KJ18N15K

N-Channel Enhancement Mode MOSFET

1. Product Information

Features

- Advanced SGT Technology
- Excellent $R_{DS(ON)}$
- Low gate charge

Applications

- Automative lighting
- Load switch
- Uninterruptible power supply

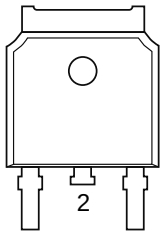
Quick reference

- V_{DS} = 150V
- I_D = 28A
- $R_{DS(ON)}$ ≦ 78mΩ@V_{GS}=10V(Type: 63mΩ）

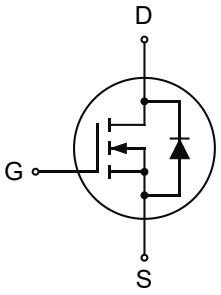
Pin Description

Pin	Description
1	Gate(G)
2	Drain(D)
3	Source(S)

Simplified Outline	Symbol



Top View
TO-252



Package Marking and Ordering Information

Product Name	Package	Marking	Reel Size	Tape Width	Quantity
KJ18N15K	TO-252	KJ18N15K XXXYYY XXXYYY: Date Code	-	-	2500

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

Symbol	Parameter	Values	Unit
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current, V_{GS}=10V,T_C=25℃	28	A
	Drain Current, V_{GS}=10V,T_C=100℃	16	A
I_{DM}	Pulsed Drain Current [1]	84	A
P_D	Power Dissipation	60	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55~150	℃
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance from Junction to Case	2.5	℃/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	150	-	-	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=150V, V_{GS}=0V, T_J=25℃	-	-	1	μA
		V_{DS}=150V, V_{GS}=0V, T_J=100℃	-	-	100	μA
I_{GSS}	Gate-Body Leakage Current	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
$V_{GS(th)}$	Gate-Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	1.0	2.0	3.0	V
$R_{DS(ON)}$	Drain-Source On-Resistance[2]	V_{GS}=10V, I_{DS}=10A	-	63	78	mΩ
		V_{GS}=4.5V, I_{DS}=8A	-	72	90	mΩ
gfs	Forward Transconductance	V_{DS}=5V, I_{DS}=10A	-	23	-	S
R_G	Gate Resistance	V_{DS}=0V, V_{GS} Open, f=1.0MHZ	-	5	-	Ω
C_{iss}	Input Capacitance	V_{DS}=75V, V_{GS}=0V, f=1.0MHz	-	630	-	pF
C_{oss}	Output Capacitance		-	50	-	
C_{rss}	Reverse Transfer Capacitance		-	13.5	-	
Q_g	Total Gate Charge	V_{DS}=10V, V_{GS}=75V, I_{DS}=10A	-	11	-	nC
Q_{gs}	Gate-Source Charge		-	1.2	-	
Q_{gd}	Gate-Drain Charge		-	4	-	
t_d(on)	Turn-on Delay Time	V_{DD}=75V, V_{GS}=10V, I_{DS}=10A, R_G=10Ω	-	9.8	-	ns
t_r	Turn-on Rise Time		-	6	-	
t_d(off)	Turn-off Delay Time		-	15	-	
t_f	Turn-off Fall Time		-	4.1	-	
V_{SD}	Diode Forward Voltage [2]	V_{GS}=0V, I_{SD}=10A,	-	-	1.2	V
t_{rr}	Diode Reverse Recovery Time	V_R=75V, I_F=10A, dI/dt=100A/μs	-	55	-	ns
Q_{rr}	Diode Reverse Recovery Charge		-	124	-	uC

Notes:

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 ≦ 300μs , duty cycle ≦ 2%
3. The power dissipation is limited by 150℃ 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

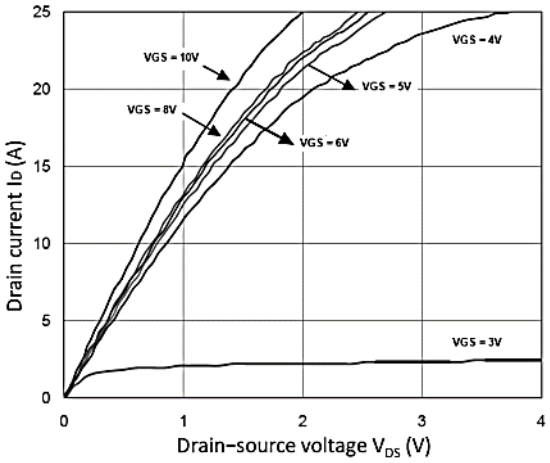


Figure 1. Output Characteristics

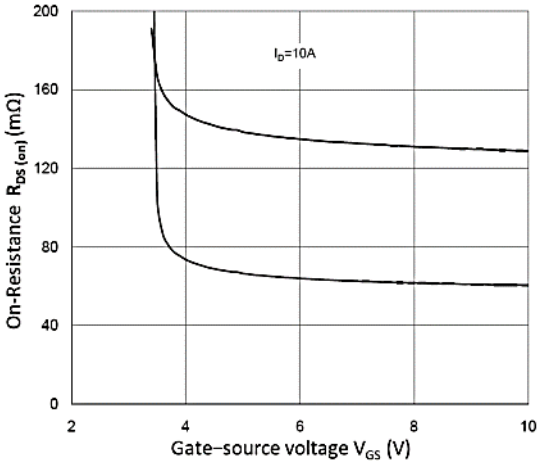


Figure 2. $R_{DS\ (on)}$ vs. V_{GS}

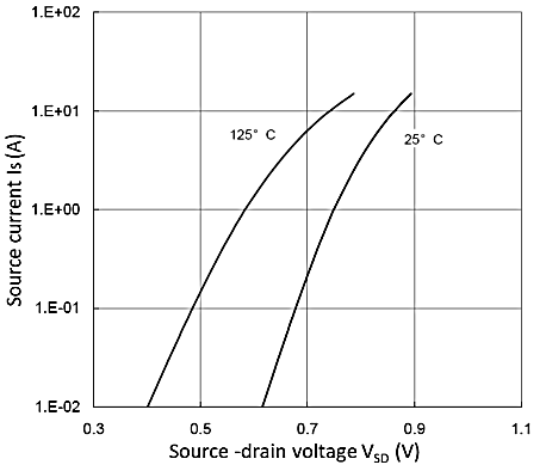


Figure 3. Forward Characteristics of Reverse

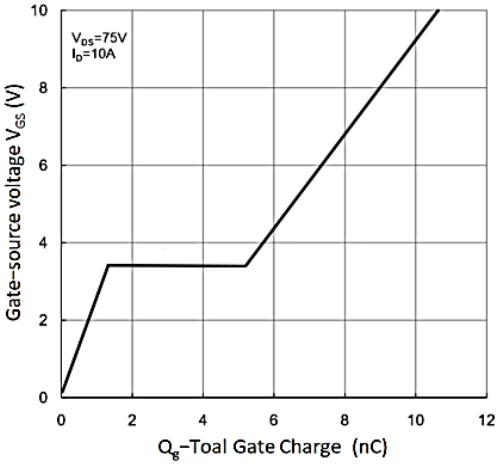


Figure 4. Gate Charge Characteristics

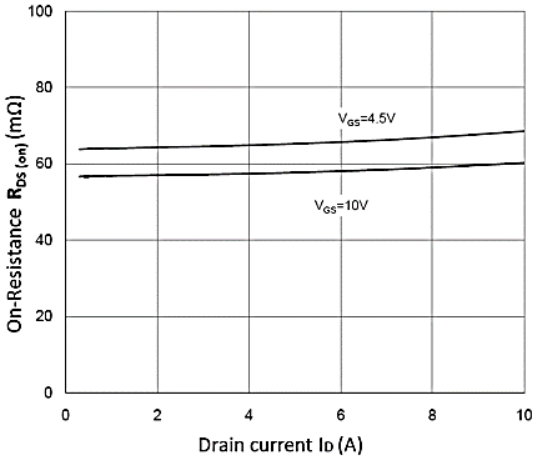


Figure 5. $R_{DS(ON)}$ vs. I_D

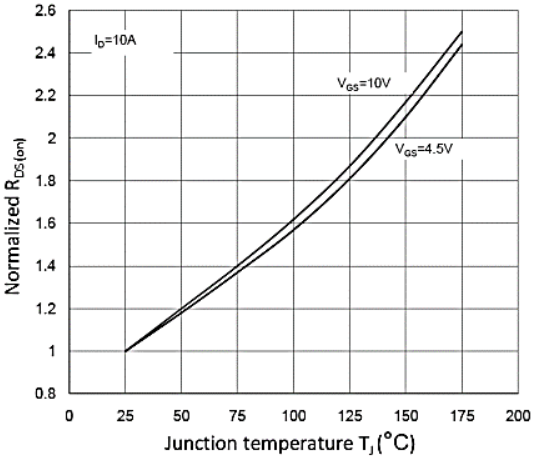


Figure 6. Normalized $R_{DS(ON)}$ vs. T_J

4. Typical Characteristics (Cont.)

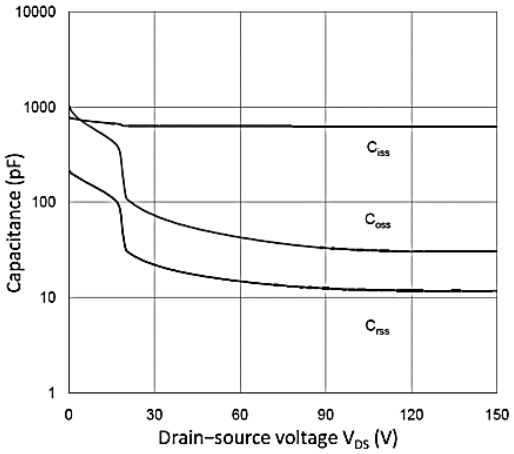


Figure 7. Capacitance Characteristics

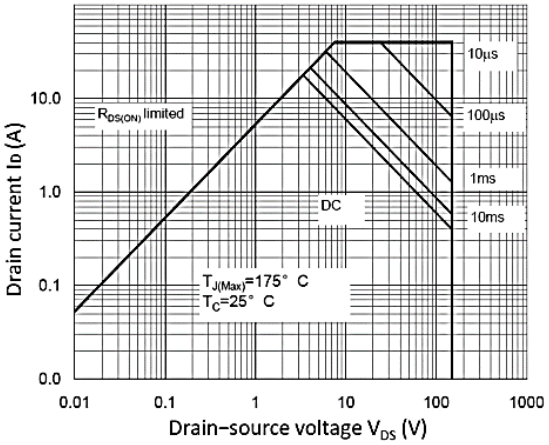


Figure 8. Safe Operating Area

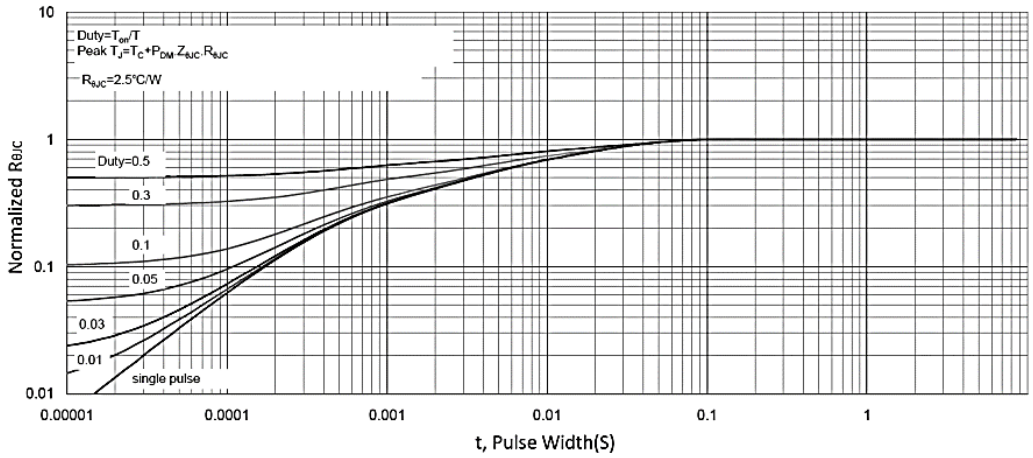


Figure 9. Normalized Maximum Transient Thermal Impedance

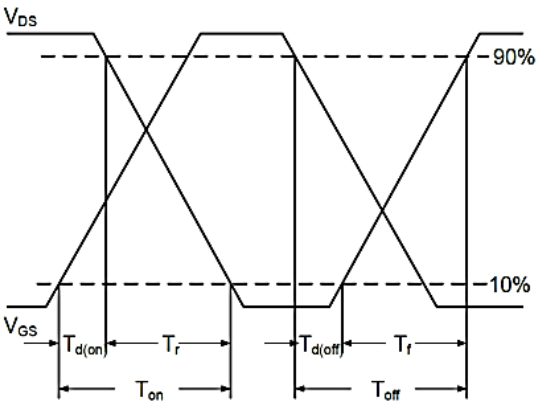


Figure 10. Switching Time Waveform

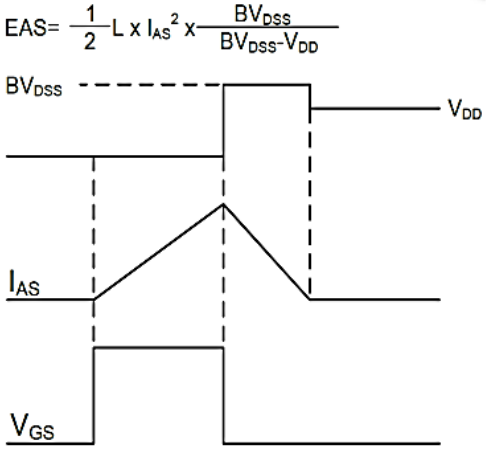
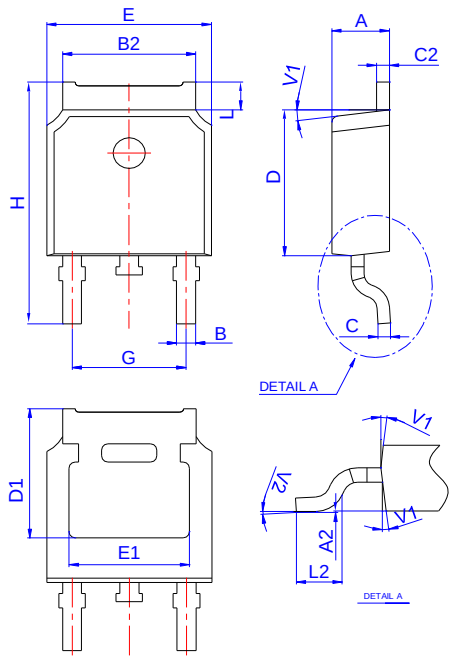


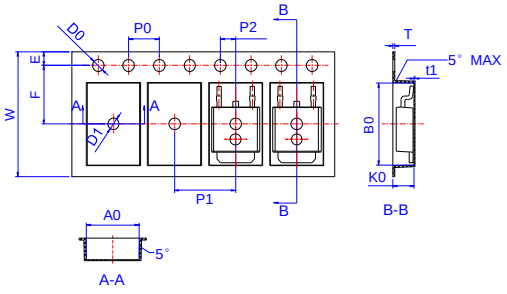
Figure 11. Unclamped Inductive Switching

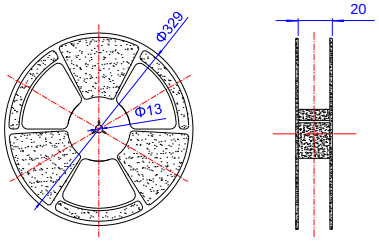
5. Package Mechanical Data

TO-252 Package



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°





Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.63	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.27	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583