KJ100N25P

N-Channel Enhancement Mode MOSFET

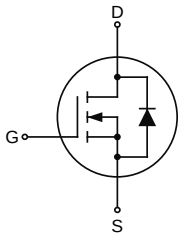
1. Product Information

1.1 Features

Advanced Trench Technology

Excellent $R_{DS(ON)}$

Low gate charge



1.2 Applications

UPS

BLDC

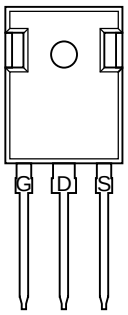
1.3 Quick reference

V_{DS}=250 V

I_D=100 A

P_D=360 W

$R_{DS(ON)}$≦33 mΩ@V_{GS}=10 V (Type:28 mΩ)



Top View
TO-247

2. Package Marking and Ordering Information

Product Name	Package	Marking	Reel Size	Tape width	Quantity
KJ100N25P	TO-247	KJ100N25P	-	-	300

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	250	V
V_{GS}	Gate-Source Voltage	±30	V
I_D	Continuous Drain Current (T_A=25℃)	100	A
I_D	Continuous Drain Current (T_A=100℃)	75	A
I_{DM}	Pulsed Drain Current	300	A
I_{AS}	Avalanche Current	45	A
E_{AS}	Single Pulse Avalanche Energy	895	mJ
P_D	Power Dissipation (T_C=25℃) [4]	326	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	–55 to 150	℃
$R_{\theta JA}$	Thermal Resistance, Junction-Ambient	62	℃/W
$R_{\theta JC}$	Thermal Resistance, Junction-Case	0.45	℃/W

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0 V, I_{DS}=250 μA	250	275	-	V
Zero Gate Voltage Source Current	I_{DSS}	V_{DS}=250 V, V_{GS}=0 V	-	-	1	μA
Gate to Source Forward Leakage	I_{GSS}	V_{GS}=±20 V, V_{DS}=0 V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250 μA	3.6	4.5	5.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10 V, I_D=35 A	-	28	33	mΩ
Forward Transconductance	G_{FS}	V_{DS}=5 V, V_{GS}=35 A	100	-	-	S
Gate Resistance	R_g	V_{GS}=0 V, V_{DS} open f=1.0 MHz	-	1.5	-	Ω
Diode Characteristics						
Diode Forward Voltage	V_{SD}	I_{SD}=35 A, V_{GS}=0 V	-	-	1.2	V
Reverse Recovery Time	t_{rr}	I_{DS}=30 A, V_{GS}=0 V dI$_{SD}$/dt=100 A/μs	-	120	-	ns
Reverse Recovery Charge	Q_{rr}		-	0.55	-	nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0 V, V_{DS}=50 V, Frequency=1 MHz	-	7000	-	pF
Output Capacitance	C_{oss}		-	480	-	
Reverse Transfer Capacitance	C_{rss}		-	210	-	
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=50 V, V_{GEN}=10 V, R_G=2.5 Ω, I_{DS}=35 A	-	45	-	ns
Turn-on Rise Time	t_r		-	70	-	
Turn-off Delay Time	$t_{d(off)}$		-	110	-	
Turn-off Fall Time	t_f		-	90	-	
Gate Charge Characteristics						
Total Gate Charge	Q_g	V_{DS}=100 V, V_{GS}=10 V, I_{DS}=35 A	-	200	-	nC
Gate-Source Charge	Q_{gs}		-	28	-	
Gate-Drain Charge	Q_{gd}		-	60	-	

Notes:

1. The data tested by surface mounted on a 1 inch$_2$ FR-4 board with 2OZ copper.
3. The EAS data shows Max. rating. I_{AS}=35 A, R_G=25 Ω, V_{DD}=50 V, V_{GS}=10 V, Starting T_J=25℃
2. The test condition is Pulse Test: Pulse width≤300 μs, Duty Cycle≤1%
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.

7. Typical Characteristics

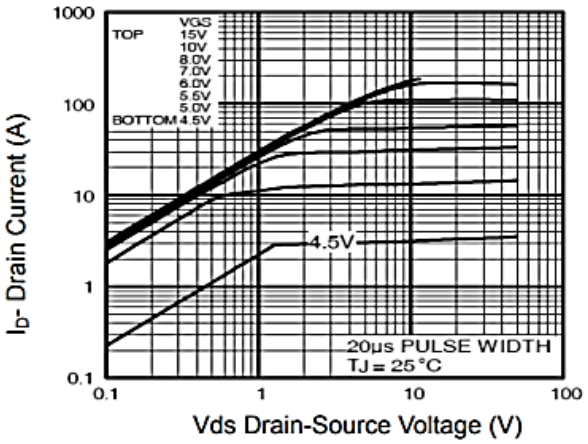


Figure 1 Output Characteristics

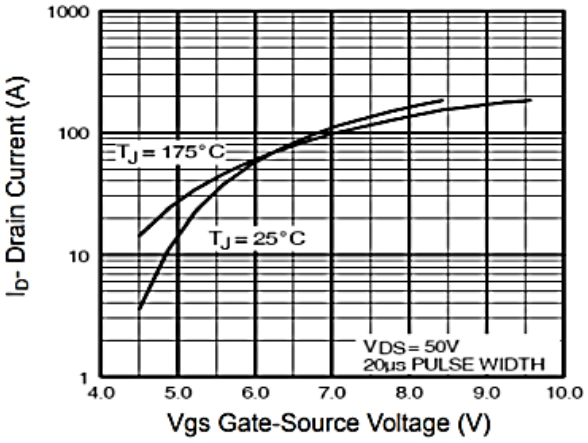


Figure 2 Transfer Characteristics

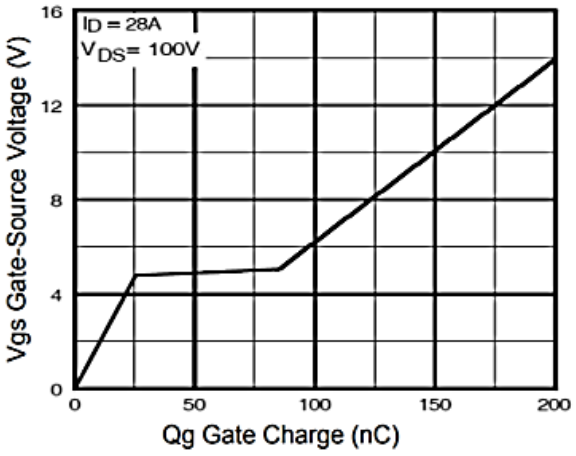


Figure 5 Gate Charge

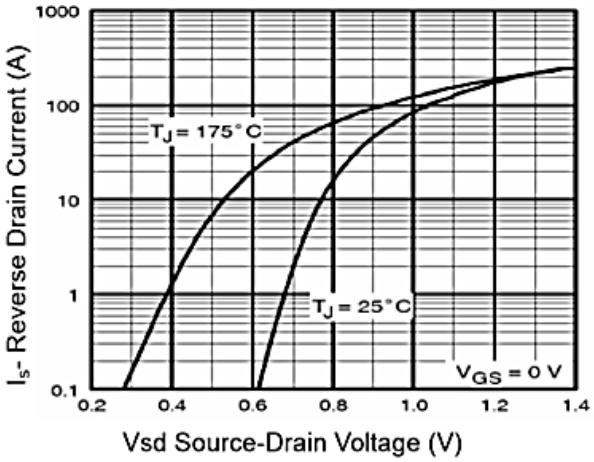


Figure 6 Source- Drain Diode Forward

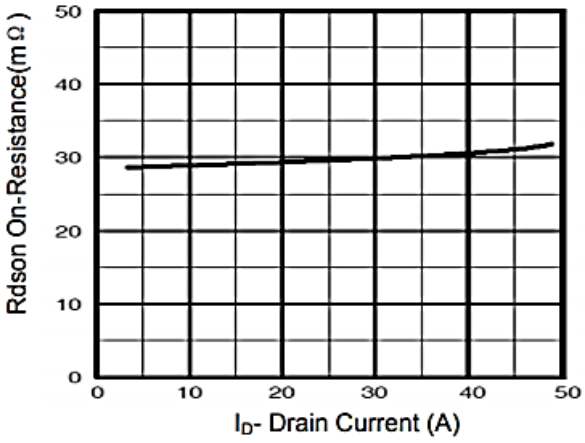


Figure 3 Rdson- Drain Current

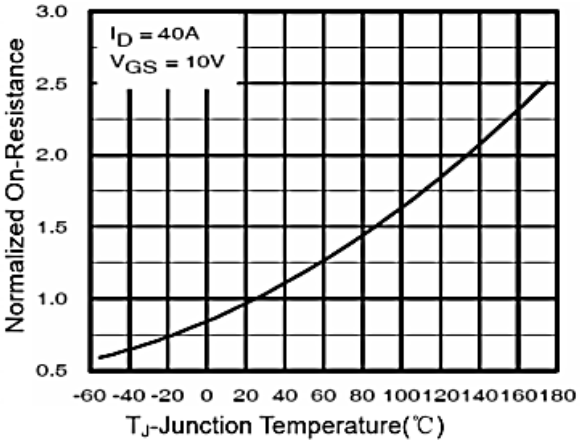


Figure 4 Rdson-JunctionTemperature

7. Typical Characteristics (cont.)

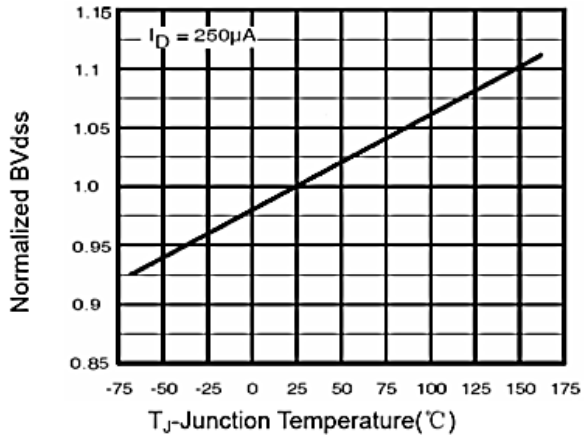


Figure 9 BV_{DSS} vs Junction Temperature

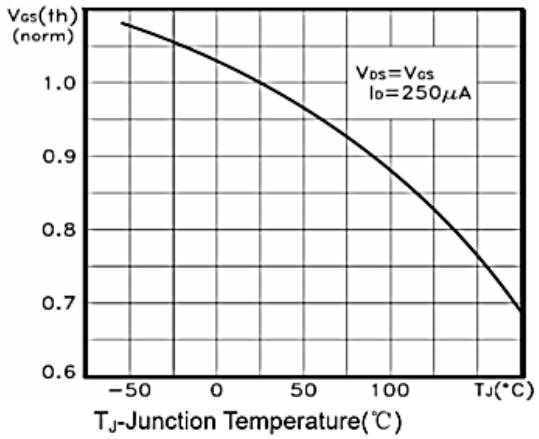


Figure 10 $V_{GS(th)}$ vs Junction Temperature

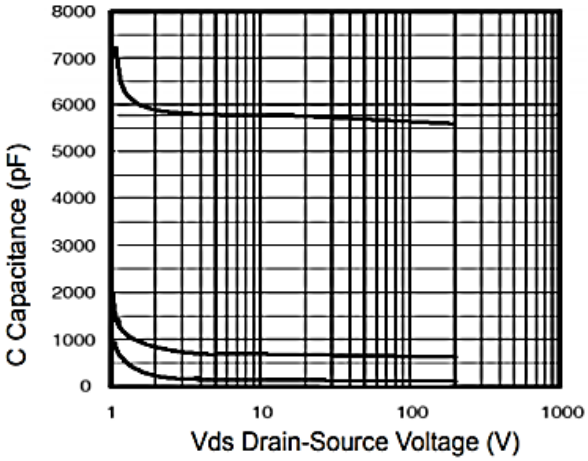


Figure 7 Capacitance vs Vds

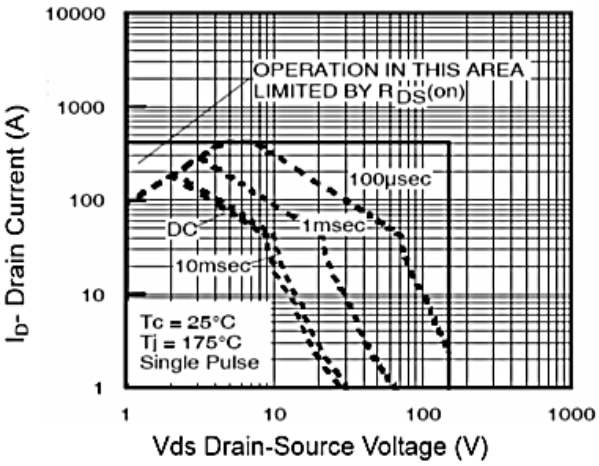


Figure 8 Safe Operation Area

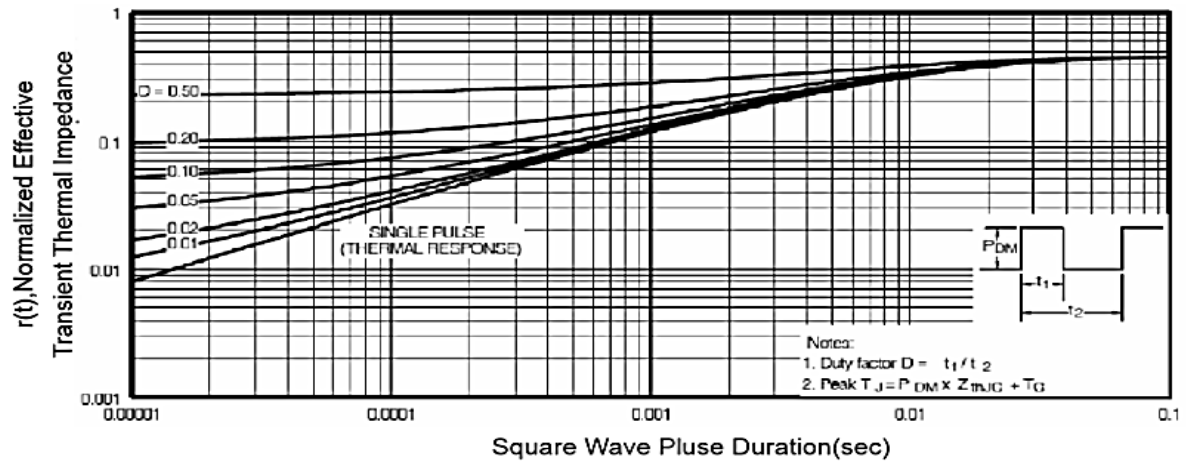
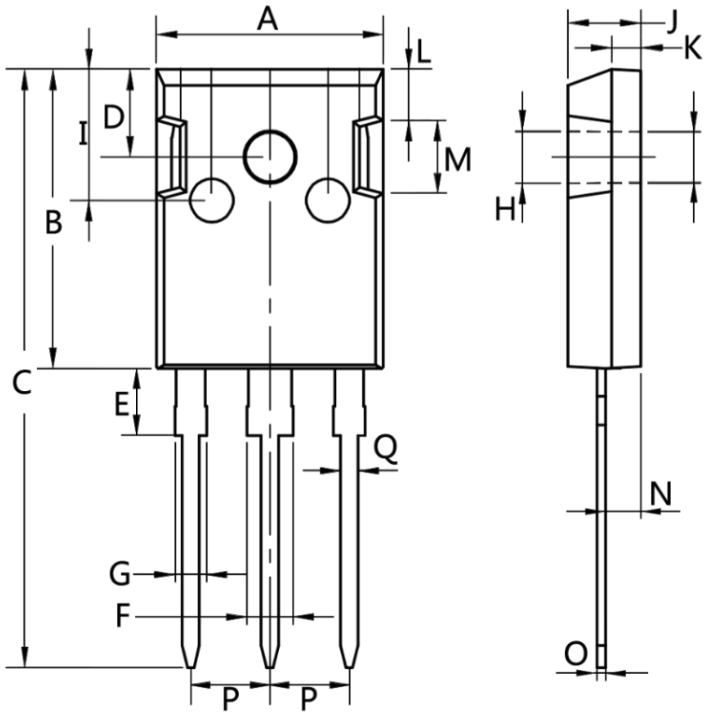


Figure 11 Normalized Maximum Transient Thermal Impedance

8. Package Dimensions

TO-247 Package



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	MIN.	MAX.	MIN.	MAX.
A	15.00	16.00	0.5906	0.6299
B	20.00	21.00	0.7874	0.8268
C	41.00	42.00	1.6142	1.6535
D	5.00	6.00	0.1969	0.2362
E	4.00	5.00	0.1575	0.1969
F	2.50	3.50	0.0984	0.1378
G	1.75	2.50	0.0689	0.0984
H	3.00	3.50	0.1181	0.1378
I	8.00	10.00	0.3150	0.3937
J	4.90	5.10	0.1929	0.2008
K	1.90	2.10	0.0748	0.0827
J	4.90	5.10	0.1929	0.2008
K	1.90	2.10	0.0748	0.0827
L	3.50	4.00	0.1378	0.1575
M	4.75	5.25	0.1870	0.2067
N	2.00	3.00	0.0787	0.1181
O	0.55	0.75	0.0217	0.0295
P	TYP 5.08		TYP 0.2000	
Q	1.20	1.30	0.0472	0.0512