

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ Advanced trench cell design
- ☒ Super Trench
- ☒ MSL1
- ☒ $T_J \text{ max } 175^\circ\text{C}$

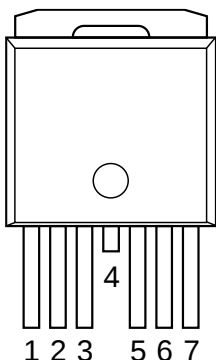
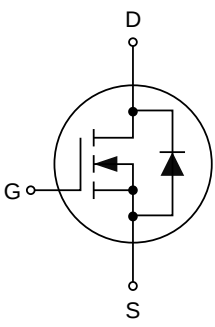
1.2 Applications

- ☒ Power Tool appliances
- ☒ High power inverter system
- ☒ BMS appliances

1.3 Quick reference

- ☒ $BV \geq 60 \text{ V}$
- ☒ $R_{DS(ON)} \leq 1.3 \text{ m}\Omega @ V_{GS} = 10 \text{ V}$
- ☒ $P_{tot} \leq 405 \text{ W}$
- ☒ $I_D \leq 343 \text{ A}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate (G)	 Top View TO263-7L	
2, 3	Source (S)		
4	Drain (D)		
5, 6, 7	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^*	Continuous Drain Current	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	343	A
		$T_C=100^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	266	A
I_{DM}^{**}	Pulsed Drain Current	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	1200	A
P_D	Power Dissipation	$T_C=25^{\circ}\text{C}$	-	405	W
E_{AS}	Single Pulsed Avalanche Energy	$V_{DD}=30\text{ V}, L=0.5\text{ mH}$	-	1462	mJ
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	175	$^{\circ}\text{C}$
$R_{\theta JA}^{***}$	Thermal Resistance-Junction to Ambient		-	40	$^{\circ}\text{C/W}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case		-	0.37	

Notes:

- * Package limited.
- ** Pulse width limited by maximum junction temperature.
- *** Mounted on a 1 in² pad 2 oz copper pad on a 1.5"x1.5" board of FR-4 material.

4. Marking Information

Product Name	Marking
KJ013N06D7	KJ013N06D7 YWWXXX XXXXXX

5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ013N06D7	TO263-7L	13"	24 mm	800

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).

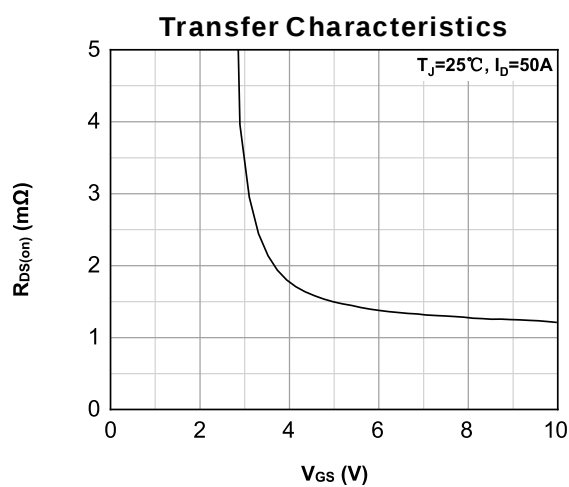
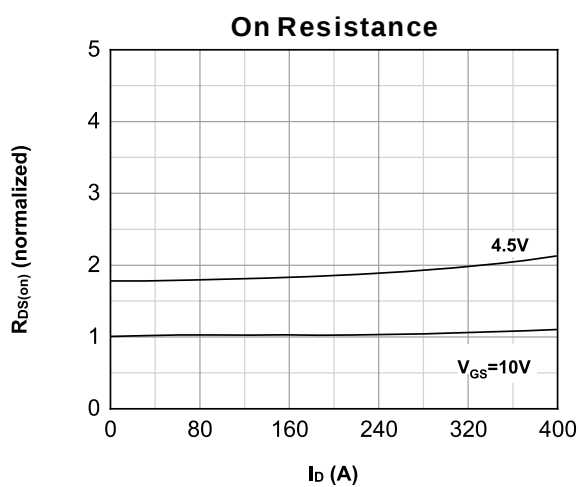
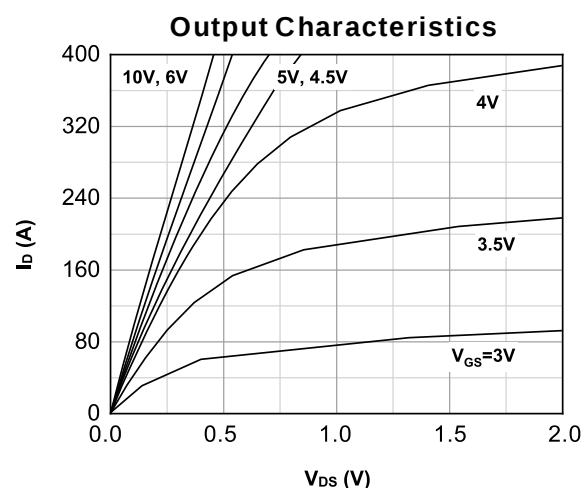
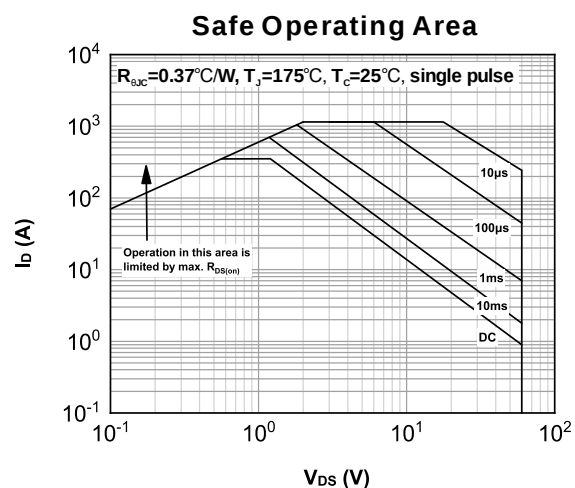
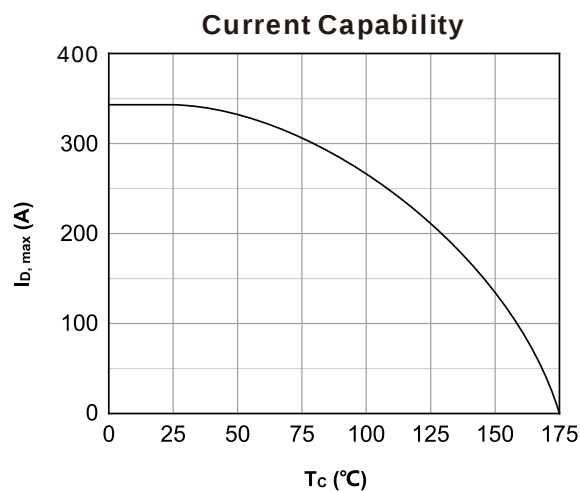
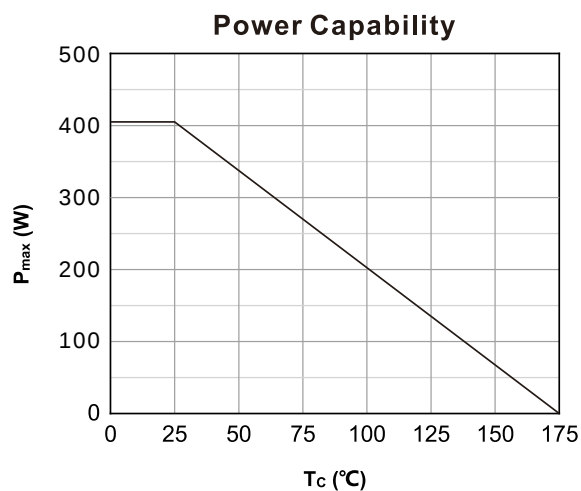
6. Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _{DS} =250 μA	60	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250 μA	1.7	2.5	3.3	V
I _{DSS}	Drain Leakage Current	V _{DS} =60 V, V _{GS} =0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{GS} =0 V, V _{GS} =±20 V	-	-	±100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} =10 V, I _{DS} =50 A	-	1.1	1.3	mΩ
R _G	Gate resistance			1	2	Ω
Diode Characteristics						
V _{SD}	Diode Forward Voltage ^a	I _{SD} =50 A, V _{GS} =0 V	-	0.8	1.1	V
t _{rr}	Reverse Recovery Time	V _{DS} =30 V, I _{DS} =50 A, dI _{SD} /dt=100 A/μs	-	72	-	ns
Q _{rr}	Reverse Recovery Charge		-	110	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =30 V, Frequency=1 MHz	-	7450	-	pF
C _{oss}	Output Capacitance		-	1680	-	
C _{rss}	Reverse Transfer Capacitance		-	90	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =30 V, V _{GEN} =10 V, R _G =1.6 Ω, I _{DS} =50 A	-	31	-	ns
t _r	Turn-on Rise Time		-	4	-	
t _{d(off)}	Turn-off Delay Time		-	81	-	
t _f	Turn-off Fall Time		-	23	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =30 V, V _{GS} =10 V, I _{DS} =50 A	-	168	-	nC
Q _{gs}	Gate-Source Charge		-	43	-	
Q _{gd}	Gate-Drain Charge		-	50	-	

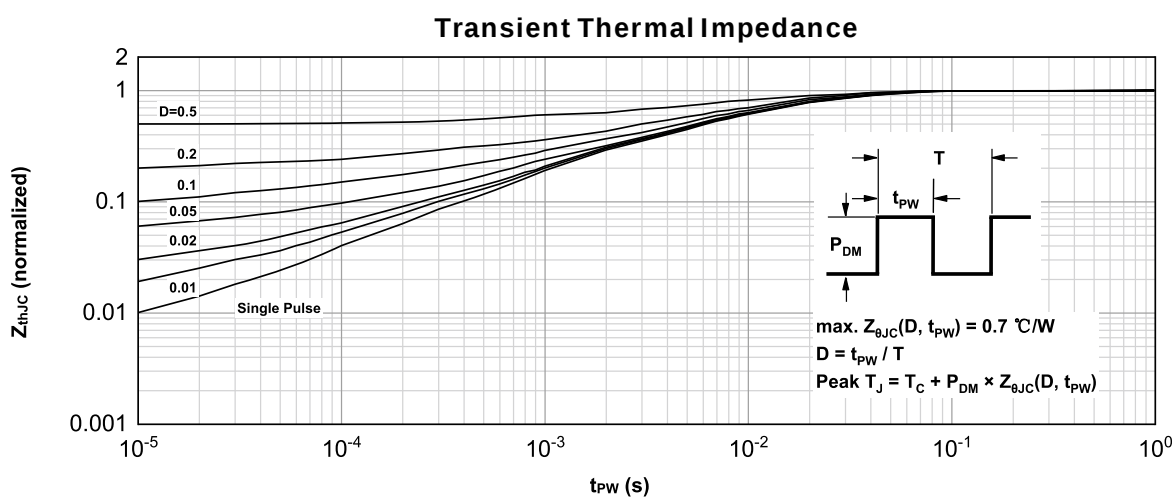
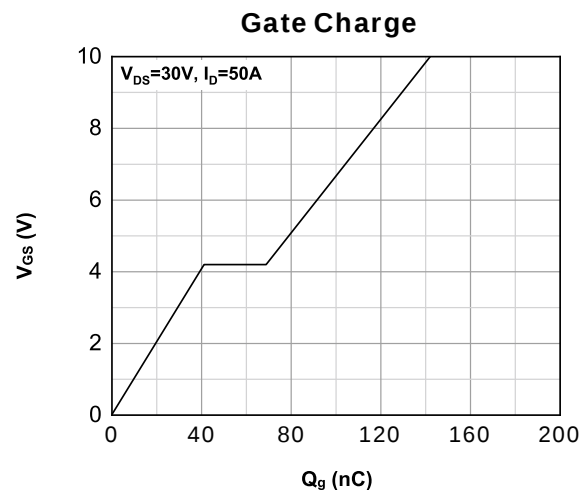
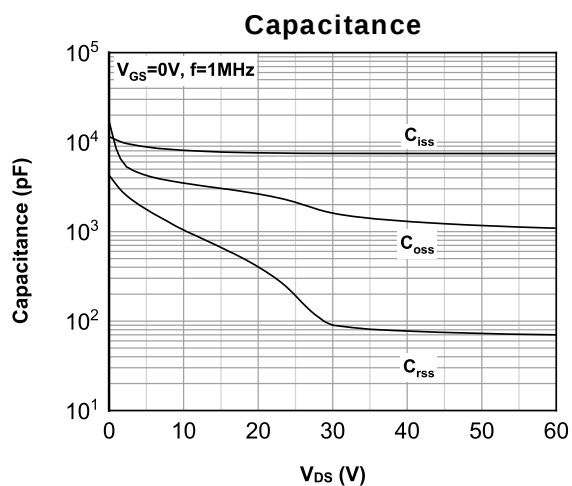
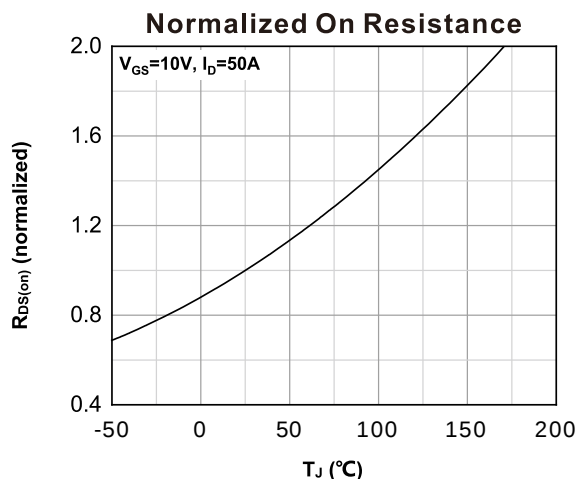
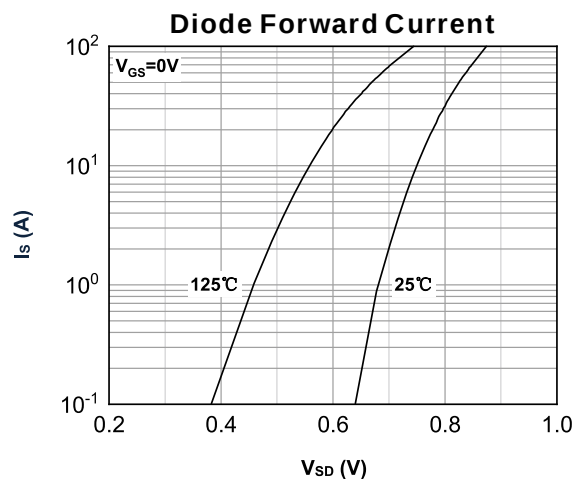
Notes:

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

7. Typical Characteristics

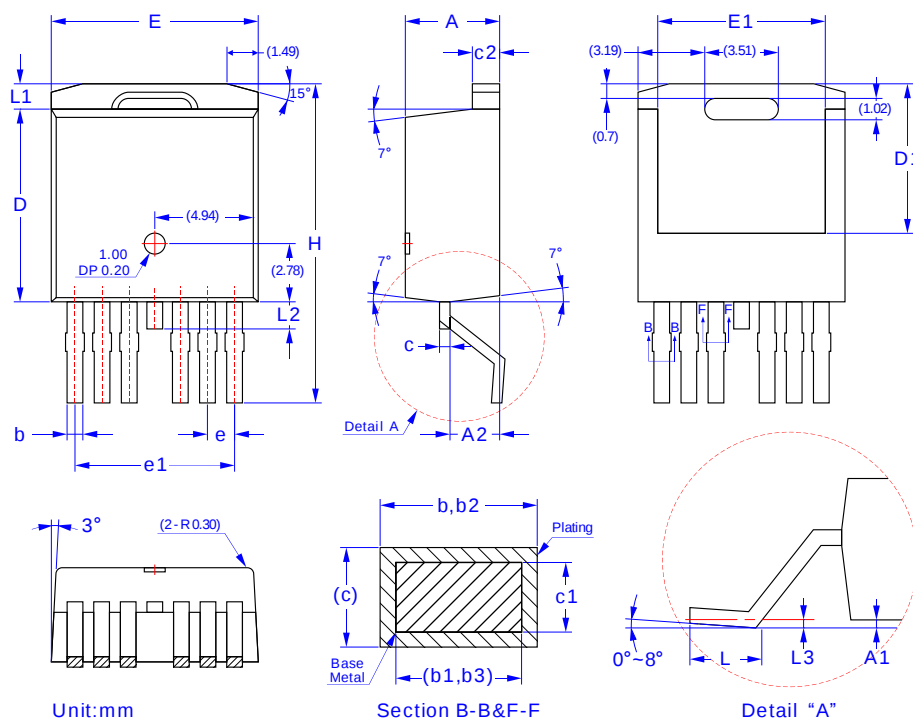


7. Typical Characteristics (cont.)



8. Package Dimensions

TO263-7L Package



Symbol	Dimensions in Millimeters	
	MIN	MAX
A	4.30	4.70
A1	-	0.25
A2	2.20	2.60
b	0.65	0.85
b1	0.65	0.80
b2	0.80	1.00
b3	0.80	0.95
c	0.45	0.60
c1	0.45	0.55
c2	1.25	1.40
D	9.00	9.40
D1	6.86	7.42
E	9.68	10.08
E1	7.70	8.30
e	1.27 BSC	
e1	7.62 BSC	
L	1.78	2.79
L1	-	1.60
L2	-	1.78
L3	0.25 BSC	
H	14.61	15.88