

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 Back-light Inverter and power Supply.

FEATURES

- $V_{DSS}=40V$, $I_D=35A$.
- Low Drain to Source On-state Resistance.
 - : $R_{DS(ON)}=17.5m$ (Max.) @ $V_{GS}=10V$
 - : $R_{DS(ON)}=27.0m$ (Max.) @ $V_{GS}=4.5V$

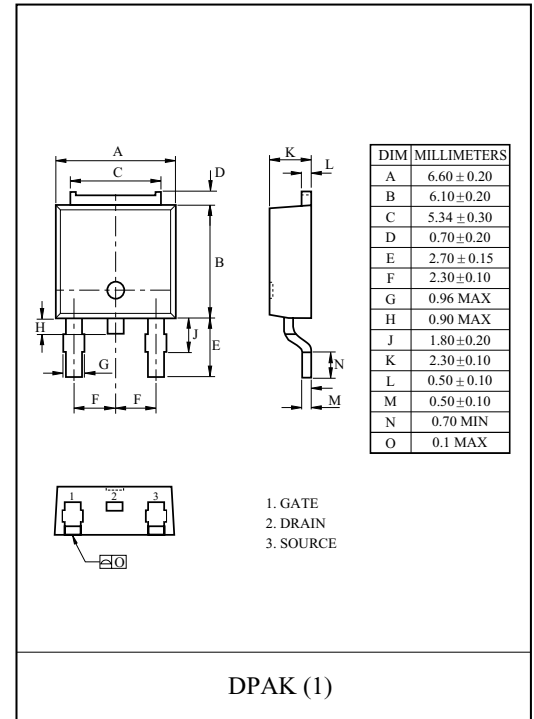
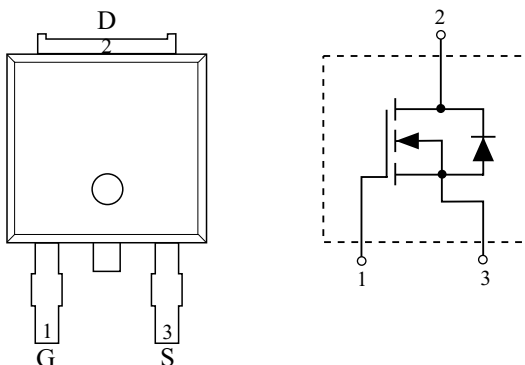
MAXIMUM RATING (Ta=25 Unless otherwise Noted)

CHARACTERISTIC		SYMBOL	N-Ch	UNIT
Drain to Source Voltage		V_{DSS}	40	V
Gate to Source Voltage		V_{GSS}	± 20	V
Drain Current	DC@ $T_C=25$ (Note1)	I_D	35	A
	Pulsed (Note2)	I_{DP}	140	
Drain Power Dissipation	@ $T_C=25$ (Note1)	P_D	42	W
	@ $T_a=25$ (Note2)		3.1	
Maximum Junction Temperature		T_j	150	
Storage Temperature Range		T_{stg}	-55 150	
Thermal Resistance, Junction to Case (Note1)		R_{thJC}	3.0	/W
Thermal Resistance, Junction to Ambient (Note2)		R_{thJA}	40	/W

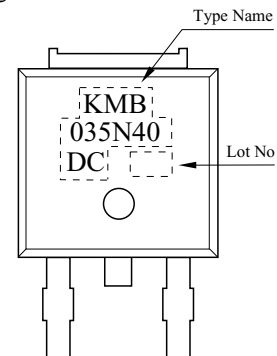
Note 1) R_{thJC} means that the infinite heat sink is mounted.

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

PIN CONNECTION (TOP VIEW)



Marking



KMB035N40DC

ELECTRICAL CHARACTERISTICS (Ta=25 °C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =250 μA	40	-	-	V
Drain Cut-off Current		I _{DSS}	V _{GS} =0V, V _{DS} =32V	-	-	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	-	3	V
Drain to Source On Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =18A (Note3)	-	14.0	17.5	m
			V _{GS} =4.5V, I _D =16A (Note3)	-	20.0	27.0	
Forward Transconductance		g _{fs} *	V _{DS} =5V, I _D =18A (Note3)	-	35	-	S
Dynamic							
Input Capacitance		C _{iss}	V _{DS} =20V, f=1MHz, V _{GS} =0V	-	524	-	pF
Output Capacitance		C _{oss}		-	103	-	
Reverse Transfer Capacitance		C _{rss}		-	51	-	
Gate Resistance		R _g	f=1MHz	-	2.4	-	
Total Gate Charge		V _{GS} =10V	V _{DS} =20V, V _{GS} =10V, I _D =18A (Note3)	-	12.2	-	nC
		V _{GS} =5V		-	6.3	-	
Gate to Source Charge		Q _{gs}		-	1.9	-	
Gate to Drain Charge		Q _{gd}		-	3.3	-	
Turn-On Delay Time		t _{d(on)}		V _{DD} =20V, V _{GS} =10V I _D =18A, R _G =6 (Note3)	-	16	
Turn-On Rise Time		t _r	-		18	-	
Turn-Off Delay Time		t _{d(off)}	-		52	-	
Turn-Off Fall Time		t _f	-		13	-	
Source-Drain Diode Ratings							
Continuous Source Current		I _S	-	-	35	-	A
Rulsed Source Current		I _{SP}	-	-	140	-	A
Source to Drain Forward Voltage		V _{SD}	V _{GS} =0V, I _S =3A (Note3)	-	0.8	1.2	V
Reverse Recovery time		t _{rr}	I _S =18A, dI/dt=100A/μs	-	22	-	ns
Reverse Recovered Charge		Q _{rr}	I _S =18A, dI/dt=100A/μs	-	8.6	-	nC
Note3) Pulse Test : Pulse width <300μs , Duty cycle < 2%							

Fig1. $I_D - V_{DS}$

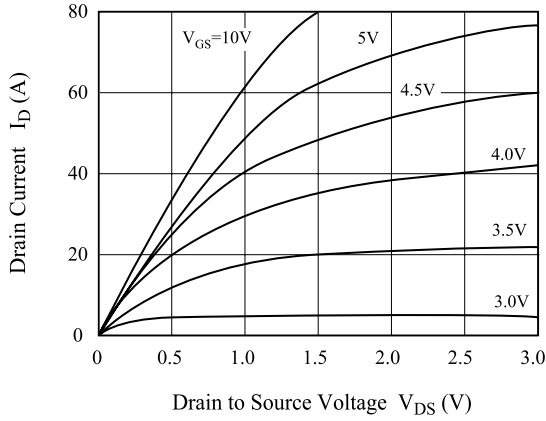


Fig2. $R_{DS(on)} - I_D$

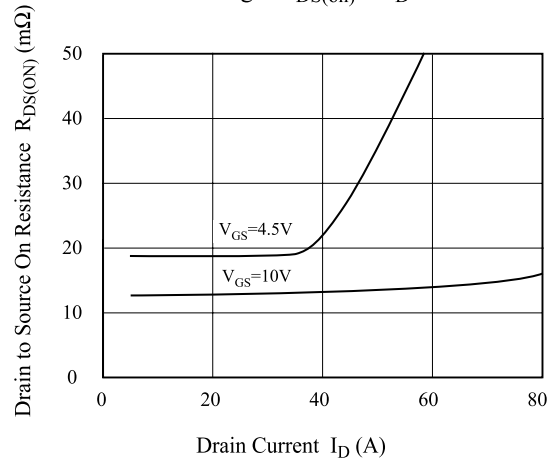


Fig3. $I_D - V_{GS}$

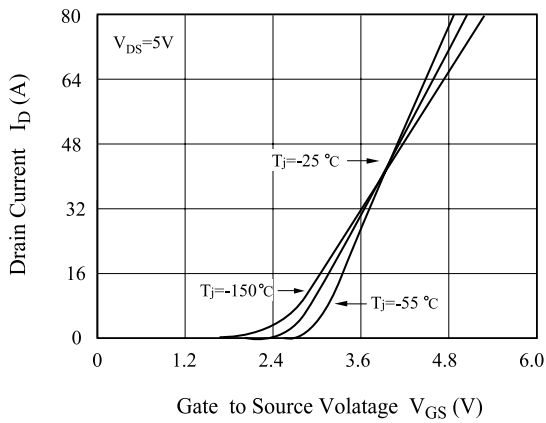


Fig4. $R_{DS(on)} - T_j$

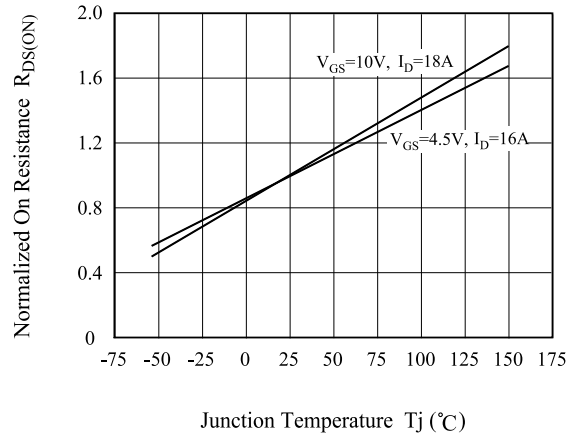


Fig5. $V_{th} - T_j$

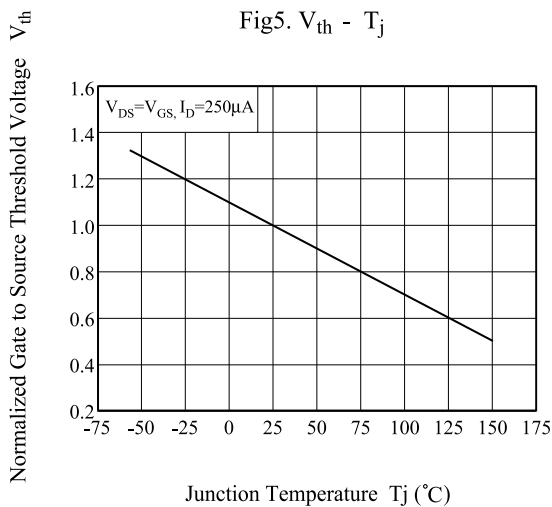
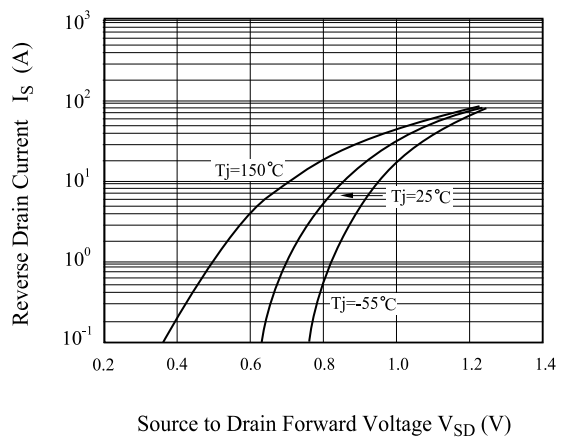


Fig6. $I_S - V_{SD}$



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

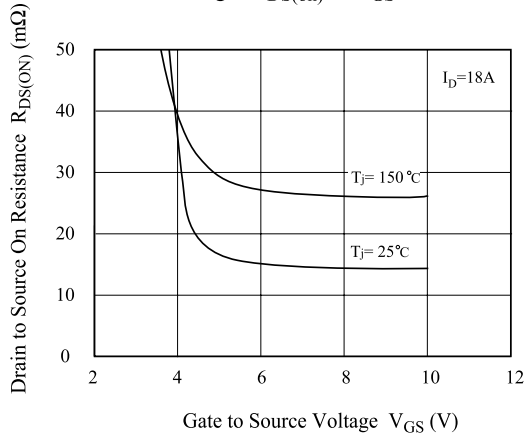


Fig 8. C - V_{DS}

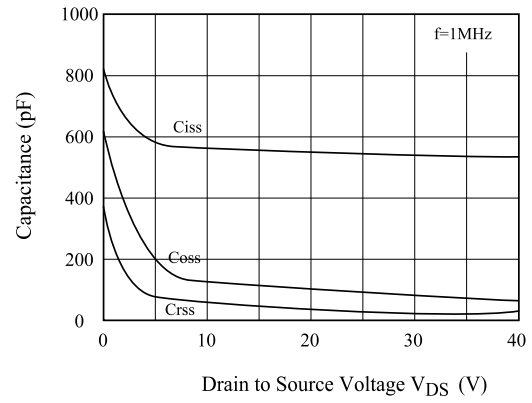


Fig 9. V_{GS} - Q_g

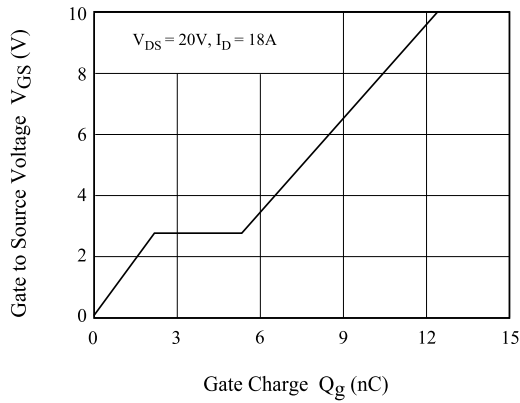


Fig10. Safe Operation Area

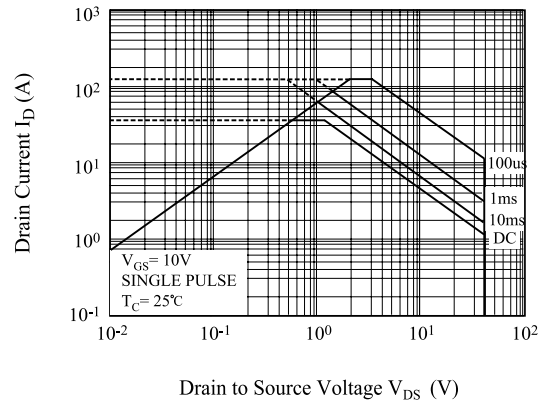


Fig11. Transient Thermal Response Curve

