KJ18N30T

Super-Junction Power Mosfet

1. Product Information

Features

- Super Junction technology
- Low FOM $R_{DS(ON)} \times Q_G$
- Fast switching capability
- Lead free product is acquired

Applications

- Power management
- Hard switched and high frequency circuits
- PWM application

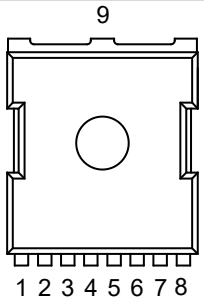
Quick reference

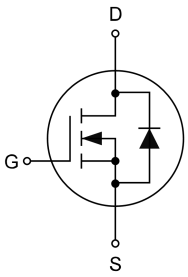
- $V_{DS} \geq 300$ V
- $I_D \leq 125$ A
- $R_{DS(ON)} \leq 16$ mΩ @V_{GS} = 10 V (Type 13 mΩ)

Pin Description

Pin	Description
1	Gate
2~8	Source
9	Drain

Simplified Outline	Symbol





TOLL-8L

Package Marking and Ordering Information

Part number	Marking	Package	Packaging	Quantity	Reel size	Tape width
KJ18N30T	KJ18N30T	TOLL-8L	☑ Tape & Reel	2000 PCS	13"	24 mm
			☐ Tube	N/A	N/A	N/A

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

Symbol	Parameter	Values	Unit
V_{DS}	Drain-Source Voltage	300	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current (T_C=25℃)	125	A
	Continuous Drain Current (T_C=100℃)	79	A
I_{DM}	Pulsed Drain Current	375	A
E_{AS}	Single Pulsed Avalanche Energy (V_{DD}=50 V, V_{GS}=10 V, L=0.5 mH, R_G=25 Ω)	1335	mJ
P_D	Power Dissipation	480	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	-55 to 150	℃
$R_{\theta JA}$	Thermal Resistance, Junction-Ambient	50	℃/W
$R_{\theta JC}$	Thermal Resistance, Junction-Case	0.26	℃/W

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

Symbol	Parameter	Test Conditions	Min	Type	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0 V, I_D=250 μA	300	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=300 V, V_{GS}=0 V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20 V, V_{DS}=0 V	-	-	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250 μA	2.5	-	4.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10 V, I_D=35 A	-	13	16	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=50 V, V_{GS}=0 V, f=1 MHz	-	5200	-	pF
C_{oss}	Output Capacitance		-	350	-	pF
C_{rss}	Reverse Transfer Capacitance		-	7	-	pF
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=200 V, I_D=35 A, R_G=20 Ω, V_{GS}=10 V	-	50	-	ns
t_r	Turn-on Rise Time		-	32	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	80	-	ns
t_f	Turn-off Fall Time		-	6	-	ns
Q_g	Total Gate Charge	V_{DS}=200 V, I_D=35 A, V_{GS}=10 V	-	86	-	nC
Q_{gs}	Gate-Source Charge		-	27	-	nC
Q_{gd}	Gate-Drain Charge		-	22	-	nC
Source-Drain Diode Characteristics						
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS}=0 V, I_F=1 A	-	-	1.2	V
Q_{rr}	Reverse Recovery Time	V_R=200 V, I_F=35 A, di/dt=100 A/μs	-	0.6	-	μC
T_{rr}	Reverse Recovery Charge		-	120	-	ns

4. Electrical Characteristics

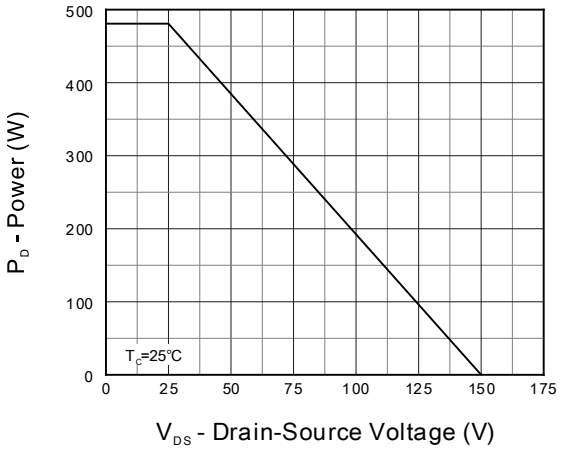


Figure 1. Output Characteristics

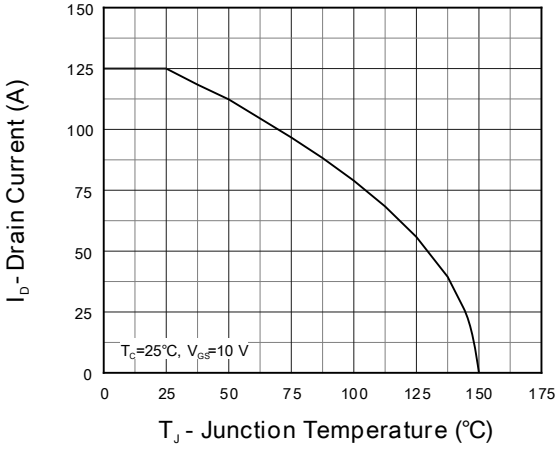


Figure 2. Current Capability

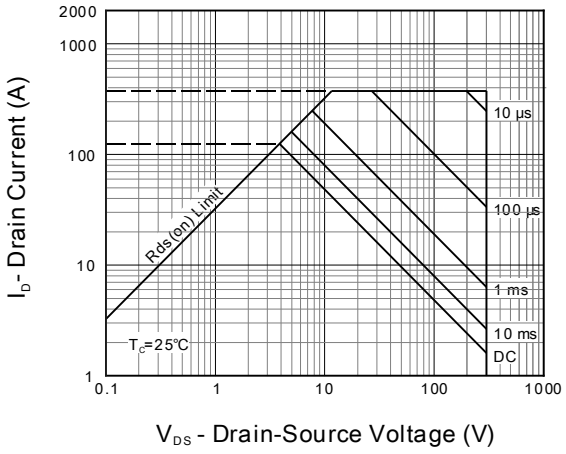


Figure 3. Safe Operation Area

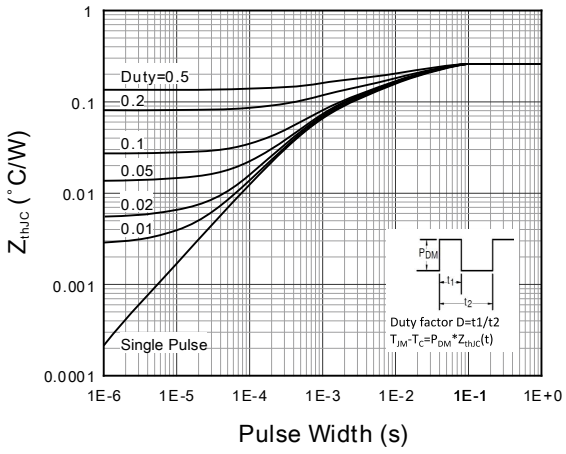


Figure 4. Transient Thermal Impedance

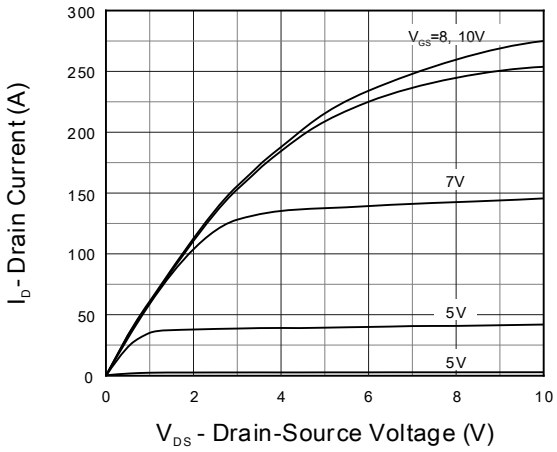


Figure 5. Output Characteristics

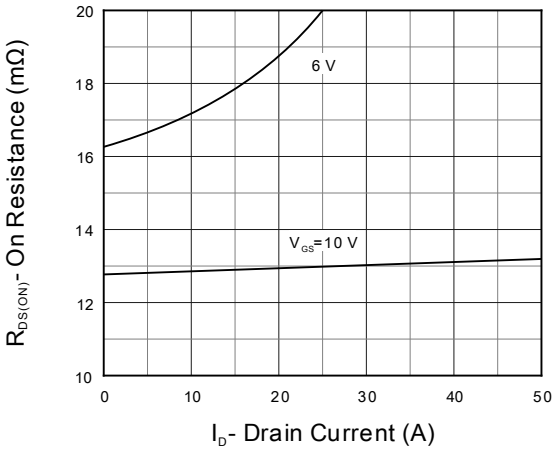


Figure 6. On Resistance

5. Electrical Characteristics (cont.)

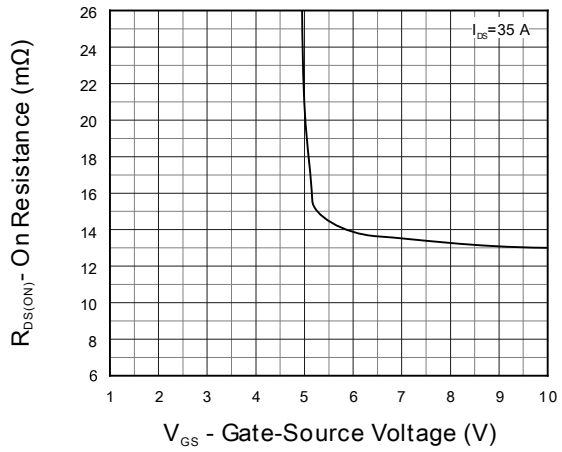


Figure 7. Transfer Characteristics

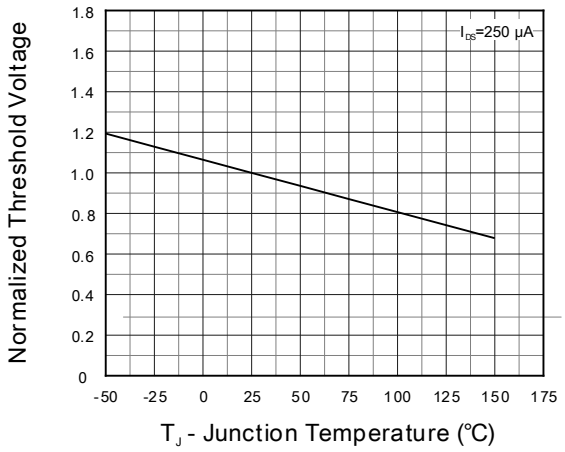


Figure 8. Normalized Threshold Voltage

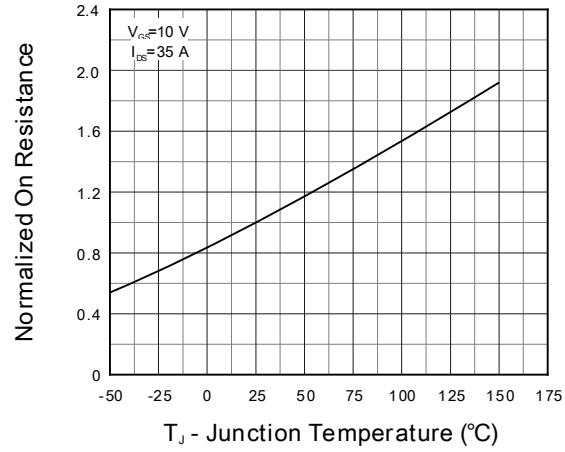


Figure. Normalized On Resistance

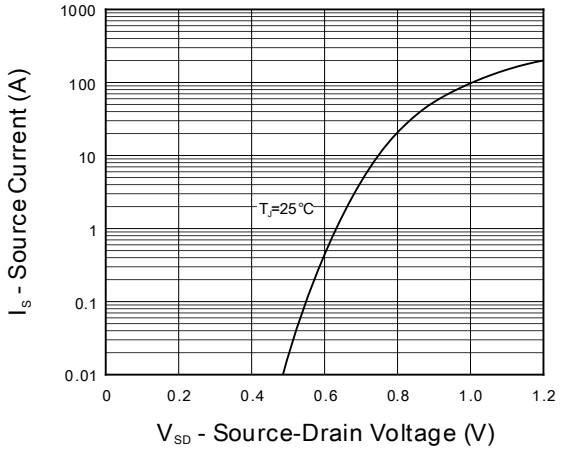


Figure 10. Diode Forward Current

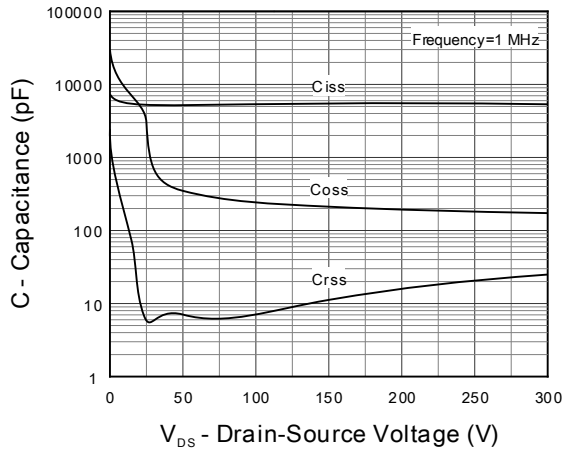


Figure 11. Capacitance

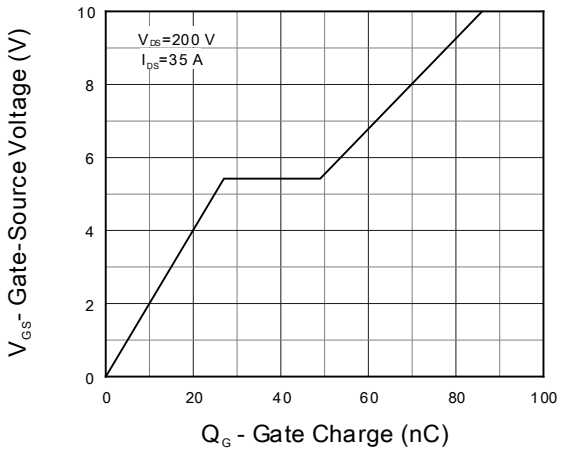
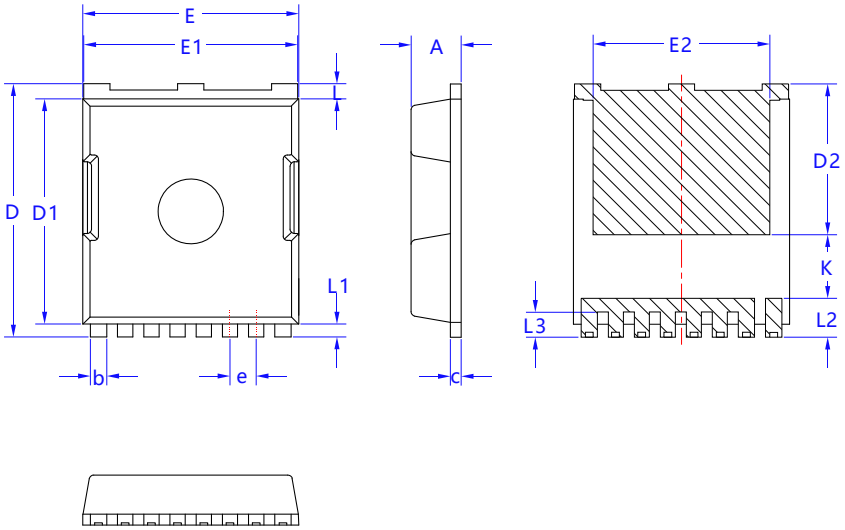


Figure 12. Gate Charge

5. Package Mechanical Data

TOLL-8L package



Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
A	2.20	2.30	2.40
b	0.60	0.70	0.90
c	0.40	0.50	0.60
D	11.48	11.68	11.88
D1	10.28	10.38	10.55
D2	6.85	6.95	7.05
E	9.80	9.90	10.0
E1	9.70	9.80	9.90
E2	8.00	8.10	8.20
e	1.20 BSC		
L	0.60 TYPE		
L1	0.60 TYPE		
L2	1.60	1.80	2.10
L3	1.00	1.15	1.30
K	2.90 TYPE		