

GENERAL DESCRIPTION

This Trench MOSFET has better characteristics, such as low on resistance, low gate charge and excellent avalanche characteristics. It is mainly suitable for battery protection circuit.

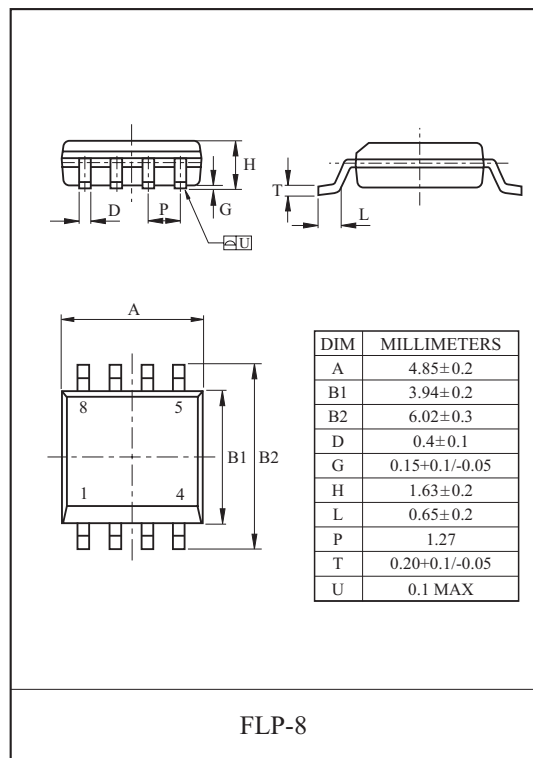
FEATURES

- $V_{DSS} = -40V$, $I_D = -7.5A$.
- Drain-Source ON Resistance.
 - $R_{DS(ON)} = 30m\Omega$ (Max.) @ $V_{GS} = -10V$
 - $R_{DS(ON)} = 37m\Omega$ (Max.) @ $V_{GS} = -4.5V$
- Super High Dense Cell Design

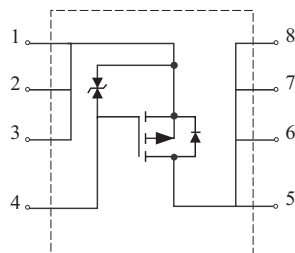
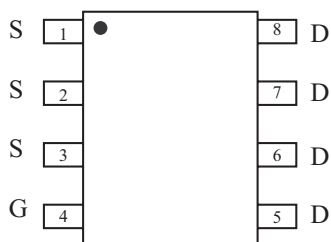
MOSFET Maximum Ratings (Ta=25°C Unless otherwise noted)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain Source Voltage		V_{DS}	-40	V
Gate Source Voltage		V_{GS}	± 20	V
Drain Current	DC@Ta=25°C	I_D^*	-7.5	A
	Pulsed	I_{DP}	-20	A
Drain Source Diode Forward Current		I_S	-30	A
Drain Power Dissipation	DC@Ta=25°C	P_D^*	2.0	W
Maximum Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{stg}	-55~150	°C
Thermal Resistance, Junction to Ambient		R_{thJA}^*	62.5	°C/W

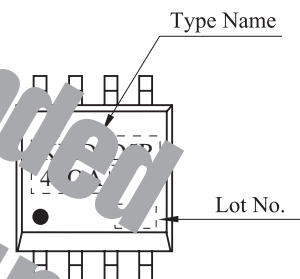
Note : *Surface Mounted on 1 × 1 FR4 Board, $t \leq 10sec$



PIN CONNECTION (TOP VIEW)



Marking



KMD7D5P40QA

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _{DS} =-250μA	-40	-	-	V
Drain Cut-off Current	I _{DSS}	V _{DS} =-40V, V _{GS} =0V	-	-	-10	μA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±10	μA
Gate Threshold Voltage	V _{th}	V _{DS} =V _{GS} , I _D =-250μA	-1.0	-	-3.0	V
Drain-Source ON Resistance	R _{DS(ON)*}	V _{GS} =-10V, I _D =-3.8A	-	24	30	mΩ
		V _{GS} =-4.5V, I _D =-3.8A	-	29	37	
Forward Transconductance	g _{fs*}	V _{DS} =-10V, I _D =-3.8A	-	1.2	-	S
Dynamic						
Input Capacitance	C _{iss}	V _{DS} = 20V, f=MHz, V _{GS} =0V	-	1,480	-	pF
Output Capacitance	C _{oss}		-	240	-	
Reverse Transfer Capacitance	C _{rss}		-	140	-	
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	8	-	Ω
Total Gate Charge	Q _{g*}	V _{DS} =-10V, V _{GS} =10V, I _D =-7.5A	-	32.0	-	nC
Gate-Source Charge	Q _{gs*}		-	5.5	-	
Gate-Drain Charge	Q _{gd*}		-	9.0	-	
Turn-On Delay Time	t _{d(on)}	V _{DS} =-10V, V _{GS} =-10V I _D =-7.5A, R _g =4.7Ω	-	11	-	nS
Turn-On Rise Time	t _{r*}		-	20	-	
Turn-Off Delay Time	t _{d(off)*}		60	-	-	
Turn-Off Fall Time	t _{f*}		7	-	-	
Source-Drain Diode Ratings						
Source-Drain Forward Voltage	V _{SDF*}	V _{GS} =0V, I _{DR} =-7.5A,	-	-	-1.2	V
Note) *Pulse Test : Pulse width ≤ 300μs , Duty cycle ≤ 2%						

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Fig1. $I_D - V_{DS}$

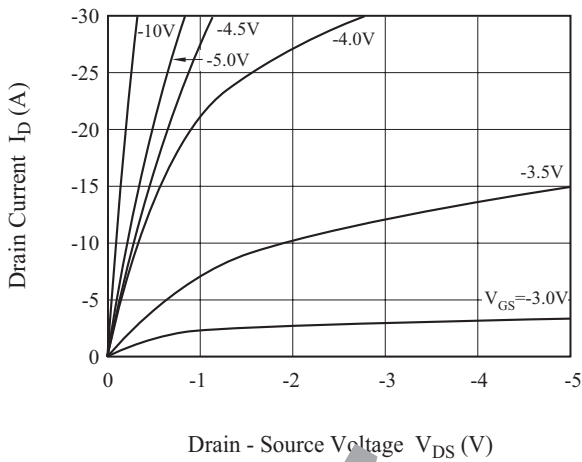


Fig2. $R_{DS(ON)} - I_D$

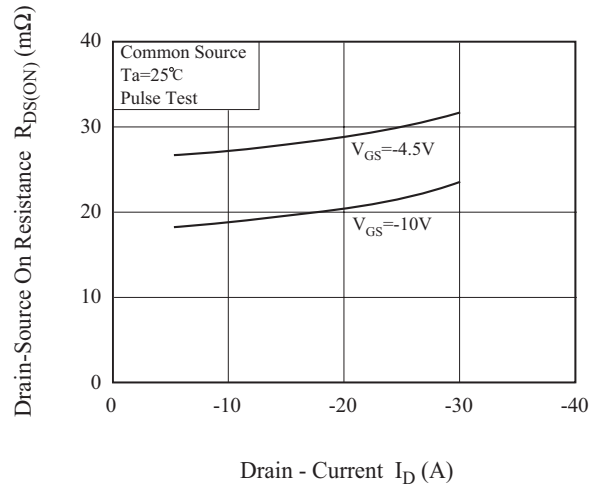


Fig3. $I_D - V_{GS}$

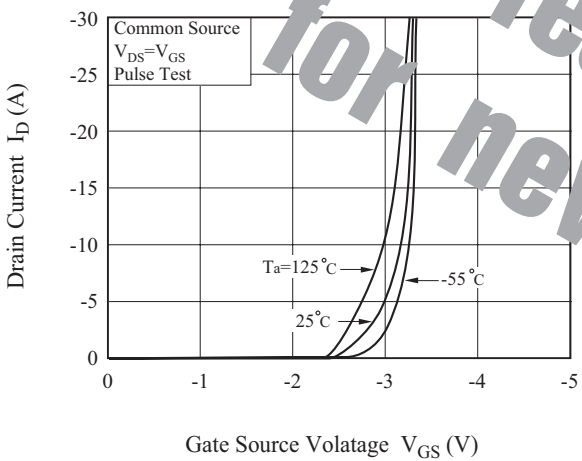


Fig4. $R_{DS(on)} - T_j$

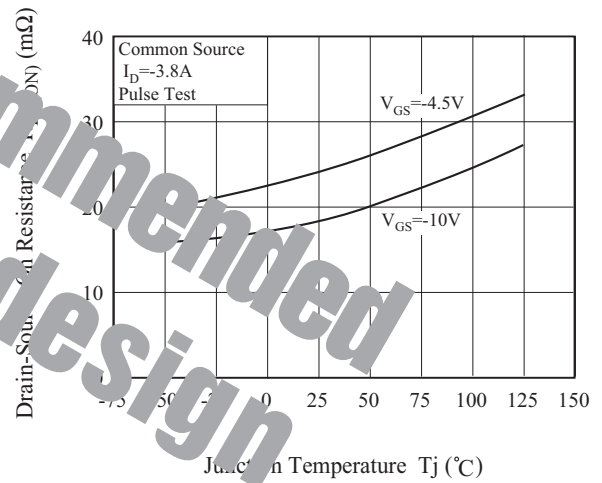


Fig5. $V_{th} - T_j$

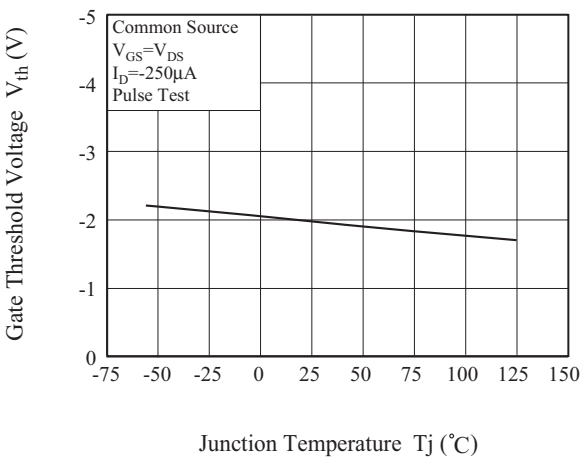
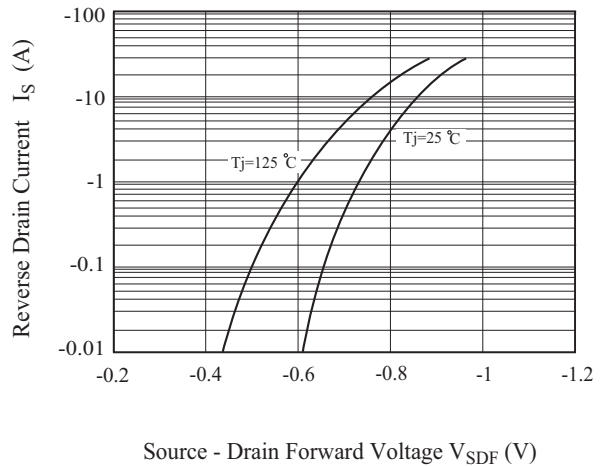


Fig6. $I_S - V_{SDF}$



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Fig7. Q_g - V_{GS}

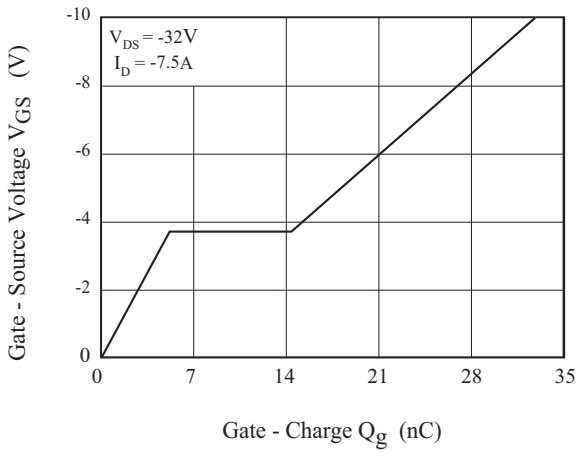


Fig8. C-V_{DS}

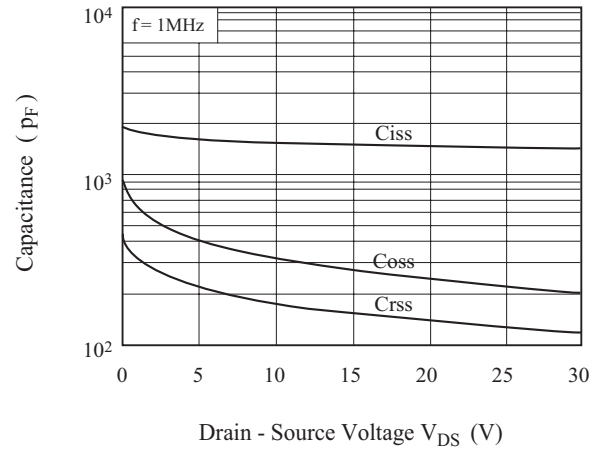


Fig9. Safe Operating Area

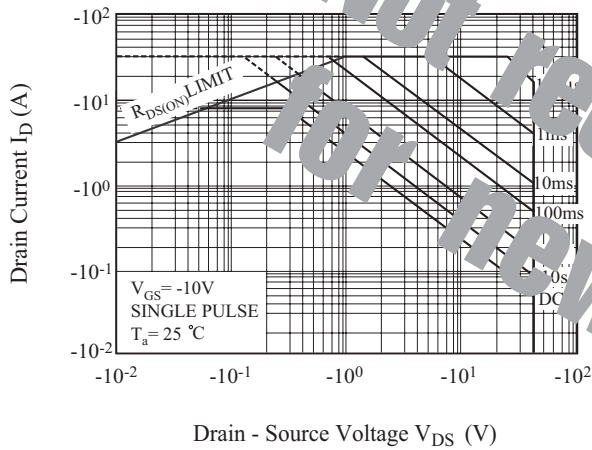


Fig10. Transient Thermal Response Curve

