

P-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- Surface-mounted package
- Low gate charge

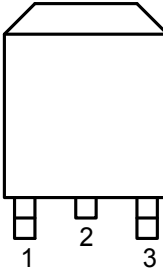
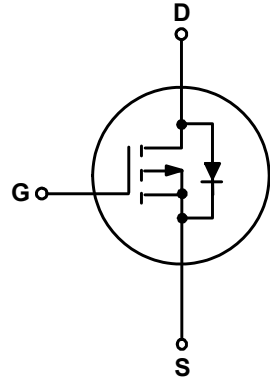
1.2 Applications

- Motor driver appliances
- Adapter appliances
- High power inverter system

1.3 Quick reference

- $BV \leq -100\text{ V}$
- $P_{tot} \leq 50\text{ W}$
- $I_D \leq -20\text{ A}$
- $R_{DS(ON)} \leq 180\text{ m}\Omega @ V_{GS} = -10\text{ V}$
- $R_{DS(ON)} \leq 190\text{ m}\Omega @ V_{GS} = -4.5\text{ V}$

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_{DS}	Drain-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-100	-	V
V_{GS}	Gate-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-	± 20	V
I_D	Drain Current (DC)	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = -10\text{ V}$	-	- 20	A
I_{DM}^*	Drain Current (Pulsed) *	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = -10\text{ V}$	-	- 44	A
P_{tot}	Drain power dissipation	$T_C = 25\text{ }^\circ\text{C}$	-	35	W
T_{stg}	Storage Temperature		-55	150	$^\circ\text{C}$
T_J	Junction Temperature		-	150	$^\circ\text{C}$
I_S	Diode Forward Current	$T_C = 25\text{ }^\circ\text{C}$	-	- 20	A
$R_{\theta JA}^{**}$	Thermal Resistance- Junction to Ambient		-	62.5	$^\circ\text{C}/\text{W}$
$R_{\theta JC}^{***}$	Thermal Resistance- Junction to Case		-	2.5	

Notes :

- * Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$
- ** Mounted on PCB of 1 in^2 pad area
- *** Mounted on Large Heat Sink

4. Marking Information

Product Name	Marking
KJ20P10K	<div style="display: flex; align-items: center;"> <div style="background-color: black; color: white; padding: 5px; margin-right: 10px;"> 20P10 YWWXXX </div> <div> YWW: Date Code </div> </div>

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ20P10K	TO-252			2500	

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 ($T_A=25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

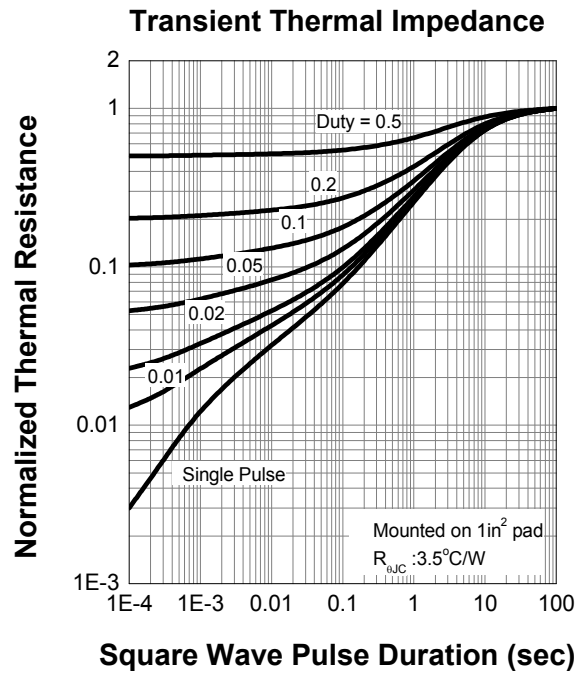
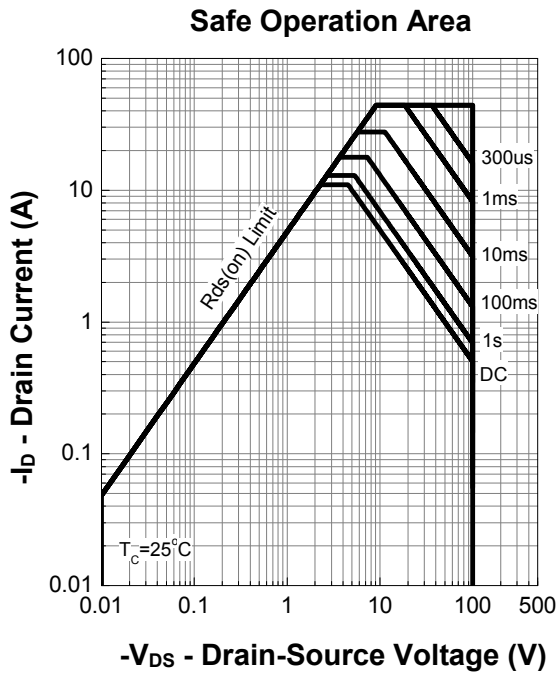
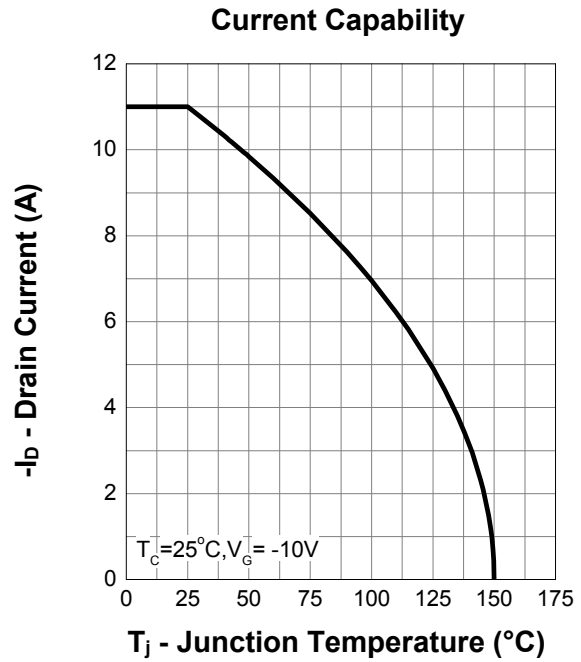
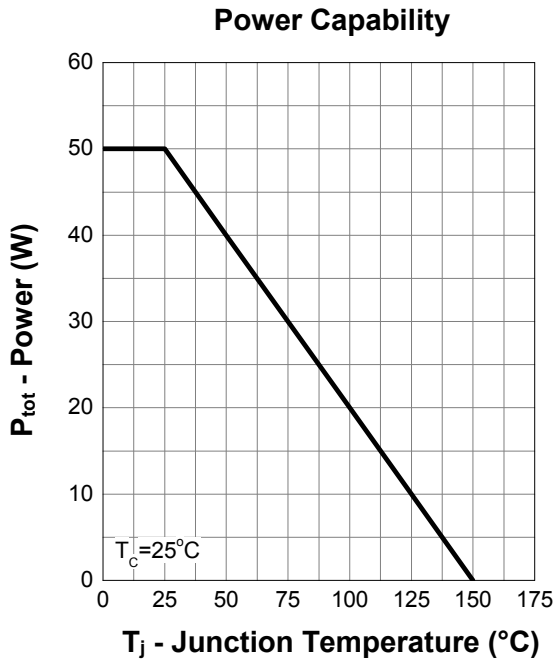
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = -250\text{ }\mu\text{A}$	-100	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = -250\text{ }\mu\text{A}$	-1.0	-	-2.5	V
I_{DSS}	Drain Leakage Current	$V_{DS} = -80\text{ V}, V_{GS} = 0\text{ V}$	-	-	-1.0	μA
I_{GSS}	Gate Leakage Current	$V_{GS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	-	-	± 100	nA
$R_{DS(ON)}^a$	On-State Resistance	$V_{GS} = -10\text{ V}, I_{DS} = -2\text{ A}$	-	165	180	m Ω
		$V_{GS} = -4.5\text{ V}, I_{DS} = -1\text{ A}$	-	175	190	
Diode Characteristics						
V_{SD}^a	Diode Forward Voltage	$I_{SD} = -2\text{ A}, V_{GS} = 0\text{ V}$	-	-	-1.3	V
t_{rr}	Reverse Recovery Time	$I_{SD} = -6\text{ A}, dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	40	-	nS
Q_{rr}	Reverse Recovery Charge		-	28	-	nC
Dynamic Characteristics^b						
C_{iss}	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = -50\text{ V}$ Frequency = 1 MHz	-	1545	-	pF
C_{oss}	Output Capacitance		-	37	-	
C_{rss}	Reverse Transfer Capacitance		-	25	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = -50\text{ V}, V_{GEN} = -10\text{ V},$ $R_G = 4.5\text{ }\Omega, R_L = 25\text{ }\Omega,$ $I_{DS} = -2\text{ A}$	-	10	-	nS
t_r	Turn-on Rise Time		-	27	-	
$t_d(off)$	Turn-off Delay Time		-	288	-	
t_f	Turn-off Fall Time		-	88	-	
Gate Charge Characteristics^b						
Q_g	Total Gate Charge	$V_{DS} = -50\text{ V}, V_{GS} = -10\text{ V},$ $I_{DS} = -2\text{ A}$	-	27	-	nC
Q_{gs}	Gate-Source Charge		-	5.3	-	
Q_{gd}	Gate-Drain Charge		-	3.2	-	

Notes :

a : Pulse test ; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

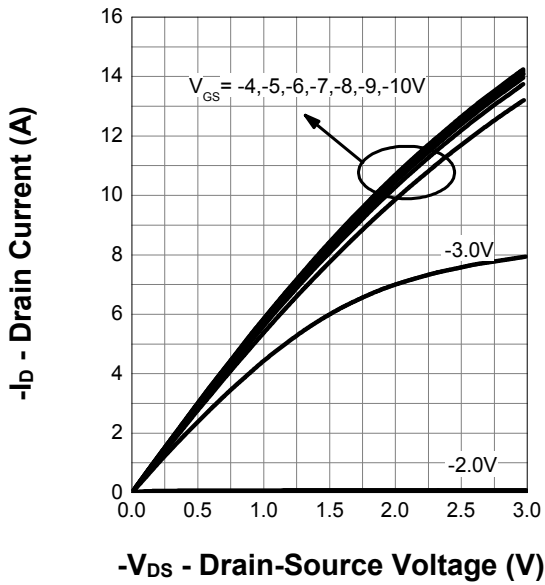
b : Guaranteed by design, not subject to production testing

7. Typical Characteristics (Cont.)

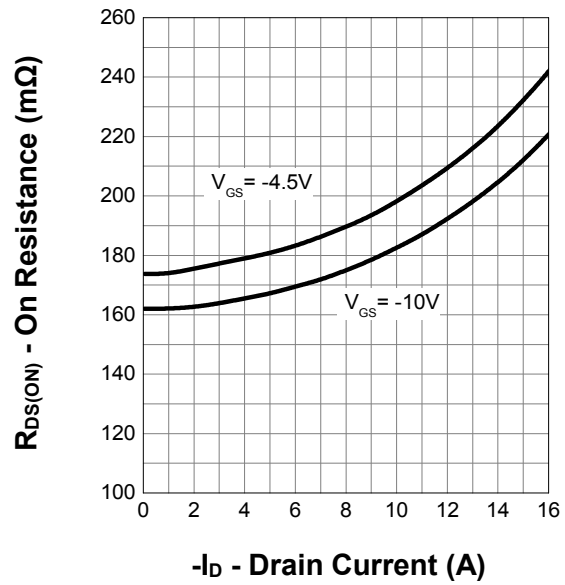


7. Typical Characteristics (Cont.)

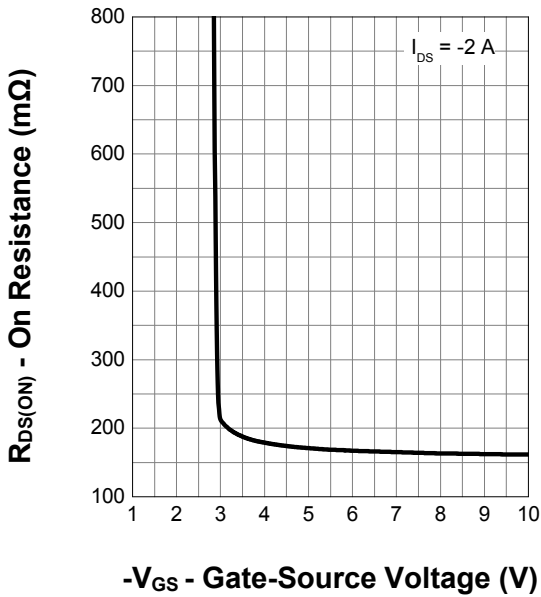
Output Characteristics



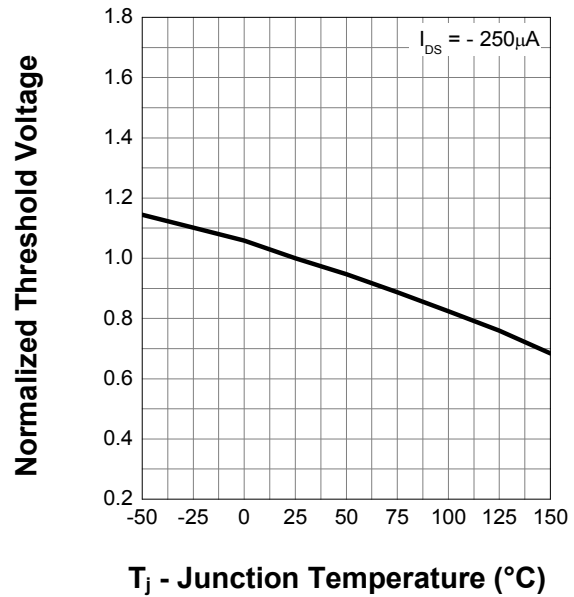
Drain-Source On Resistance



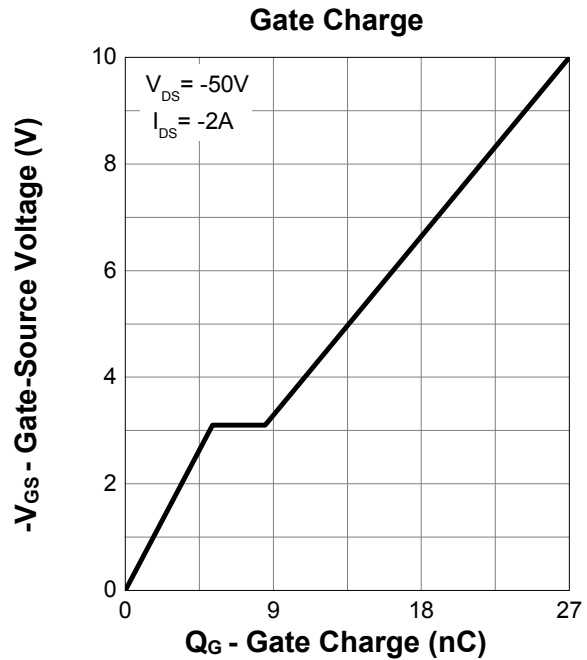
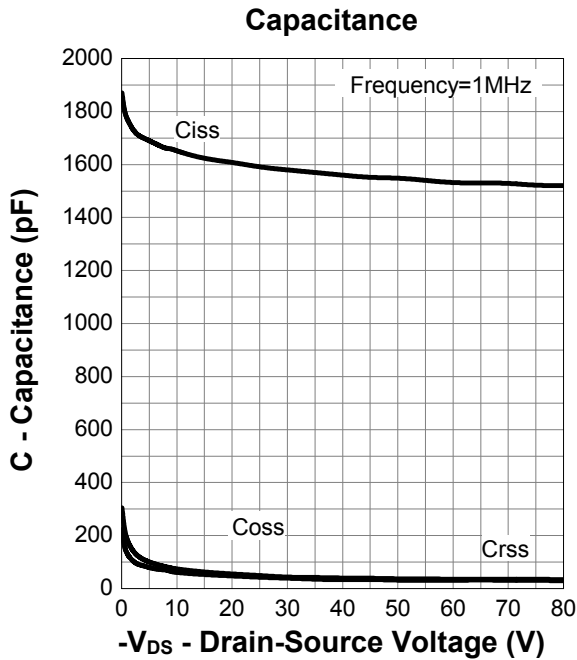
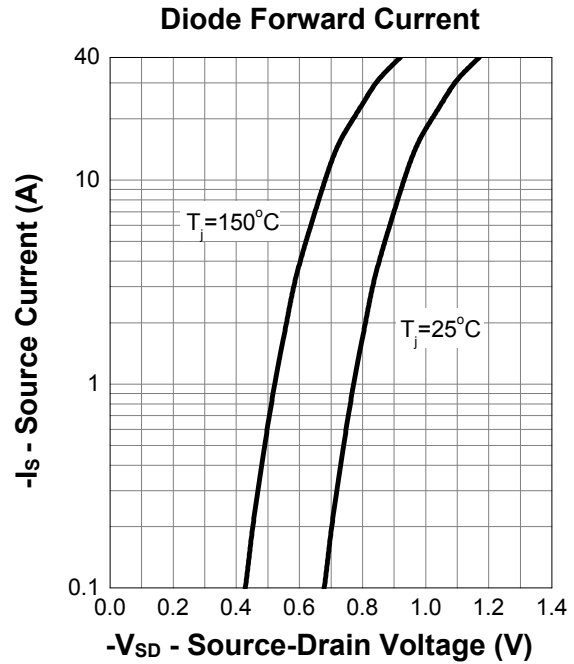
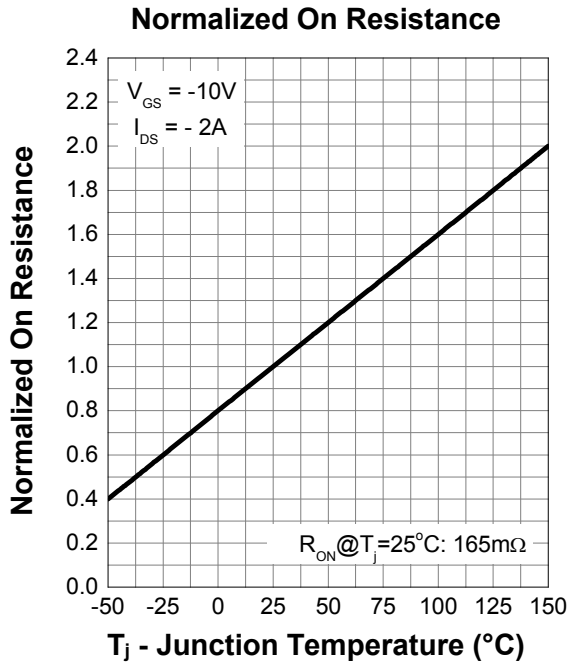
Transfer Characteristics



Normalized Threshold Voltage

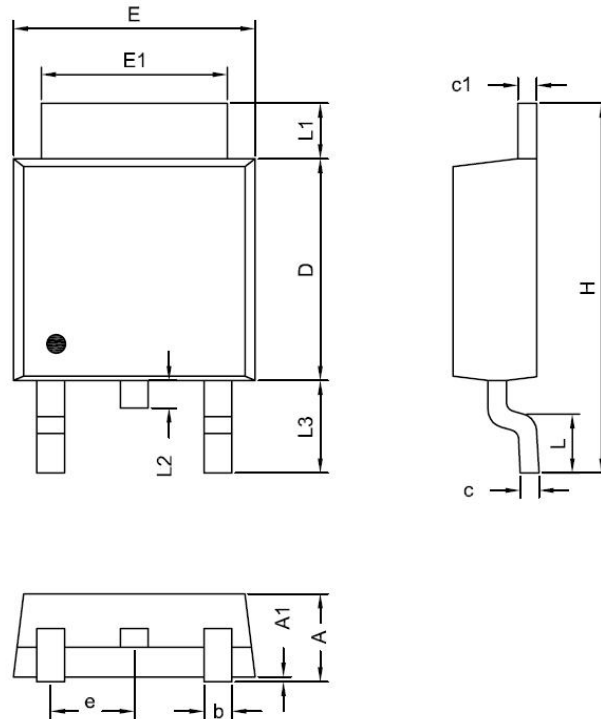


7. Typical Characteristics (Cont.)



8. Package Dimensions

T0252-3L



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