

## N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- Surface-mounted package
- Advanced trench cell design

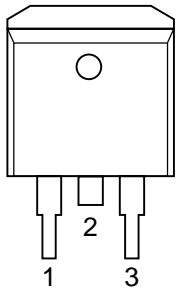
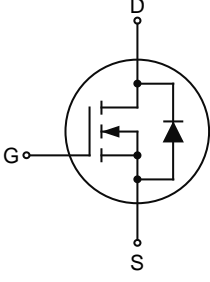
#### 1.2 Applications

- LCD TV appliances
- High power inverter system
- LCDM appliances

#### 1.3 Quick reference

- $BV \geq 40\text{ V}$
- $R_{DS(ON)} \leq 0.95\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- $P_{tot} \leq 178\text{ W}$
- $R_{DS(ON)} \leq 1.55\text{ m}\Omega @ V_{GS} = 6\text{ V}$
- $I_D \leq 120\text{ A}$

### 2. Pin Description

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

Top View  
TO-263

## 3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>DS</sub>	Drain-Source Voltage	T <sub>C</sub> =25°C	40	-	V
V <sub>GS</sub>	Gate-Source Voltage	T <sub>C</sub> =25°C	-	±20	V
I <sub>D</sub> <sup>*,***</sup>	Drain Current (DC)	T <sub>C</sub> =25°C, V <sub>GS</sub> =10 V	-	120	A
		T <sub>C</sub> =100°C, V <sub>GS</sub> =10 V	-	120	A
I <sub>DM</sub> <sup>*,**</sup>	Drain Current (Pulsed)	T <sub>C</sub> =25°C, V <sub>GS</sub> =10 V	-	480	A
P <sub>tot</sub>	Drain power dissipation	T <sub>C</sub> =25°C	-	178	W
T <sub>stg</sub>	Storage Temperature		-55	150	°C
T <sub>J</sub>	Junction Temperature		-	150	°C
I <sub>S</sub>	Continuous-Source Current	T <sub>C</sub> =25°C	-	120	A
E <sub>AS</sub> <sup>*</sup>	Single Pulsed Avalanche Energy	V <sub>DD</sub> =50 V, L=1.0 mH	-	2312	mJ
R <sub>θJA</sub> <sup>*</sup>	Thermal Resistance-Junction to Ambient		-	46	°C/W
R <sub>θJC</sub> <sup>*</sup>	Thermal Resistance-Junction to Case		-	0.7	

### 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
KJ008N04DH	<div style="display: inline-block; background-color: black; color: white; padding: 2px;">008N04H YWWXXX</div> <span style="margin-left: 10px;">YWWXXX: Date Code</span>

## 5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ008N04DH	TO-263	-	-	800	

Note: KUIJIEXIN 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)

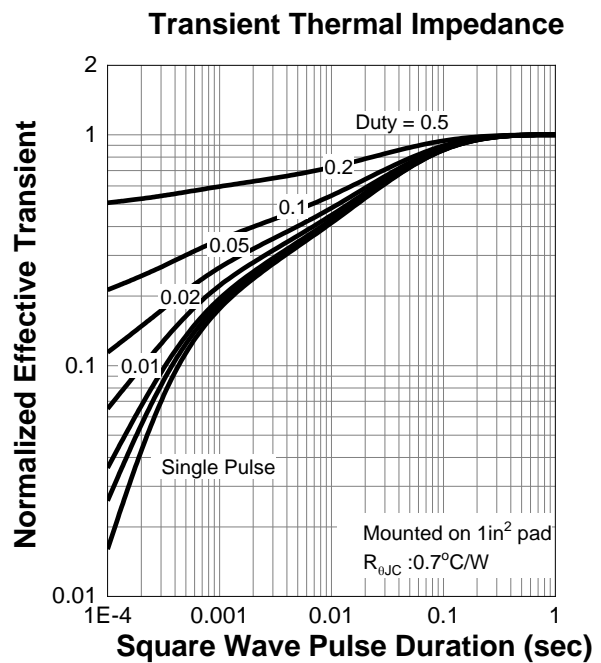
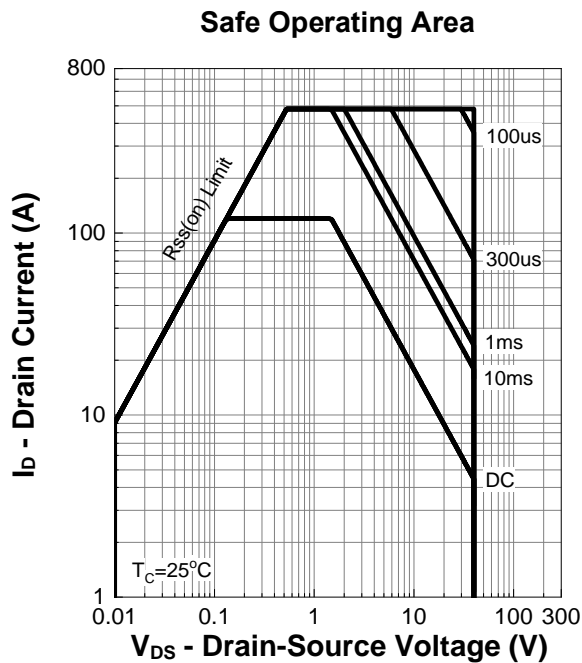
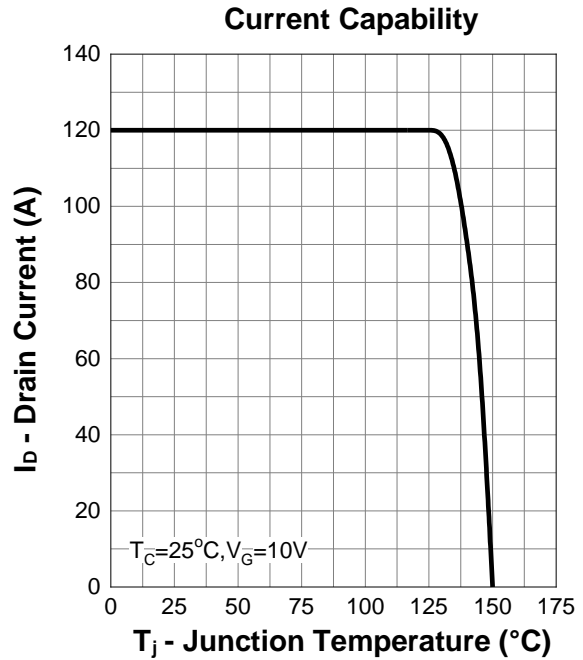
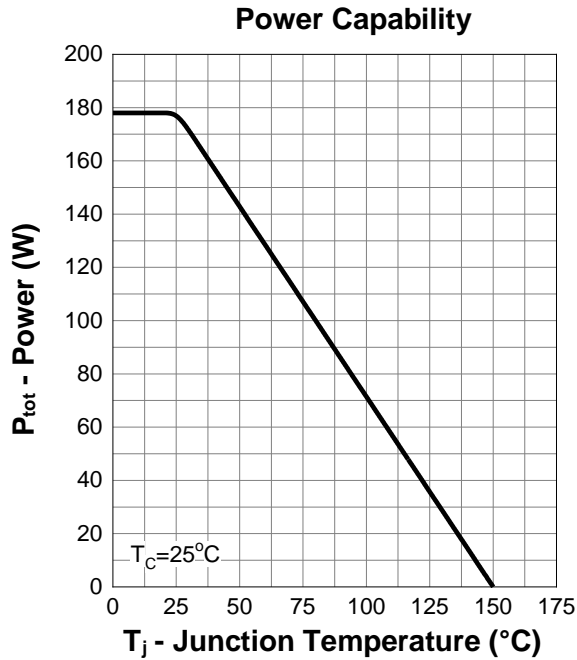
## 6. Electrical Characteristics (T<sub>A</sub>=25°C Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
B <sub>V</sub> DSS	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0 V, I <sub>DS</sub> =250 μA	40	-	-	V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250 μA	2.0	-	4.0	V
I <sub>DSS</sub>	Drain Leakage Current	V <sub>DS</sub> =32 V, V <sub>GS</sub> =0 V	-	-	1	μA
I <sub>GSS</sub>	Gate Leakage Current	V <sub>GS</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> =30 A	-	0.85	0.95	mΩ
		V <sub>GS</sub> =6 V, I <sub>DS</sub> =20 A	-	1.25	1.55	
<b>Diode Characteristics</b>						
V <sub>SD</sub> <sup>a</sup>	Diode Forward Voltage	I <sub>SD</sub> =30 A, V <sub>GS</sub> =0 V	-	-	1.3	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>DS</sub> =30 A, V <sub>GS</sub> =0 V dI <sub>SD</sub> /dt=100 A/μs	-	90	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge		-	130	-	nC
<b>Dynamic Characteristics<sup>b</sup></b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0 V, V <sub>DS</sub> =30 V Frequency=1 MHz	-	8606	-	pF
C <sub>oss</sub>	Output Capacitance		-	3780	-	
C <sub>rss</sub>	Reverse Transfer Capacitance		-	87	-	
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =20 V, V <sub>GEN</sub> =10 V, R <sub>G</sub> =3.9 Ω, R <sub>L</sub> =0.66 Ω, I <sub>DS</sub> =30 A	-	30	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	125	-	
t <sub>d(off)</sub>	Turn-off Delay Time		-	102	-	
t <sub>f</sub>	Turn-off Fall Time		-	117	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =20 V, V <sub>GS</sub> =10 V, I <sub>DS</sub> =30 A	-	141	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	44	-	
Q <sub>gd</sub>	Gate-Drain Charge		-	31	-	

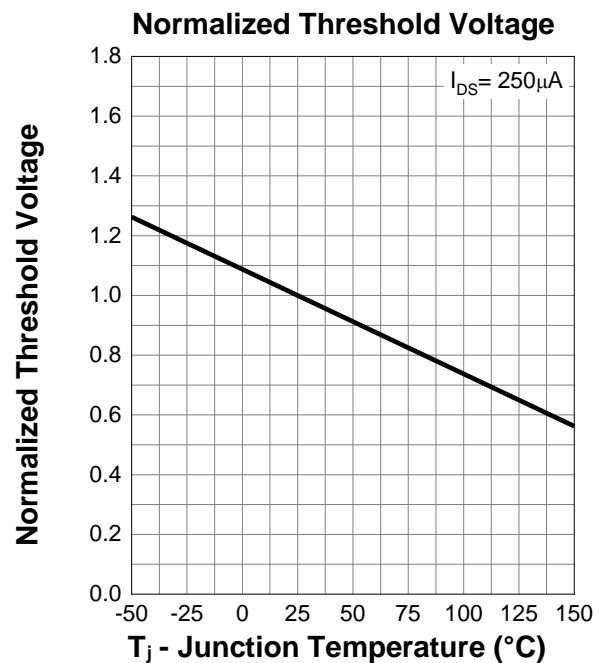
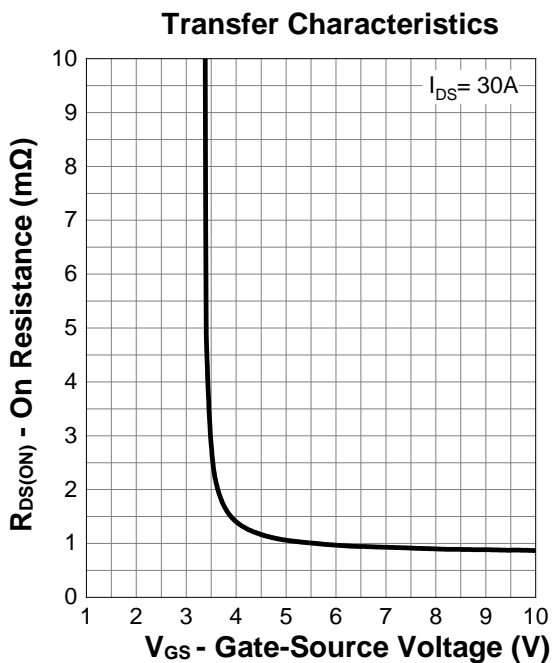
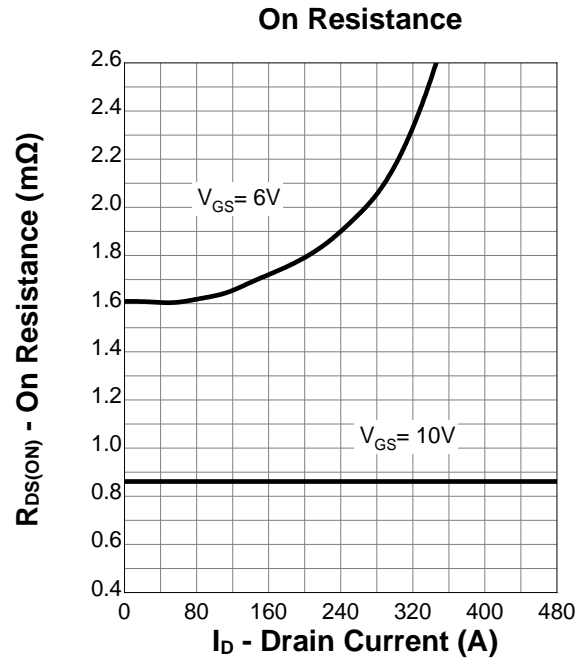
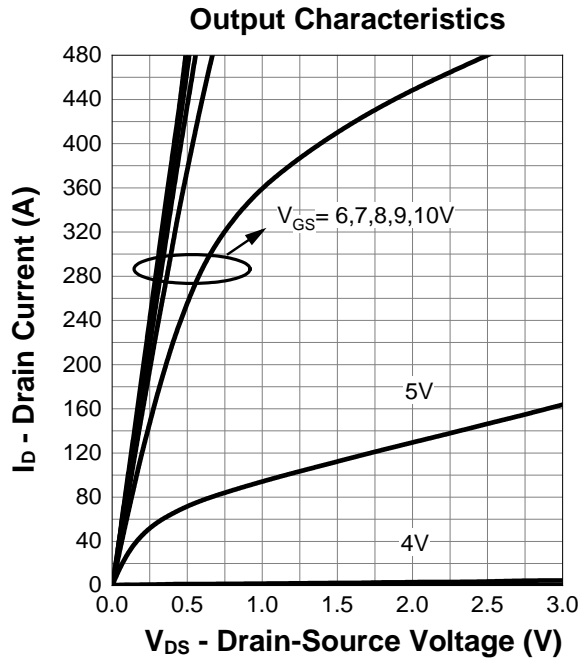
**Notes:**

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

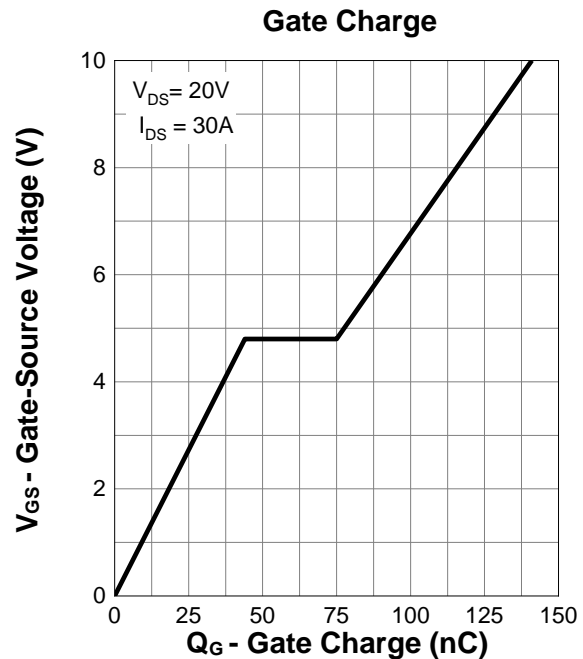
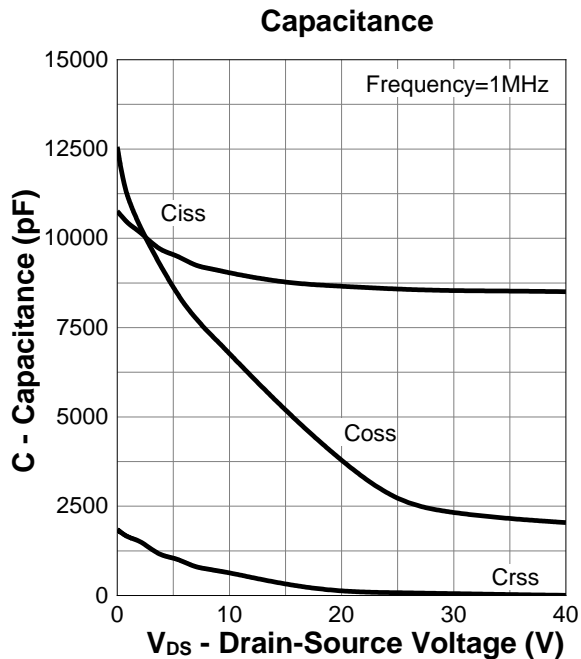
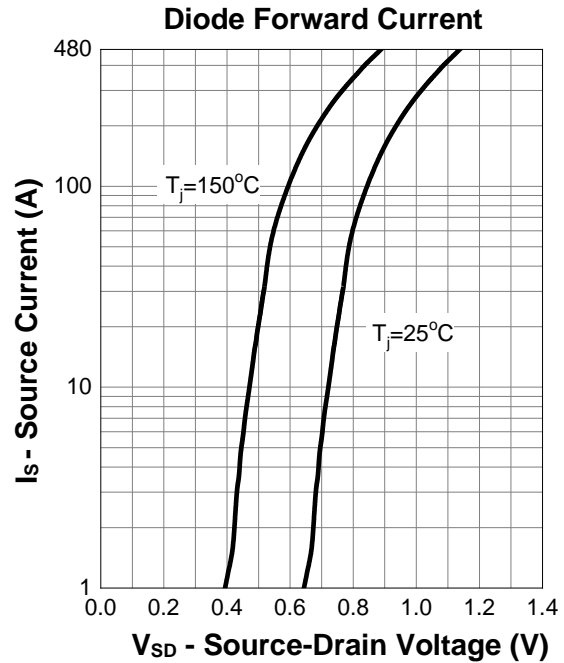
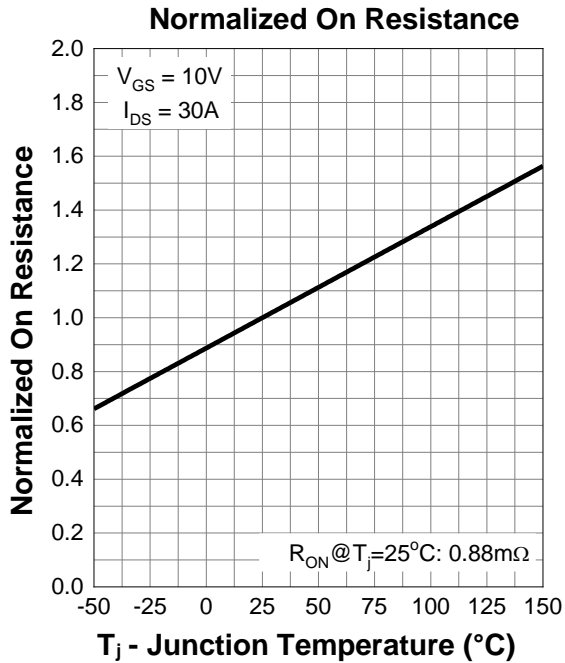
## 7. Typical Characteristics



## 7. Typical Characteristics (Cont.)

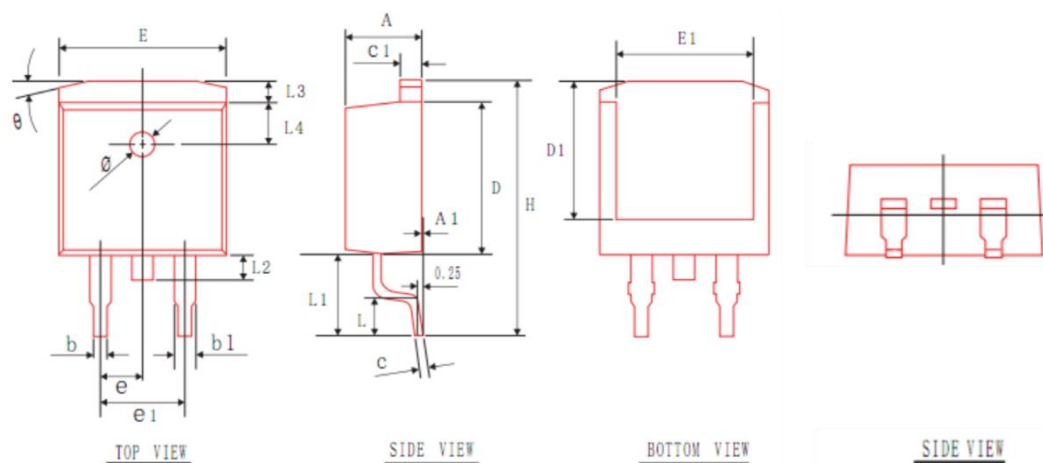


## 7. Typical Characteristics (Cont.)



## 8. Package Dimensions

### TO-263 Package



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	4.30	4.70
A1	0.00	0.25
b	0.70	0.90
b1	1.20	1.40
c	0.40	0.55
c1	1.25	1.35
D	9.00	9.20
D1	8.00	8.20
H	14.90	15.20
E	9.80	10.20
E1	7.85	8.15
e1	4.93	5.23
L	2.00	2.45
L1	4.60	5.00
L2	1.30	1.70
L3	1.15	1.35
L4	2.40	2.60
$\varnothing$	1.50 REF	
e	2.54 BSC	
$\theta$	13° TYP	