

## N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- Surface-mounted package
- Advanced trench cell design
- $T_J 175^\circ\text{C}$
- MSL1

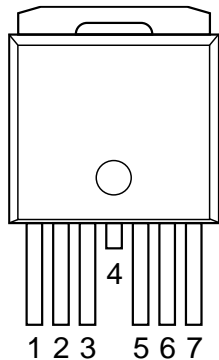
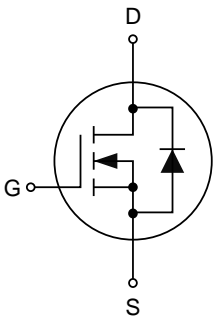
#### 1.2 Applications

- Power Tool appliances
- High power inverter system
- BMS appliances

#### 1.3 Quick reference

- $BV \geq 100\text{ V}$
- $R_{DS(ON)} \leq 1.2\text{ m}\Omega @V_{GS} = 10\text{ V}$
- $P_D \leq 430\text{ W}$
- $R_{DS(ON)} \leq 1.65\text{ m}\Omega @V_{GS} = 6\text{ V}$
- $I_D \leq 420\text{ A}$

### 2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)		
2, 3	Source(S)		
4	Drain(D)		
5, 6, 7	Source(S)		

Top View  
TO263-7L

## 3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>DS</sub>	Drain-Source Voltage	T <sub>C</sub> =25°C	-	100	V
V <sub>GS</sub>	Gate-Source Voltage	T <sub>C</sub> =25°C	-	±20	V
I <sub>D</sub> *	Drain Current (DC)	T <sub>C</sub> =25°C, V <sub>GS</sub> =10 V	-	420	A
		T <sub>C</sub> =100°C, V <sub>GS</sub> =10 V	-	290	A
I <sub>DM</sub> *, **	Drain Current (Pulsed)	T <sub>C</sub> =25°C, V <sub>GS</sub> =10 V	-	1840	A
P <sub>D</sub>	Power Dissipation	T <sub>C</sub> =25°C	-	430	W
I <sub>S</sub>	Continuous-Source Current	T <sub>C</sub> =25°C	-	420	A
E <sub>AS</sub>	Single Pulsed Avalanche Energy	V <sub>DD</sub> =75 V, L=0.3 mH	-	1800	mJ
T <sub>J</sub> , T <sub>stg</sub>	Operating Junction and Storage Temperature Range		-55	175	°C
R <sub>θJA</sub> **	Thermal Resistance- Junction to Ambient		-	40	°C/W
R <sub>θJC</sub> **	Thermal Resistance- Junction to Case		-	0.35	°C/W

Notes:

- \* Surface Mounted on 1 in<sup>2</sup> pad area, t ≤ 10 sec.
- \*\* Pulse width ≤ 300 μs, duty cycle ≤ 2%.
- \*\*\* Limited by bonding wire.

## 4. Marking Information

Product Name	Marking
KJ011N10D7	<div style="background-color: black; color: white; padding: 5px; text-align: center;"> <b>KJ011N10D7</b>  <b>YWWXXX</b>  <b>XXXXXX</b> </div>

## 5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity(pcs)
KJ011N10D7	TO263-7L	13"	24 mm	800

Note: KUAJIEXIN defines "Green" as lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC/JEDEC J-STD-020C)

## 6. Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0 V, I <sub>DS</sub> =250 μA	100	-	-	V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250 μA	2.2	-	3.5	V
I <sub>DSS</sub>	Drain Leakage Current	V <sub>DS</sub> =100 V, V <sub>GS</sub> =0 V	-	-	1	μA
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0 V, V <sub>GS</sub> =±20 V	-	-	±100	nA
R <sub>DS(ON)</sub> <sup>a</sup>	On-State Resistance	V <sub>GS</sub> =10 V, I <sub>DS</sub> =50 A	-	1.0	1.2	mΩ
		V <sub>GS</sub> =6 V, I <sub>DS</sub> =50 A	-	1.2	1.65	mΩ
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5 V, I <sub>DS</sub> =30 A	-	49	-	S
R <sub>g</sub>	Gate Resistance		-	1	2	Ω
<b>Diode Characteristics</b>						
V <sub>SD</sub> <sup>a</sup>	Diode Forward Voltage	V <sub>GS</sub> =0 V, I <sub>SD</sub> =30 A	-	0.8	1.1	V
t <sub>rr</sub>	Reverse Recovery Time	V <sub>DS</sub> =50 V, V <sub>GS</sub> =0 V, I <sub>DS</sub> =30 A, di/dt=100 A/μs	-	113	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge		-	400	-	nC
<b>Dynamic Characteristics<sup>b</sup></b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =50 V, V <sub>GS</sub> =0 V, f=1 MHz	-	15722	-	pF
C <sub>oss</sub>	Output Capacitance		-	2152	-	
C <sub>rss</sub>	Reverse Transfer Capacitance		-	48	-	
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =50 V, V <sub>GEN</sub> =10 V, R <sub>G</sub> =6 Ω, I <sub>DS</sub> =30 A	-	65	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	60	-	
t <sub>d(off)</sub>	Turn-off Delay Time		-	223	-	
t <sub>f</sub>	Turn-off Fall Time		-	104	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =50 V, V <sub>GS</sub> =10 V, I <sub>DS</sub> =30 A	-	275	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	62	-	
Q <sub>gd</sub>	Gate-Drain Charge		-	72	-	

Notes:

- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

## 7. Typical Characteristics

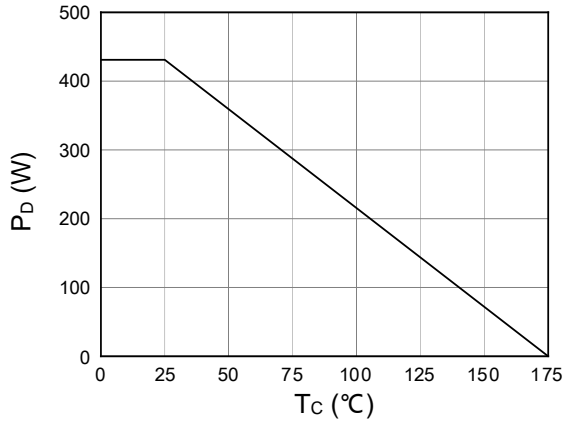


Figure 1. Power Capability

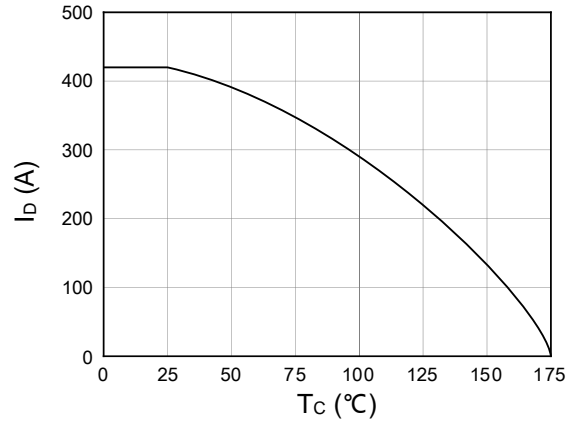


Figure 2. Current Capability

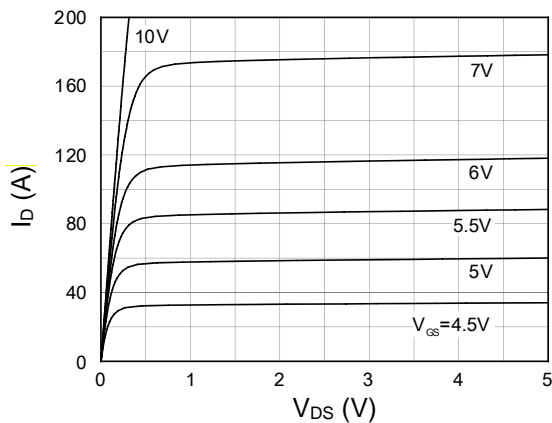


Figure 3. Output characteristics

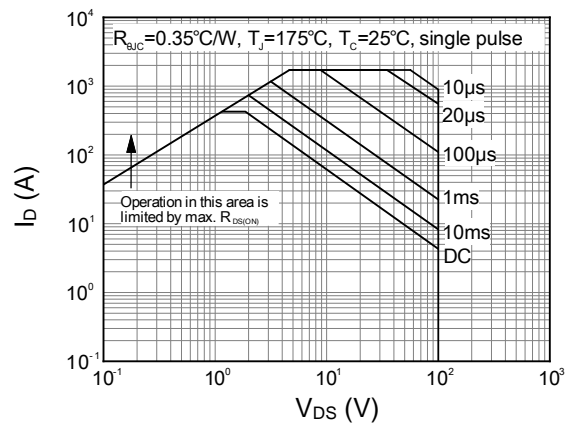


Figure 4. Safe operating area

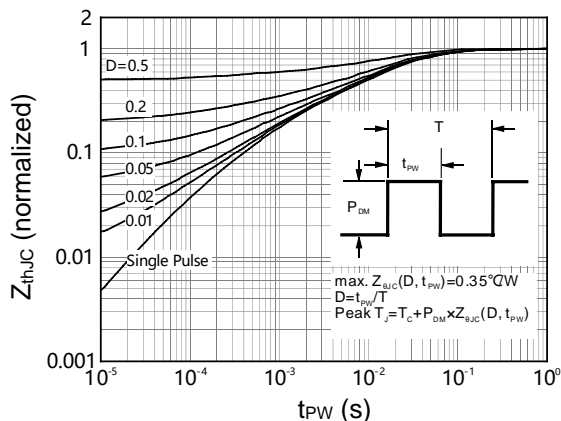


Figure 5. Normalized transient thermal impedance from junction to case

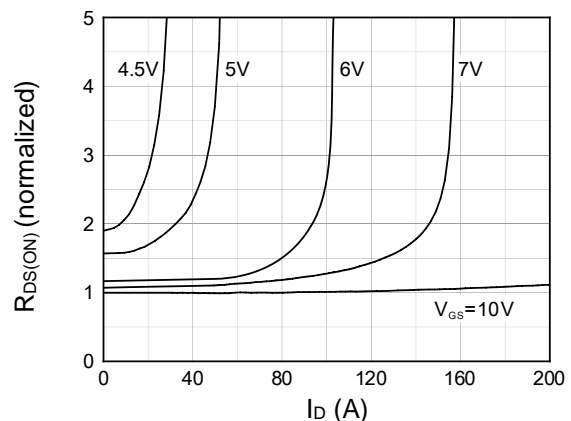
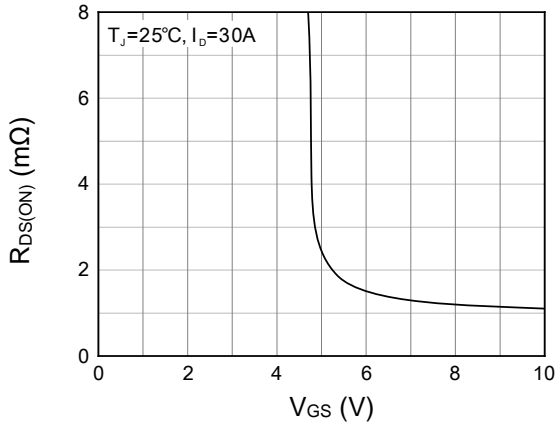
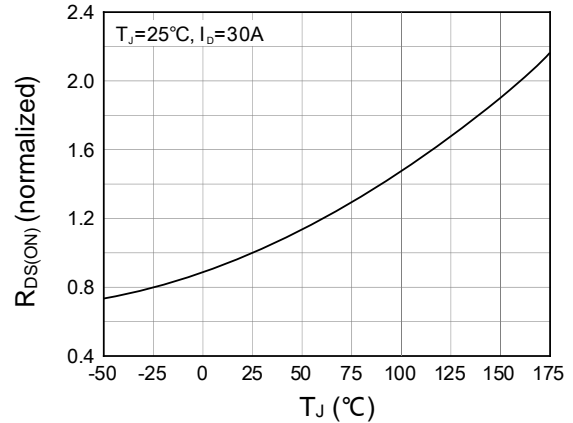


Figure 6. Normalized on-resistance vs drain current

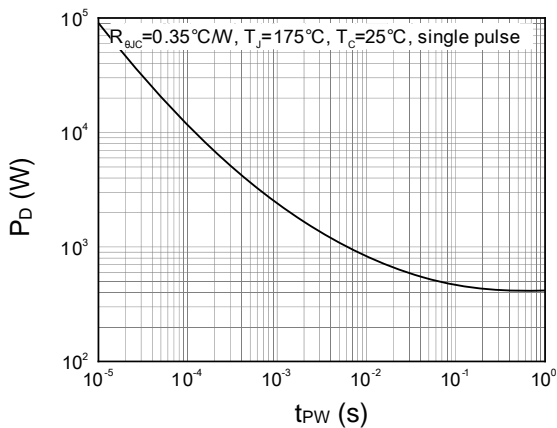
## 7. Typical Characteristics (cont.)



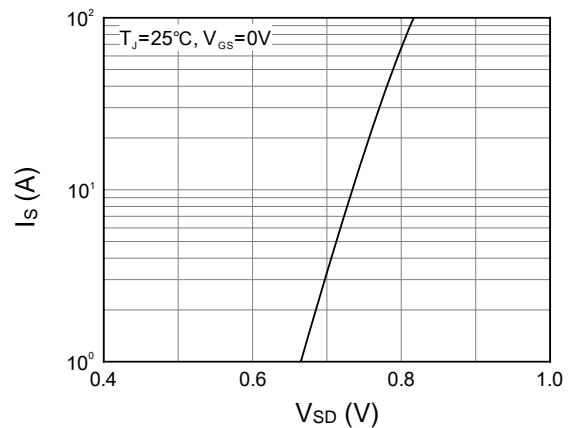
**Figure 7. On-resistance vs gate-source voltage**



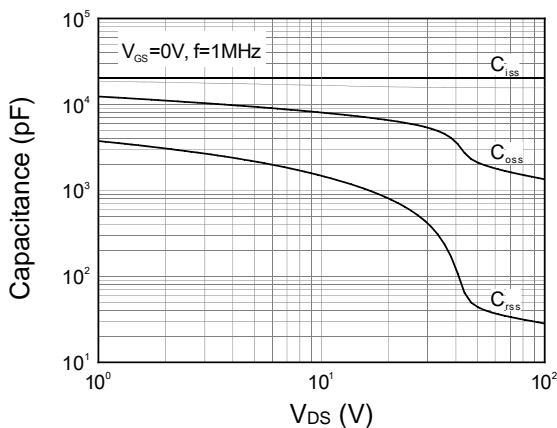
**Figure 8. Normalized on-resistance vs junction temperature**



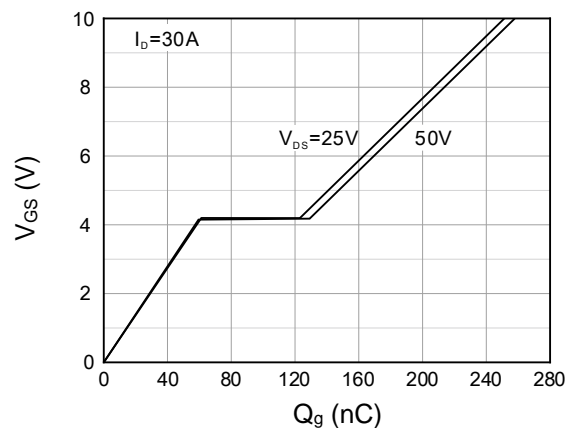
**Figure 9. Single pulse maximum power dissipation**



**Figure 10. Forward characteristics of body diode**



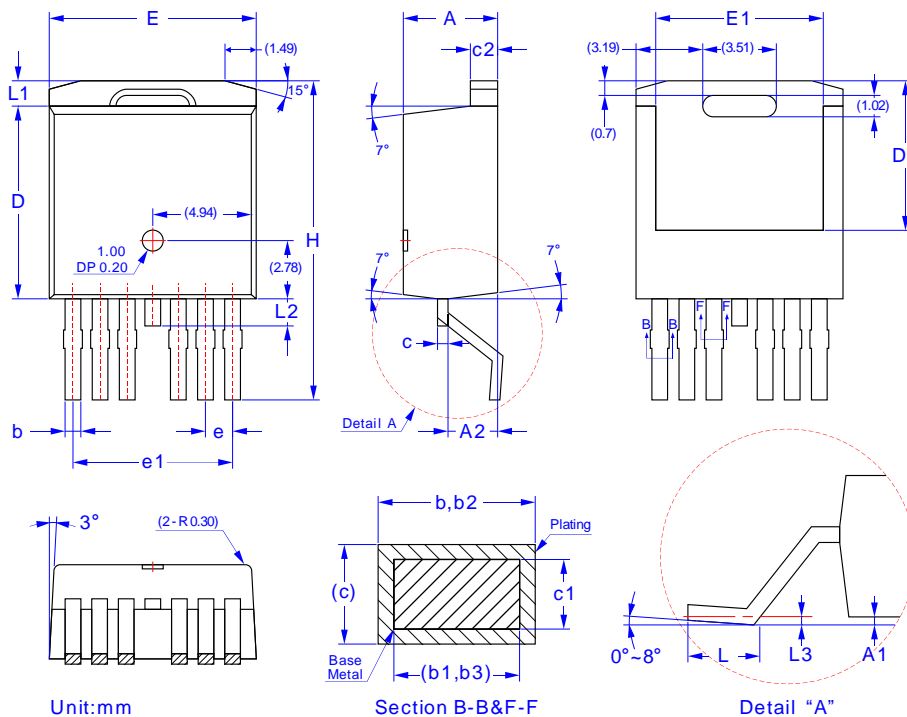
**Figure 11. Capacitance**



**Figure 12. Gate charge**

## 8. Package Dimensions

### T0263-7L Package



Symbol	Dimensions in Millimeters	
	MIN	MAX
A	4.30	4.70
A1	-	0.25
A2	2.20	2.60
b	0.65	0.85
b1	0.65	0.80
b2	0.80	1.00
b3	0.80	0.95
c	0.45	0.60
c1	0.45	0.55
c2	1.25	1.40
D	9.00	9.40
D1	6.86	7.42
E	9.68	10.08
E1	7.70	8.30
e	1.27 BSC	
e1	7.62 BSC	
L	1.78	2.79
L1	-	1.60
L2	-	1.78
L3	0.25 BSC	
H	14.61	15.88