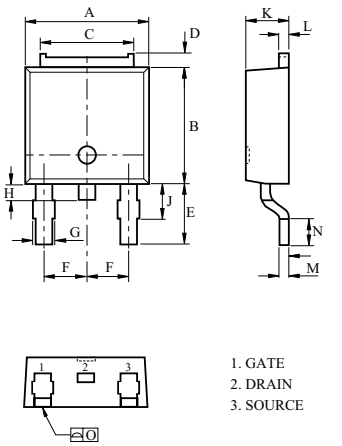
KMB035N40DA

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 characteristics. It is mainly suitable for Back-light Inverter and Power Supply.



DIM	MILLIMETERS
A	6.60 ± 0.20
B	6.10 ± 0.20
C	5.34 ± 0.30
D	0.70 ± 0.20
E	2.70 ± 0.15
F	2.30 ± 0.10
G	0.96 MAX
H	0.90 MAX
J	1.80 ± 0.20
K	2.30 ± 0.10
L	0.50 ± 0.10
M	0.50 ± 0.10
N	0.70 MIN
O	0.1 MAX

DPAK (1)

FEATURES

- V_{DSS}=40V, I_D=35A.
- Low Drain to Source On-state Resistance.
  : $R_{DS(ON)}$=17.5mΩ(Max.) @ V_{GS}=10V
  : $R_{DS(ON)}$=22.5mΩ(Max.) @ V_{GS}=4.5V

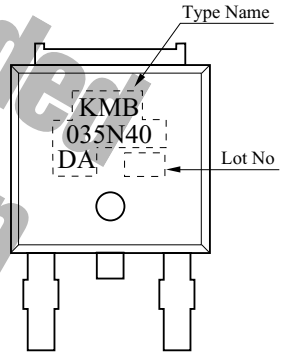
MAXIMUM RATING (Ta=25℃ Unless otherwise Noted)

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
	@Ta=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

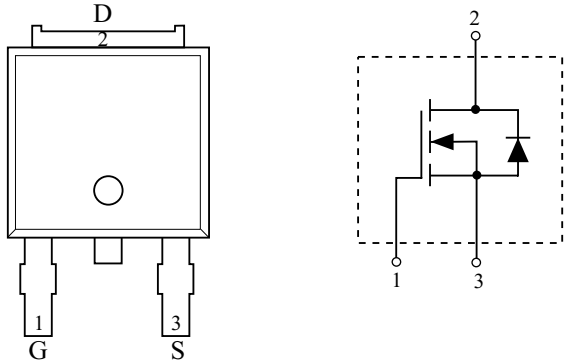
Note 1) R_{thJC} means that the infinite heat sink is mounted.

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

Marking



PIN CONNECTION (TOP VIEW)



ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain to 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	mΩ
		V_{GS}=4.5V, I_D=16A (Note3)	-	18.0	22.5	
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
Ouput Capacitance	C_{oss}		-	103	-	
Reverse Transfer Capacitance	C_{rss}		-	51	-	
Gate Resistance	R_g	f=1MHz	-	2.4	-	Ω
Total Gate Charge (V_{GS}=10V)	Q_g	V_{DS}=20V, V_{GS}=10V, I_D=18A (Note3)	-	12.2	-	nC
Total Gate Charge (V_{GS}=5V)	Q_g		-	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=6Ω (Note3)	-	16	-	ns
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
Pulsed 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}

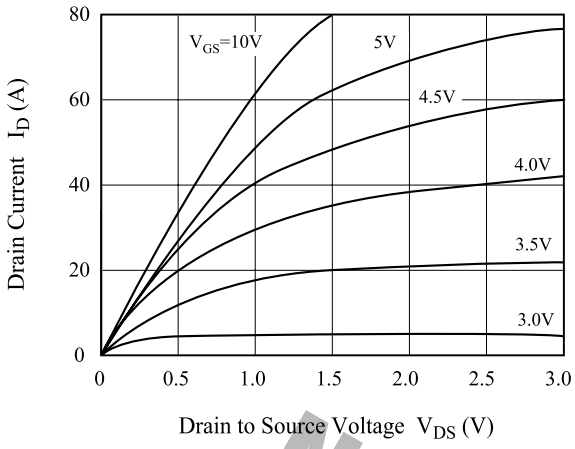


Fig2. $R_{DS(on)}$ - I_D

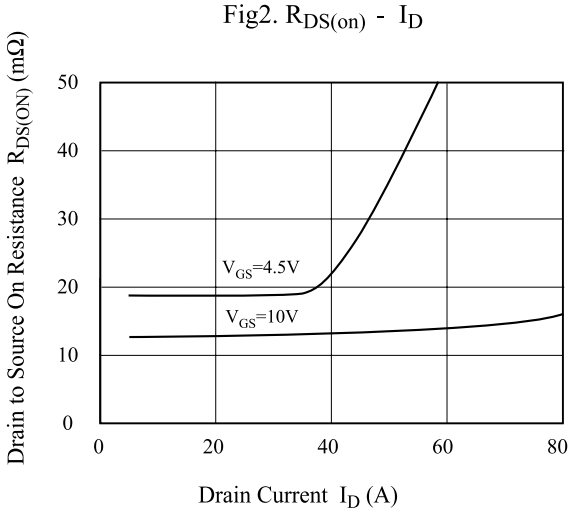


Fig3. I_D - V_{GS}

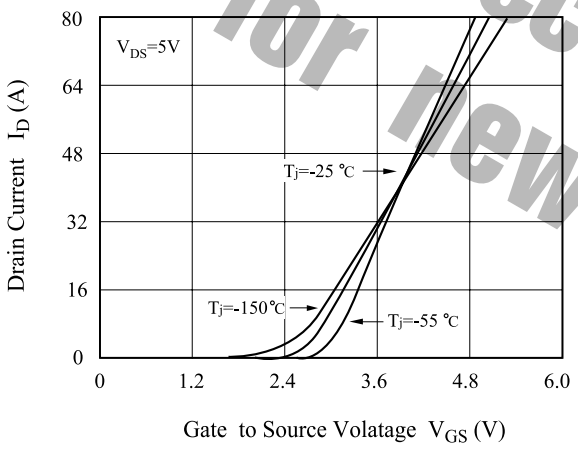


Fig4. $R_{DS(on)}$ - T_j

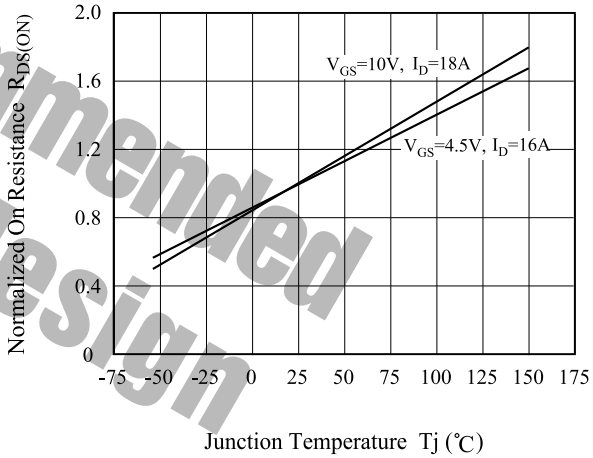


Fig5. V_{th} - T_j

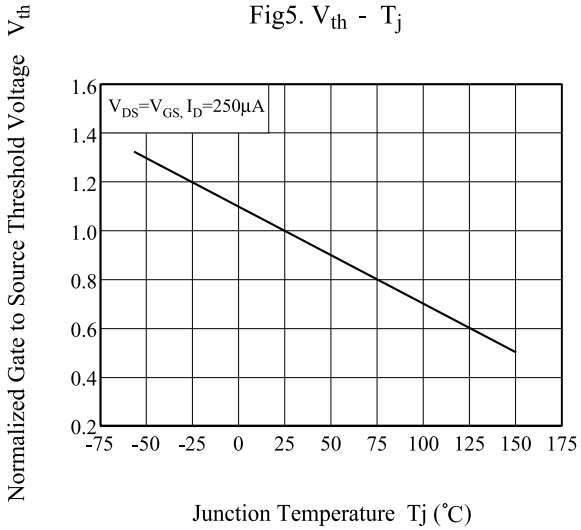


Fig6. I_S - V_{SD}

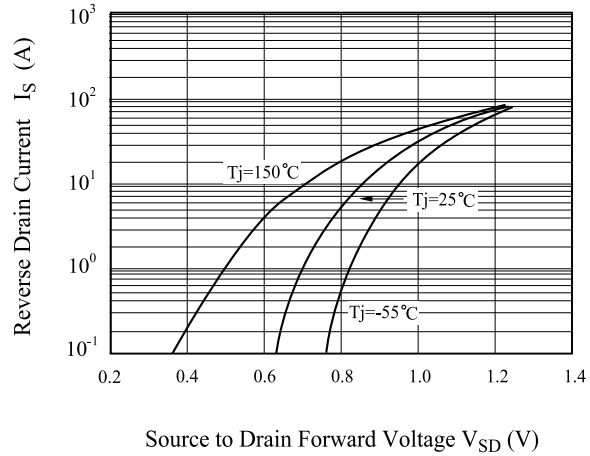


Fig7. $R_{DS(on)}$ - V_{GS}

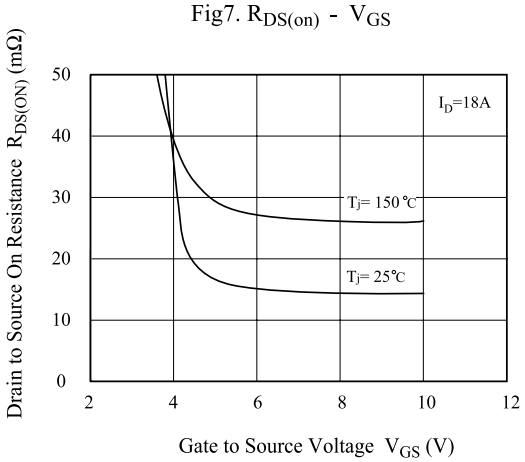


Fig 8. C - V_{DS}

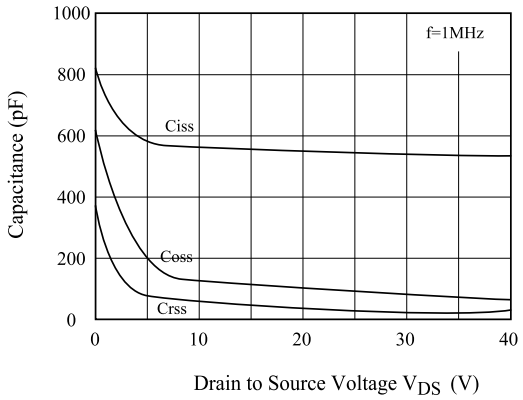


Fig 9. V_{GS} - Q_g

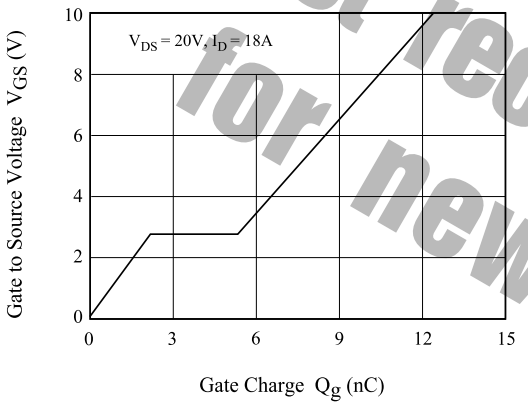


Fig10. Safe Operation Area

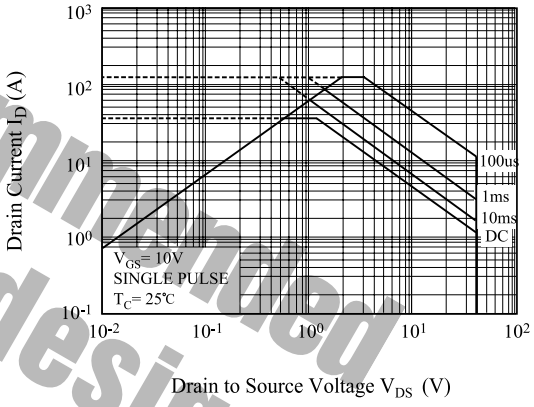


Fig11. Transient Thermal Response Curve