

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..

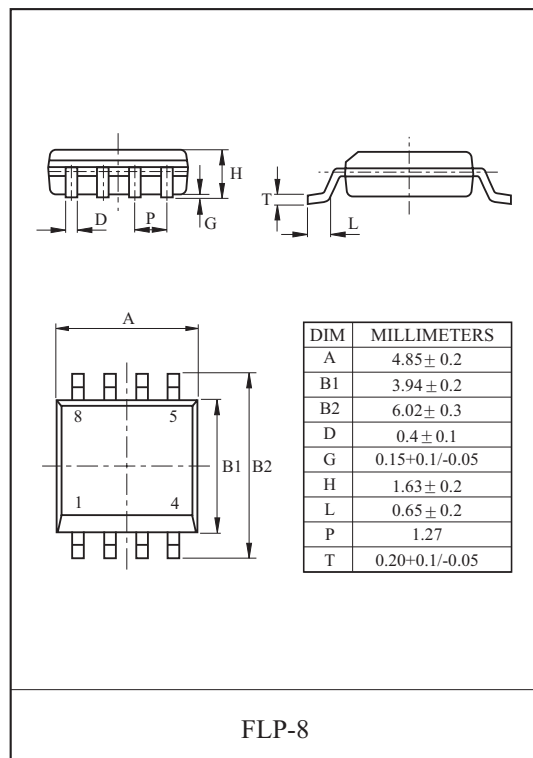
FEATURES

- $V_{DS}=30V$, $I_D=12A$.
- Drain to Source On Resistance.
 $R_{DS(ON)}=7m\ \Omega$ (Max.) @ $V_{GS}=10V$
 $R_{DS(ON)}=11m\ \Omega$ (Max.) @ $V_{GS}=4.5V$

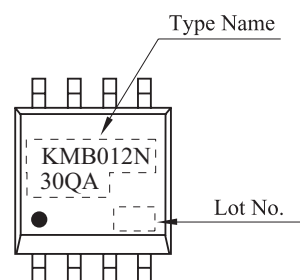
MOSFET Maximum Ratings (Ta=25 °C Unless otherwise noted)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain to Source Voltage		V_{DS}	30	V
Gate to Source Voltage		V_{GS}	± 20	V
Drain Current	DC@Ta=25 °C (Note 1)	I_D	12	A
	Pulsed (Note 1)	I_{DP}	48	A
Drain Power Dissipation	@Ta=25 °C (Note 1)	P_D	2.5	W
Maximum Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	-55~150	°C
Thermal Resistance, Junction to Ambient (Note 1)		R_{thJA}	50	°C/W

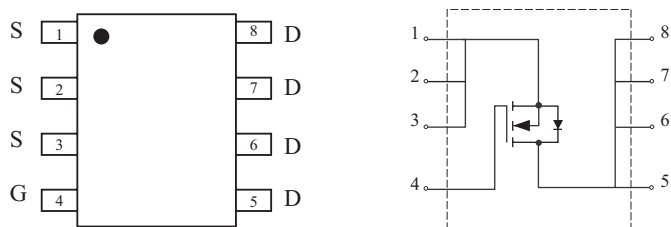
Note1) Surface Mounted on 1 "×1 " FR4 Board, $t \leq 10$ sec.



Marking



PIN CONNECTION (TOP VIEW)



KMB012N30QA

ELECTRICAL CHARACTERISTICS (Ta=25℃) UNLESS OTHERWISE NOTED

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 =12A (Note2)	-	6.0	7.0	m Ω
			V _{GS} =4.5V, I _D =10A (Note2)	-	8.5	11.0	
Forward Transconductance		g _{fs}	V _{DS} =5V, I _D =12A (Note2)	-	48	-	S
Dynamic							
Input Capacitance		C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz (Note2)	-	1310	-	pF
Ouput Capacitance		C _{oss}		-	420	-	
Reverse Transfer Capacitance		C _{rss}		-	205	-	
Total Gate Charge	V _{GS} =10V	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =12A (Note2)	-	27.0	-	nC
	V _{GS} =4.5V			-	14.5	-	
Gate to Source Charge		Q _{gs}		-	4.8	-	
Gate to Drain Charge		Q _{gd}		-	6.6	-	
Turn-On Delay Time		t _{d(on)}	V _{DS} =15V, V _{GS} =10V I _D =1A, R _G =6 Ω (Note2)	-	7.0	-	ns
Turn-On Rise Time		t _r		-	7.5	-	
Turn-Off Delay Time		t _{d(off)}		-	28.3	-	
Turn-Off Fall Time		t _f		-	9.9	-	
Source to Drain Diode Ratings							
Continuous Source Current		I _S	-	-	-	1.7	A
Pulsed Source Current		I _{SP}	-	-	-	48	
Source to Drain Forward Voltage		V _{SD}	V _{GS} =0V, I _S =1.7A (Note2)	-	0.75	1.2	V
Note2) Pulse Test : Pulse Width ≤300 μs, Duty Cycle ≤2%							

Fig1. $I_D - V_{DS}$

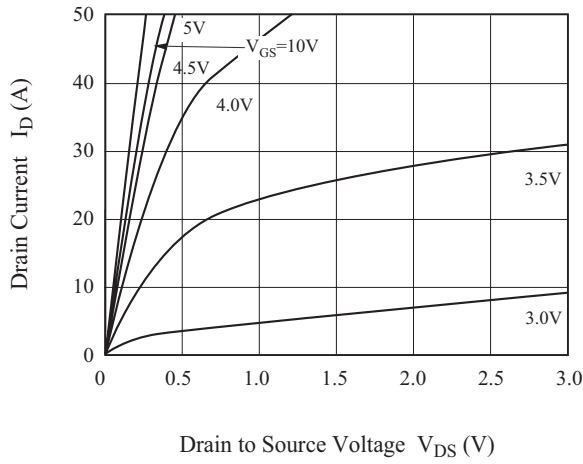


Fig2. $R_{DS(on)} - I_D$

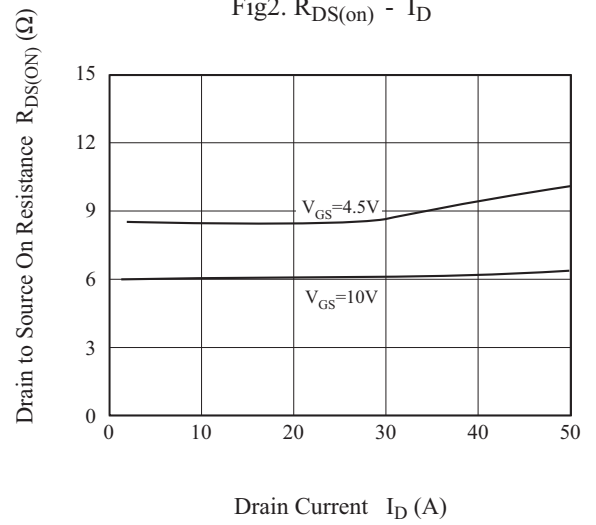


Fig3. $I_D - V_{GS}$

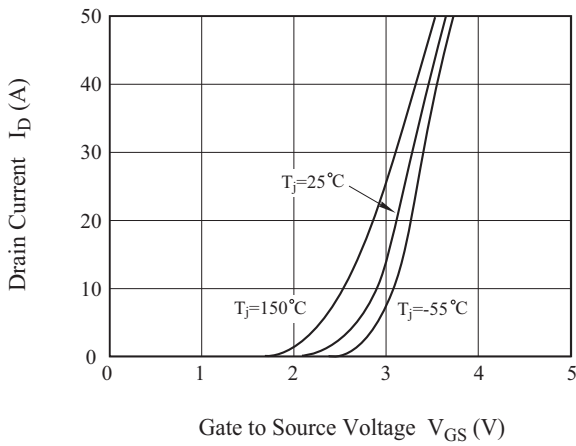


Fig4. $R_{DS(on)} - T_J$

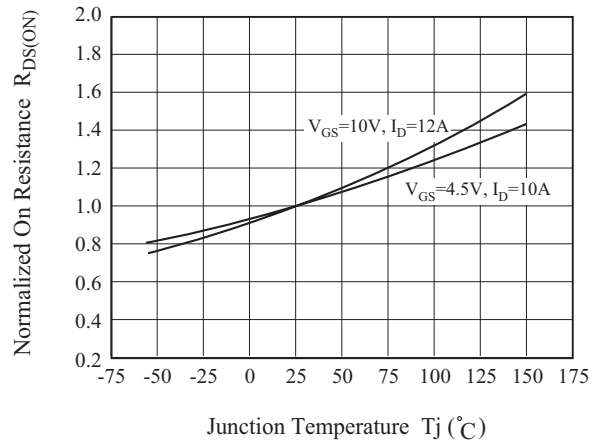


Fig5. $V_{th} - T_J$

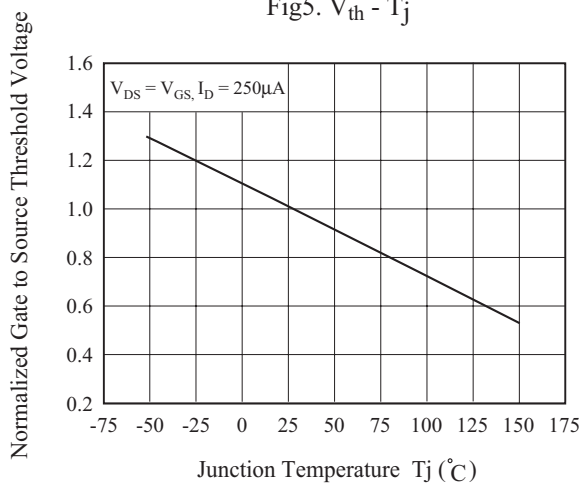
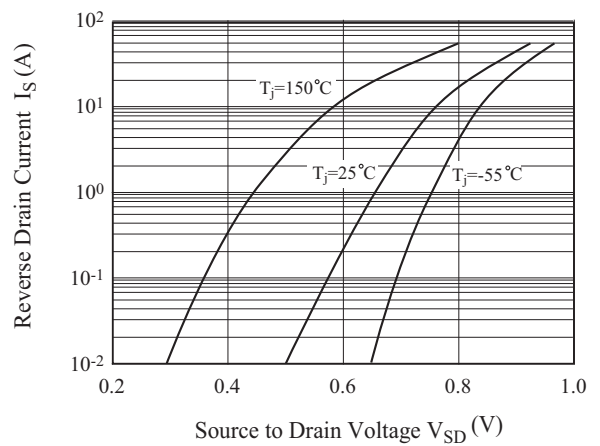


Fig6. $I_S - V_{SD}$



KMB012N30QA

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

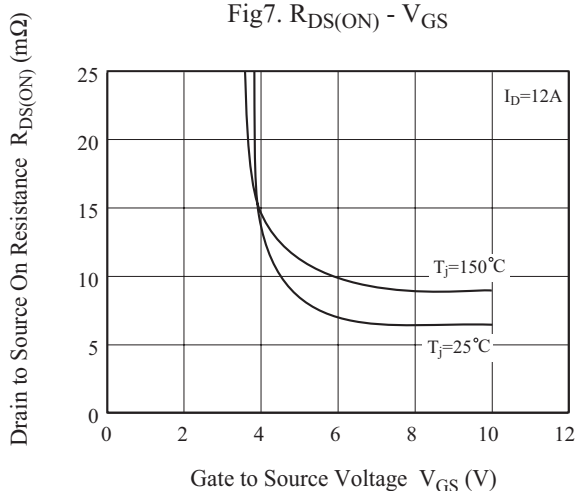


Fig8. $C - V_{DS}$

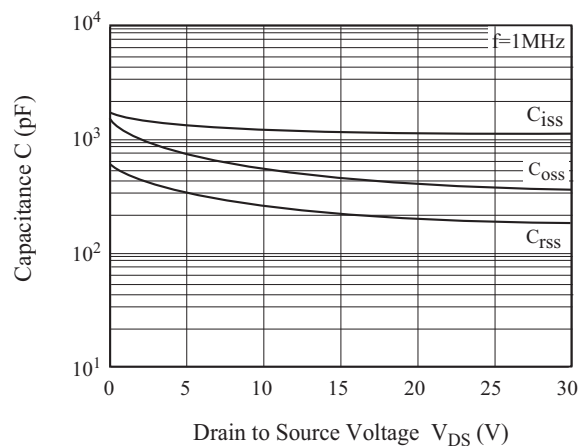


Fig9. $Q_g - V_{GS}$

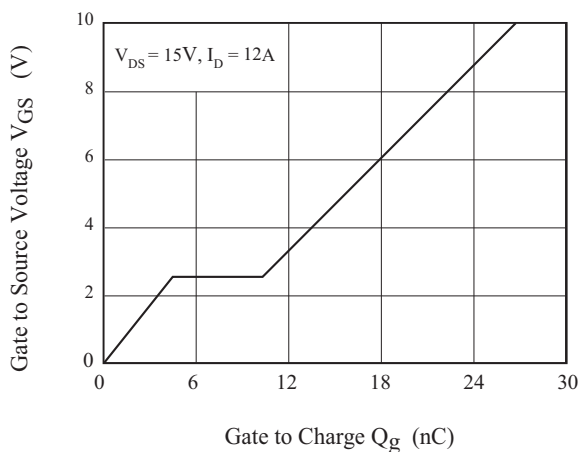


Fig10. Safe Operation Area

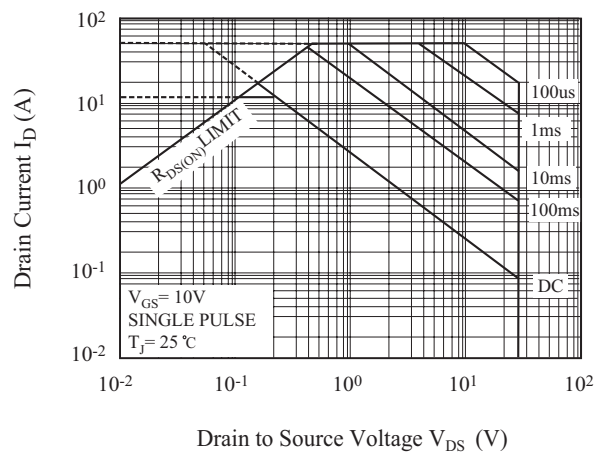


Fig11. Transient Thermal Response Curve

