KJ0815G

N-Channel Enhancement Mode MOSFET

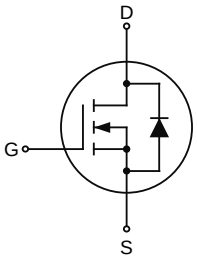
1. Product Information

1.1 Features

Shielded Gate Trench Technology

Excellentlow $R_{DS(ON)}$

Low gate charge



1.2 Applications

DC/DC converter

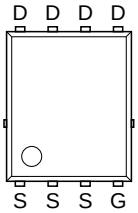
Power management switches

1.3 Quick reference

V_{DS} = 150 V

I_D = 140 A

$R_{DS(ON)}$ ≤ 9 mΩ @V_{GS} = 10V (Type:7.5 mΩ)



Top View
PDFN 5x6-8L

2. Package Marking and Ordering Information

Product Name	Package	Marking	Reel size	Tape width	Quantity (pcs)
KJ0815G	PDFN 5x6-8L	KJ0815G YWWXXX	13"	12 mm	5000

3. Absolute Maximum Ratings (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current, T_C=25℃ [1, 2]	140	A
	Continuous Drain Current, T_C=100℃ [1, 2]	60	A
I_{DM}	Pulsed Drain Current [1, 2]	550	A
I_{AS}	Avalanche Current	65	A
E_{AS}	Single Pulse Avalanche Energy [3]	506	mJ
P_D	Power Dissipation [4]	147	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	–55 to 150	℃
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	25	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case [1]	0.85	℃/W

4. Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0 V, I_{DS}=250 μA	150	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250 μA	2.0	-	4.5	V
I_{DSS}	Drain Leakage Current	V_{DS}=150 V, V_{GS}=0 V	-	-	1	μA
I_{GSS}	Gate Leakage Current	V_{GS}=0 V, V_{GS}=±20 V	-	-	±100	nA
$R_{DS(ON)}$	On-State Resistance [4]	V_{GS}=10 V, I_{DS}=20 A	-	7.5	9.0	mΩ
g_{FS}	Forward Transconductance [4]	V_{GS}=5 V, I_{DS}=20 A	-	60	-	S
R_g	Gate Resistance	Frequency=1 MHz	-	2.5	-	Ω
Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_{SD}=20 A, V_{GS}=0 V	-	-	1.2	V
t_{rr}	Reverse Recovery Time	I_{DS}=20 A, V_{GS}=0 V, dI_{SD}/dt=100 A/μs	-	98	-	ns
Q_{rr}	Reverse Recovery Charge		-	320	-	nC
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=10 V, V_{DS}=75 V, I_{DS}=20 A, Frequency=1 MHz	-	2184	-	pF
C_{oss}	Output Capacitance		-	360	-	
C_{rss}	Reverse Transfer Capacitance		-	8	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=75 V, V_{GEN}=10 V, R_G=3 Ω, I_{DS}=20 A	-	13	-	ns
t_r	Turn-on Rise Time		-	24	-	
$t_{d(off)}$	Turn-off Delay Time		-	30	-	
t_f	Turn-off Fall Time		-	25	-	
Gate Charge Characteristics						
Q_g	Total Gate Charge	V_{DS}=75 V, V_{GS}=10 V, I_{DS}=20 A	-	30	-	nC
Q_{gs}	Gate-Source Charge		-	7.5	-	
Q_{gd}	Gate-Drain Charge		-	6.6	-	

Notes:

1. Tested by surface mounted on a 1 inch^2 FR-4 board with 2 OZ copper.
2. Tested by pulsed, pulse width ≤ 300 μs, duty cycle ≤ 2%.
3. The E_{AS} data shows Max. rating. The test condition is V_{DD}=50 V, V_{GS}=10 V, L=0.5 mH, I_{AS}=45 A.
4. The power dissipation is limited by 150℃ junction temperature.
5. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

5. Typical Characteristics

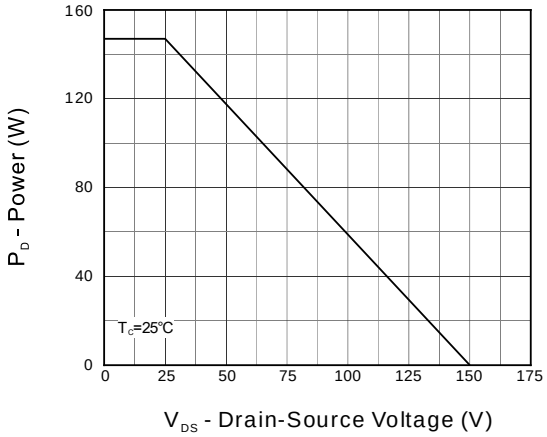


Figure 1. Output Characteristics

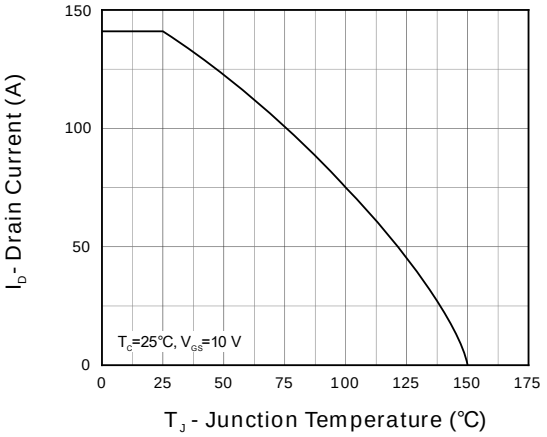


Figure 2. Current Capability

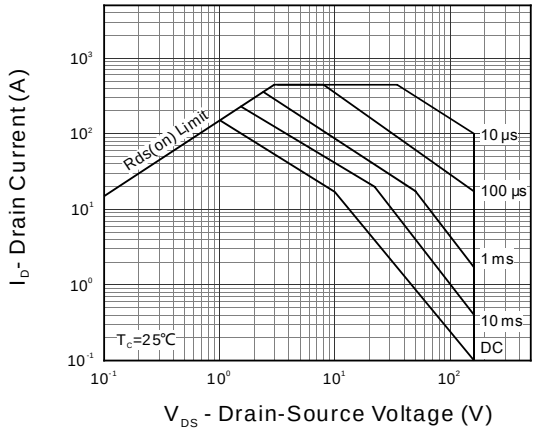


Figure 3. Safe Operation Area

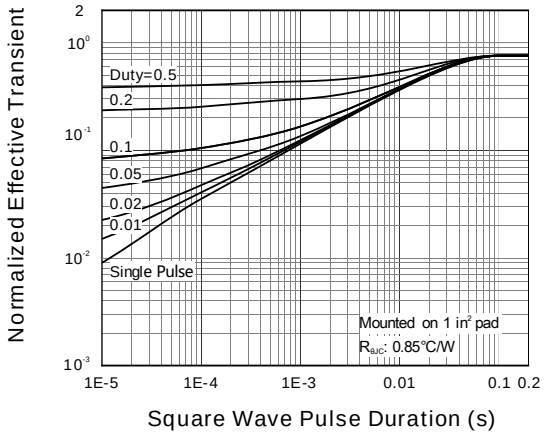


Figure 4. Transient Thermal Impedance

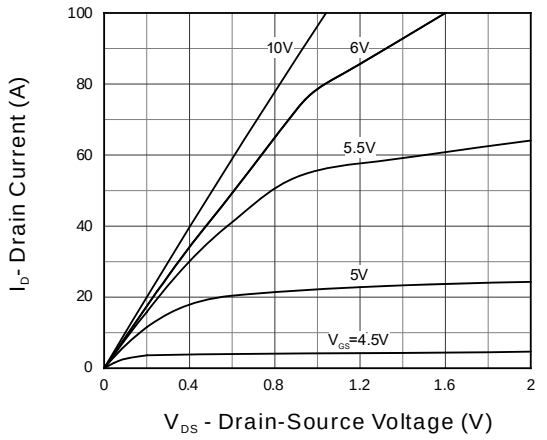


Figure 5. Output Characteristics

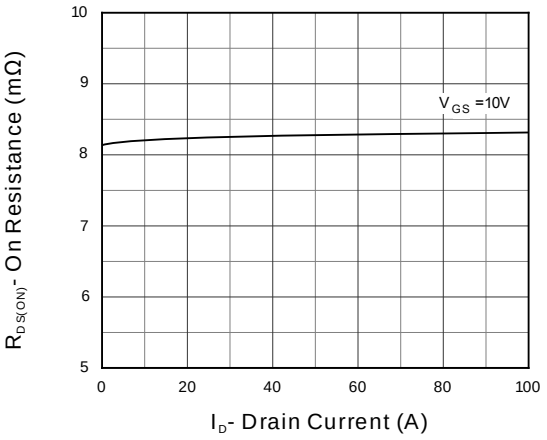


Figure 6. On Resistance

5. Typical Characteristics (cont.)

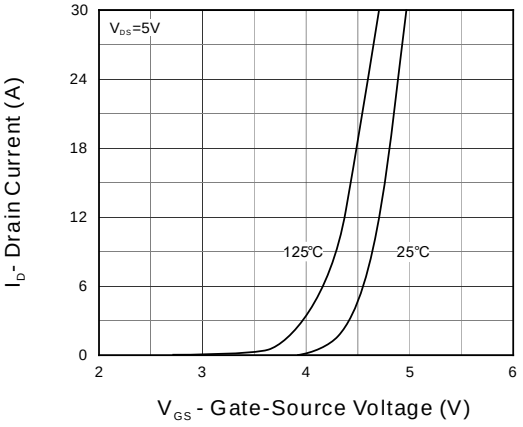


Figure 7. Transfer Characteristics

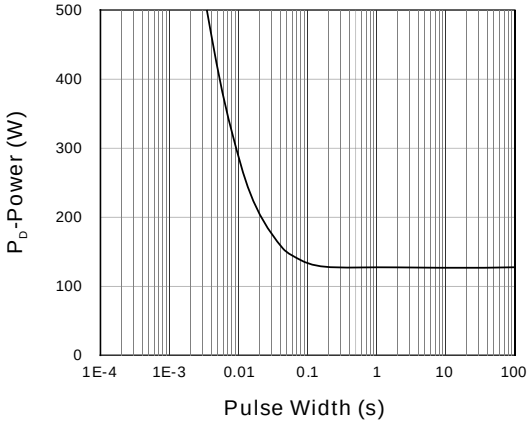


Figure 8. Single Pulse Power Rating, Junction-Case

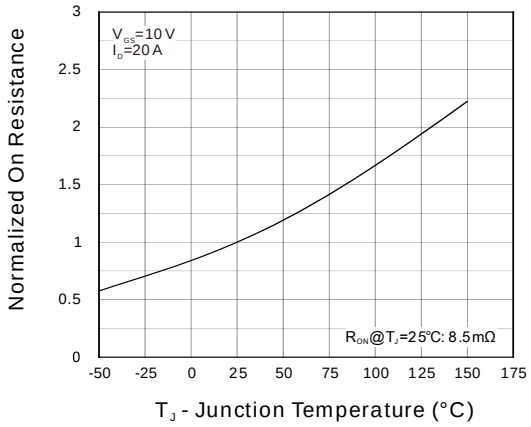


Figure 9. Normalized On Resistance

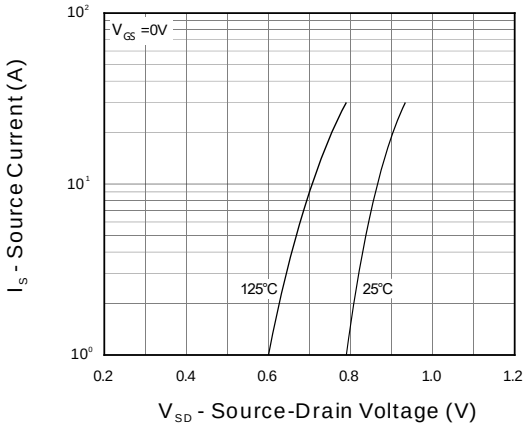


Figure 10. Diode Forward Current

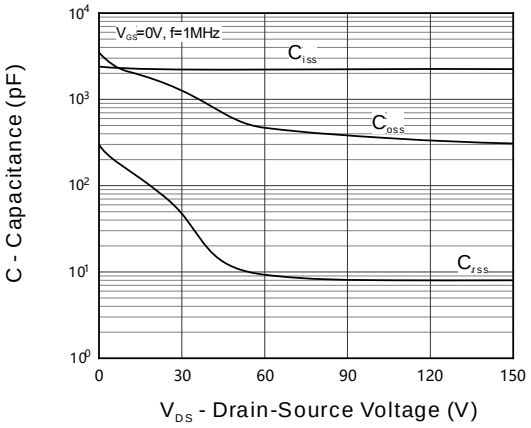


Figure 11. Capacitance

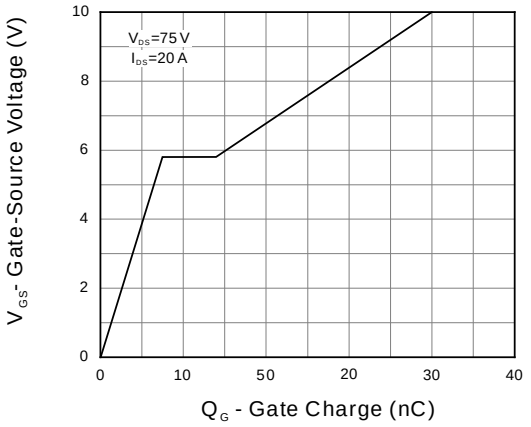
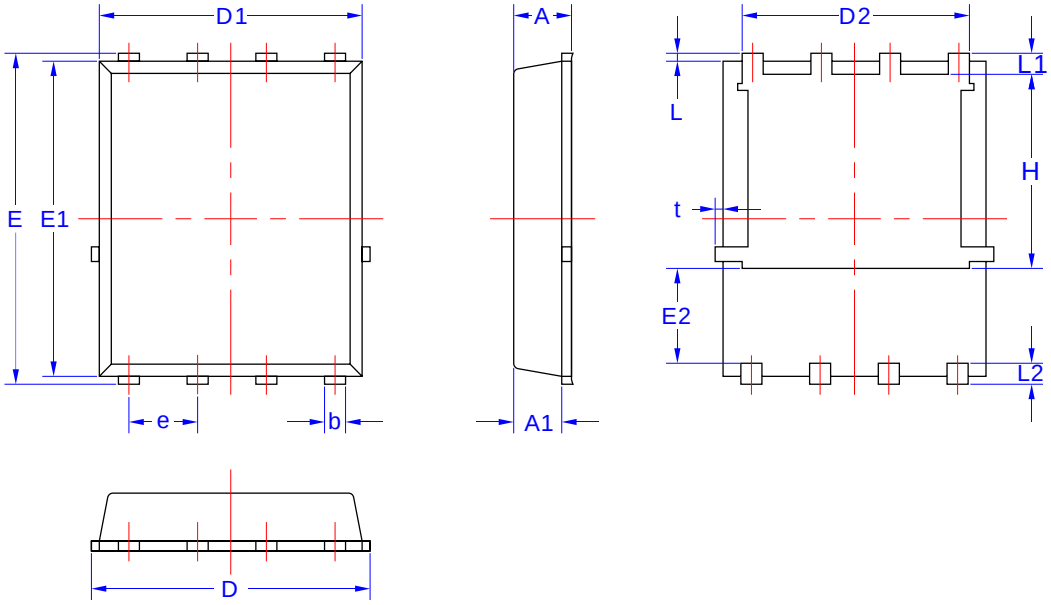


Figure 12. Gate Charge

6. Package Dimensions

PDFN 5x6-8L Package



Symbol	Dimensions in Millimeters	
	MIN.	MAX
A	1.03	1.17
A1	0.824	0.97
b	0.34	0.48
D	4.80	5.40
D1	4.80	5.00
D2	4.11	4.31
E	5.95	6.15
E1	5.65	5.85
E2	1.40	-
e	1.27 BSC	
L	0.05	0.25
L1	0.38	0.50
L2	0.38	0.71
H	3.30	3.50
t	-	0.18