

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Surface-mounted package
- ☑ Advanced trench cell design
- ☑ 100% EAS Guaranteed

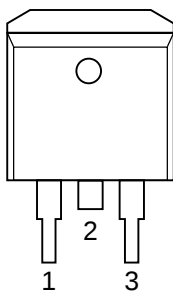
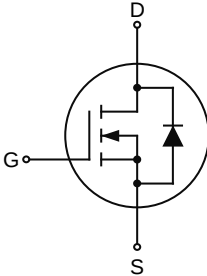
1.2 Applications

- ☑ Switch Mode Power Supply
- ☑ Uninterruptible Power Supply
- ☑ High-Frequency Switching and Synchronous Rectification

1.3 Quick reference

- ☑ $BV \geq 100\text{ V}$
- ☑ $R_{DS(ON)} \leq 3.3\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- ☑ $P_{tot} \leq 245\text{ W}$
- ☑ $I_D \leq 160\text{ A}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 Top View TO-263	
2	Drain(D)		
3	Source(S)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_C = 25^{\circ}\text{C}$	-	100	V
V_{GS}	Gate-Source Voltage	$T_C = 25^{\circ}\text{C}$	-	± 20	V
I_D^{***}	Drain Current (DC)	$T_C = 25^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	160	A
$I_{DM}^{*,***}$	Drain Current (Pulsed)	$T_C = 25^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	640	A
P_{tot}	Drain power dissipation	$T_C = 25^{\circ}\text{C}$	-	245	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	175	$^{\circ}\text{C}$
I_S	Continuous-Source Current	$T_C = 25^{\circ}\text{C}$	-	160	A
E_{AS}	Single Pulsed Avalanche Energy	$V_{DD}=90\text{ V}, L=0.5\text{ mH}$	-	702	mJ
$R_{\theta JA}^{**}$	Thermal Resistance-Junction to Ambient		-	60	$^{\circ}\text{C/W}$
$R_{\theta JC}^{**}$	Thermal Resistance-Junction to Case		-	0.61	

Notes:

- * Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 1\%$
- ** Surface Mounted on minimum footprint pad area.
- *** Limited by bonding wire

4. Marking Information

Product Name	Marking
KJ037N10D	KJ037N10D YWWXXX YWWXXX: Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ037N10D	TO-263	-	-	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_c=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	100	-	-	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} =100 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} =80 A	-	3.0	3.3	mΩ
R _G	Gate Resistance	f=1.0 MHz, open drain	-	1.9	-	S
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =80 A, V _{GS} =0 V	-	-	1.2	V
t _{rr}	Reverse Recovery Time	I _{DS} =80 A, V _{GS} =0 V, dI _{SD} /dt=100 A/μs	-	78	-	ns
Q _{rr}	Reverse Recovery Charge		-	12	-	nC
Dynamic Characteristics ^b						
C _{iSS}	Input Capacitance	V _{GS} =0 V, V _{DS} =50 V, f=1.0 MHz	-	4950	-	pF
C _{oSS}	Output Capacitance		-	1692	-	
C _{rSS}	Reverse Transfer Capacitance		-	43	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =50 V, V _{GEN} =10 V, R _G =2.4 Ω, I _{DS} =80 A	-	94	-	ns
t _r	Turn-on Rise Time		-	142	-	
t _{d(off)}	Turn-off Delay Time		-	306	-	
t _f	Turn-off Fall Time		-	120	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =50 V, V _{GS} =10 V, I _{DS} =80 A	-	120	-	nC
Q _{gs}	Gate-Source Charge		-	31.8	-	
Q _{gd}	Gate-Drain Charge		-	24	-	

Notes:

- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 1%
- Guaranteed by design, not subject to production testing

7. Typical Characteristics

Figure 1. Output Characteristics

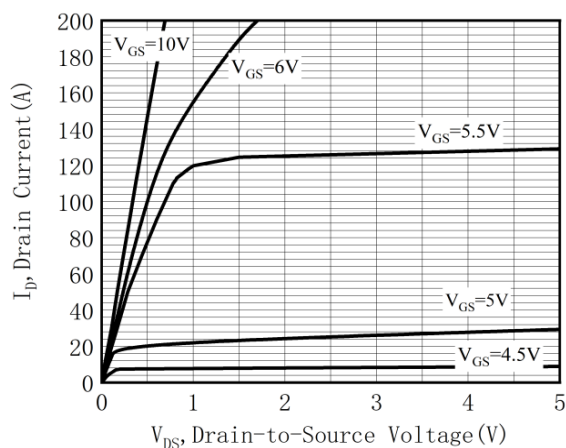


Figure 2. Transfer Characteristics

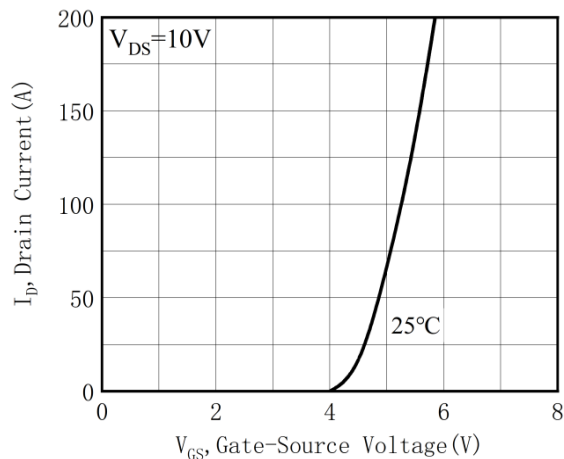


Figure 3. On-Resistance vs Drain Current

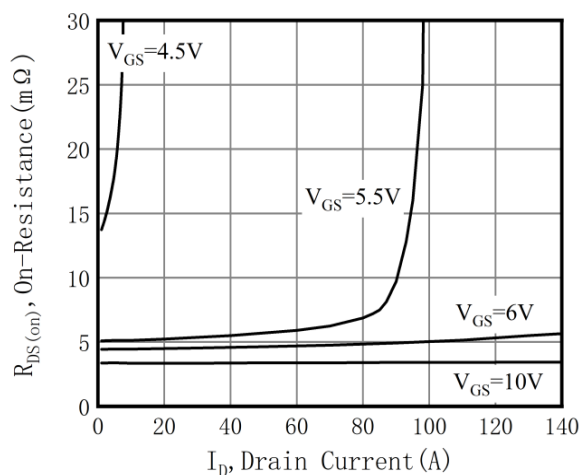


Figure 4. Capacitance

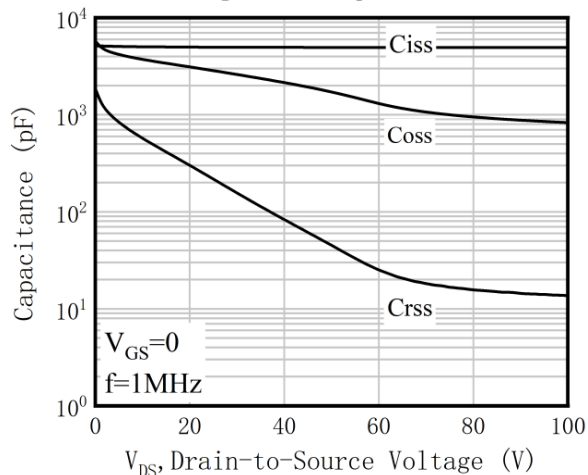


Figure 5. Gate Charge

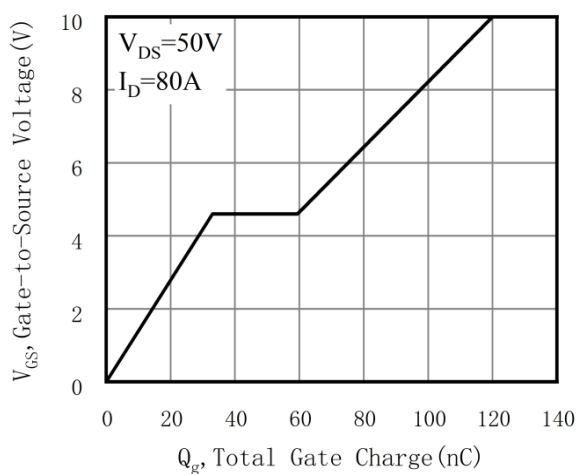
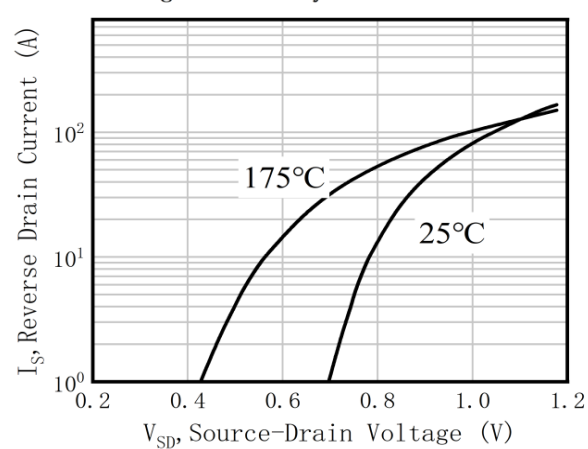


Figure 6. Body Diode Forward



7. Typical Characteristics (Cont.)

Figure 7. On-Resistance vs Junction Temperature

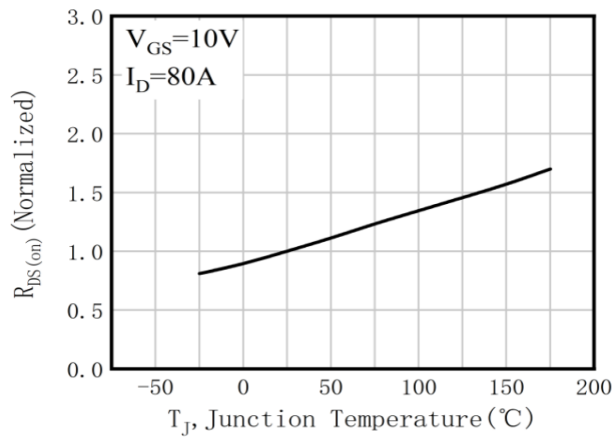


Figure 8. Threshold Voltage vs Junction Temperature

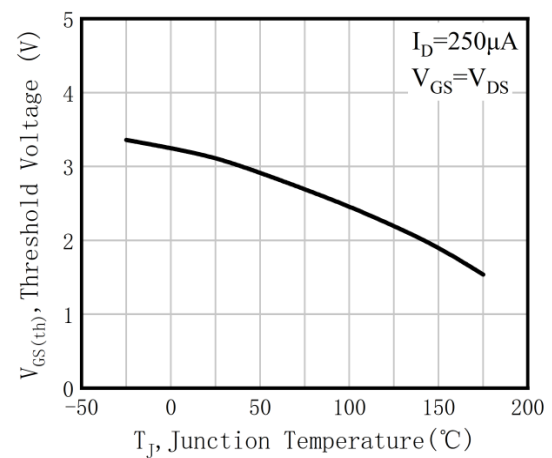


Figure 9. Transient thermal Impedance

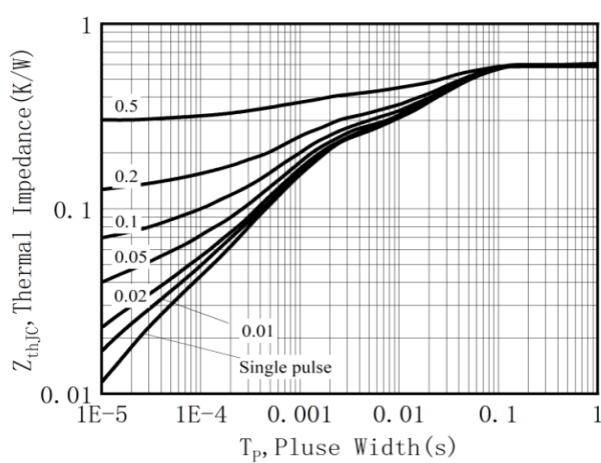
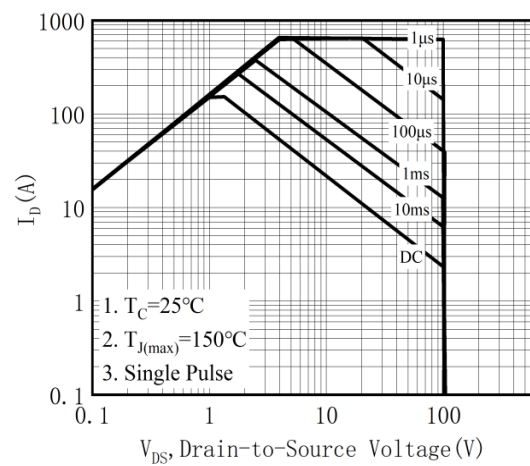
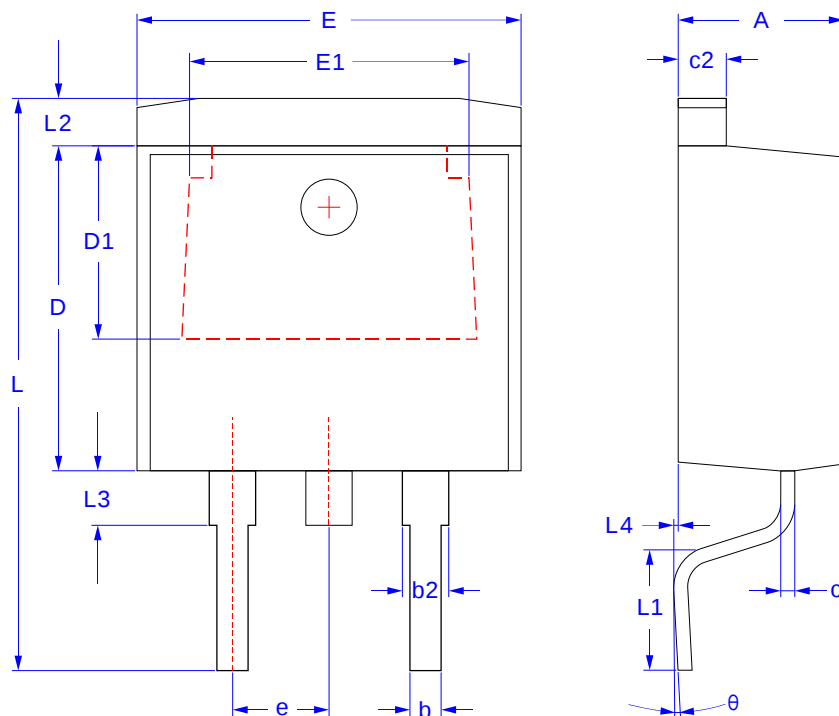


Figure 10. Safe Operating Area



8. Package Dimensions

TO-263 Package



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	4.40	4.80
b	0.76	1.00
b2	1.17	1.47
c	0.36	0.50
c2	1.25	1.45
D	8.60	9.00
D1	5.10 REF	
E	9.80	10.40
E1	7.40 REF	
e	2.54 REF	
L	14.6	15.8
L1	2.29	2.79
L2	1.27 REF	
L3	1.50 REF	
L4	0.00	0.25
θ	$0^\circ \pm 3^\circ$	