

N-Channel Enhancement Mode MOSFET

1. Product Information

Features

- Advanced trench technology
- Extremely low $R_{DS(ON)}$
- Low gate charge

Applications

- Battery protection
- Load switch
- Uninterruptible power supply

Quick reference

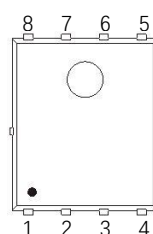
- $V_{DS} = 150V$
- $I_D \leq 25A$
- $R_{DS(ON)} \leq 52m\Omega @ V_{GS} = 10V$ (Type:43 m Ω)

Pin Description

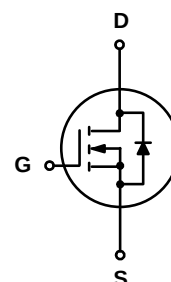
Pin	Description
1,2,3	Source(S)
4	Gate(G)
5,6,7,8	Drain(D)

Simplified Outline

Symbol



Top View
PDFN5*6-8L



Package Marking and Ordering Information

Product Name	Package	Marking		Reel Size	Tape width	Quantity
KJ25N15G	PDFN5*6-8L	25N15 XXXXYY	XXXXYY: Date Code	-	-	5000

2. Absolute Maximum Ratings (TC=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_{D@T_C=25^\circ C}$	Continuous Drain Current ¹	25	A
$I_{D@T_C=100^\circ C}$	Continuous Drain Current ¹	16	A
$I_{D@T_A=25^\circ C}$	Continuous Drain Current ¹	4.5	A
$I_{D@T_A=70^\circ C}$	Continuous Drain Current ¹	3.8	A
IDM	Pulsed Drain Current ²	60	A
$P_{D@T_C=25^\circ C}$	Total Power Dissipation ³	72.6	W
$P_{D@T_A=25^\circ C}$	Total Power Dissipation ³	2.7	W
TSTG	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	55	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	2.0	°C/W

3. Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	150	165	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =20A	---	43	52	mΩ
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =10A	---	45	70	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.2	1.8	2.5	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =120V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =120V, V _{GS} =0V, T _J =55°C	---	---	5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =10A	---	25	---	S
Q _g	Total Gate Charge	V _{DS} =75V, V _{GS} =10V, I _D =10A	---	23	---	nC
Q _{gs}	Gate-Source Charge		---	5.8	---	
Q _{gd}	Gate-Drain Charge		---	4.2	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =75V, V _{GS} =10V, R _G =3.3Ω, I _D =10A	---	16.2	---	ns
T _r	Rise Time		---	18.6	---	
T _{d(off)}	Turn-Off Delay Time		---	28.5	---	
T _f	Fall Time		---	6.5	---	
C _{iss}	Input Capacitance	V _{DS} =75V, V _{GS} =0V, f=1MHz	---	1190	---	pF
C _{oss}	Output Capacitance		---	73	---	
C _{rss}	Reverse Transfer Capacitance		---	4	---	
I _S	Continuous Source Current ^{1,4}	V _G =V _D =0V, Force Current	---	---	20	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =1A, T _J =25°C	---	---	1.2	V
t _{rr}	Reverse Recovery Time	I _F =10A, dI/dt=100A/μs, T _J =25°C	---	45	---	nS
Q _{rr}	Reverse Recovery Charge	T _J =25°C	---	138	---	nC

Note :

- 1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
- 2、The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3、The power dissipation is limited by 150°C junction temperature
- 4、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

4. Typical Characteristics

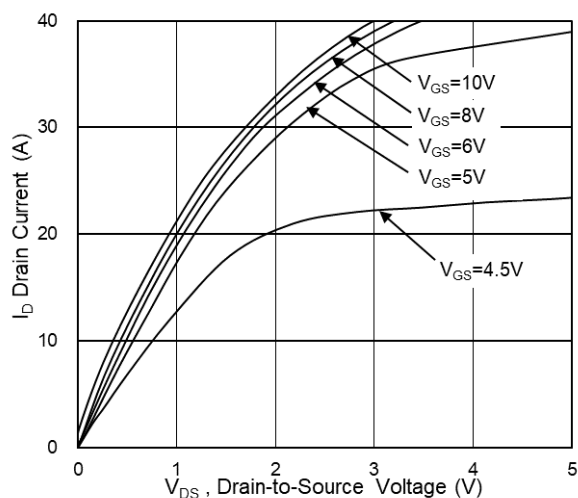


Fig.1 Typical Output Characteristics

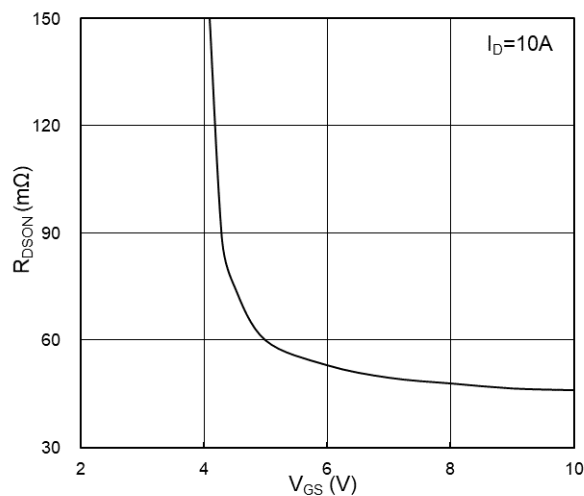


Fig.2 On-Resistance vs G-S Voltage

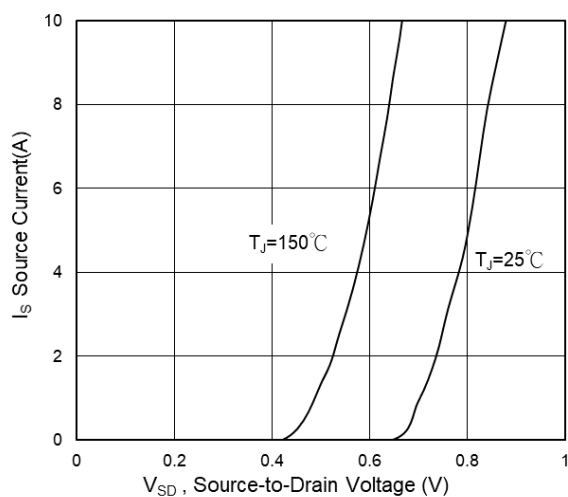


Fig.3 Source Drain Forward Characteristics

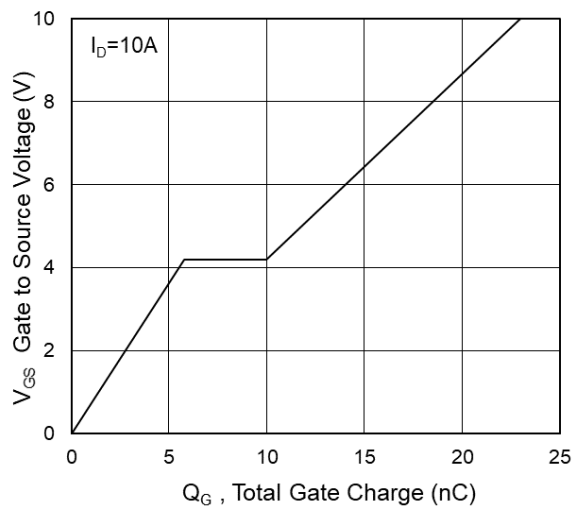


Fig.4 Gate-Charge Characteristics

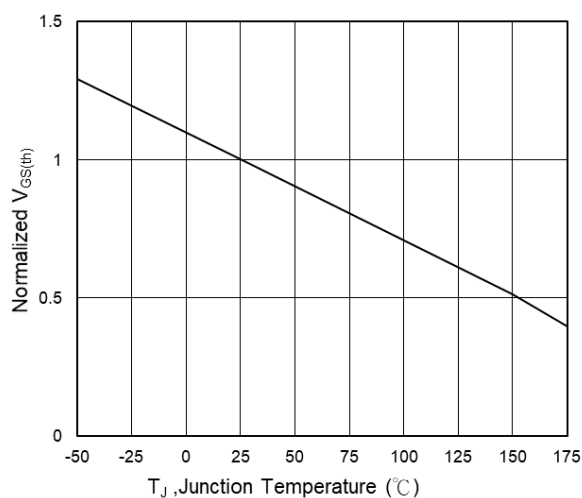


Fig.5 Normalized $V_{GS(th)}$ vs T_J

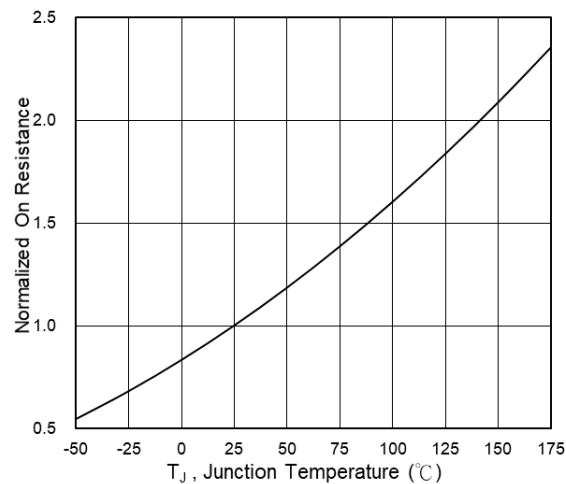


Fig.6 Normalized $R_{DS(on)}$ vs T_J

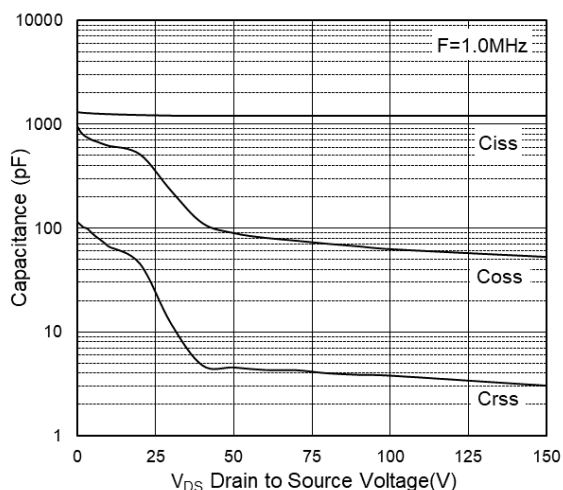


Fig.7 Capacitance

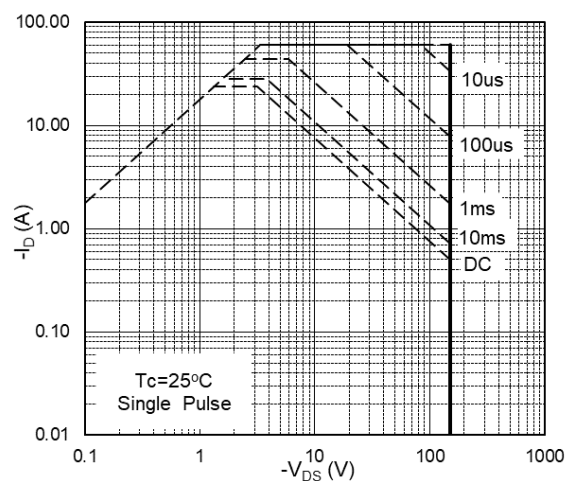


Fig.8 Safe Operating Area

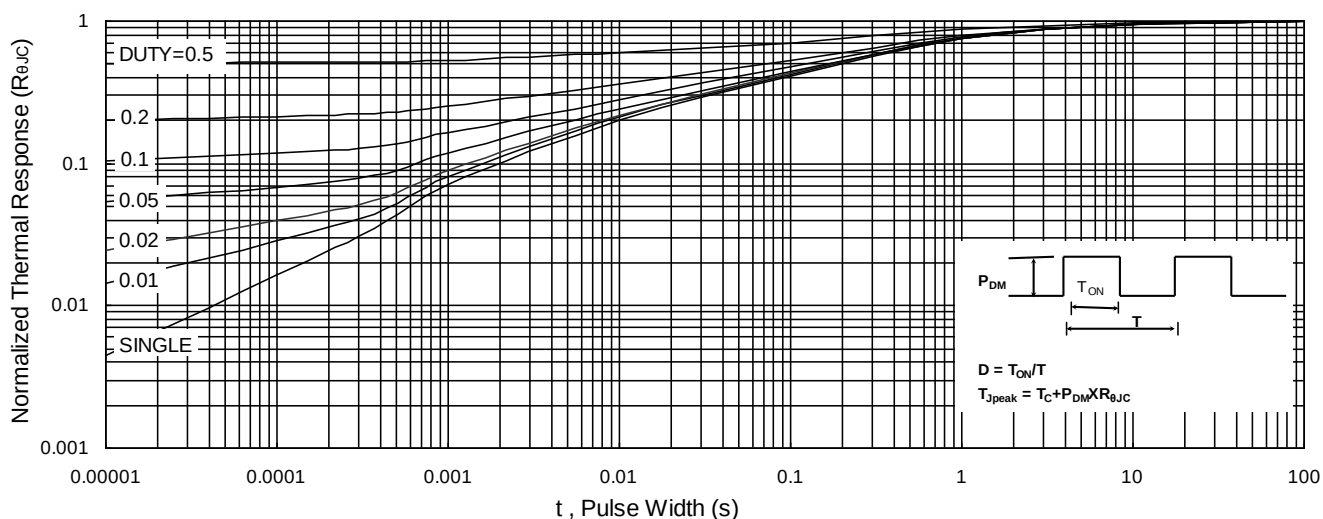


Fig.9 Normalized Maximum Transient Thermal Impedance

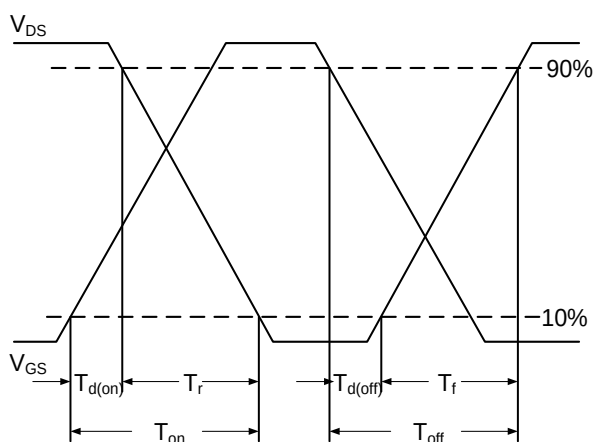


Fig.10 Switching Time Waveform

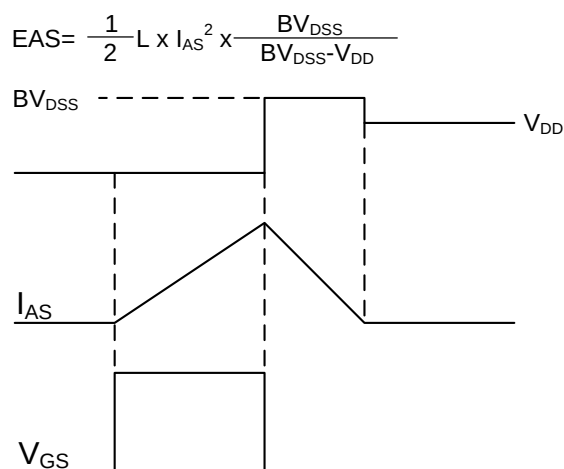
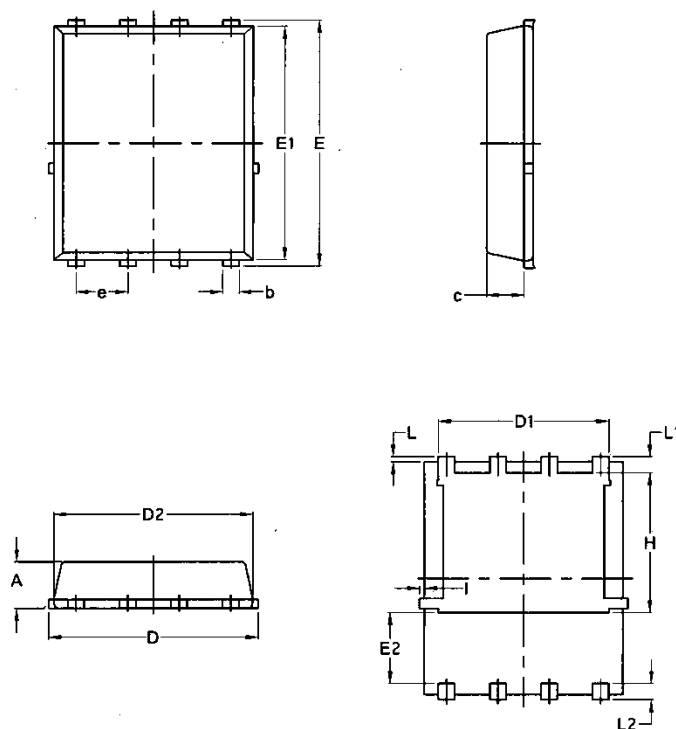


Fig.11 Unclamped Inductive Switching Waveform

5.Package Mechanical Data

PDFN5*6-8L



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070