

## N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- Surface-mounted package
- Low thermal resistance

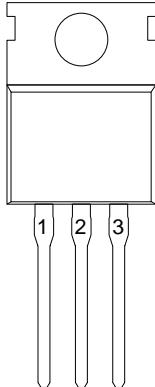
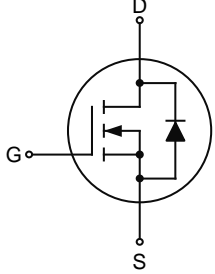
#### 1.2 Applications

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

#### 1.3 Quick reference

- $BV \geq 80\text{ V}$
- $R_{DS(ON)} \leq 1.7\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- $P_{tot} \leq 300\text{ W}$
- $R_{DS(ON)} \leq 2.3\text{ m}\Omega @ V_{GS} = 6\text{ V}$
- $I_D \leq 278\text{ A}$

### 2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 <p>Top View TO-220</p>	
2	Drain(D)		
3	Source(S)		

## 2. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>DS</sub>	Drain-Source Voltage	T <sub>C</sub> =25°C	-	80	V
V <sub>GS</sub>	Gate-Source Voltage	T <sub>C</sub> =25°C	-	±20	V
I <sub>D</sub> *	Drain Current	T <sub>C</sub> =25°C, V <sub>GS</sub> =10 V	-	278	A
		T <sub>C</sub> =100°C, V <sub>GS</sub> =10 V	-	197	A
I <sub>DM</sub> *	Pulsed Drain Current	T <sub>C</sub> =25°C, V <sub>GS</sub> =10 V	-	800	A
P <sub>tot</sub>	Total Power Dissipation	T <sub>C</sub> =25°C	-	300	W
T <sub>J</sub> , T <sub>stg</sub>	Operating Junction and Storage Temperature		-55	175	°C
I <sub>S</sub>	Diode Forward Current	T <sub>C</sub> =25°C	-	278	A
E <sub>AS</sub>	Single Pulsed Avalanche Energy	V <sub>DD</sub> =50 V, L=1.0 mH	-	1512	mJ
R <sub>θJA</sub> **	Thermal Resistance-Junction to Ambient		-	43	°C/W
R <sub>θJC</sub> **	Thermal Resistance-Junction to Case		-	0.5	

Notes:

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

## 4. Marking Information

Product Name	Marking
KJ1R5N08C	<b>KJ1R5N08C</b> <b>XXXXXX</b>

## 5. Ordering Code

Product Name	Package	Packaging	Quantity	Note
KJ1R5N08C	TO-220	Tube	50	

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)

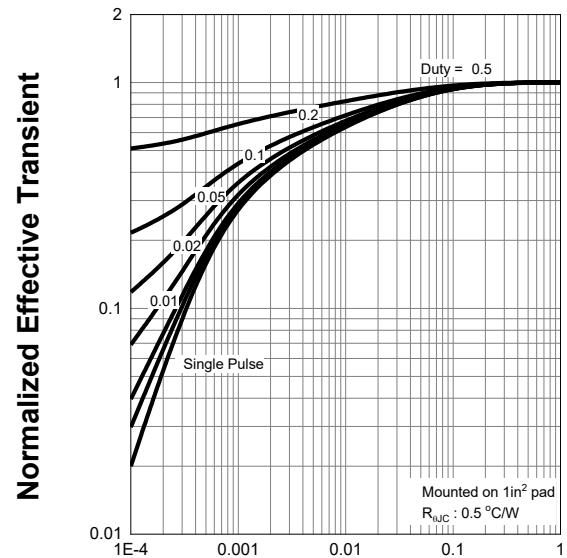
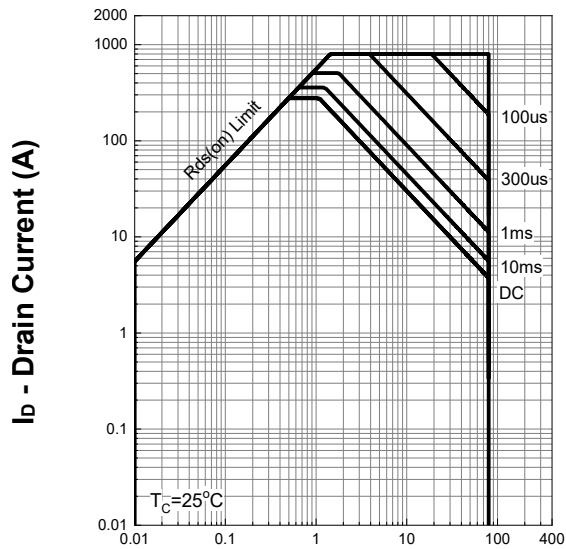
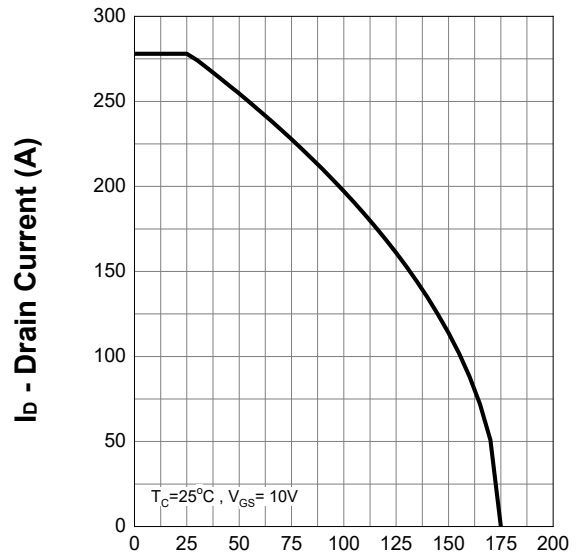
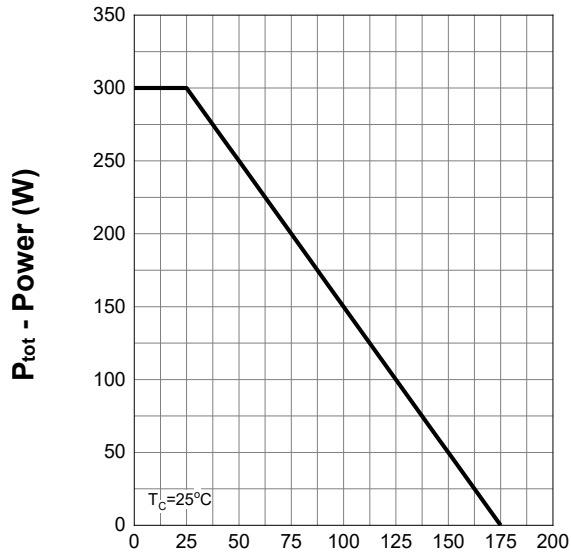
## 6. Electrical Characteristics (T<sub>A</sub>=25°C Unless Otherwise Noted)

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	80	-	-	V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250 μA	2	-	4	V
I <sub>DSS</sub>	Drain Leakage Current	V <sub>DS</sub> =64 V, V <sub>GS</sub> =0 V	-	-	1	μA
I <sub>GSS</sub>	Gate Leakage Current	V <sub>GS</sub> =±20 V, V <sub>DS</sub> =0 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	-	1.5	1.7	mΩ
		V <sub>GS</sub> =6 V, I <sub>DS</sub> =30 A	-	2.1	2.3	
<b>Diode Characteristics</b>						
V <sub>SD</sub> <sup>a</sup>	Diode Forward Voltage	I <sub>SD</sub> =50 A, V <sub>GS</sub> =0 V	-	-	1.3	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>SD</sub> =50 A, V <sub>GS</sub> =0 V, dI <sub>SD</sub> /dt=100 A/μs	-	54	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge		-	78	-	nC
<b>Dynamic Characteristics<sup>b</sup></b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0 V, V <sub>DS</sub> =40 V, Frequency=1 MHz	-	7971	-	pF
C <sub>oss</sub>	Output Capacitance		-	1112	-	
C <sub>rss</sub>	Reverse Transfer Capacitance		-	53	-	
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =40 V, V <sub>GEN</sub> =10 V, R <sub>G</sub> =3.9 Ω, R <sub>L</sub> =0.8 Ω, I <sub>DS</sub> =50 A	-	24	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	57	-	
t <sub>d(off)</sub>	Turn-off Delay Time		-	94	-	
t <sub>f</sub>	Turn-off Fall Time		-	56	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =40 V, V <sub>GS</sub> =10 V, I <sub>DS</sub> =50 A	-	141	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	40	-	
Q <sub>gd</sub>	Gate-Drain Charge		-	34	-	

Notes:

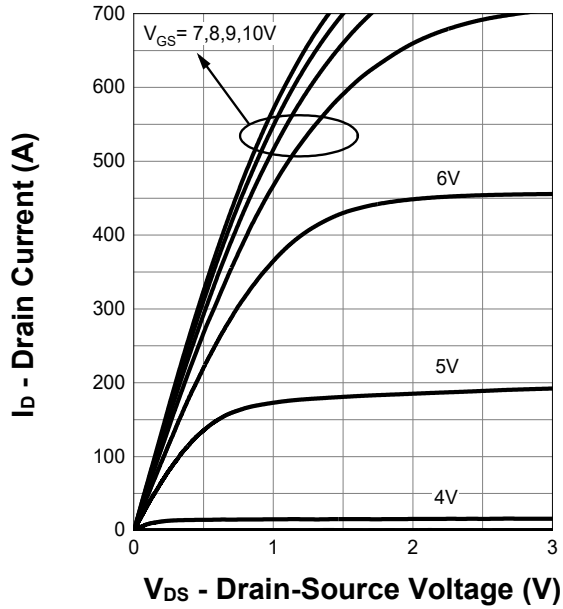
- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

## 7. Typical Characteristics

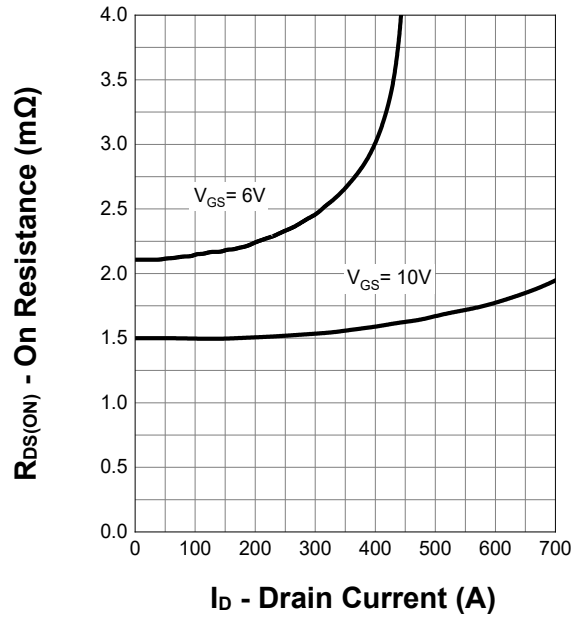


## 7. Typical Characteristics (cont.)

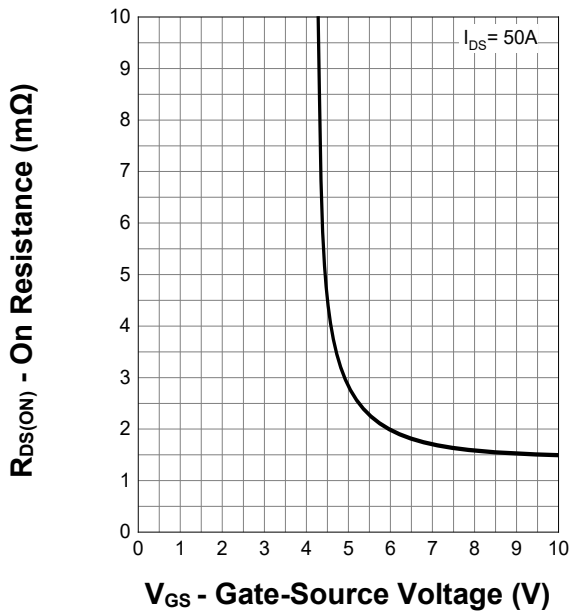
**Output Characteristics**



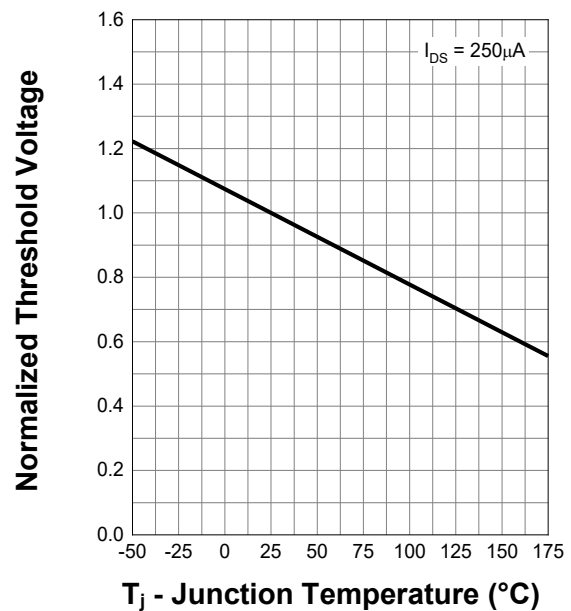
**On Resistance**



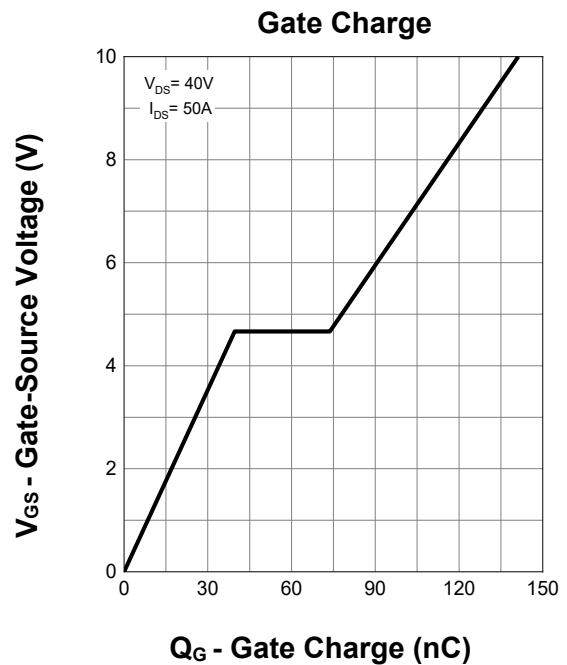
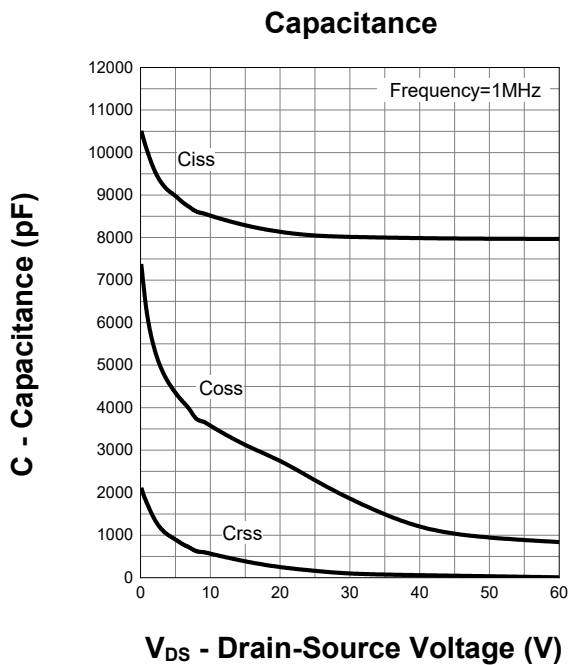
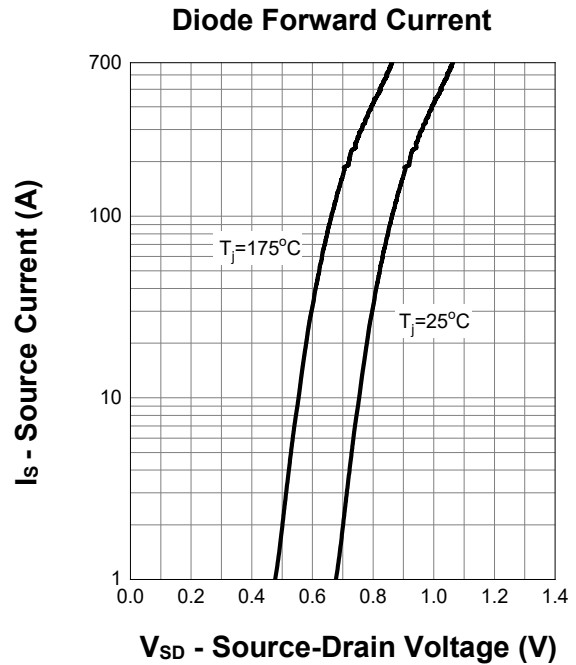
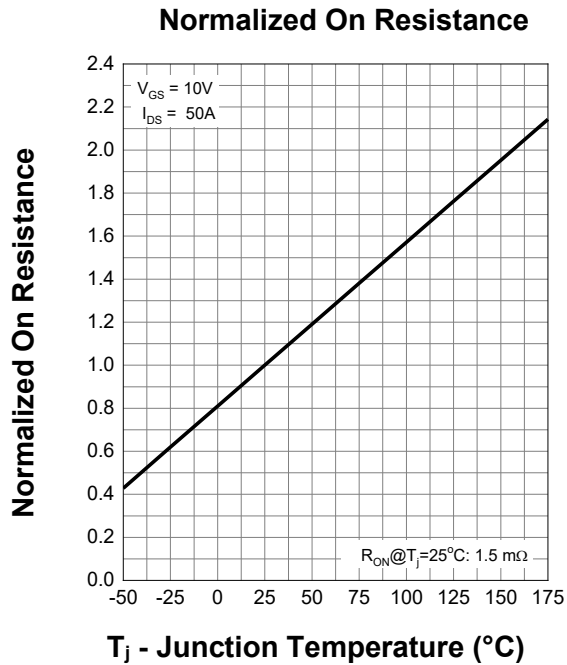
**Transfer Characteristics**



**Normalized Threshold Voltage**

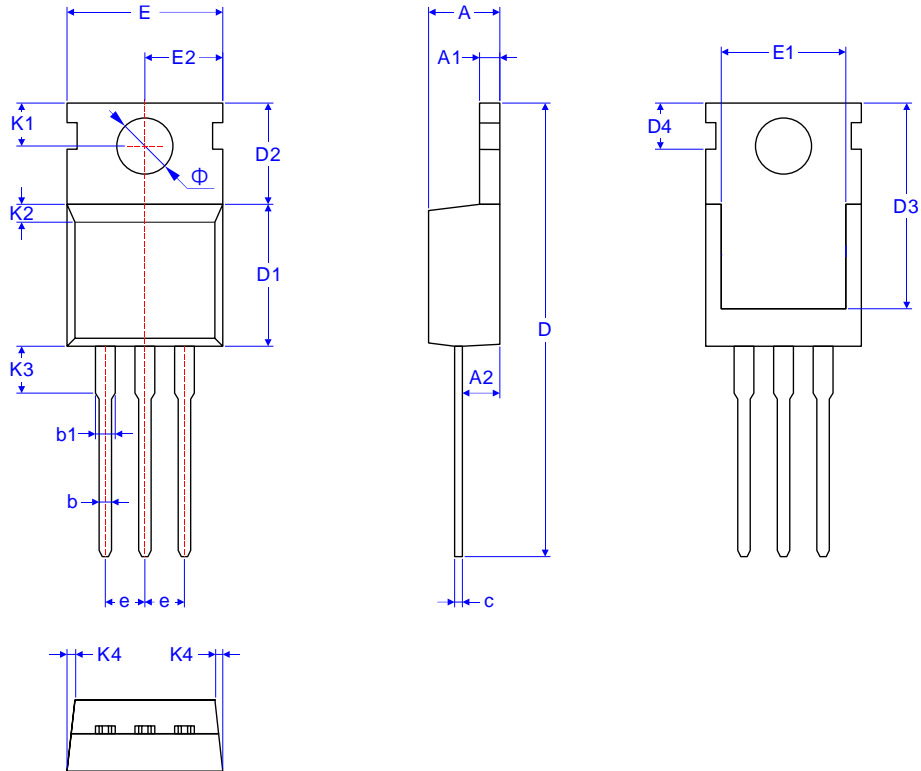


## 7. Typical Characteristics (cont.)



## 8. Package Dimensions

### TO-220 Package



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	4.35	4.65
A1	1.15	1.45
A2	2.20	2.60
b	0.65	0.95
b1	1.15	1.45
c	0.35	0.65
D	28.68	29.08
D1	9.00	9.40
D2	6.40	6.80
D3	13.00	13.40
D4	2.85	3.15
E	9.80	10.20
E1	7.80	8.20
E2	4.80	5.20
e	TYP 2.54	
K1	2.65	2.95
K2	0.15	0.35
K3	2.80	3.20
K4	0.15	0.35
Φ	3.45	3.75