KJ6880D

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Surface-mounted package
- ☑ Low thermal resistance

1.2 Applications

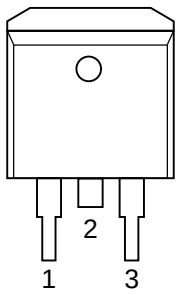
- ☑ Battery management
- ☑ Motor control and drive
- ☑ UPS
- ☑ Load switch

1.3 Quick reference

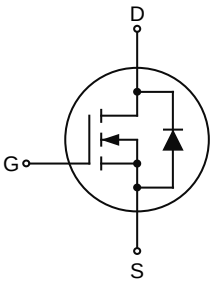
- ☑ BV ≥ 68 V
- ☑ $R_{DS(ON)}$ ≤ 6.5 mΩ @V_{GS} = 10 V
- ☑ P_D ≤ 150.6 W
- ☑ $R_{DS(ON)}$ ≤ 13 mΩ @V_{GS} = 6 V
- ☑ I_D ≤ 92 A

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate (G)		
2	Drain (D)		
3	Source (S)		



Top View
TO-263



3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	T_C=25℃	68	-	V
V_{GS}	Gate-Source Voltage	T_C=25℃	-	±20	V
I_D *, ***	Drain Current (DC)	T_C=25℃	-	92	A
		T_C=100℃, V_{GS}=10 V	-	58	A
I_{DM} *	Drain Current (Pulsed)	T_C=25℃, V_{GS}=10 V	-	368	A
P_D *	Drain Power Dissipation	T_C=25℃	-	150.6	W
E_{AS}	Single Pulsed Avalanche Energy	V_{DD}=48 V, L=0.3 mH	-	140	mJ
I_S	Continuous-Source Current	T_C=25℃	-	92	A
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	150	℃
$R_{\theta JA}$ *	Thermal Resistance-Junction to Ambient		-	65	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		-	0.83	

Notes:

* Surface mounted on 1 in^2 pad area, t ≤ 10 sec.

** Pulse width ≤ 300 μs, duty cycle ≤ 2%.

*** Limited by bonding wire.

4. Marking Information

Product Name	Marking
KJ6880D	**KJ6880D XXXXXX-X**

5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ6880D	**TO-263**	**13"**	**24 mm**	**800**

Note: KUAIJIEXIN 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℃ 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	68	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250 μA	2	-	4	V
I_{DSS}	Drain Leakage Current	V_{DS}=60 V, V_{GS}=0 V	-	-	1	μA
I_{GSS}	Gate Leakage Current	V_{GS}=±20 V, V_{DS}=0 V	-	-	±100	nA
$R_{DS(ON)}$ [a]	Drain-Source On-State Resistance	V_{GS}=10 V, I_{DS}=45 A	-	5.5	6.8	mΩ
		V_{GS}=6 V, I_{DS}=30 A	-	11	13	mΩ
R_g	Gate resistance	V_{GS}=0 V, V_{DS}=0 V, f=1 MHz	-	0.85	-	Ω
Diode Characteristics						
V_{SD} [a]	Diode Forward Voltage	I_{SD}=45 A, V_{GS}=0 V	-	-	1.3	V
t_{rr}	Reverse Recovery Time	I_{SD}=45 A, V_{DS}=60 V, dI_{SD}/dt=100 A/μs	-	40	-	ns
Q_{rr}	Reverse Recovery Charge		-	63	-	nC
Dynamic Characteristics [b]						
C_{iss}	Input Capacitance	V_{GS}=0 V, V_{DS}=30 V, f=1 MHz	-	5400	-	pF
C_{oss}	Output Capacitance		-	285	-	
C_{rss}	Reverse Transfer Capacitance		-	200	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=30 V, V_{GEN}=10 V, R_G=3 Ω, I_{DS}=45 A	-	21	-	ns
t_r	Turn-on Rise Time		-	32	-	
$t_{d(off)}$	Turn-off Delay Time		-	44	-	
t_f	Turn-off Fall Time		-	15	-	
Gate Charge Characteristics [b]						
Q_g	Total Gate Charge	V_{DS}=30 V, V_{GS}=10 V, I_{DS}=45 A	-	95	-	nC
Q_{gs}	Gate-Source Charge		-	30	-	
Q_{gd}	Gate-Drain Charge		-	25	-	

Notes:

a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

b. Guaranteed by design, not subject to production testing.

7. Typical Characteristics

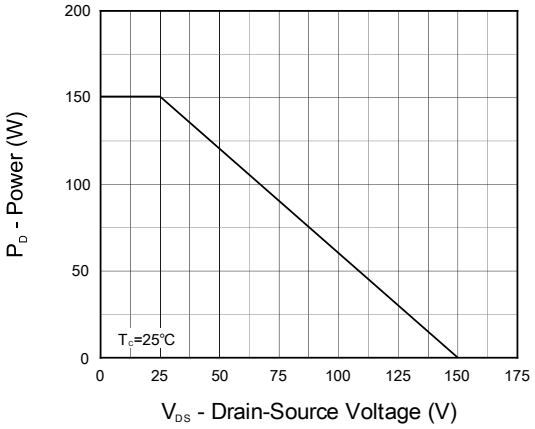


Figure 1. Output Characteristics

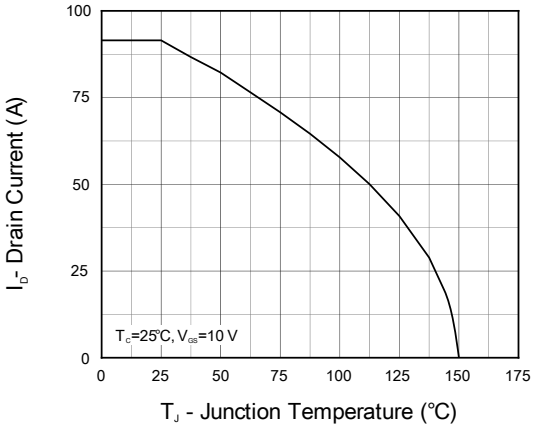


Figure 2. Current Capability

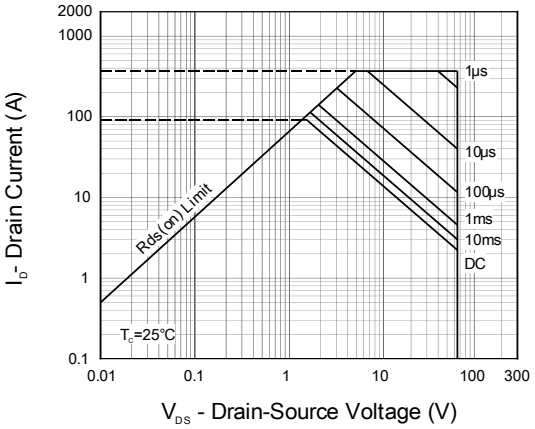


Figure 3. Safe Operation Area

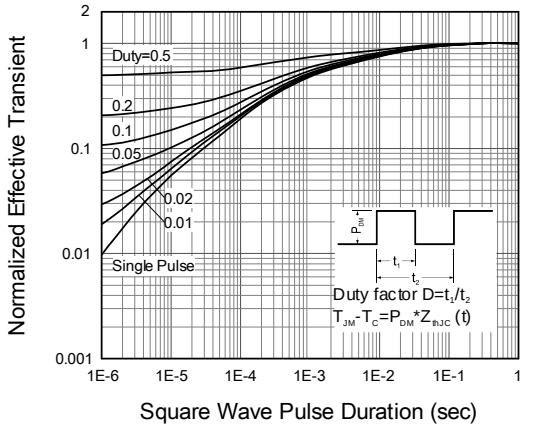


Figure 4. Transient Thermal Impedance

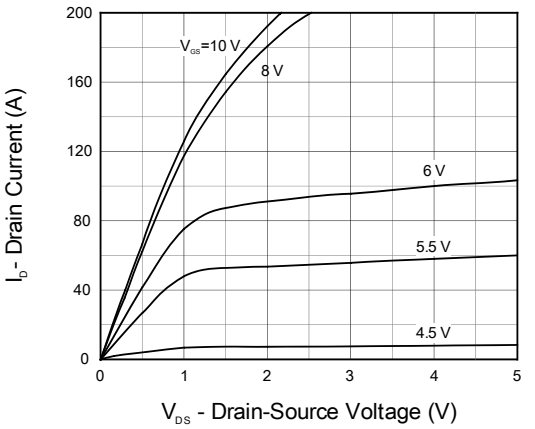


Figure 5. Output Characteristics

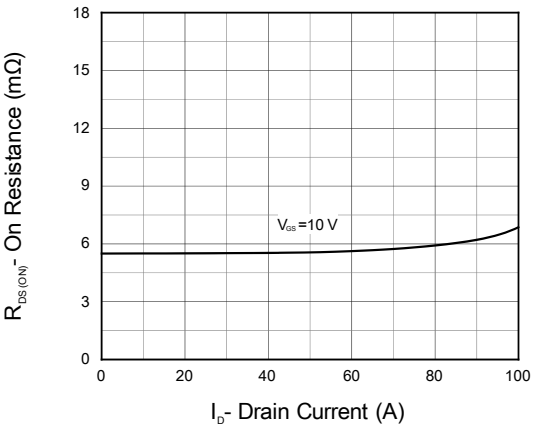


Figure 6. On Resistance

7. Typical Characteristics (cont.)

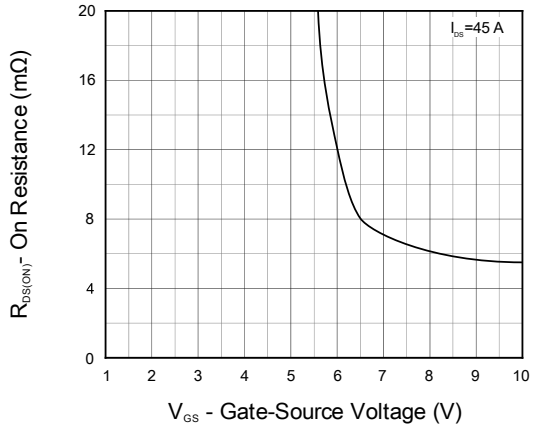


Figure 7. Transfer Characteristics

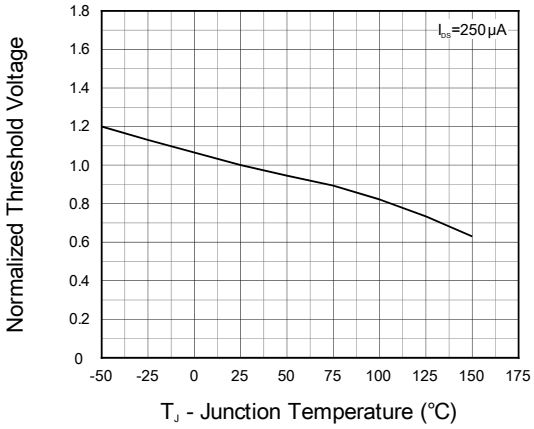


Figure 8. Normalized Threshold Voltage

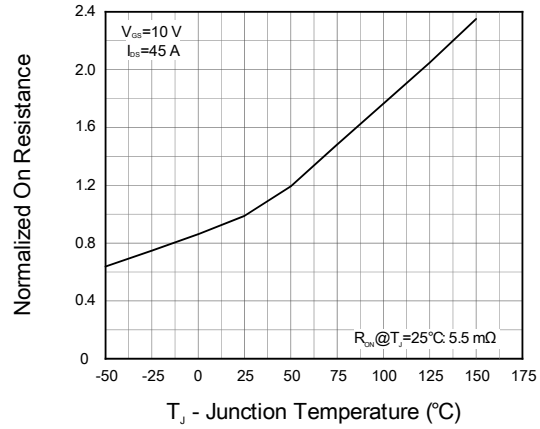


Figure 9. Normalized On Resistance

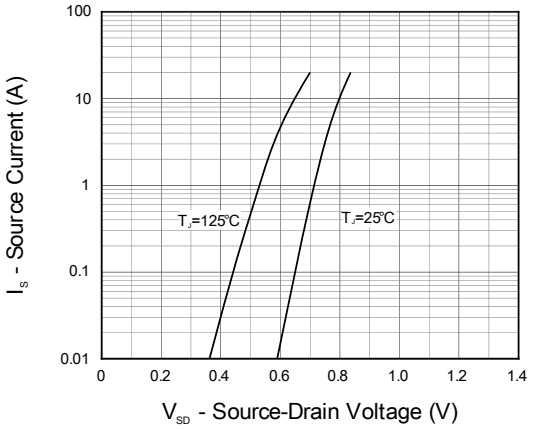


Figure 10. Diode Forward Current

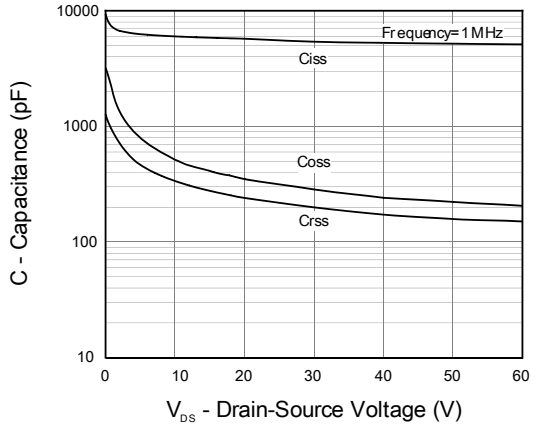


Figure 11. Capacitance

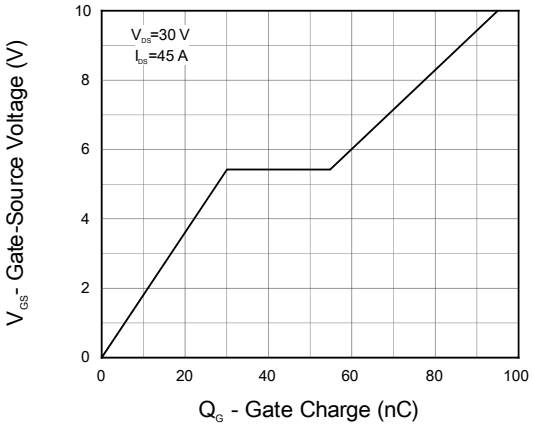
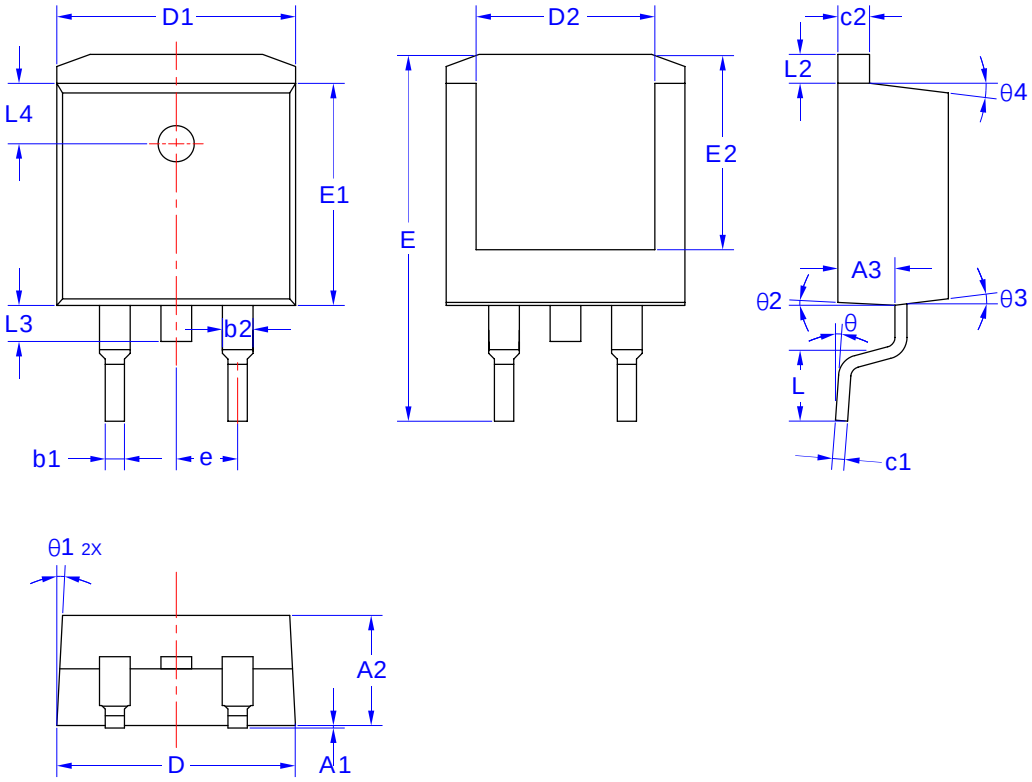


Figure 12. Gate Charge

8. Package Dimensions

TO-263 Package



Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
A1	0.020	-	0.200
A2	4.470	4.570	4.670
A3	2.300	2.350	2.400
b1	0.750	-	0.850
b2	1.220	-	1.320
c1	0.500	-	0.550
c2	1.300	-	1.350
D	9.780	9.880	9.980
D1		9.880 REF	
D2		7.400 REF	
E	14.900	15.100	15.300
E1	9.100	9.200	9.300

Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
E2		8.100 REF	
e		5.540 REF	
L	2.100	2.300	2.500
L2	1.025	-	1.375
L3	1.300	1.500	1.700
L4	2.400	2.500	2.600
θ		0~8°	
θ1		3°	
θ2		3°	
θ3		7°	
θ4		7°	