

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ Low gate charge

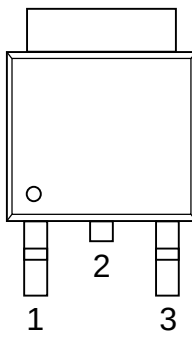
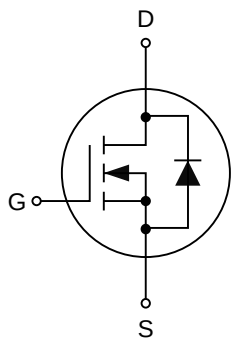
1.2 Applications

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

1.3 Quick reference

- ☒ $BV \geq 150\text{ V}$
- ☒ $R_{DS(ON)} \leq 40\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- ☒ $P_{tot} \leq 50\text{ W}$
- ☒ $R_{DS(ON)} \leq 46\text{ m}\Omega @ V_{GS} = 6\text{ V}$
- ☒ $I_D \leq 21\text{ A}$

2. Pin Description

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

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_C=25^{\circ}\text{C}$	-	150	V
V_{GS}	Gate-Source Voltage	$T_C=25^{\circ}\text{C}$	-	± 20	V
I_D^*	Drain Current	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	21	A
		$T_C=100^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	13.8	A
I_{DM}^*	Drain Current (Pulsed)	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	84	A
P_{tot}	Drain power dissipation	$T_C=25^{\circ}\text{C}$	-	50	W
I_S	Continuous-Source Current	$T_C=25^{\circ}\text{C}$	-	21	A
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	150	$^{\circ}\text{C}$
$R_{\theta JA}^{**}$	Thermal Resistance-Junction to Ambient		-	50	$^{\circ}\text{C/W}$
$R_{\theta JC}^{**}$	Thermal Resistance-Junction to Case		-	2.5	

Notes:

- * Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- ** Surface mounted on 1 in^2 pad area, $t \leq 10\text{ sec}$.
- *** Limited by bonding wire.

4. Marking Information

Product Name	Marking
KJ20N15K	20N15 YWWXXX YWWXXX: Date Code

5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ20N15K	TO-252	13"	16 mm	2500

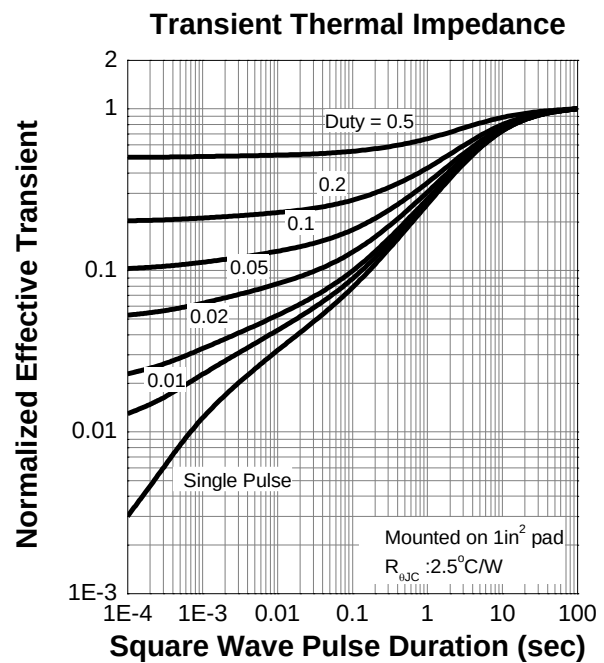
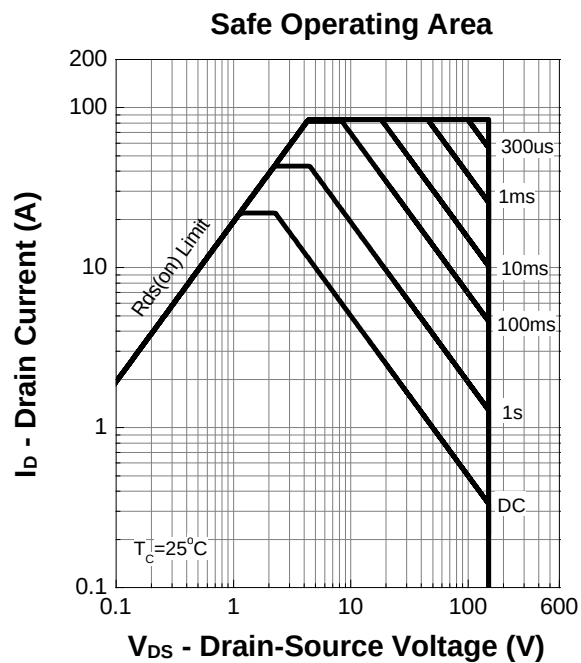
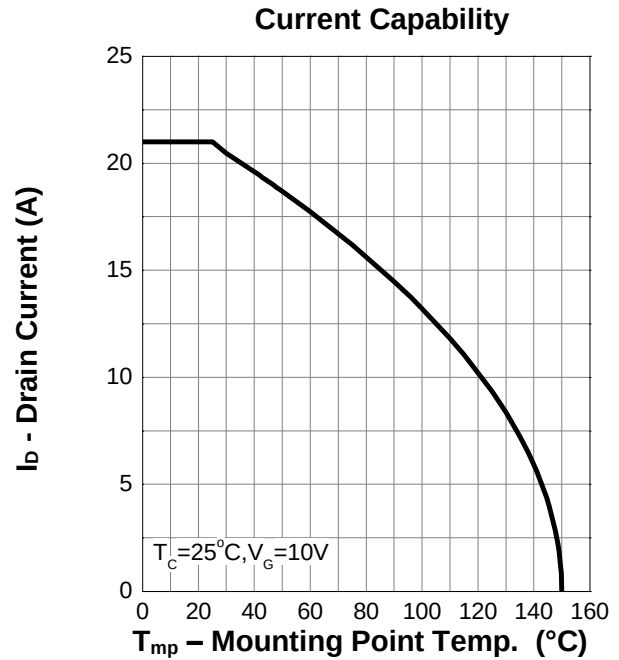
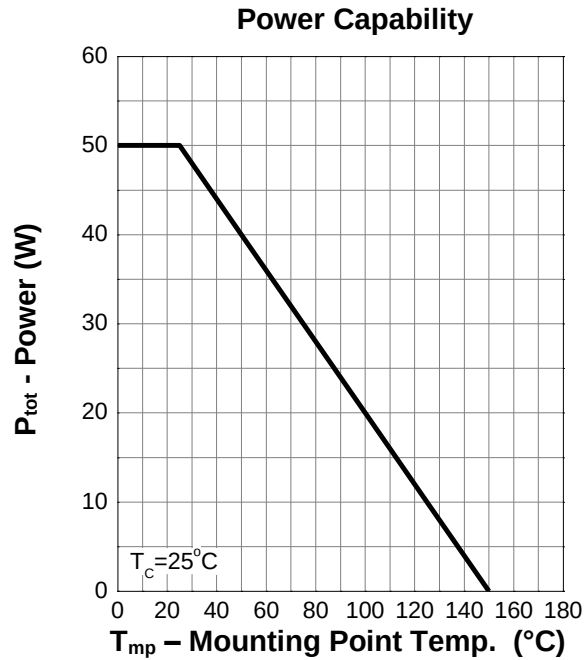
6. Electrical Characteristics (T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _{DS} =250 μA	150	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250 μA	2.0	-	4.0	V
I _{DSS}	Drain Leakage Current	V _{DS} =120 V, V _{GS} =0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{DS} =0 V, V _{GS} =±20 V	-	-	±100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} =10 V, I _{DS} =10 A	-	33	40	mΩ
		V _{GS} =6 V, I _{DS} =5 A	-	40	46	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =10 A, V _{GS} =0 V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _{DS} =4 A, V _{GS} =0 V, dI _{SD} /dt=100 A/μs	-	72	-	ns
Q _{rr}	Reverse Recovery Charge		-	143	-	μC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =75 V, Frequency=1 MHz	-	1232	-	pF
C _{oss}	Output Capacitance		-	81	-	
C _{rss}	Reverse Transfer Capacitance		-	32	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =75 V, V _{GEN} =10 V, R _G =4.5 Ω, R _L =7.5 Ω, I _{DS} =10 A	-	11	-	ns
t _r	Turn-on Rise Time		-	40	-	
t _{d(off)}	Turn-off Delay Time		-	19	-	
t _f	Turn-off Fall Time		-	32	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =75 V, V _{GS} =10 V, I _{DS} =10 A	-	25.8	-	nC
Q _{gs}	Gate-Source Charge		-	8	-	
Q _{gd}	Gate-Drain Charge		-	8.3	-	

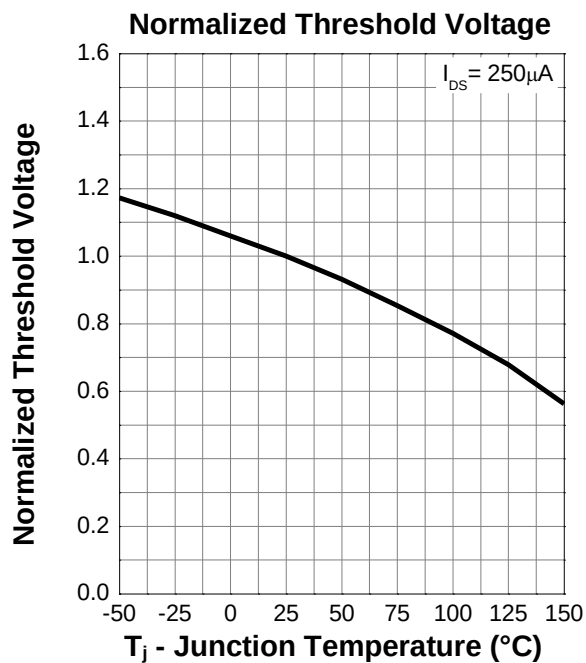
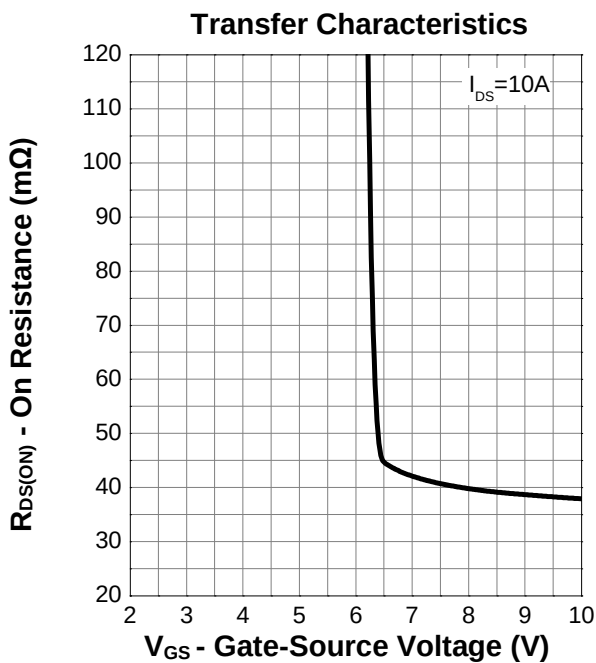
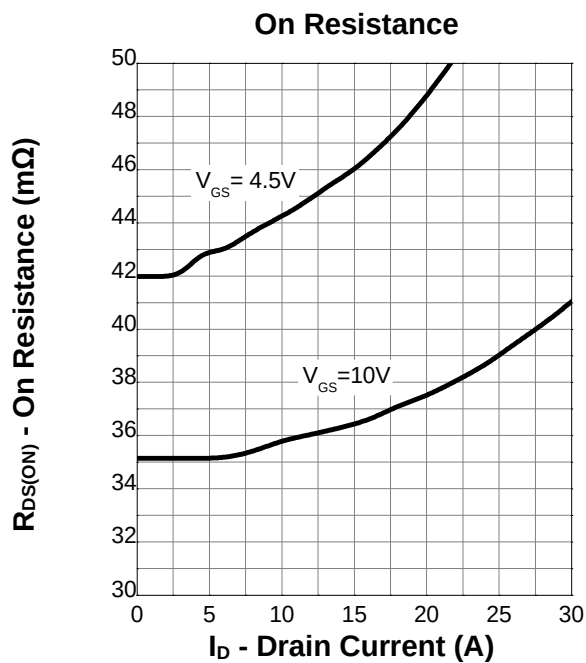
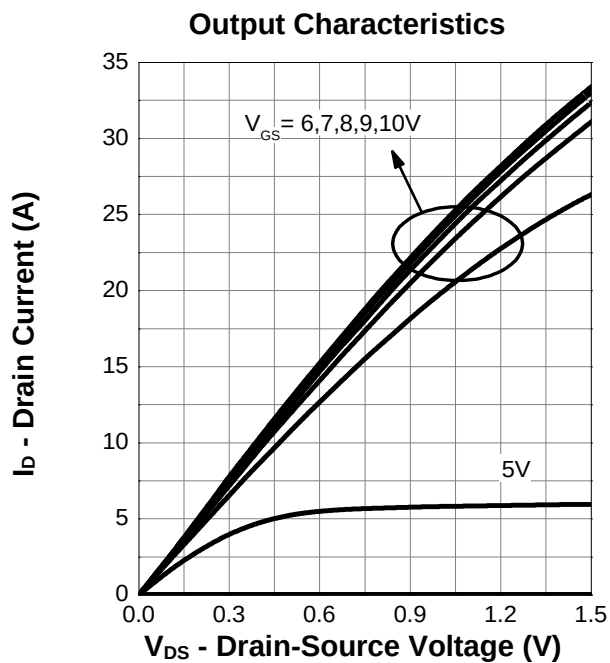
Notes:

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

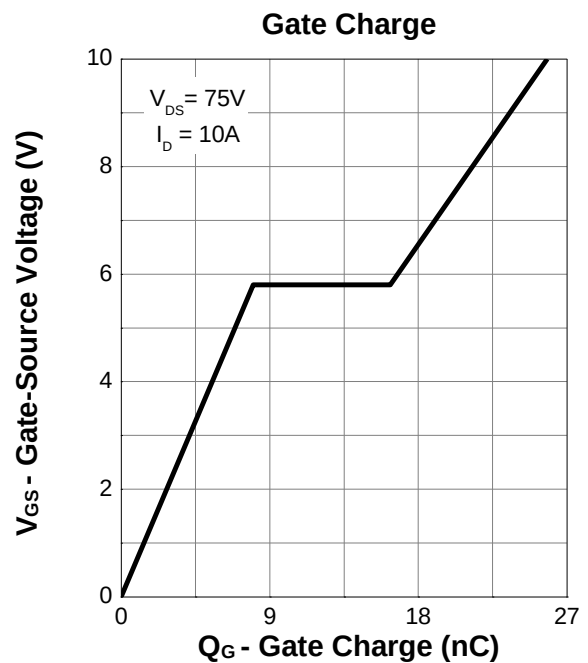
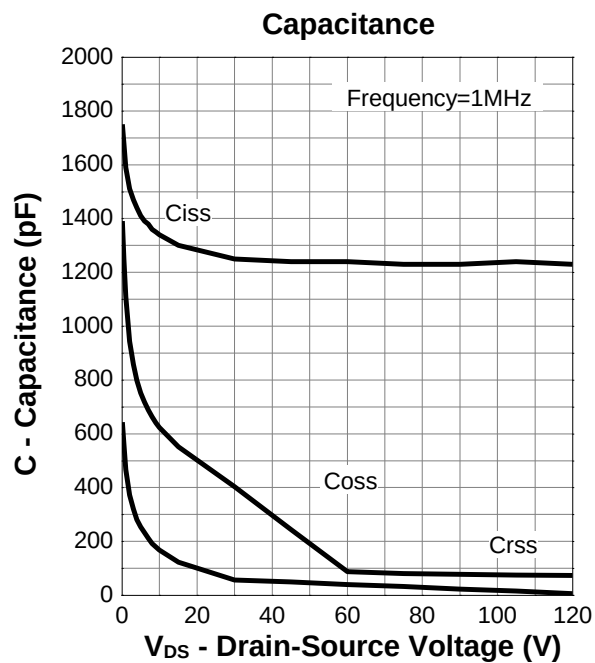
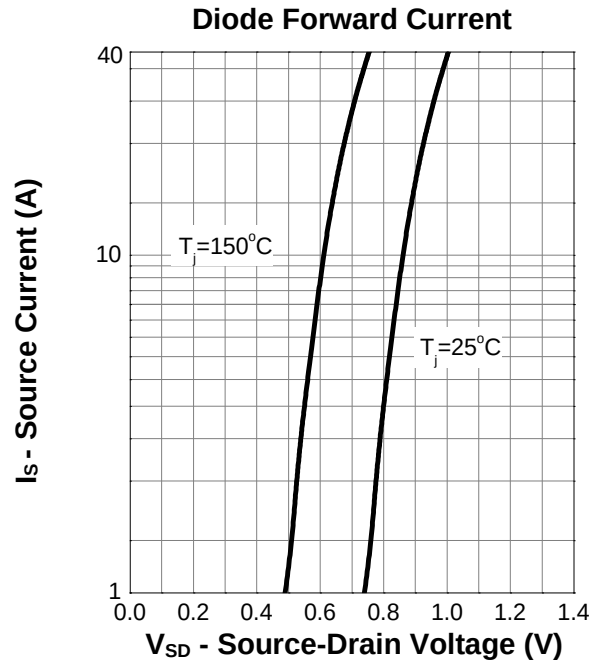
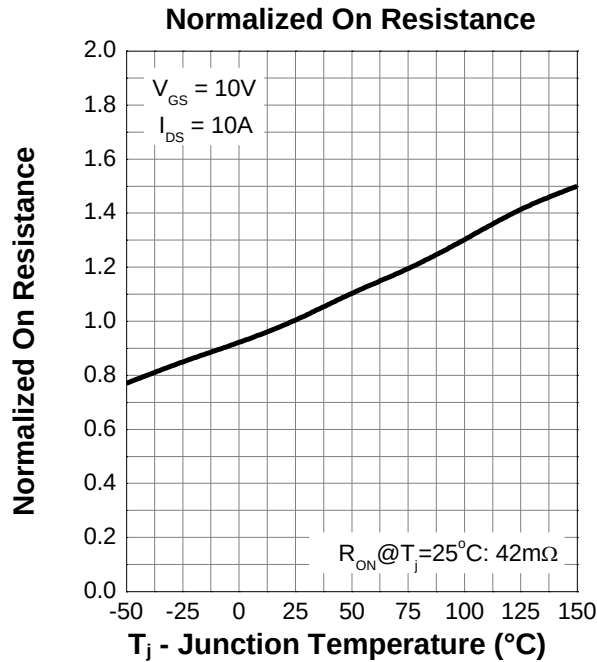
7. Typical Characteristics



7. Typical Characteristics (cont.)

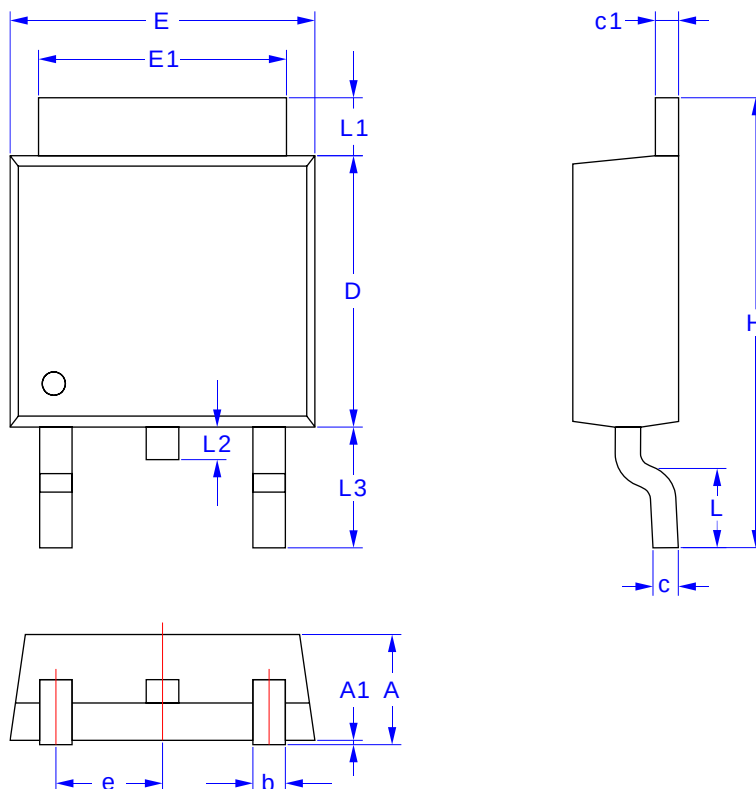


7. Typical Characteristics (cont.)



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