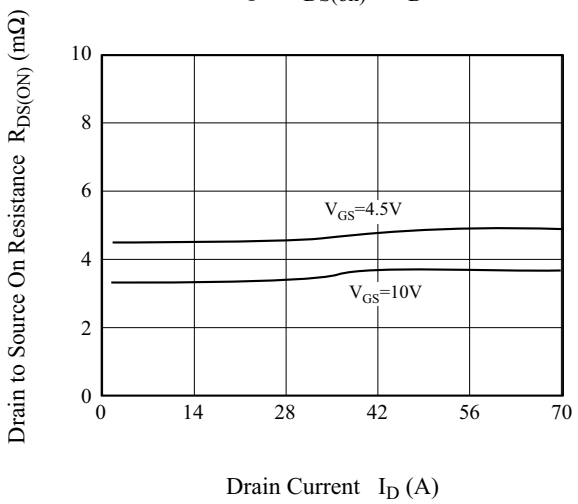


Fig3. I_D - V_{GS}

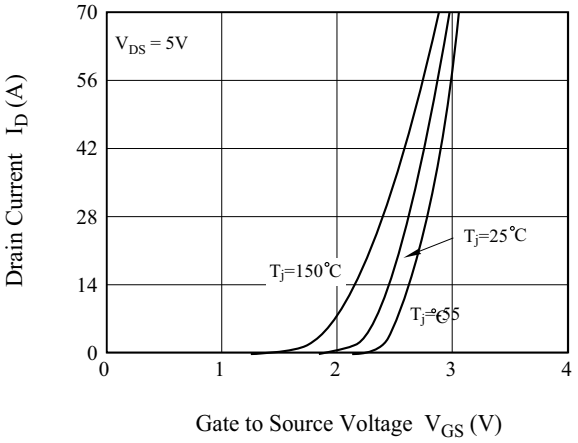


Fig4. $R_{DS(ON)}$ - T_j

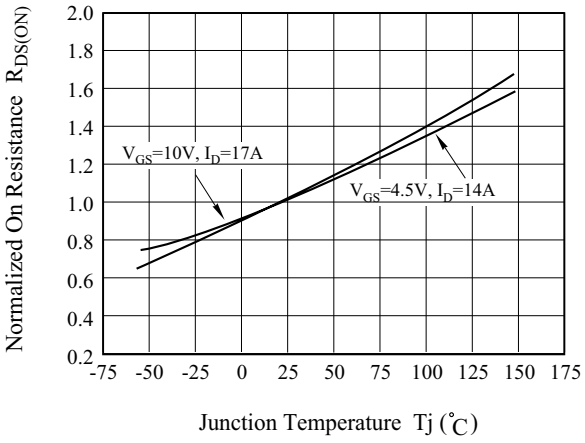


Fig5. V_{th} - T_j

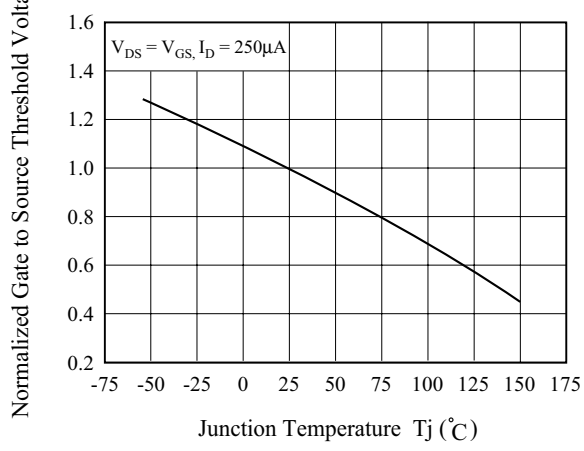


Fig6. I_S - V_{SD}

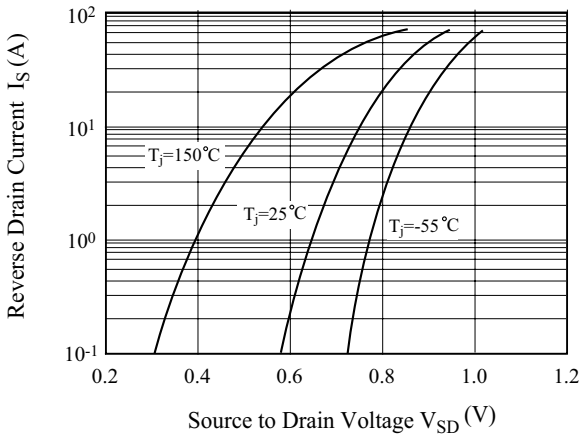


Fig7. $R_{DS(ON)}$ - V_{GS}

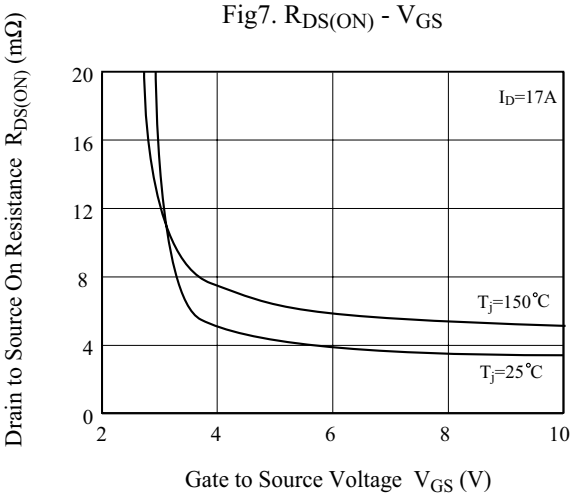


Fig8. C - V_{DS}

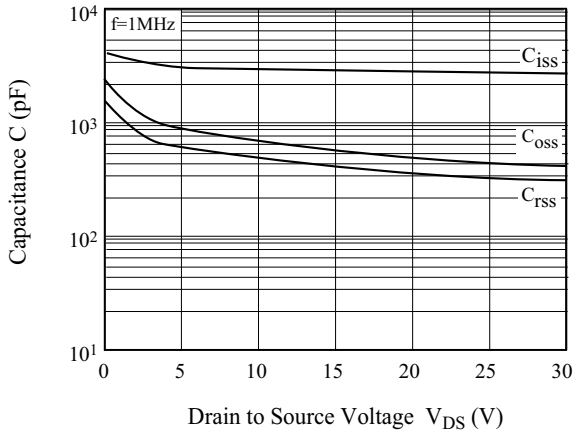


Fig9. Q_g - V_{GS}

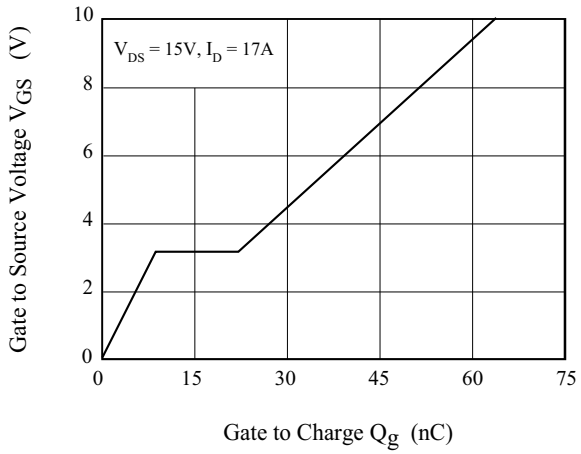


Fig10. Safe Operation Area

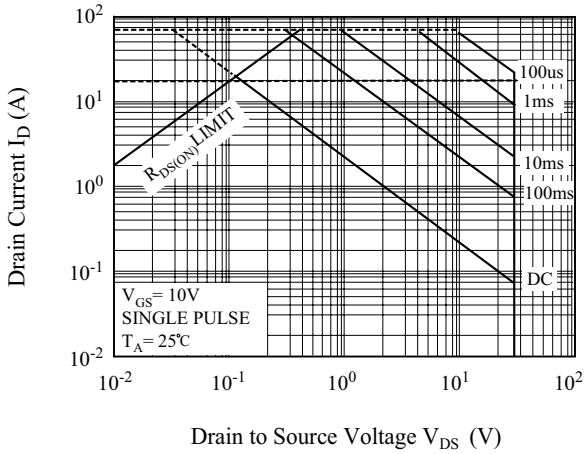


Fig11. Transient Thermal Response Curve