General Description

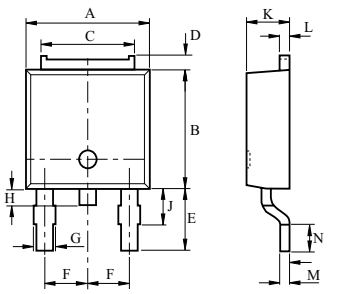
This Trench MOSFET has better characteristics, such as fast switching time, low on resistance, low gate charge and excellent avalanche characteristics. It is mainly suitable for DC/DC Converter, Synchronous Rectification and a load switch in battery powered applications

FEATURES

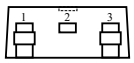
· V_{DSS}= 100V, I_D= 27A

· Drain-Source ON Resistance :

$R_{DS(ON)}$=31mΩ(Max.) @V_{GS} = 10V



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



1. GATE
2. DRAIN
3. SOURCE

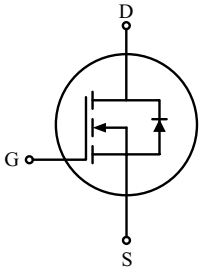
DPAK (1)

MAXIMUM RATING (Tc=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	@T_C=25°C	I_D	27	A
	@T_C=100°C		17	
	Pulsed (Note1)	I_{DP}	110*	
Single Pulsed Avalanche Energy (Note 2)		E_{AS}	60	mJ
Repetitive Avalanche Energy (Note 1)		E_{AR}	2.3	mJ
Peak Diode Recovery dv/dt (Note 3)		dv/dt	4.5	V/ns
Drain Power Dissipation	Tc=25°C	P_D	52	W
	Derate above 25°C		0.42	W/°C
Maximum Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	-55 ~ 150	°C
Thermal Characteristics				
Thermal Resistance, Junction-to-Case		R_{thJC}	2.4	°C/W
Thermal Resistance, Junction-to-Ambient		R_{thJA}	110	°C/W

* : Drain current limited by maximum junction temperature.

PIN CONNECTION



ELECTRICAL CHARACTERISTICS (Tc=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=250 μA, V_{GS}=0V	100	-	-	V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_j$	I_D=5mA, Referenced to 25℃	-	0.10	-	V/℃
Drain Cut-off Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V,	-	-	10	μA
Gate Threshold Voltage	V_{th}	V_{DS}=V_{GS}, I_D=250 μA	2.0	-	4.0	V
Gate Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Drain-Source ON Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=13.5A	-	25	31	mΩ
Dynamic						
Total Gate Charge	Q_g	V_{DS}=80V, I_D=34A V_{GS}=10V (Note4,5)	-	49	-	nC
Gate-Source Charge	Q_{gs}		-	10	-	
Gate-Drain Charge	Q_{gd}		-	14	-	
Turn-on Delay time	$t_{d(on)}$	V_{DD}=50V I_D=34A R_G=25Ω (Note4,5)	-	30	-	ns
Turn-on Rise time	t_r		-	32	-	
Turn-off Delay time	$t_{d(off)}$		-	115	-	
Turn-off Fall time	t_f		-	40	-	
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1.0MHz	-	2230	-	pF
Output Capacitance	C_{oss}		-	170	-	
Reverse Transfer Capacitance	C_{rss}		-	85	-	
Source-Drain Diode Ratings						
Continuous Source Current	I_S	V_{GS}<V_{th}	-	-	34	A
Pulsed Source Current	I_{SP}		-	-	136	
Diode Forward Voltage	V_{SD}	I_S=13.5A, V_{GS}=0V	-	-	1.4	V
Reverse Recovery Time	t_{rr}	I_S=34A, V_{GS}=0V, dIs/dt=300A/μs	-	53	-	ns
Reverse Recovery Charge	Q_{rr}		-	0.11	-	μC

Note 1) Repetivity rating : Pulse width limited by junction temperature.

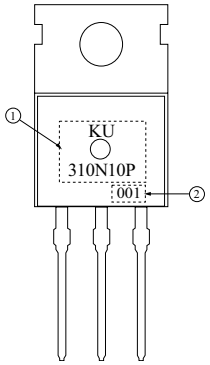
Note 2) L =35 μH, I_S=34A, V_{DD}=80V, R_G=25Ω, Starting T_j=25℃.

Note 3) I_S≤34A, dI/dt≤200A/μs, V_{DD}≤BV_{DSS}, Starting T_j=25℃.

Note 4) Pulse Test : Pulse width ≤ 300μs, Duty Cycle ≤ 2%.

Note 5) Essentially independent of operating temperature.

Marking



① PRODUCT NAME

② LOT NO

Fig1. I_D - V_{DS}

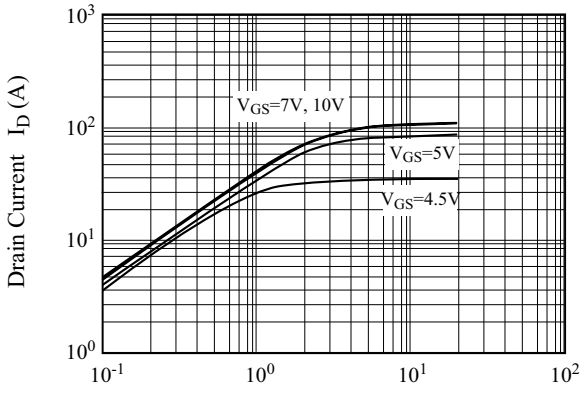


Fig2. I_D - V_{GS}

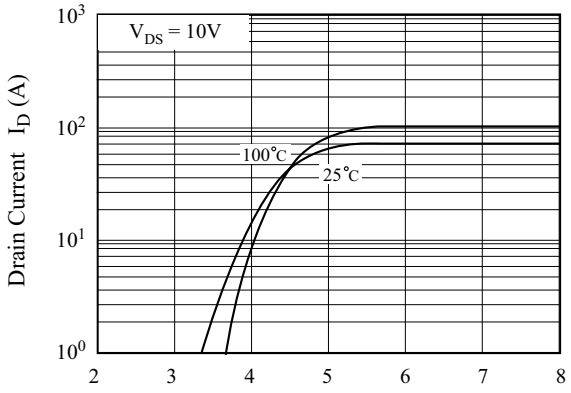


Fig3. BV_{DSS} - T_j

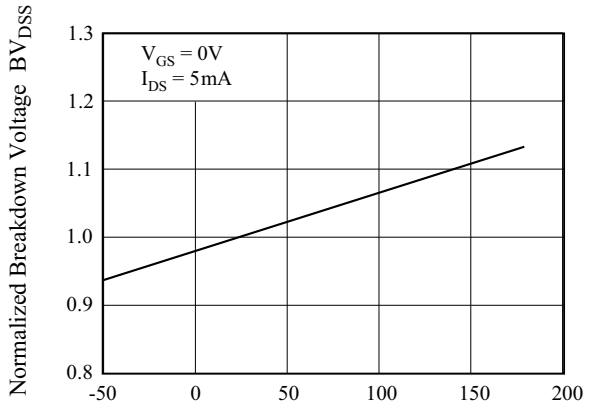


Fig4. $R_{DS(ON)}$ - I_D

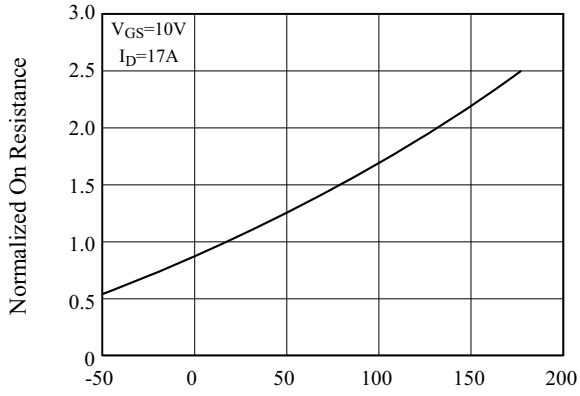


Fig5. I_S - V_{SD} - Ⅰ

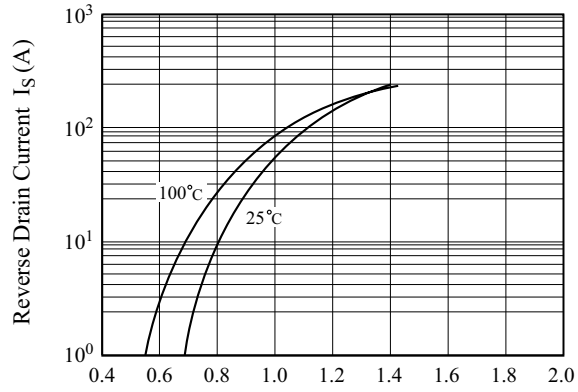


Fig6. I_S - V_{SD} - Ⅱ

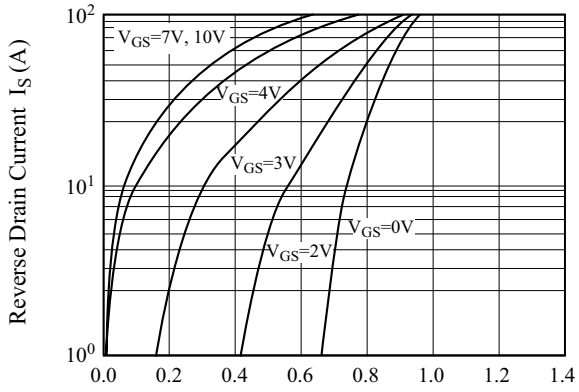


Fig7. $R_{DS(ON)}$ - I_D

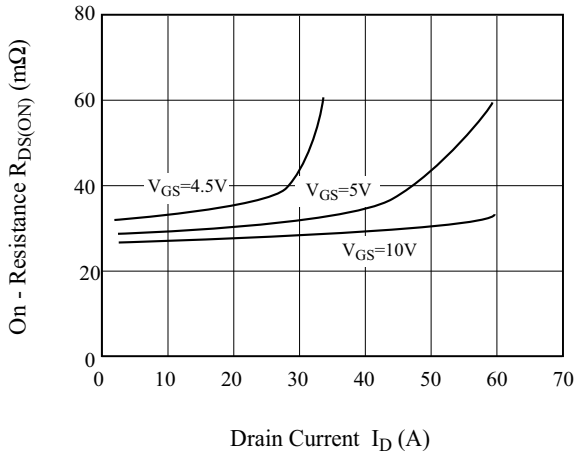


Fig8. I_D- T_j

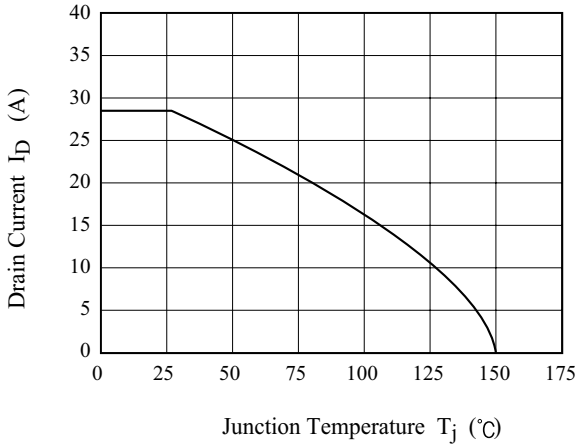


Fig 9. C - V_{DS}

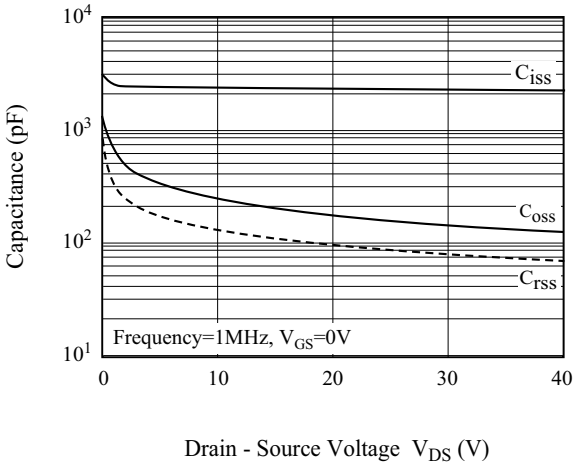


Fig10. Q_g- V_{GS}

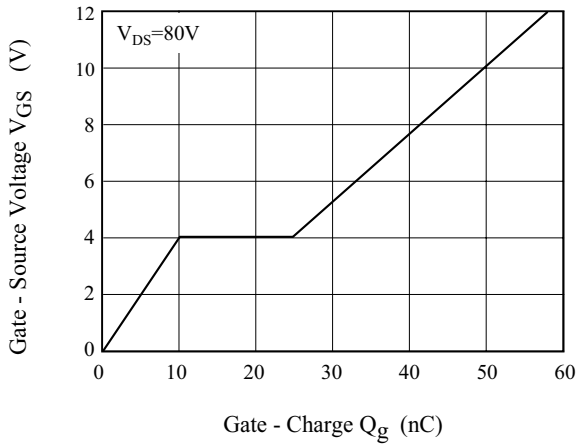


Fig11. Safe Operation Area

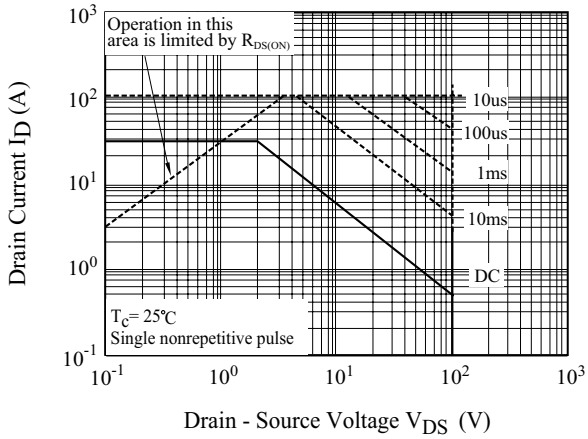


Fig12. Transient Thermal Response Curve

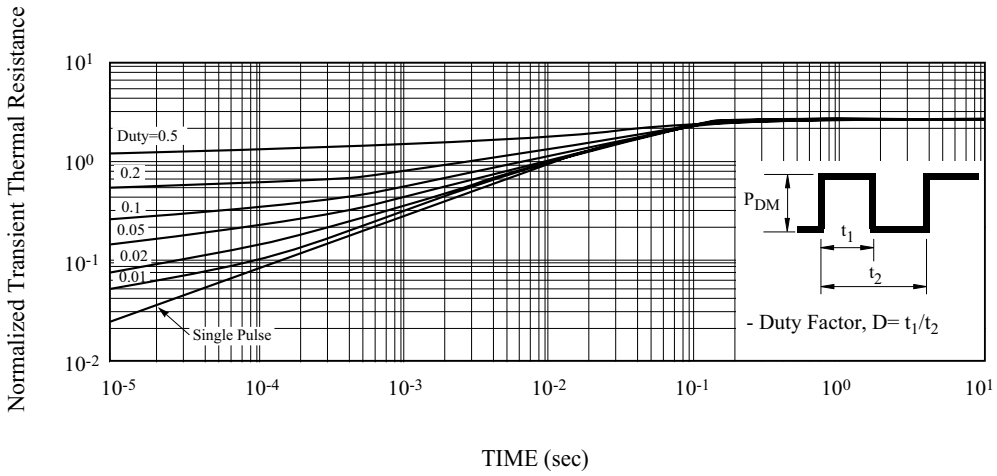


Fig13. Gate Charge

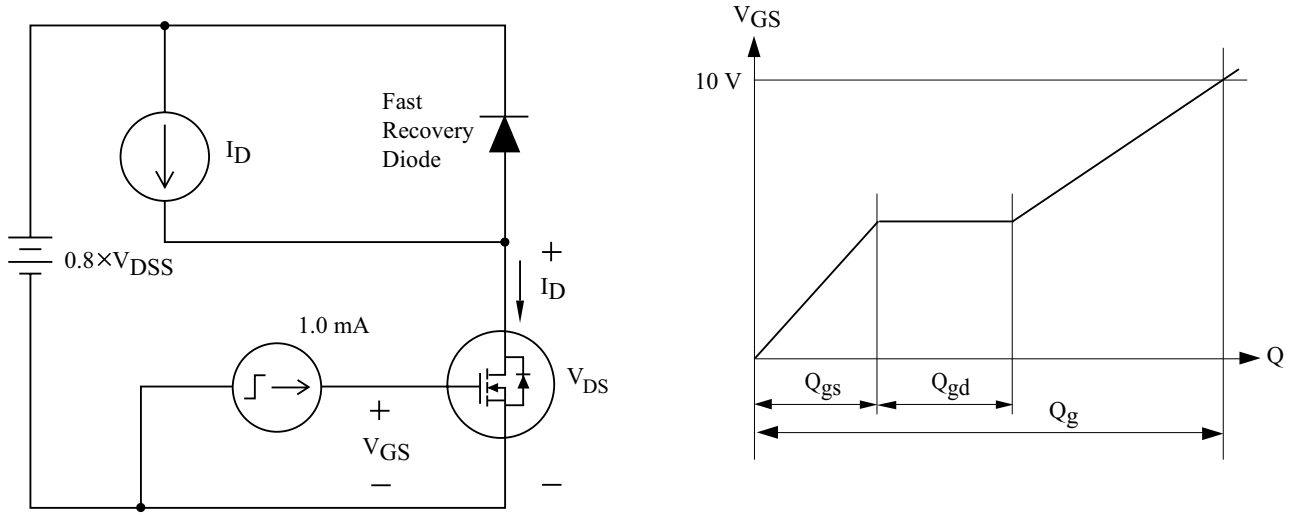


Fig14. Single Pulsed Avalanche Energy

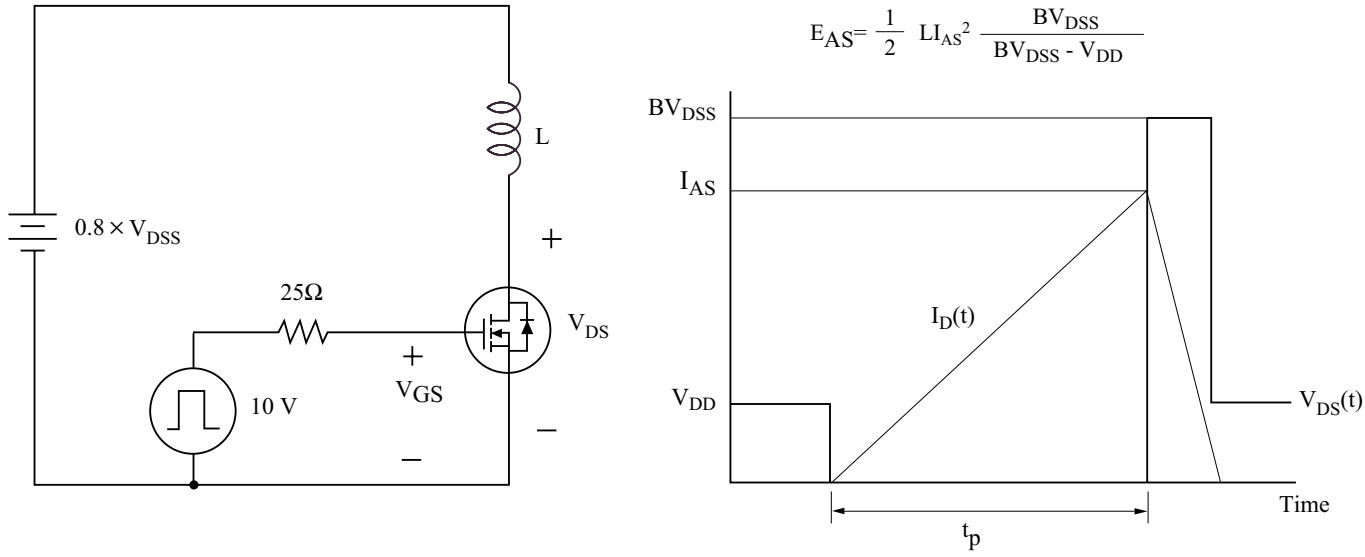


Fig15. Resistive Load Switching

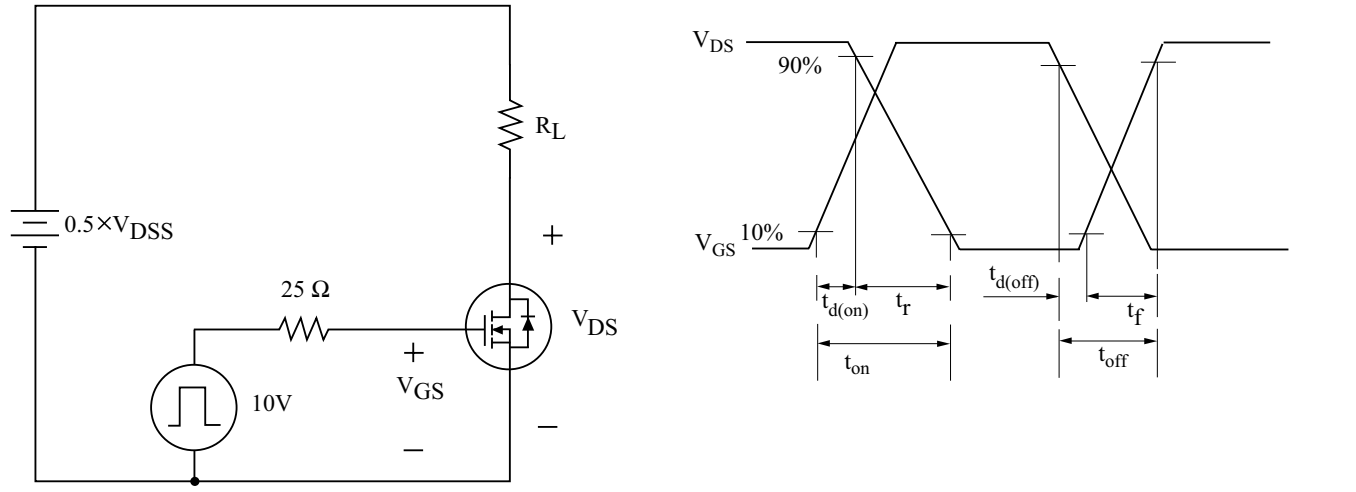


Fig16. Source - Drain Diode Reverse Recovery and dv /dt