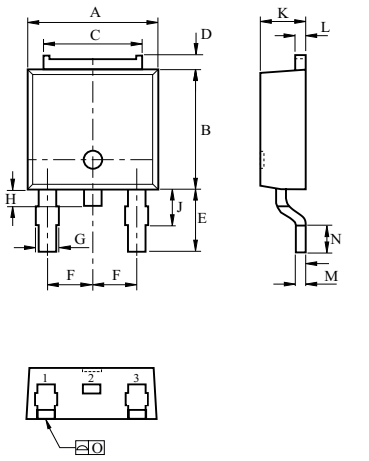
General Description

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.
: $R_{DS(ON)}$=12.0mΩ(Max.) @ V_{GS}=10V
: $R_{DS(ON)}$=17.0mΩ(Max.) @ V_{GS}=4.5V



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	Max 0.1

DPAK (1)

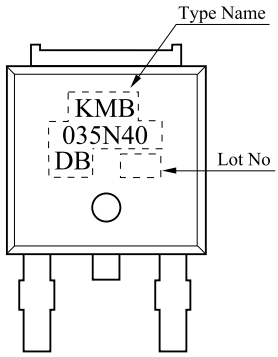
* Weight : 0.33g(typ)

MAXIMUM RATING (Ta = 25℃ Unless otherwise Noted)

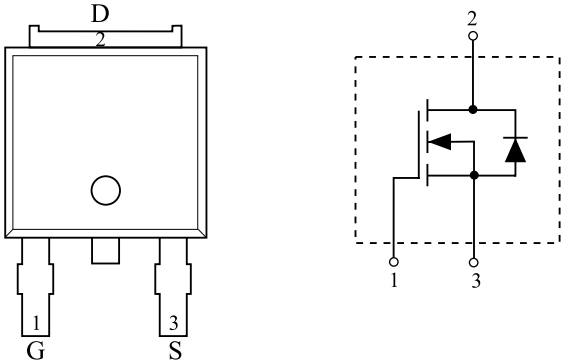
CHARACTERISTIC		SYMBOL	N-Ch	UNIT
Drain to Source Voltage		V_{DSS}	40	V
Gate to Source Voltage		V_{GSS}	±20	V
Drain Current	DC@T_C=25℃ (Note1)	I_D	35	A
	Pulsed (Note2)	I_{DP}	140	
Drain Power Dissipation	@T_C=25℃ (Note1)	P_D	43	W
	@Ta=25℃ (Note2)		3.1	
Maximum Junction Temperature		T_j	150	℃
Storage Temperature Range		T_{stg}	-55 150	℃
Thermal Resistance, Junction to Case (Note1)		R_{thJC}	2.9	℃/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	1.7	-	3.0	V
Drain to Source On Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=18A (Note3)	-	8.0	12.0	mΩ
			V_{GS}=4.5V, I_D=16A (Note3)	-	13.0	17.0	
Forward Transconductance		g_{fs}	V_{DS}=5V, I_D=18A (Note3)	-	48	-	S
Dynamic							
Input Capacitance		C_{iss}	V_{DS}=20V, f=1MHz, V_{GS}=0V	-	970	-	pF
Ouput Capacitance		C_{oss}		-	205	-	
Reverse Transfer Capacitance		C_{rss}		-	100	-	
Gate Resistance		R_g	f=1MHz	-	2.9	-	Ω
Total Gate Charge	V_{GS}=10V	Q_g	V_{DS}=20V, V_{GS}=10V, I_D=18A (Note3)	-	20.2	-	nC
	V_{GS}=5V	Q_g		-	10.7	-	
Gate to Source Charge		Q_{gs}		-	5.1	-	
Gate to Drain Charge		Q_{gd}		-	4.6	-	
Turn-On Delay Time		$t_{d(on)}$	V_{DD}=20V, V_{GS}=10V, I_D=18A, R_G=6Ω (Note3)	-	18	-	ns
Turn-On Rise Time		t_r		-	17	-	
Turn-Off Delay Time		$t_{d(off)}$		-	55	-	
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	-	24	-	ns
Reverse Recovered Charge		Q_{rr}	I_S=18A, dI/dt=100A/μs	-	8.8	-	nC
Note3) Pulse Test : Pulse width <300μs , Duty cycle < 2%							

Fig1. I_D - V_{DS}

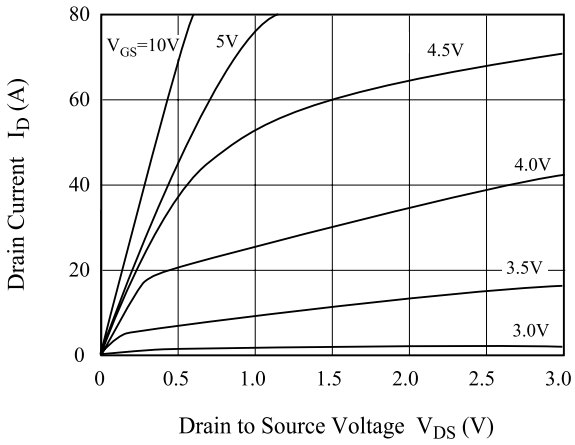


Fig2. $R_{DS(on)}$ - I_D

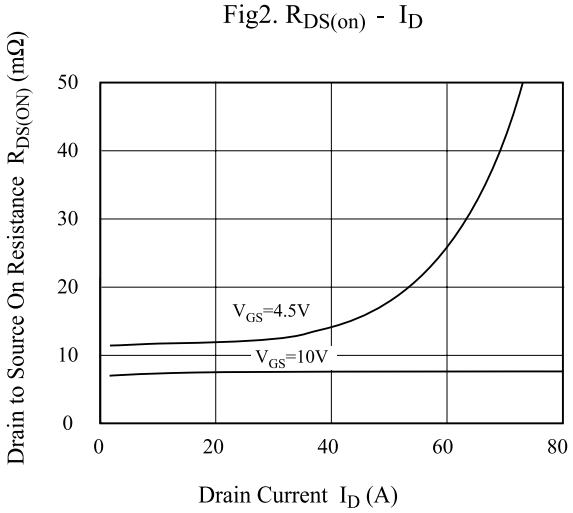


Fig3. I_D - V_{GS}

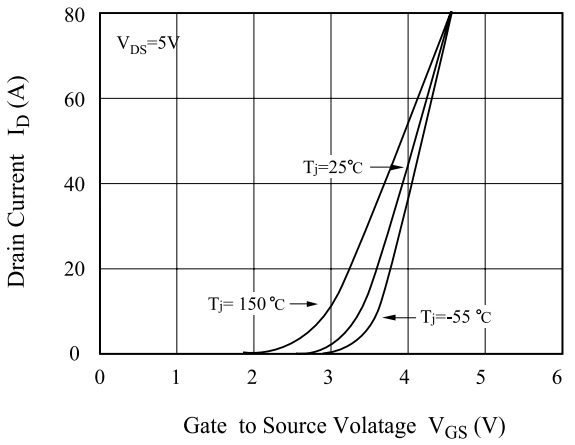


Fig4. $R_{DS(on)}$ - T_j

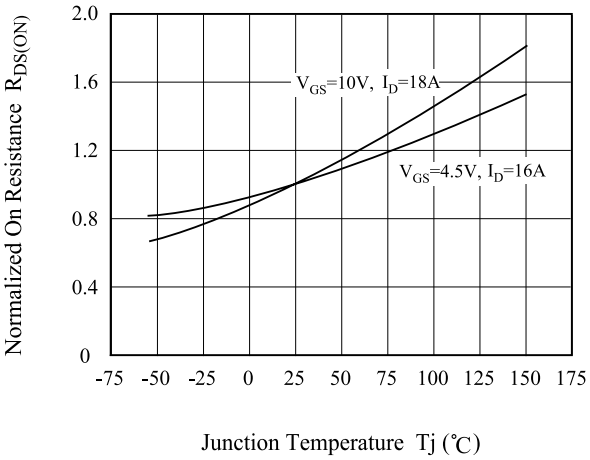


Fig5. V_{th} - T_j

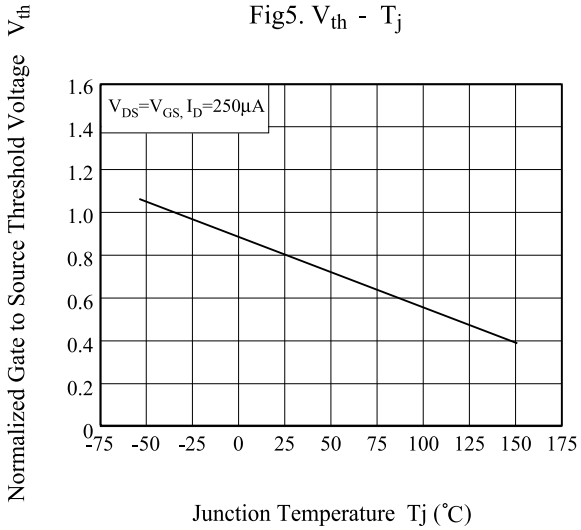


Fig6. I_S - V_{SD}

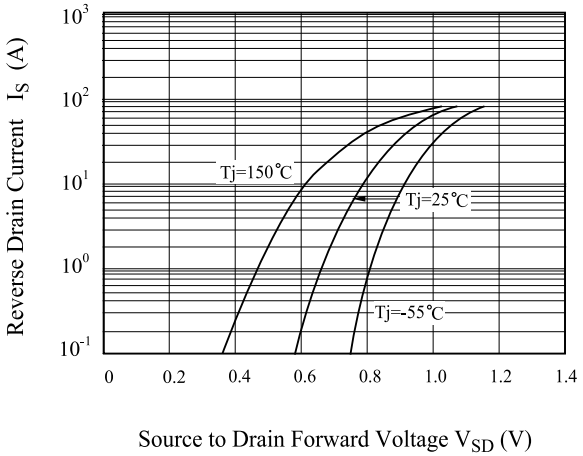


Fig7. $R_{DS(on)}$ - V_{GS}

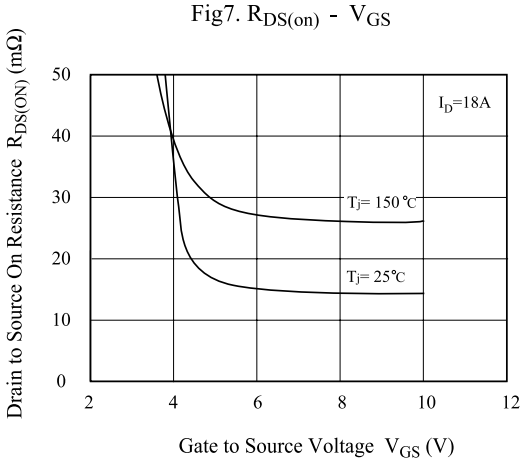


Fig 8. C - V_{DS}

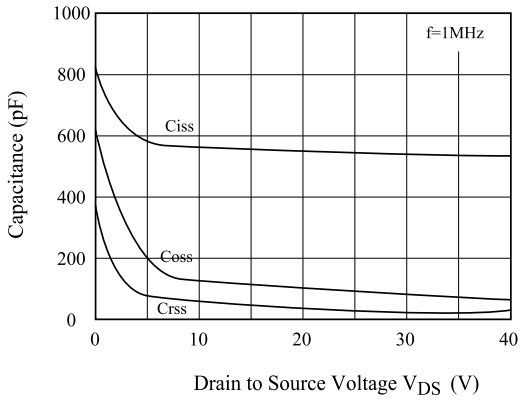


Fig 9. V_{GS} - Q_g

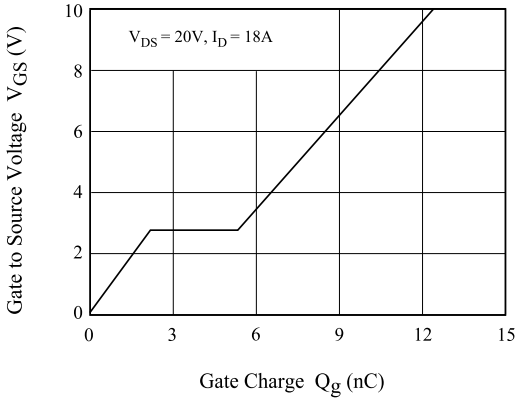


Fig10. Safe Operation Area

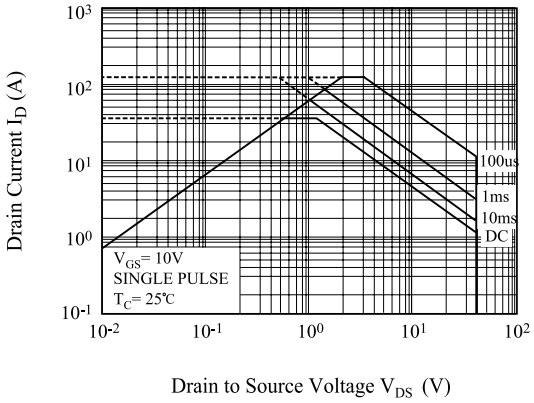


Fig11. Transient Thermal Response Curve