

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Advanced trench cell design
- ☒ Low Thermal Resistance

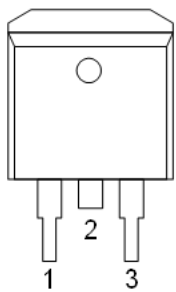
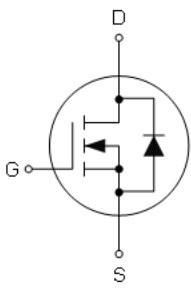
1.2 Applications

- ☒ Motor drivers
- ☒ DC/DC Converter

1.3 Quick reference

- ☒ $BV \geq 200\text{ V}$
- ☒ $P_{tot} \leq 250\text{ W}$
- ☒ $I_D \leq 107\text{ A}$
- ☒ $R_{DS(ON)} \leq 7.5\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- ☒ $R_{DS(ON)} \leq 8.0\text{ m}\Omega @ V_{GS} = 6\text{ V}$

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	$T_C=25^{\circ}\text{C}$	200	-	V
V_{GS}	Gate-Source Voltage	$T_C=25^{\circ}\text{C}$	-	± 20	V
I_D	Drain Current (DC)	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	107	A
		$T_C=100^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	67	A
I_{DM}^*	Drain Current (Pulsed)	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	420	A
P_D	Drain Power Dissipation	$T_C=25^{\circ}\text{C}$	-	250	W
T_{stg}	Storage Temperature		-55	150	$^{\circ}\text{C}$
T_J	Junction Temperature		-	150	$^{\circ}\text{C}$
I_S	Continuous-Source Current	$T_C=25^{\circ}\text{C}$	-	107	A
E_{AS}	Single Pulsed Avalanche Energy	$V_{DD}=50\text{ V}, L=0.3\text{ mH}$	-	568	mJ
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		-	42	$^{\circ}\text{C/W}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case		-	0.5	$^{\circ}\text{C/W}$

Notes:

- * Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- ** Surface mounted on 1 in² pad area, $t \leq 10\text{ sec}$.
- *** Limited by bonding wire.

4. Marking Information

Product Name	Marking
KJ08N20D	KJ08N20D XXXXXX-1

5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ08N20D	TO-263	13"	24 mm	800

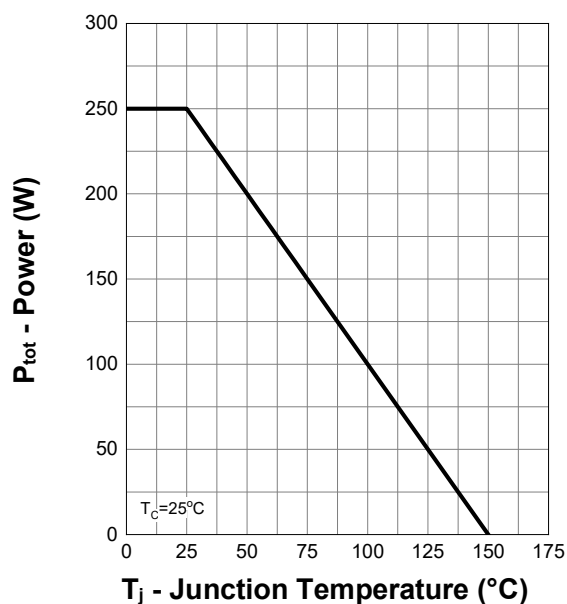
Note: KUAJIEXIN defines "Green" as lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC/JEDEC J-STD-020C)

6. Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

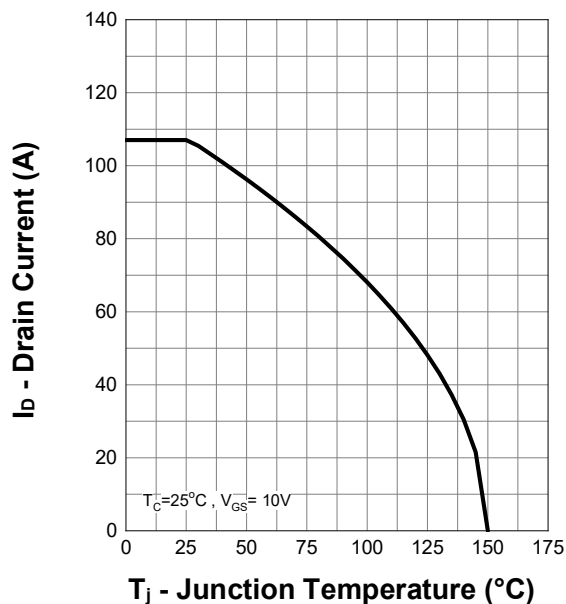
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _{DS} =250 μA	200	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250 μA	2.0	-	4.0	V
I _{DSS}	Zero Gate Voltage Source Current	V _{DS} =160 V, V _{GS} =0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{DS} =0 V, V _{GS} =±20 V	-	-	±100	nA
R _{DS(ON)}	On-State Resistance	V _{GS} =10 V, I _{DS} =30 A	-	6.9	7.5	mΩ
		V _{GS} =6 V, I _{DS} =20 A	-	7.1	8.0	
Diode Characteristics						
V _{SD}	Diode Forward Voltage	I _{SD} =30 A, V _{GS} =0 V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} =30 A, V _{GS} =0 V, dI _{SD} /dt=100 A/μs	-	140	-	ns
Q _{rr}	Reverse Recovery Charge		-	776	-	nC
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =100 V, Frequency=1 MHz	-	11518	-	pF
C _{oss}	Output Capacitance		-	484	-	
C _{rss}	Reverse Transfer Capacitance		-	35	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =100 V, V _{GEN} =10 V, R _G =3.9 Ω, R _L =3.3 Ω, I _{DS} =30 A	-	19	-	ns
t _r	Turn-on Rise Time		-	81	-	
t _{d(off)}	Turn-off Delay Time		-	107	-	
t _f	Turn-off Fall Time		-	102	-	
Gate Charge Characteristics						
Q _g	Total Gate Charge	V _{DS} =100 V, V _{GS} =10 V, I _{DS} =30 A	-	176	-	nC
Q _{gs}	Gate-Source Charge		-	54	-	
Q _{gd}	Gate-Drain Charge		-	26	-	

7. Typical Characteristics

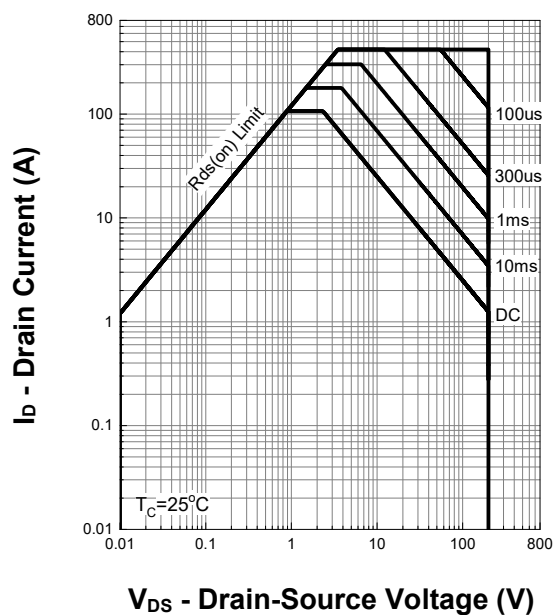
Power Capability



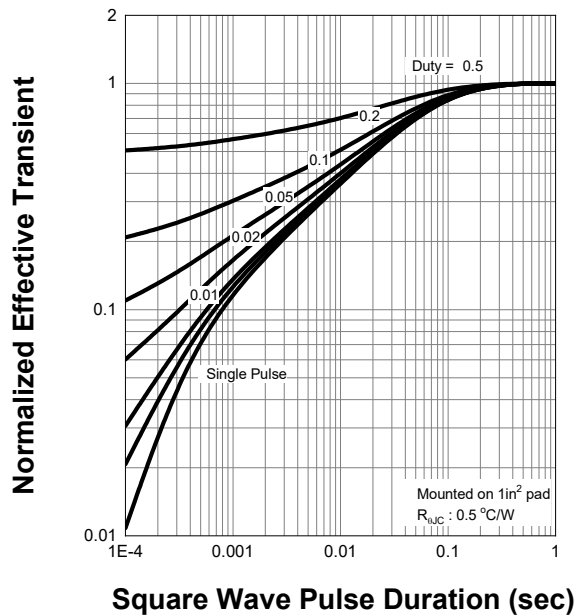
Current Capability



Safe Operating Area

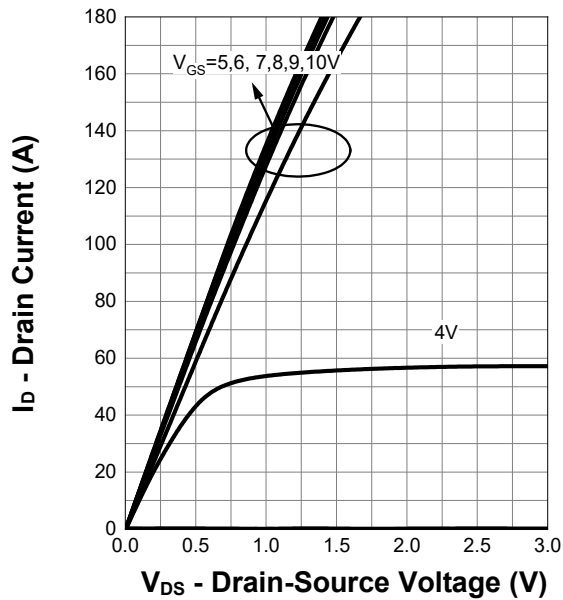


Transient Thermal Impedance

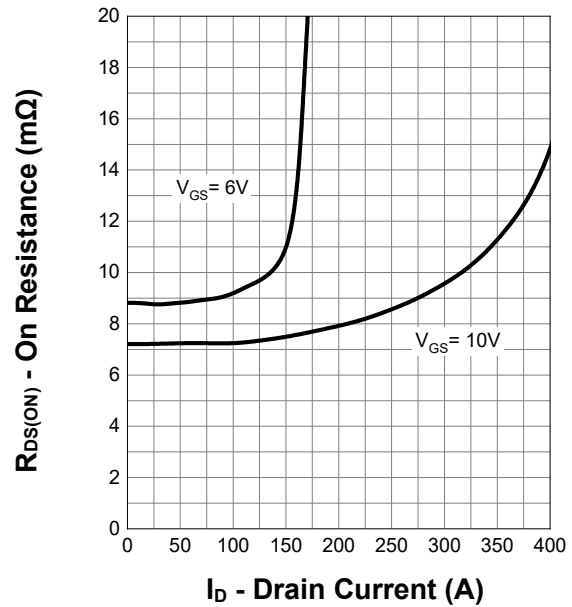


7. Typical Characteristics (cont.)

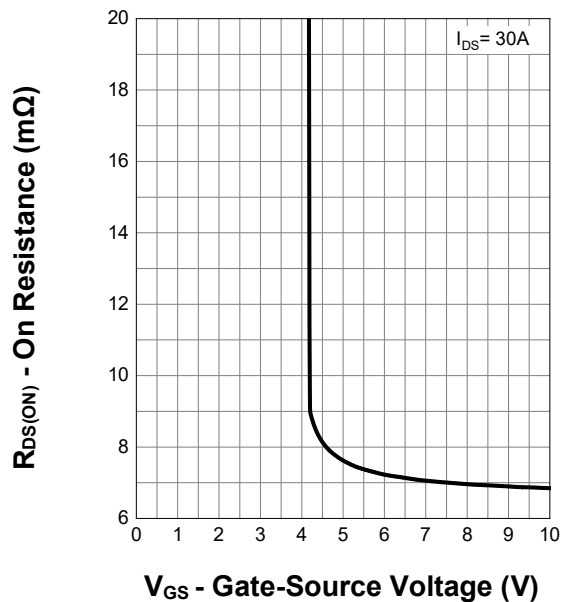
Output Characteristics



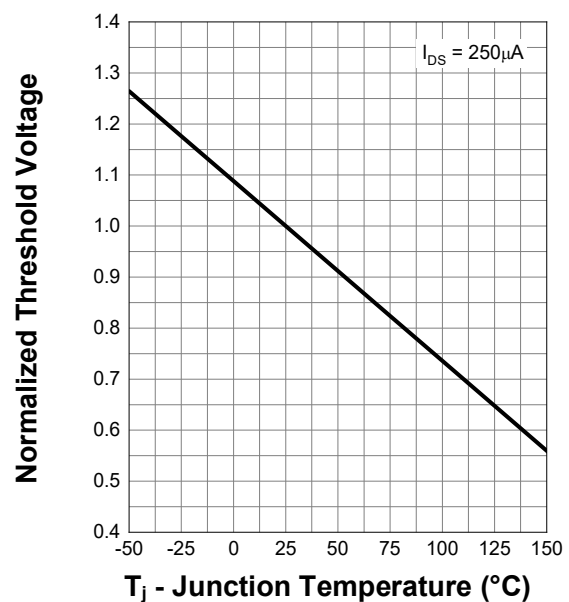
On Resistance



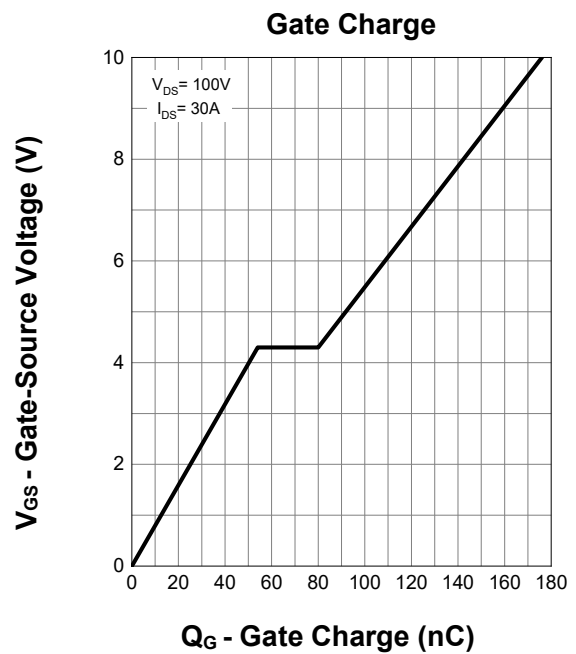
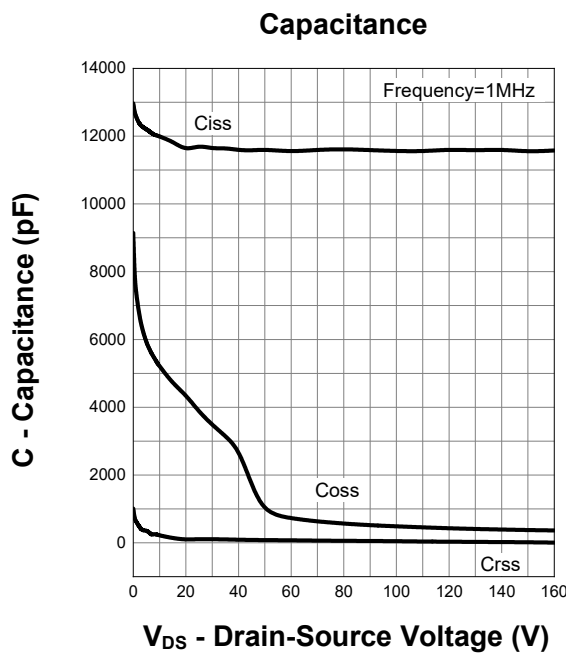
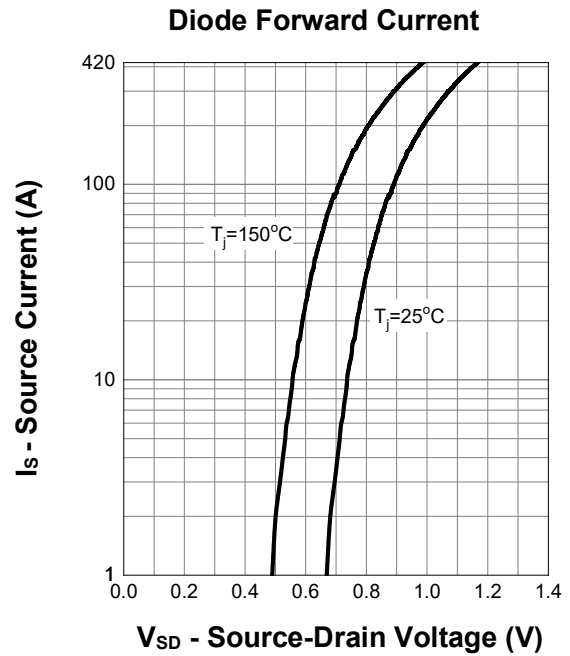
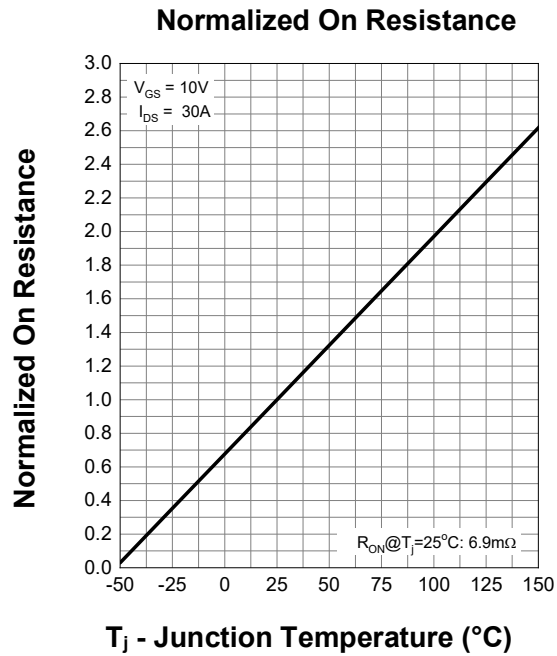
Transfer Characteristics



Normalized Threshold Voltage

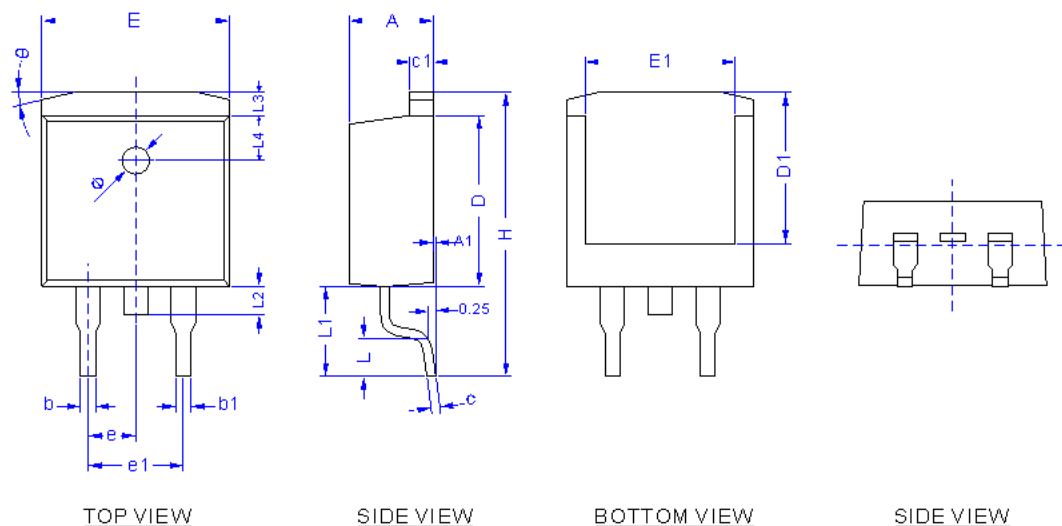


7. Typical Characteristics (cont.)



8. Package Dimensions

TO-263 Package



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	MIN.	MAX.	MIN.	MAX.
A	4.30	4.70	0.169	0.185
A1	0.00	0.25	0.000	0.010
b	0.70	0.90	0.028	0.035
b1	1.20	1.40	0.047	0.055
c	0.40	0.55	0.016	0.022
c1	1.25	1.35	0.049	0.053
D	9.00	9.20	0.354	0.362
D1	8.00	8.20	0.315	0.323
H	14.90	15.20	0.587	0.598
E	9.80	10.20	0.386	0.402
E1	7.85	8.15	0.309	0.321
e1	4.93	5.23	0.194	BSC
L	2.00	2.45	0.079	0.096
L1	4.60	5.00	0.181	0.197
L2	1.30	1.70	0.051	0.067
L3	1.15	1.35	0.045	0.053
L4	2.40	2.60	0.094	0.102
Φ	1.50 REF		0.591 REF	
e	2.54 BSC		0.100 BSC	
θ	13° TYP		0.512° TYP	