

P-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ Low gate charge

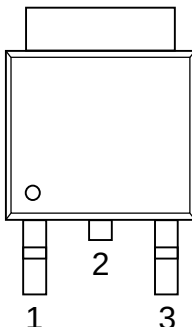
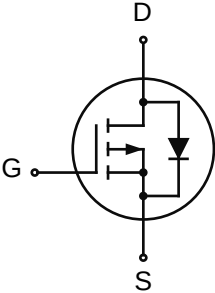
1.2 Applications

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

1.3 Quick reference

- ☒ $BV \geq -60\text{ V}$
- ☒ $P_D \leq 62.5\text{ W}$
- ☒ $I_D \leq -18\text{ A}$
- ☒ $R_{DS(ON)} \leq 88\text{ m}\Omega @ V_{GS} = -10\text{ V}$
- ☒ $R_{DS(ON)} \leq 99\text{ m}\Omega @ V_{GS} = -4.5\text{ V}$

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	$T_c=25^{\circ}\text{C}$	-60	-	V
V_{GS}	Gate-Source Voltage	$T_c=25^{\circ}\text{C}$	-	± 20	V
I_D^*	Drain Current (DC)	$T_c=25^{\circ}\text{C}, V_{GS}=-10\text{ V}$	-	-18	A
		$T_c=100^{\circ}\text{C}, V_{GS}=-10\text{ V}$	-	-11.5	A
I_{DM}^{**}	Drain Current (Pulsed)	$T_c=25^{\circ}\text{C}, V_{GS}=-10\text{ V}$	-	-48	A
P_D	Drain Power Dissipation	$T_c=25^{\circ}\text{C}$	-	62.5	W
I_S	Diode Forward Current	$T_c=25^{\circ}\text{C}$	-	-18	A
E_{AS}^{**}	Single Pulsed Avalanche Energy	$V_{DD}=-40\text{ V}, L=1.0\text{ mH}$	-	10.5	mJ
T_{stg}	Operating Junction and Storage Temperature Range		-55	150	$^{\circ}\text{C}$
$R_{\theta JA}^{**}$	Thermal Resistance-Junction to Ambient		-	38.9	$^{\circ}\text{C/W}$
$R_{\theta JC}^{***}$	Thermal Resistance-Junction to Case		-	2	

Notes:

- * Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- ** Surface mounted on 1 in² pad area, $t \leq 10\text{ sec}$.
- *** Mounted on large heat sink.

4. Marking Information

Product Name	Marking
KJ13P06K	13P06 YWWWXX YWWWX: Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity (pcs)
KJ13P06K	TO-252	13"	16 mm	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)

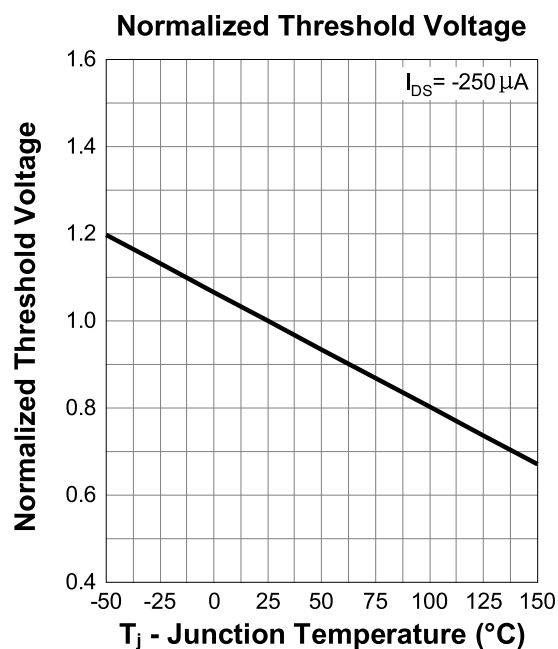
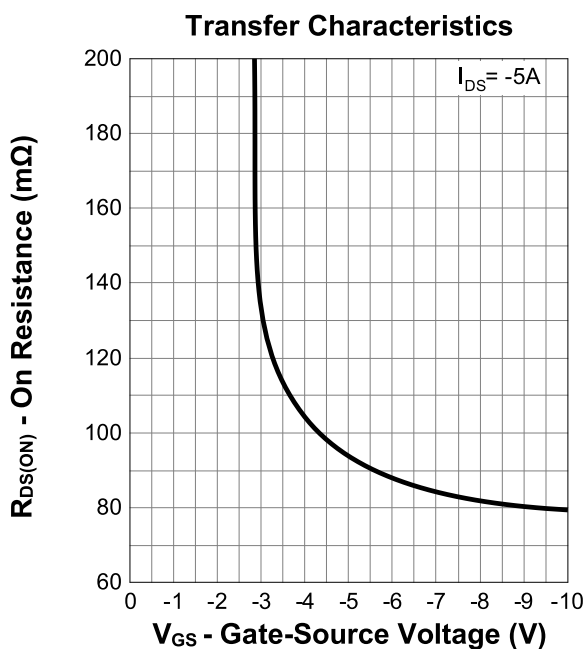
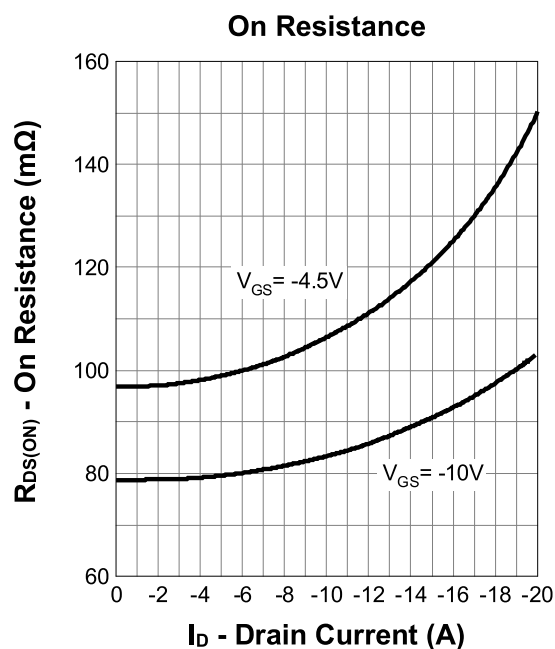
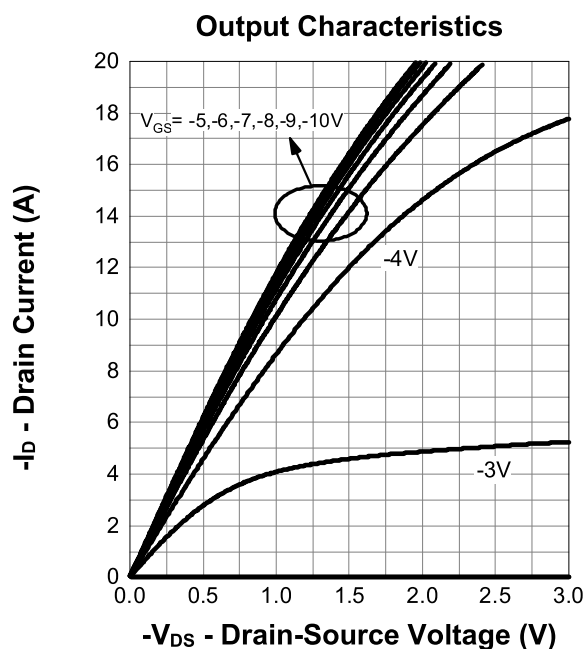
6. Electrical Characteristics (T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _D =-250 μA	-60	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250 μA	-1	-	-3	V
I _{DSS}	Drain Leakage Current	V _{DS} =-48 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 _D =-5 A	-	78	88	mΩ
		V _{GS} =-4.5 V, I _D =-2.5 A	-	95	99	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =-5 A, V _{GS} =0 V	-	-	-1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =-5 A dI _{SD} /dt=100 A/μs	-	15	-	ns
Q _{rr}	Reverse Recovery Charge		-	14	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =-30 V f=1 MHz	-	929	-	pF
C _{oss}	Output Capacitance		-	44	-	
C _{rss}	Reverse Transfer Capacitance		-	37	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =-30 V, V _{GEN} =-10 V R _G =3.9 Ω, R _L =6 Ω I _{DS} =-5 A	-	6.4	-	ns
t _r	Turn-on Rise Time		-	11	-	
t _{d(off)}	Turn-off Delay Time		-	2	-	
t _f	Turn-off Fall Time		-	18	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =-30 V, V _{GS} =-10 V I _{DS} =-5 A	-	16	-	nC
Q _{gs}	Gate-Source Charge		-	4.4	-	
Q _{gd}	Gate-Drain Charge		-	2	-	

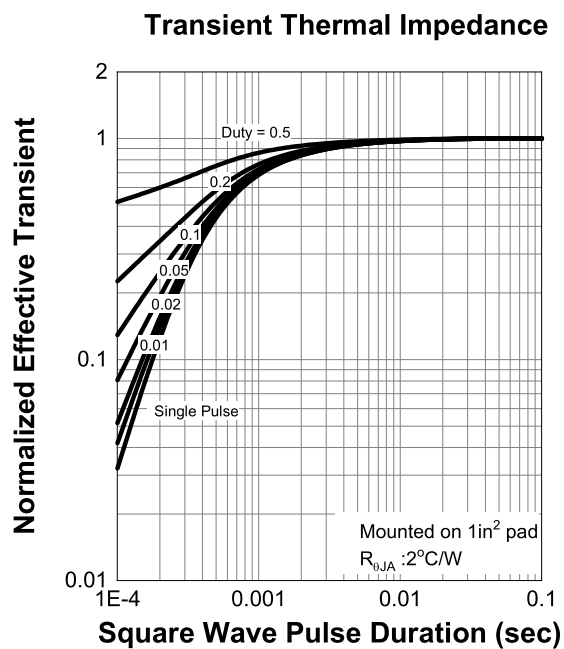
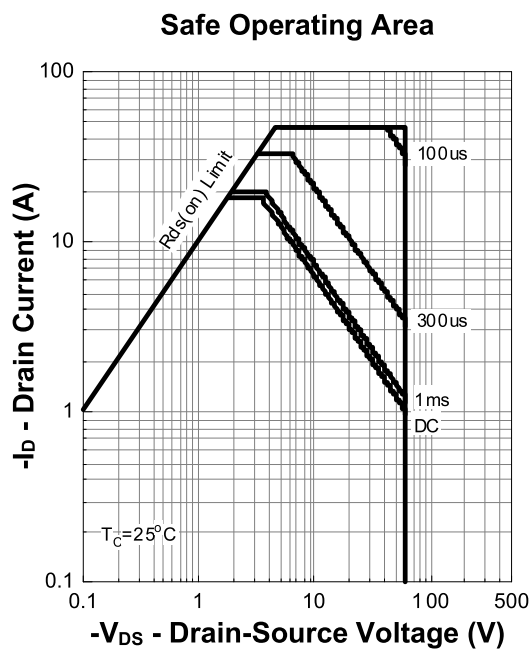
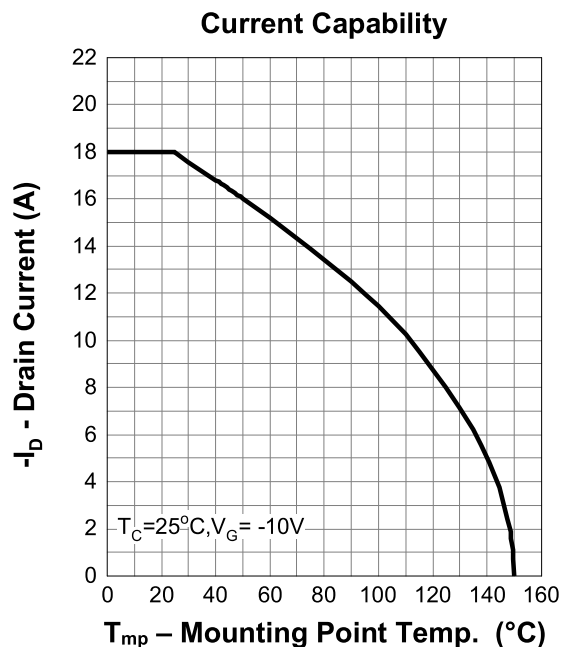
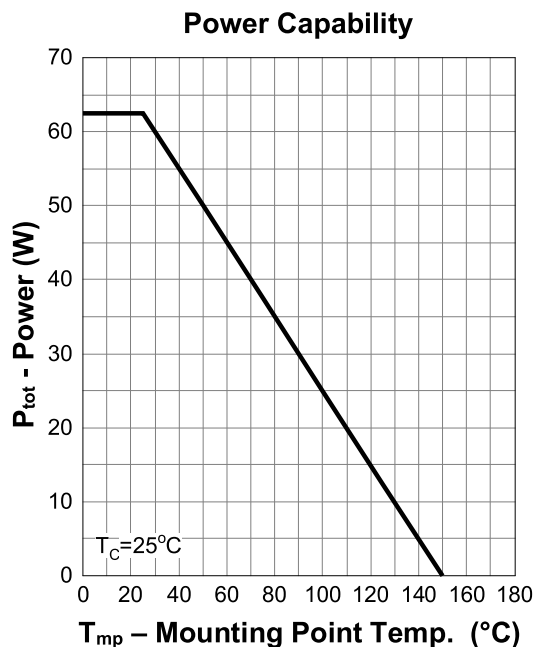
Notes:

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

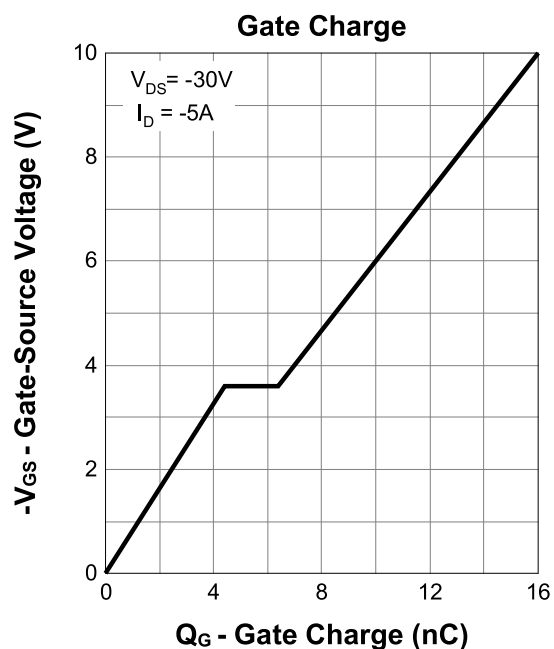
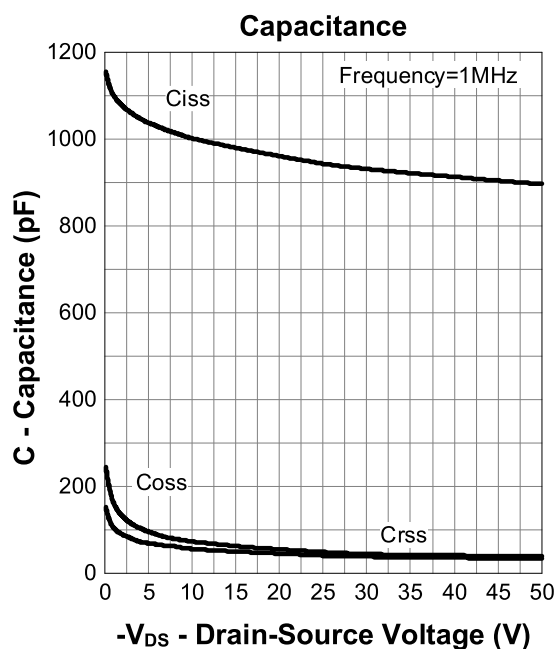
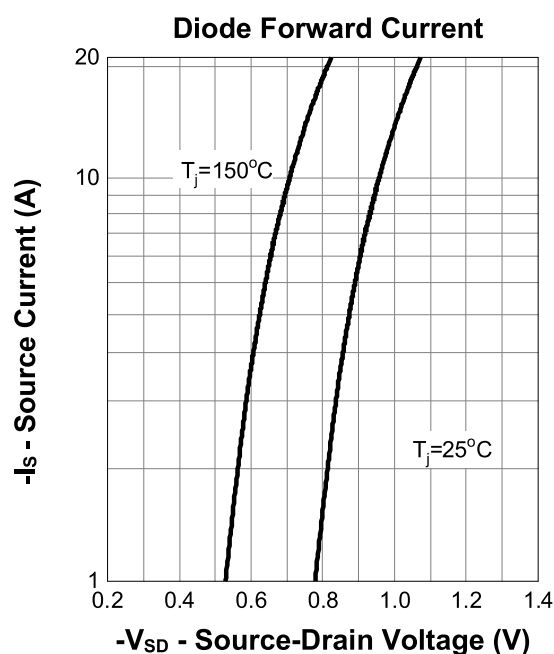
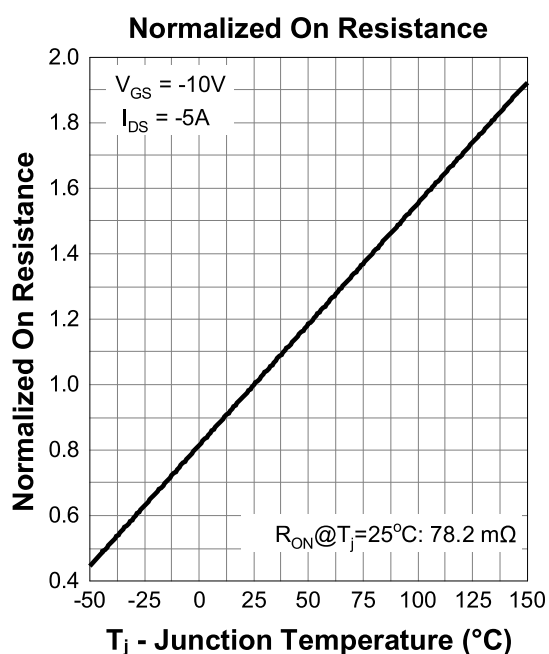
7. Typical Characteristics



7. Typical Characteristics (cont.)

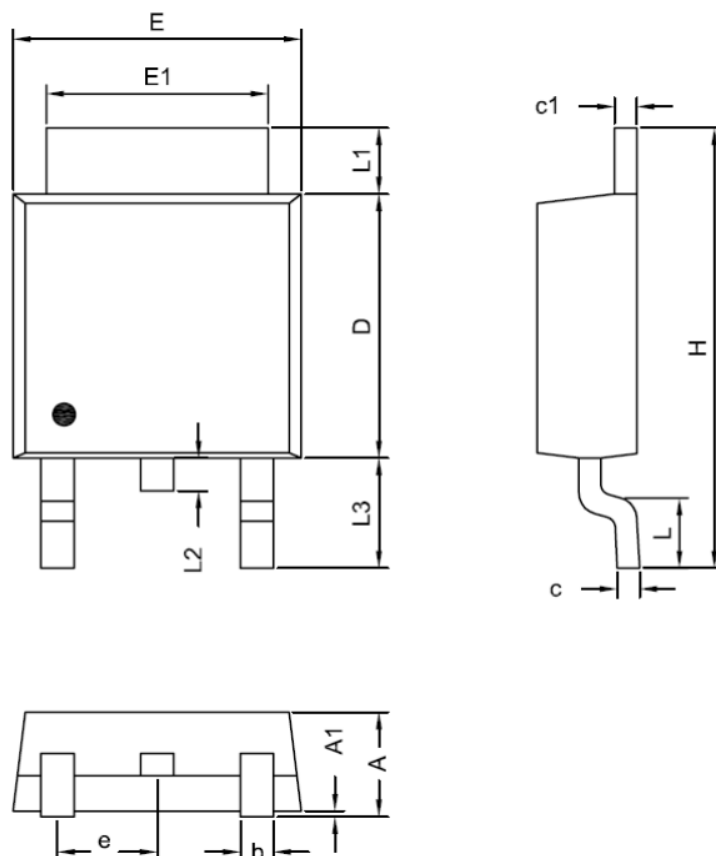


7. Typical Characteristics (cont.)



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