

### 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 DC/DC Converter.

### FEATURES

- $V_{DSS}=30V$ ,  $I_D=79A$ .
- Low Drain to Source On-state Resistance.
  - :  $R_{DS(ON)}=5.4m$  (Max.) @  $V_{GS}=10V$
  - :  $R_{DS(ON)}=10.1m$  (Max.) @  $V_{GS}=4.5V$

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

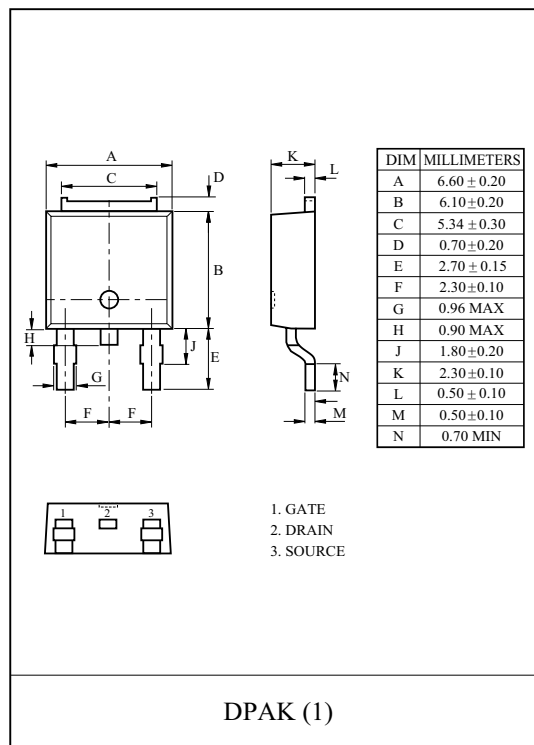
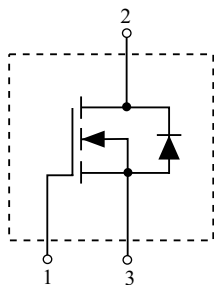
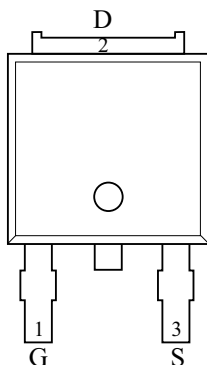
CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain to Source Voltage	$V_{DSS}$	30	V
Gate to Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current	DC@ $T_C=25$ (Note1)	$I_D$	A
	Pulsed (Note2)	$I_{DP}$	
Single Pulsed Avalanche Energy	(Note3)	$E_{AS}$	111 mJ
Drain Power Dissipation	@ $T_C=25$ (Note1)	$P_D$	48
	@ $T_a=25$ (Note2)		3.8
Maximum Junction Temperature	$T_j$	150	
Storage Temperature Range	$T_{stg}$	-55 150	
Thermal Resistance, Junction to Case	(Note1) $R_{thJC}$	2.6	/W
Thermal Resistance, Junction to Ambient	(Note2) $R_{thJA}$	40	/W

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

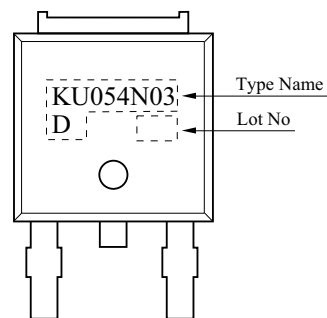
Note 2) Surface Mounted on 1 × 1 Pad of 2 oz copper.

Note 3)  $L=18.0\mu H$ ,  $I_{AS}=79A$ ,  $V_{DD}=15V$ ,  $V_{GS}=10V$ , Starting  $T_j=25$

### PIN CONNECTION (TOP VIEW)



### Marking



## ELECTRICAL CHARACTERISTICS (Ta=25 )

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
<b>Static</b>						
Drain to Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Drain Cut-off Current	$I_{DSS}$	$V_{GS}=0V, V_{DS}=30V$	-	-	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	$V_{th}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	-	3.0	V
Drain to Source On Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$ (Note4)	-	4.5	5.4	m
		$V_{GS}=4.5V, I_D=30A$ (Note4)	-	8.4	10.1	
Forward Transconductance	$g_{fs}$	$V_{DS}=5V, I_D=30A$ (Note4)	-	69	-	S
<b>Dynamic</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, f=1MHz, V_{GS}=0V$	-	1751	-	pF
Output Capacitance	$C_{oss}$		-	350	-	
Reverse Transfer Capacitance	$C_{rss}$		-	253	-	
Gate Resistance	$R_g$	$f=1MHz$	-	2.8	-	
Total Gate Charge	$V_{GS}=10V$ $Q_g$	$V_{DS}=15V, V_{GS}=10V, I_D=30A$ (Note4)	-	39.7	-	nC
	$V_{GS}=4.5V$ $Q_g$		-	20.1	-	
Gate to Source Charge	$Q_{gs}$		-	7.1	-	
Gate to Drain Charge	$Q_{gd}$		-	8.4	-	
Turn-On Delay Time	$t_{d(on)}$		$V_{DD}=15V, V_{GS}=10V$ $I_D=30A, R_G=1.6$ (Note4)	-	10.6	
Turn-On Rise Time	$t_r$	-		11.6	-	
Turn-Off Delay Time	$t_{d(off)}$	-		30.2	-	
Turn-Off Fall Time	$t_f$	-		10.2	-	
<b>Source to Drain Diode Ratings</b>						
Source to Drain Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=30A$ (Note4)	-	0.8	1.2	V
Reverse Recovery time	$t_{rr}$	$I_S=30A, dI/dt=100A/\mu s$	-	23.5	-	ns
Reverse Recovered charge	$Q_{rr}$	$I_S=30A, dI/dt=100A/\mu s$	-	9.7	-	nC

Note 4) Pulse Test : Pulse width <300 $\mu s$  , Duty cycle < 2%

Fig1.  $I_D - V_{DS}$

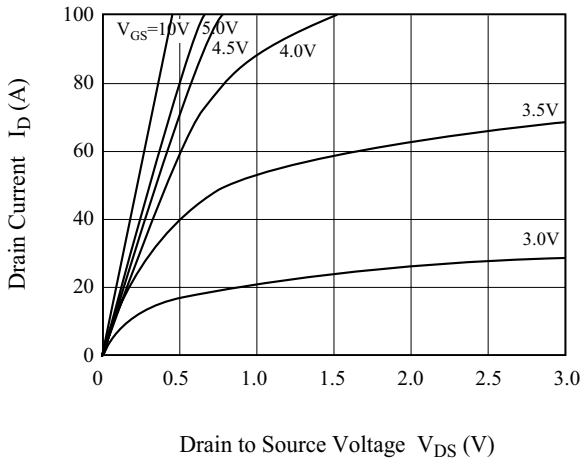


Fig2.  $R_{DS(on)} - I_D$

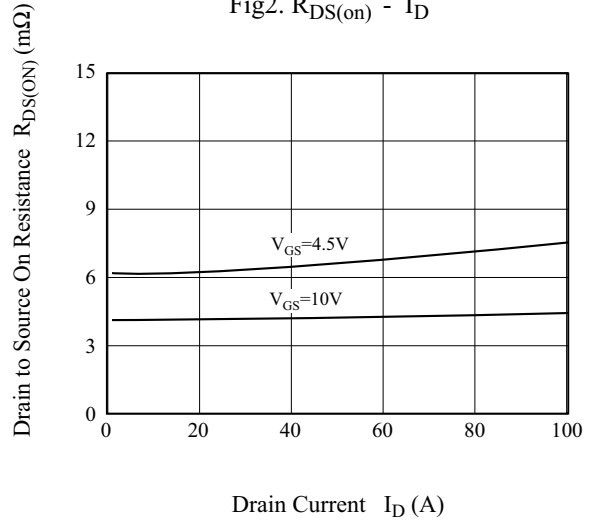


Fig3.  $I_D - V_{GS}$

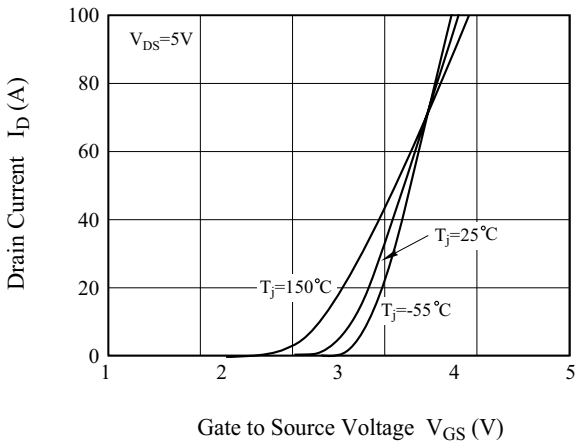


Fig4.  $R_{DS(ON)} - T_j$

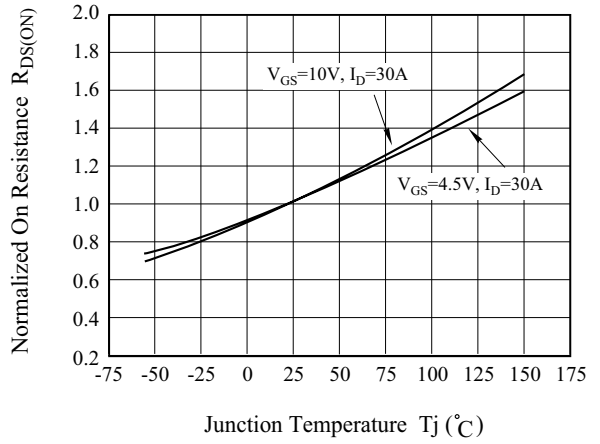


Fig5.  $V_{th} - T_j$

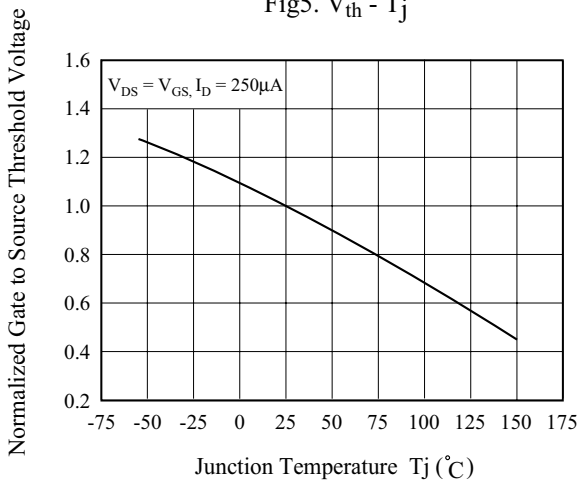


Fig6.  $I_S - V_{SD}$

