

## N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- Surface-mounted package
- Low gate charge

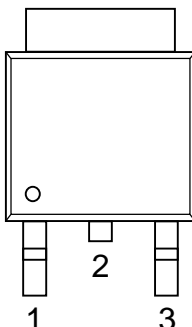
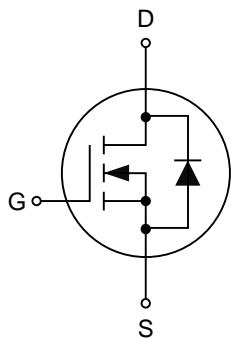
#### 1.2 Applications

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

#### 1.3 Quick reference

- $BV \geq 150\text{ V}$
- $R_{DS(ON)} \leq 52\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- $P_{tot} \leq 50\text{ W}$
- $R_{DS(ON)} \leq 62\text{ m}\Omega @ V_{GS} = 6\text{ V}$
- $I_D \leq 21\text{ A}$

### 2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 <p>Top View TO-252</p>	
2	Drain(D)		
3	Source(S)		

## 3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>DS</sub>	Drain-Source Voltage	T <sub>C</sub> =25°C	-	150	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	-	21	A
		T <sub>C</sub> =100°C, V <sub>GS</sub> =10 V	-	13.8	A
I <sub>DM</sub> *	Drain Current (Pulsed)	T <sub>C</sub> =25°C, V <sub>GS</sub> =10 V	-	84	A
P <sub>tot</sub>	Drain power dissipation	T <sub>C</sub> =25°C	-	50	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	-	21	A
R <sub>θJA</sub> **	Thermal Resistance-Junction to Ambient		-	50	°C/W
R <sub>θJC</sub> **	Thermal Resistance-Junction to Case		-	2.5	

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
KJ20N15K	<div style="display: inline-block; background-color: black; color: white; padding: 2px;">20N15 YWWXXX</div> YWWXXX: Date Code

## 5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ20N15K	TO-252	-	-	2500	

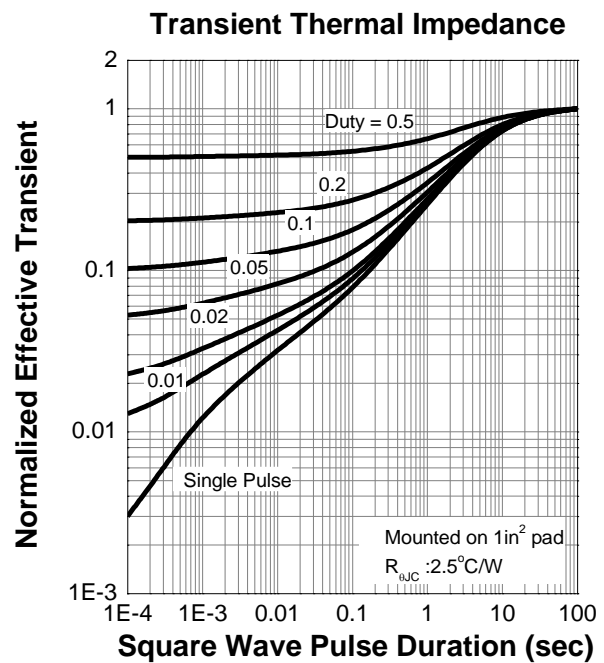
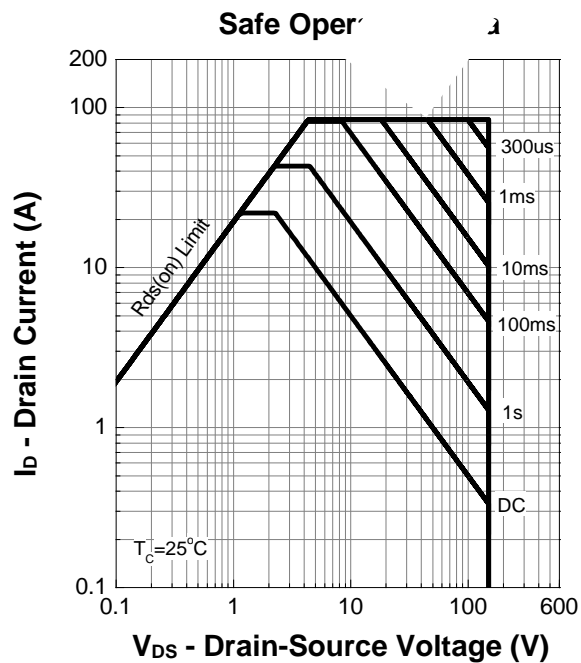
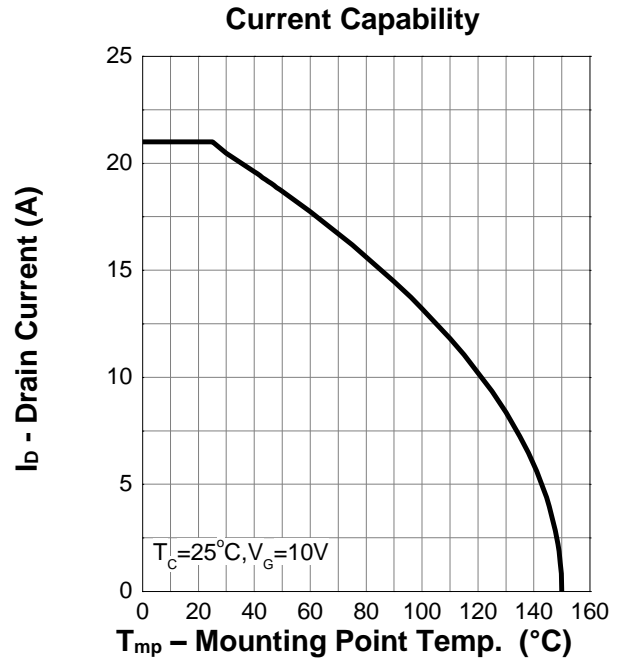
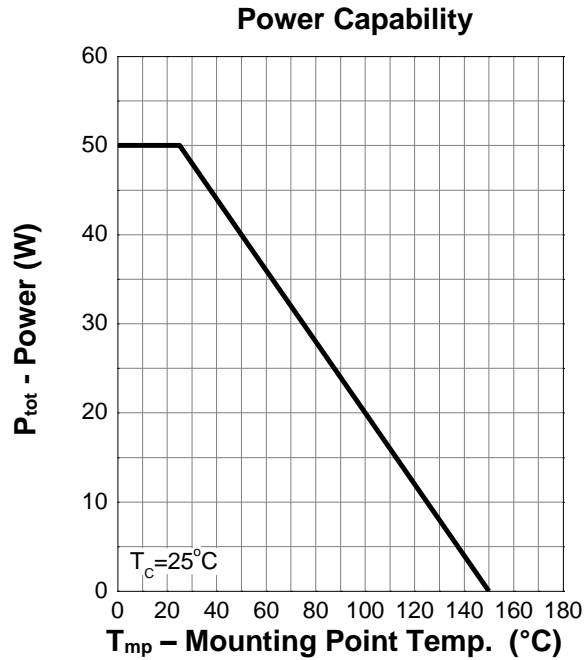
## 6. Electrical Characteristics (T<sub>A</sub>=25°C Unless Otherwise Noted)

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	150	-	-	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> =120 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> =10 A	-	42	52	mΩ
		V <sub>GS</sub> =6 V, I <sub>DS</sub> =5 A	-	48	62	
<b>Diode Characteristics</b>						
V <sub>SD</sub> <sup>a</sup>	Diode Forward Voltage	I <sub>SD</sub> =10 A, V <sub>GS</sub> =0 V	-	-	1.3	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>DS</sub> =4 A, V <sub>GS</sub> =0 V, dI <sub>SD</sub> /dt=100 A/μs	-	72	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge		-	143	-	μC
<b>Dynamic Characteristics<sup>b</sup></b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0 V, V <sub>DS</sub> =75 V, Frequency=1 MHz	-	1232	-	pF
C <sub>oss</sub>	Output Capacitance		-	81	-	
C <sub>rss</sub>	Reverse Transfer Capacitance		-	32	-	
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =75 V, V <sub>GEN</sub> =10 V, R <sub>G</sub> =4.5 Ω, R <sub>L</sub> =7.5 Ω, I <sub>DS</sub> =10 A	-	11	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	40	-	
t <sub>d(off)</sub>	Turn-off Delay Time		-	19	-	
t <sub>f</sub>	Turn-off Fall Time		-	32	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =75 V, V <sub>GS</sub> =10 V, I <sub>DS</sub> =10 A	-	25.8	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	8	-	
Q <sub>gd</sub>	Gate-Drain Charge		-	8.3	-	

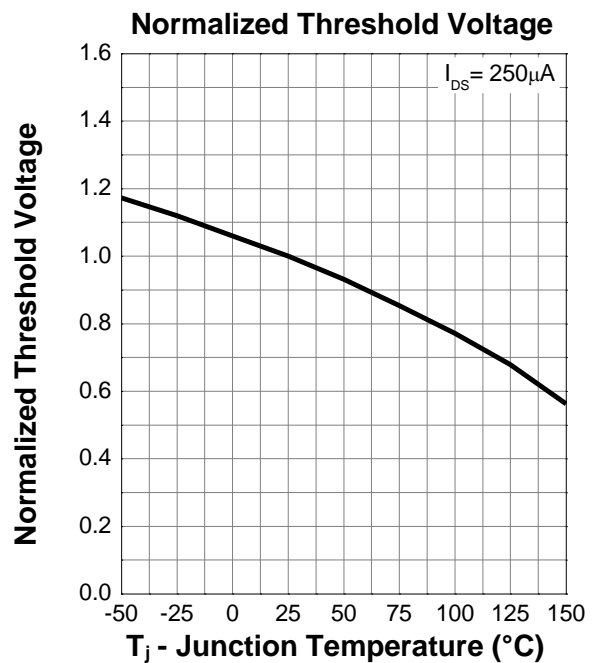
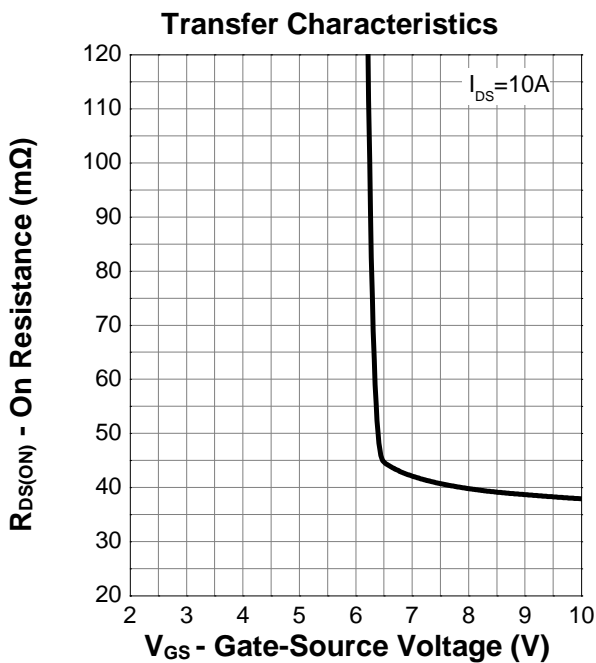
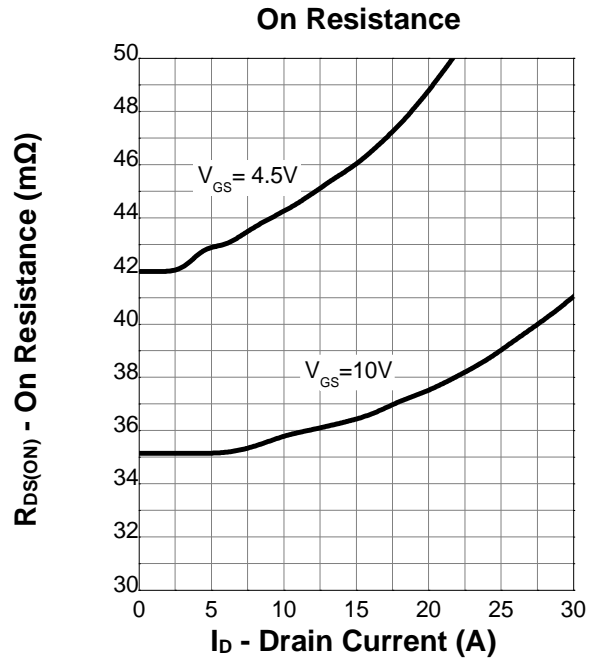
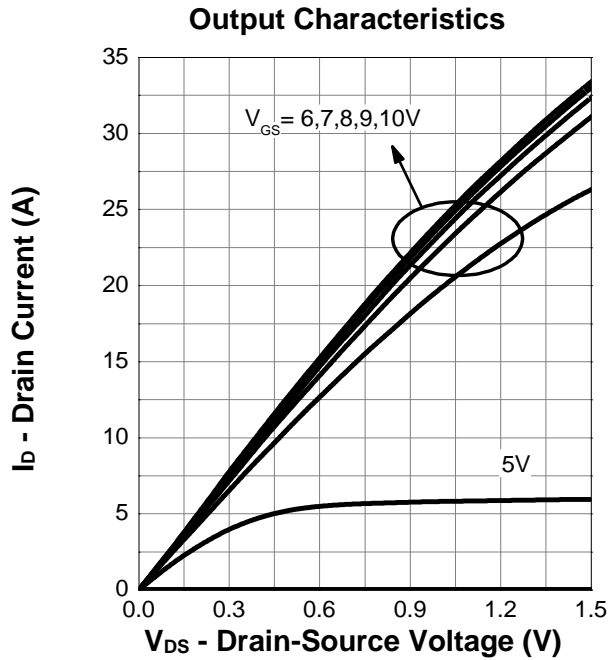
Notes:

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

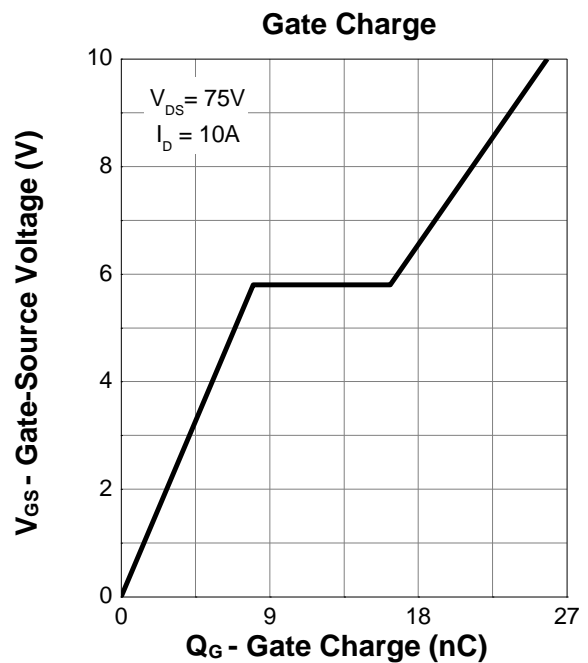
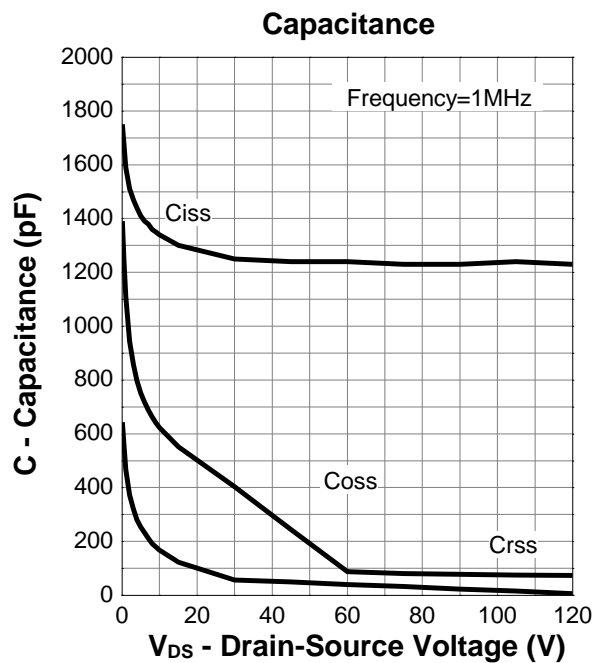
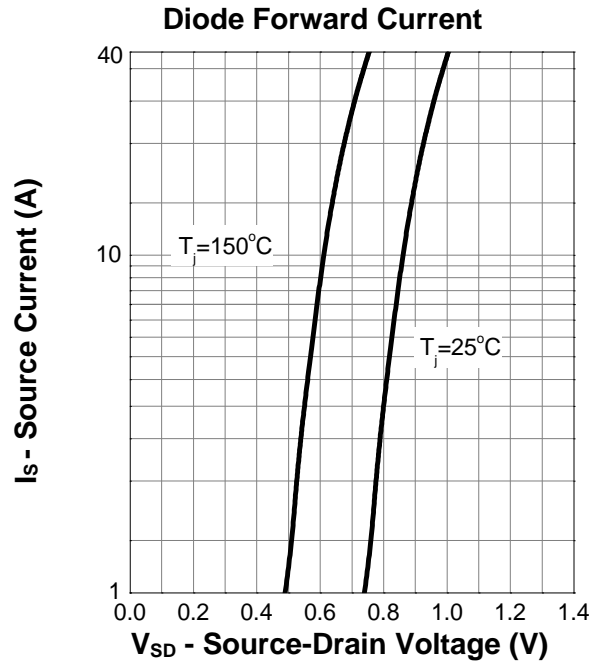
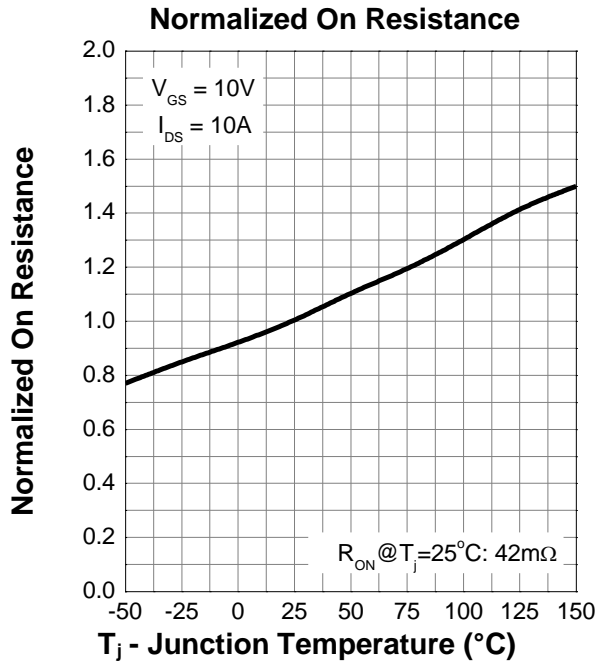
## 7. Typical Characteristics



## 7. Typical Characteristics (cont.)

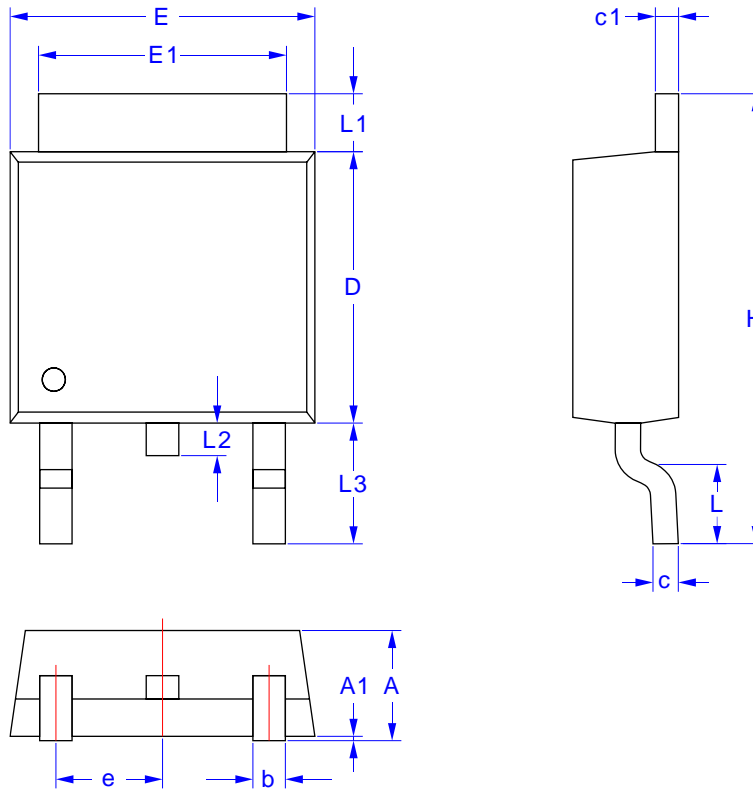


## 7. Typical Characteristics (cont.)



## 8. Package Dimensions

### TO-252 Package



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	2.19	2.38
A1	0.02	0.13
D	5.30	6.40
E	6.35	6.80
E1	5.20	5.50
c	0.40	0.60
c1	0.40	0.60
b	0.55	0.85
e	2.30 BCS	
L	1.00	1.80
L1	0.70	1.80
L2	0.70 BCS	
L3	2.40	2.80
H	9.20	10.40