KJ30N25C/D

N-Channel Enhancement Mode MOSFET

1. Product Information

Features

Fast switching
Excellent $R_{DS(ON)}$ and Low gate charge
Low reverse transfer capacitances

Applications

Uninterruptible Power Supply
Power Factor Correction

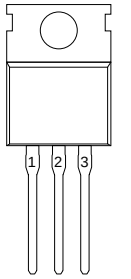
Quick reference

V_{DS}=250 V
I_D=30 A
$R_{DS(ON)}$≤128 mΩ @V_{GS}=10 V (Type: 100 mΩ)

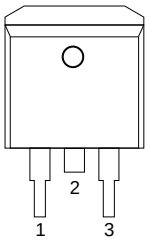
Pin Description

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

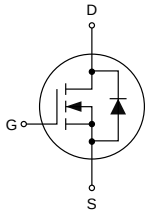
Simplified Outline	Symbol



TO-220



TO-263



Package Marking and Ordering Information

Product Name	Package	Marking	Reel Size	Tape Width	Quantity (pcs)
KJ30N25C	TO-220	KJ30N25C	N/A	N/A	1000
KJ30N25D	TO-263	KJ30N25D	13"	24 mm	800

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

Symbol	Parameter	Values	Unit
V_{DS}	Drain-Source Voltage	250	V
V_{GS}	Gate-Source Voltage	±30	V
I_D	Continuous Drain Current, T_C=25℃ [1]	30	A
	Continuous Drain Current, T_C=100℃ [1]	18	A
I_{DM}	Pulsed Drain Current [1]	120	A
E_{AS}	Single Pulse Avalanche Energy [2]	1225	mJ
I_{AS}	Avalanche Current	14	A
P_D	Power Dissipation (T_C=25℃)	150	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55~150	℃
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient [1]	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	0.83	℃/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}=0 V, I_D=250 μA	250	-	-	V
$V_{GS(th)}$	Gate-Threshold Voltage [2]	V_{DS}=V_{GS}, I_D=250 μA	2	3	4	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=250 V, V_{GS}=0 V	-	-	1	μA
I_{GSS}	Gate-body Leakage current	V_{DS}=0 V, V_{GS}=±30 V	-	-	±100	nA
$R_{DS(on)}$	Drain-Source on-Resistance [2]	V_{GS}=10 V, I_D=15 A	-	100	128	mΩ
C_{iss}	Input Capacitance	V_{DS}=25 V, V_{GS}=0 V, f=1.0 MHz	-	1975	-	pF
C_{oss}	Output Capacitance		-	268	-	
C_{rss}	Reverse Transfer Capacitance		-	24	-	
Q_g	Total Gate Charge	V_{GS}=10 V, V_{DD}=200 V, I_D=30 A	-	38	-	nC
Q_{gs}	Gate-Source Charge		-	11.5	-	
Q_{gd}	Gate-Drain Charge		-	15	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=125 V, I_D=30 A, R_G=10 Ω	-	23	-	ns
t_r	Turn-on Rise Time		-	86	-	
$t_{d(off)}$	Turn-off Delay Time		-	46	-	
t_f	Turn-off Fall Time		-	20	-	
I_S	Continuous Body Diode Current		-	-	30	A
I_{SM}	Pulsed Diode Forward Current		-	-	120	A
V_{SD}	Body Diode Voltage	I_{SD}=30 A, V_{GS}=0 V	-	-	1.5	V
t_{rr}	Reverse Recovery Time	V_{GS}=0 V, I_S=30 A, di_F/dt=100 A/μs	-	230	-	ns
Q_{rr}	Reverse Recovery Charge		-	2050	-	nC

Notes:

1. Mounted on a 1 inch^2 FR-4 board with 2 OZ copper.
2. I_{AS}=14 A, V_{DD}=50 V, R_G=10 Ω, L=10 mH, Starting T_J=25℃.
3. Pulse width ≤ 300 μs, Duty Cycle ≤ 2%.
4. P_D 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.

4.Typical Characteristics

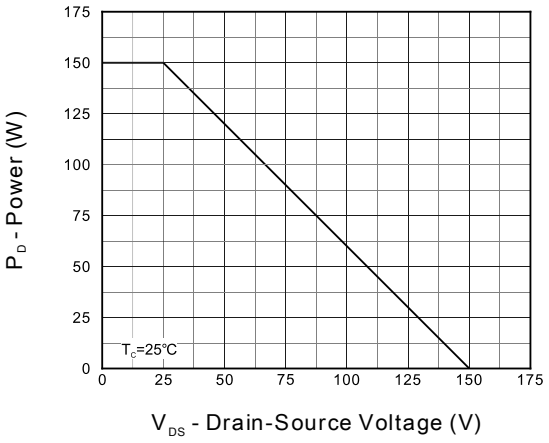


Fig 1. Output Characteristics

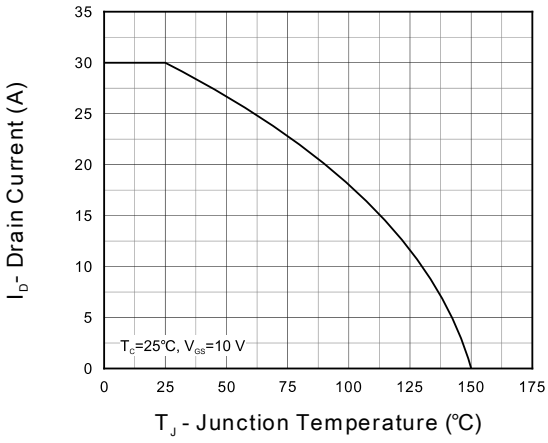


Fig 2. Current Capability

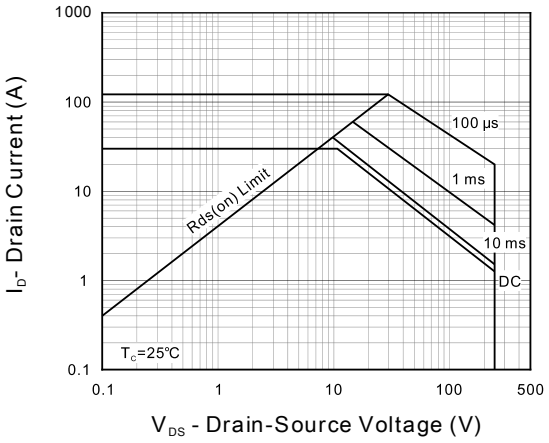


Fig 3. Safe Operation Area

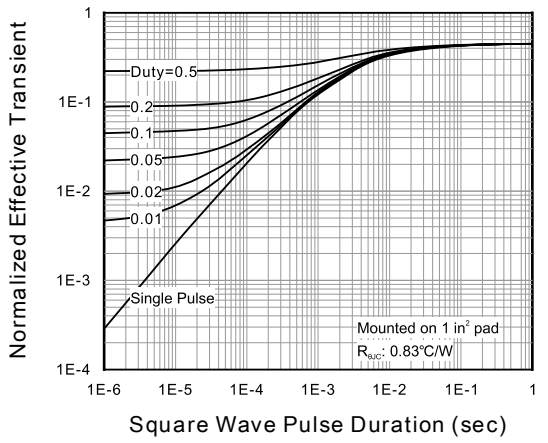


Fig 4. Transient Thermal Impedance

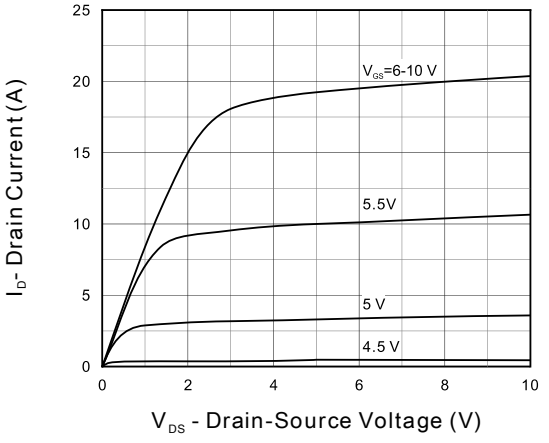


Fig 5. Output Characteristics

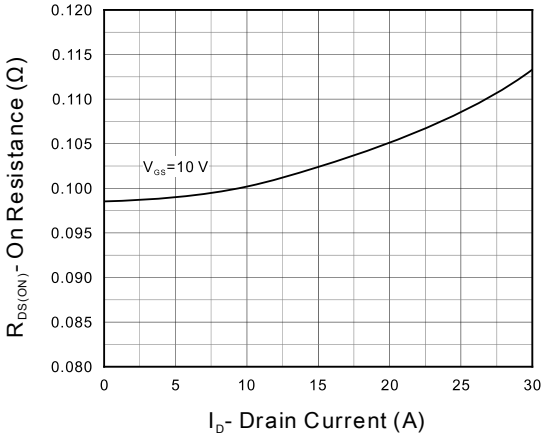


Fig 6. On Resistance

4.Typical Characteristics (Cont.)

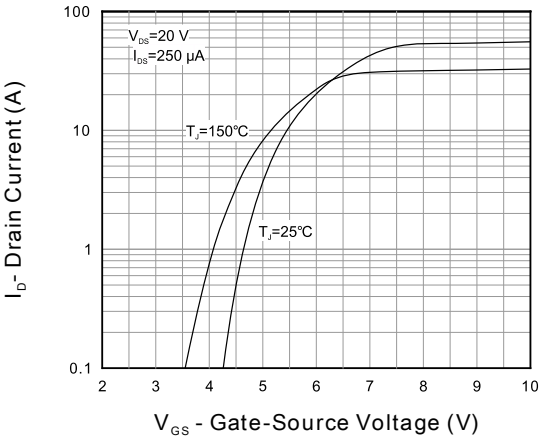


Fig 7. Transfer Characteristics

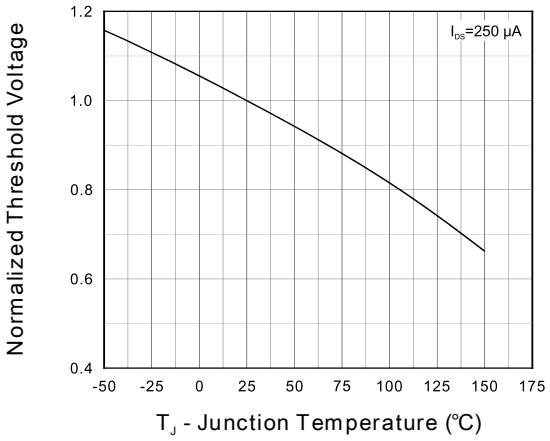


Fig 8. Normalized Threshold Voltage

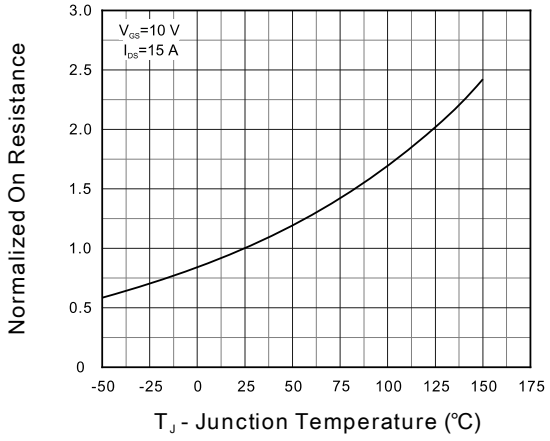


Fig 9. Normalized On Resistance

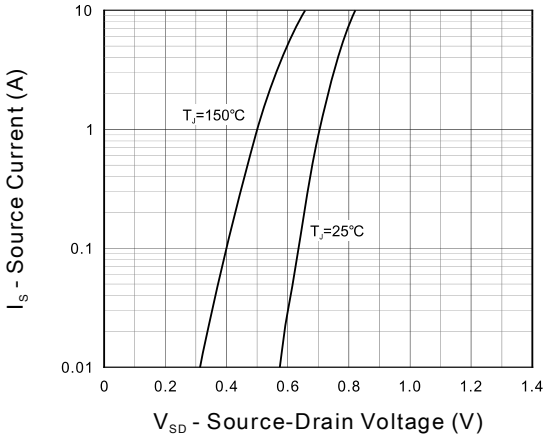


Fig 10. Diode Forward Current

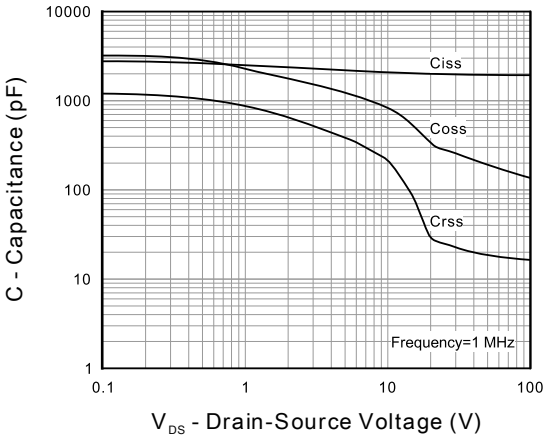


Fig 11. Capacitance

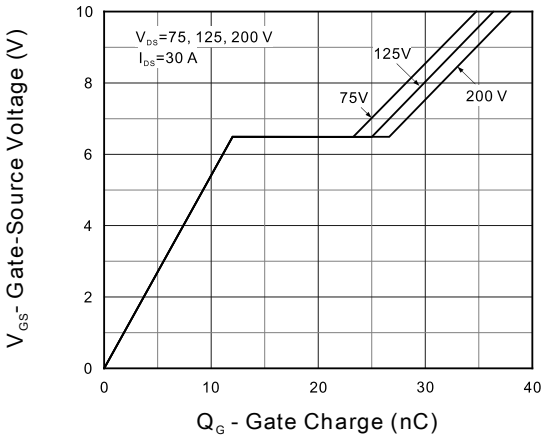
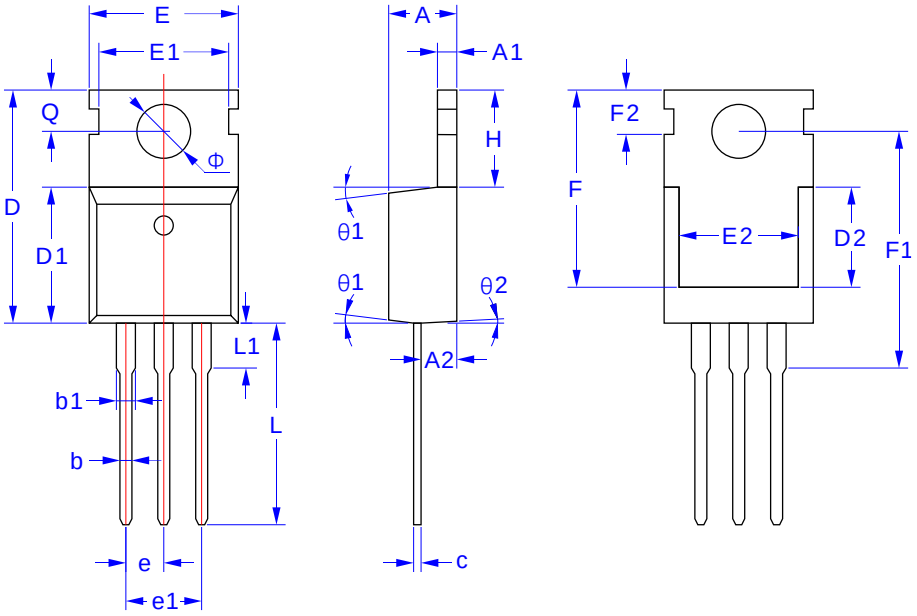


Fig 12. Gate Charge

5. Package Mechanical Data

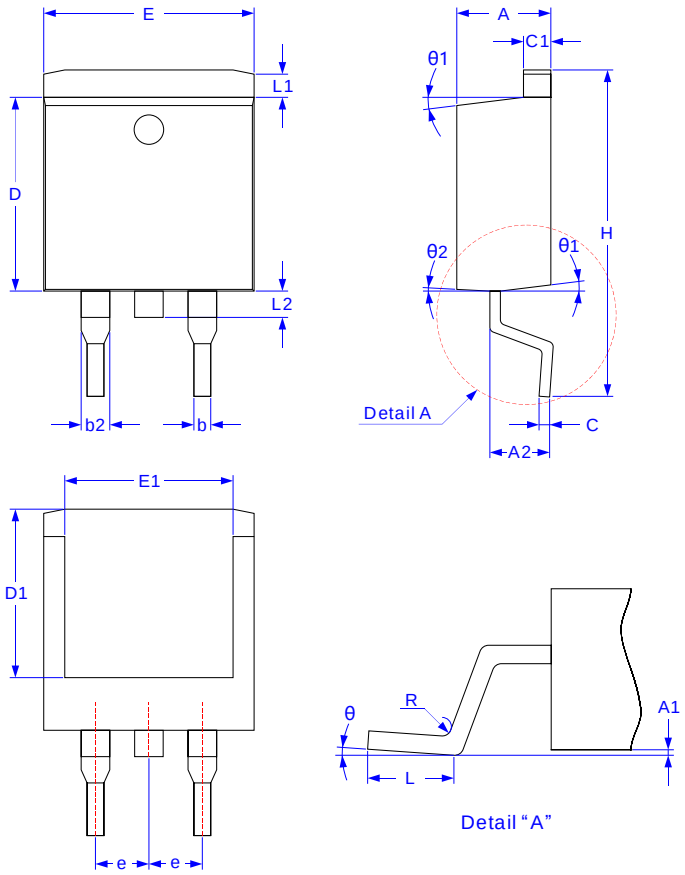
TO-220 Package



Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
A	4.27	4.57	4.87
A1	1.15	1.30	1.45
A2	2.10	2.40	2.70
b	0.70	0.80	1.00
b1	1.17	1.27	1.50
c	0.40	0.50	0.65
D	15.50	15.80	16.10
D1	8.80	9.10	9.40
D2	5.70	6.70	7.00
E	9.70	10.00	10.30
E1	-	8.70	-
E2	7.00	8.00	8.40
e	2.54		
e1	5.08		
F	13.30	13.50	13.70
F1	15.50	15.90	16.30
F2	2.80	3.00	3.20
H	6.00	6.50	6.85
L	12.75	13.50	13.90
L1	-	3.10	3.40
Q	2.60	2.80	3.00
Φ	3.45	3.60	3.75
θ1	4°	7°	10°
θ2	0°	3°	6°

5. Package Mechanical Data

TO-263 Package



Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
A	4.35	4.47	4.60
A1	0.09	0.10	0.11
A2	2.30	2.40	2.70
b	0.70	0.80	1.00
b2	1.25	1.36	1.50
C	0.45	0.50	0.65
C1	1.29	1.30	9.40
D	9.10	9.20	9.30
D1	7.90	8.00	8.10
E	9.85	10.00	10.20
E1	7.90	8.00	8.10
H	15.30	15.50	15.70
e	-	2.54	-
L	2.34	2.54	2.74
L1	1.00	1.10	1.20
L2	1.30	1.40	1.50
R	0.24	0.25	0.26
θ	0°	4°	8°
θ1	4°	7°	10°
θ2	0°	3°	6°