

### 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.) @  $V_{GS}=4.5V$

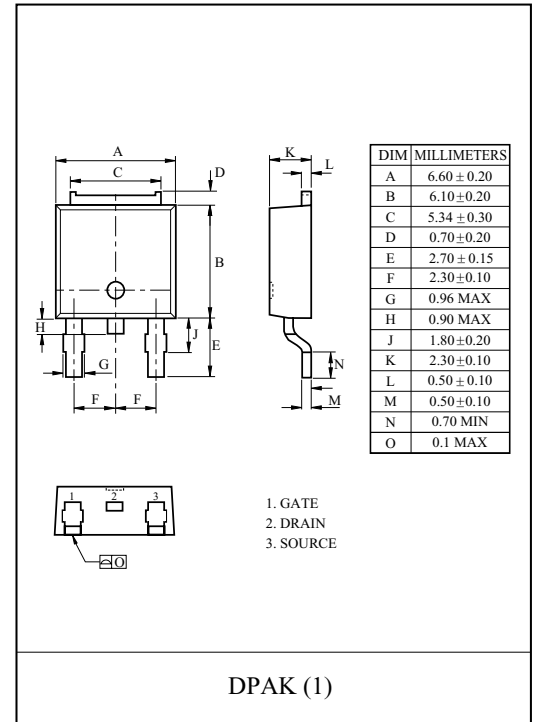
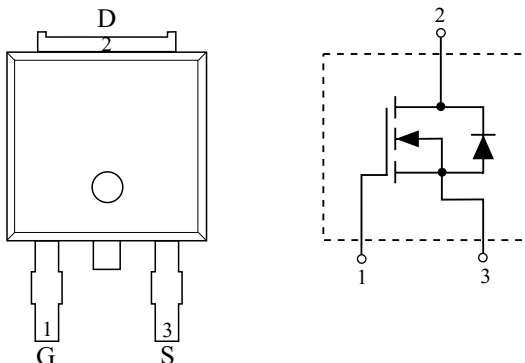
### MAXIMUM RATING (Ta=25 Unless otherwise Noted)

CHARACTERISTIC		SYMBOL	N-Ch	UNIT
Drain to Source Voltage		$V_{DSS}$	40	V
Gate to Source Voltage		$V_{GSS}$	$\pm 20$	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

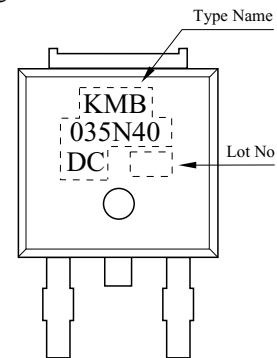
Note 1)  $R_{thJC}$  means that the infinite heat sink is mounted.

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
<b>Static</b>							
Drain-Source Breakdown Voltage		$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	40	-	-	V
Drain Cut-off Current		$I_{DSS}$	$V_{GS}=0V, V_{DS}=32V$	-	-	1	$\mu A$
Gate to Source Leakage Current		$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
Gate to Source Threshold Voltage		$V_{th}$	$V_{DS}=V_{GS}, I_D=250\mu A$	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
<b>Dynamic</b>							
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	$V_{GS}=10V$	$Q_g$	$V_{DS}=20V, V_{GS}=10V, I_D=18A$ (Note3)	-	12.2	-	nC
	$V_{GS}=5V$	$Q_g$		-	6.3	-	
Gate to Source Charge		$Q_{gs}$		-	1.9	-	
Gate to Drain Charge		$Q_{gd}$		-	3.3	-	
Turn-On Delay Time		$t_{d(on)}$		$V_{DD}=20V, V_{GS}=10V$ $I_D=18A, R_G=6$ (Note3)	-	16	
Turn-On Rise Time		$t_r$	-		18	-	
Turn-Off Delay Time		$t_{d(off)}$	-		52	-	
Turn-Off Fall Time		$t_f$	-		13	-	
<b>Source-Drain Diode Ratings</b>							
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		$t_{rr}$	$I_S=18A, dI/dt=100A/\mu s$	-	22	-	ns
Reverse Recovered Charge		$Q_{rr}$	$I_S=18A, dI/dt=100A/\mu s$	-	8.6	-	nC
Note3) Pulse Test : Pulse width <300 $\mu s$ , Duty cycle < 2%							

# KMB035N40DC

Fig1.  $I_D - V_{DS}$

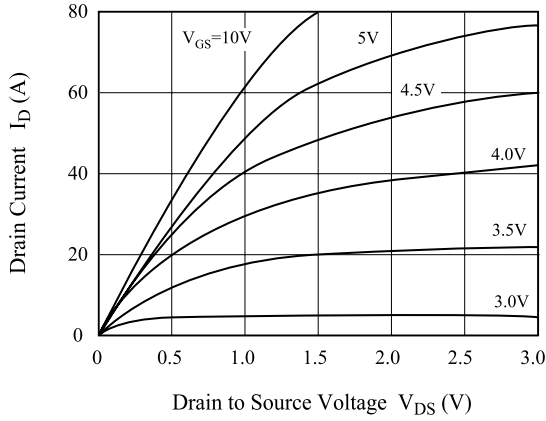


Fig2.  $R_{DS(on)} - I_D$

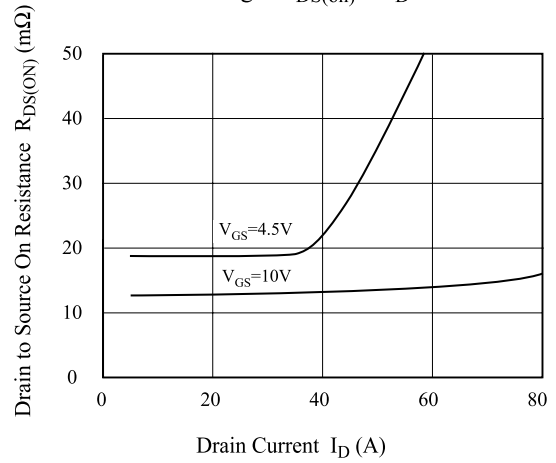


Fig3.  $I_D - V_{GS}$

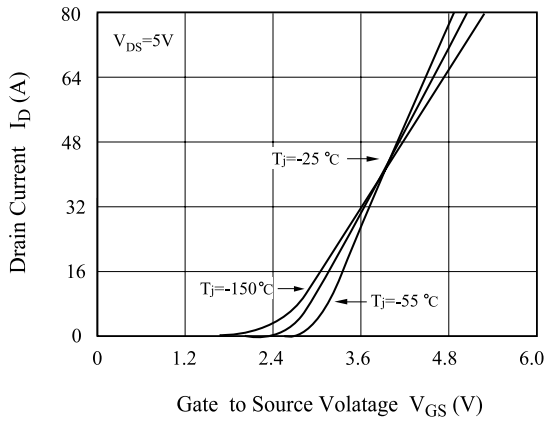


Fig4.  $R_{DS(on)} - T_j$

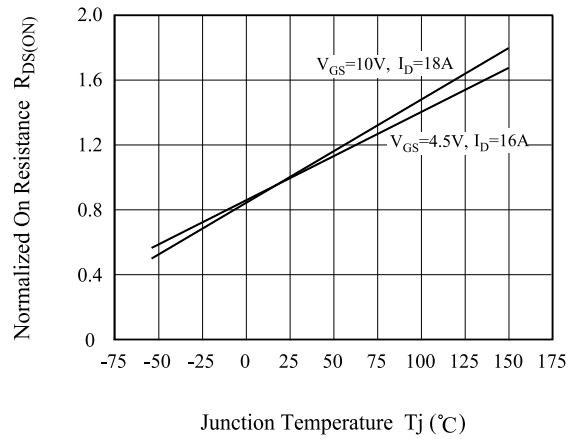


Fig5.  $V_{th} - T_j$

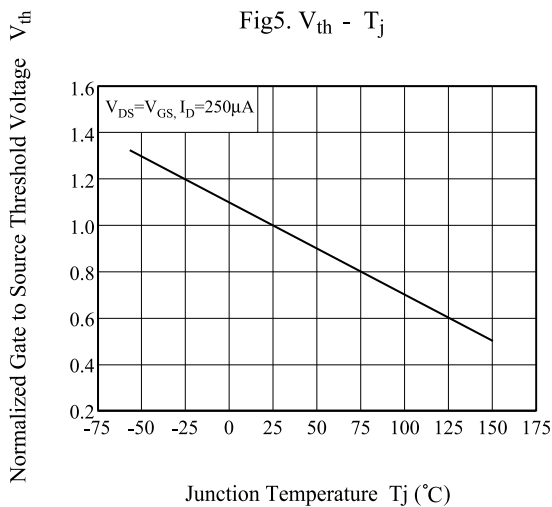
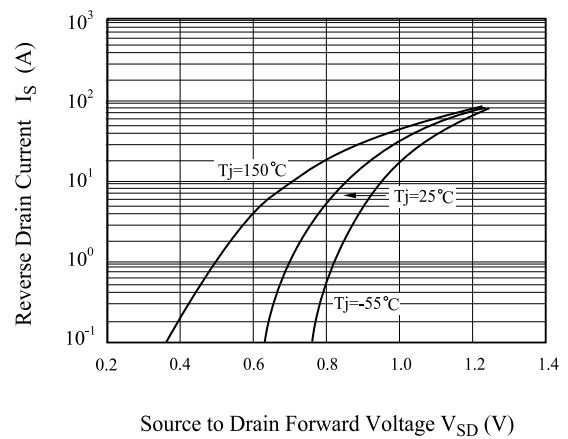


Fig6.  $I_S - V_{SD}$



# KMB035N40DC

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

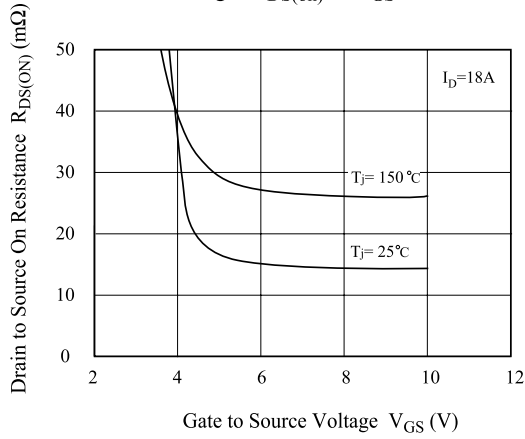


Fig 8. C -  $V_{DS}$

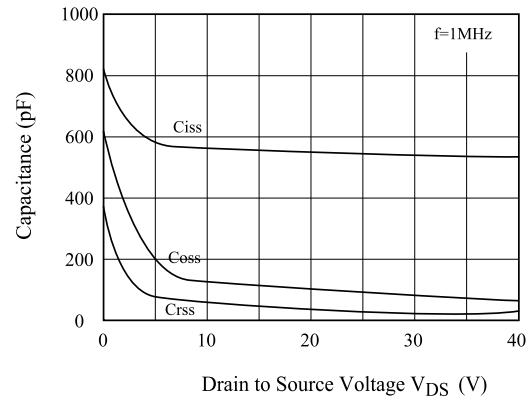


Fig 9.  $V_{GS}$  -  $Q_g$

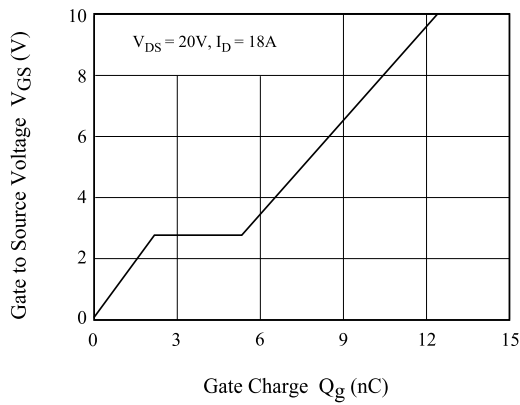


Fig10. Safe Operation Area

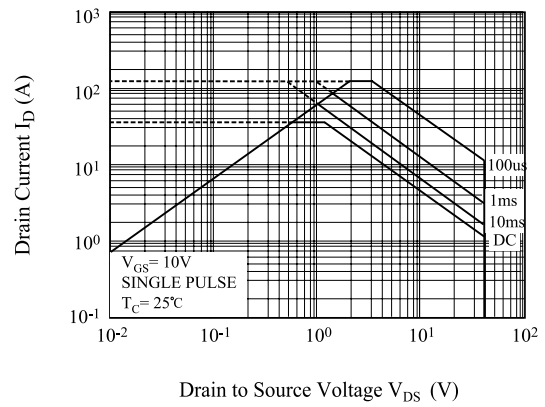


Fig11. Transient Thermal Response Curve

