

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Advanced trench cell design
- ☒ Low Thermal Resistance

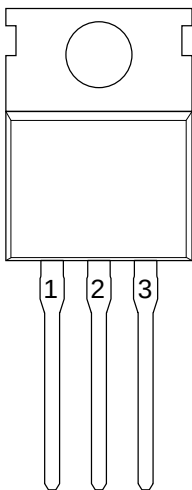
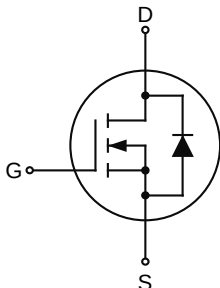
1.2 Applications

- ☒ Motor drivers
- ☒ DC/DC Converter

1.3 Quick reference

- ☒ $BV \geq 150\text{ V}$
- ☒ $P_{tot} \leq 147\text{ W}$
- ☒ $I_D \leq 85\text{ A}$
- ☒ $R_{DS(ON)} \leq 10\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- ☒ $R_{DS(ON)} \leq 12\text{ m}\Omega @ V_{GS} = 6\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 Top View TO-220	
2	Drain(D)		
3	Source(S)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_C=25^{\circ}\text{C}$	-	150	V
V_{GS}	Gate-Source Voltage	$T_C=25^{\circ}\text{C}$	-	± 25	V
I_D^*	Drain Current (DC)	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	85	A
		$T_C=100^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	43	A
$I_{DM}^{*,**,***}$	Drain Current (Pulsed)	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	240	A
P_{tot}	Drain power dissipation	$T_C=25^{\circ}\text{C}$	-	147	W
T_{stg}	Storage Temperature		-55	150	$^{\circ}\text{C}$
T_J	Junction Temperature		-	150	$^{\circ}\text{C}$
I_S	Continuous-Source Current	$T_C=25^{\circ}\text{C}$	-	85	A
E_{AS}	Single Pulsed Avalanche Energy	$V_{DD}=50\text{ V}, L=1.0\text{ mH}$	-	648	mJ
$R_{\theta JA}^*$	Thermal Resistance-Junction to Ambient		-	45	$^{\circ}\text{C/W}$
$R_{\theta JC}^*$	Thermal Resistance-Junction to Case		-	0.3	

Notes:

* Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec.}$

** Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

*** Limited by bonding wire.

4. Marking Information

Product Name	Marking
KJ0915C	0915 YWWXXX YWWXXX: Date Code

5. Ordering Code

Product Name	Package	Packing	Quantity (pcs)	Note
KJ0915C	TO-220	Tube	50	

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)

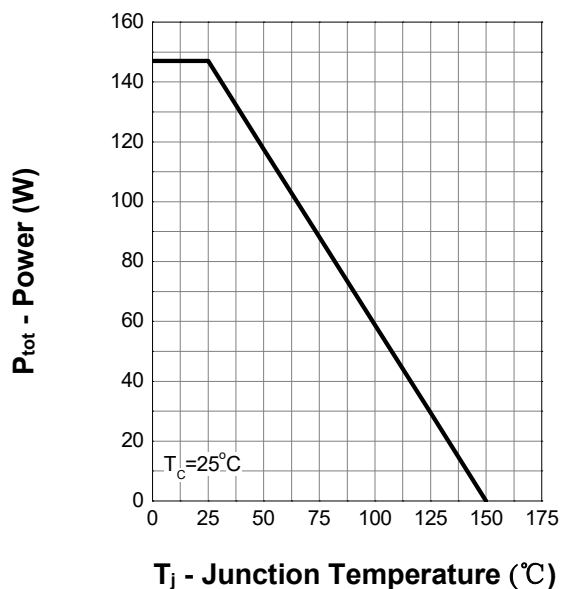
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _{DS} =250 μA	150	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250 μA	2.0	-	4.0	V
I _{DSS}	Drain Leakage Current	V _{DS} =120 V, V _{GS} =0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{GS} =0 V, V _{GS} =±25 V	-	-	±100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} =10 V, I _{DS} =30 A	-	9	10	mΩ
		V _{GS} =6 V, I _{DS} =20 A	-	11	12	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =30 A, V _{GS} =0 V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _{DS} =30 A, V _{GS} =0 V, dI _{SD} /dt=100 A/μs	-	94	-	ns
Q _{rr}	Reverse Recovery Charge		-	328	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =75 V, Frequency=1 MHz	-	4848	-	pF
C _{oss}	Output Capacitance		-	326	-	
C _{rss}	Reverse Transfer Capacitance		-	26	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =75 V, V _{GEN} =10 V, R _G =3.9 Ω, R _L =2.5 Ω, I _{DS} =30 A	-	16	-	ns
t _r	Turn-on Rise Time		-	53	-	
t _{d(off)}	Turn-off Delay Time		-	51	-	
t _f	Turn-off Fall Time		-	61	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =75 V, V _{GS} =10 V, I _{DS} =30 A	-	79	-	nC
Q _{gs}	Gate-Source Charge		-	25	-	
Q _{gd}	Gate-Drain Charge		-	17	-	

Notes:

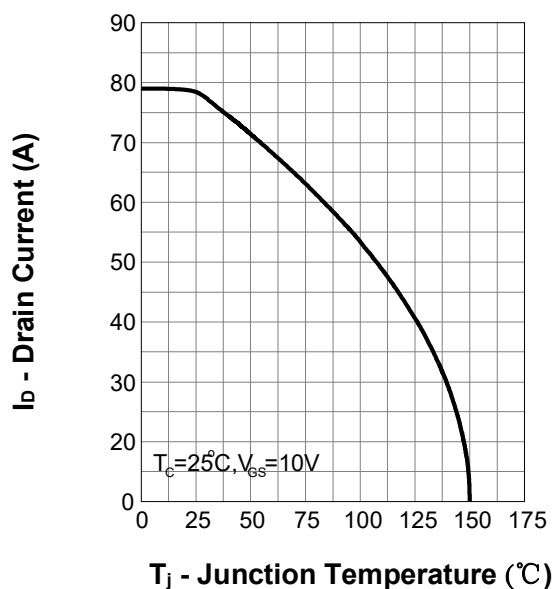
- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

7. Typical Characteristics

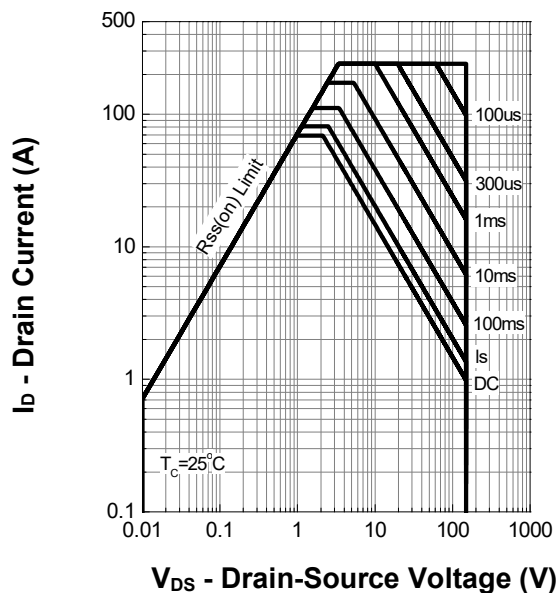
Power Capability



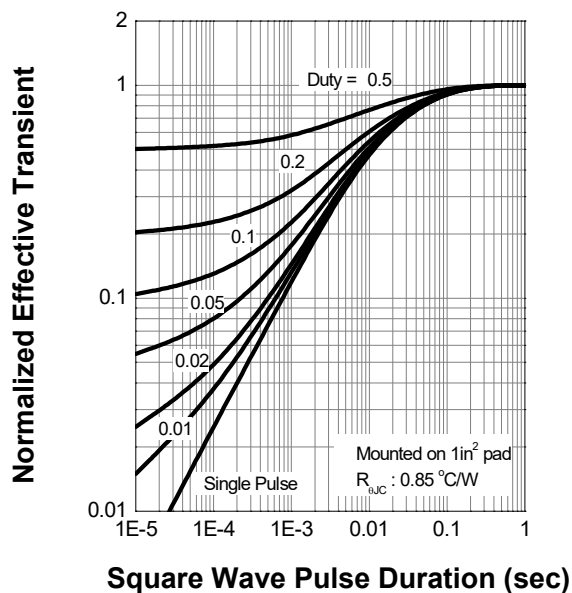
Current Capability



Safe Operation Area

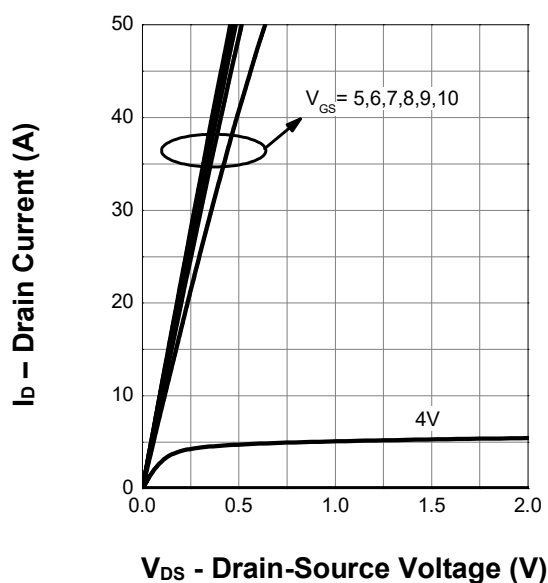


Thermal Transient Impedance

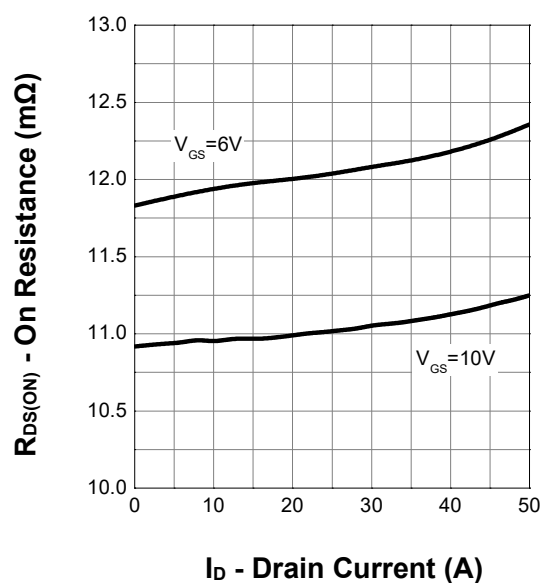


7. Typical Characteristics (cont.)

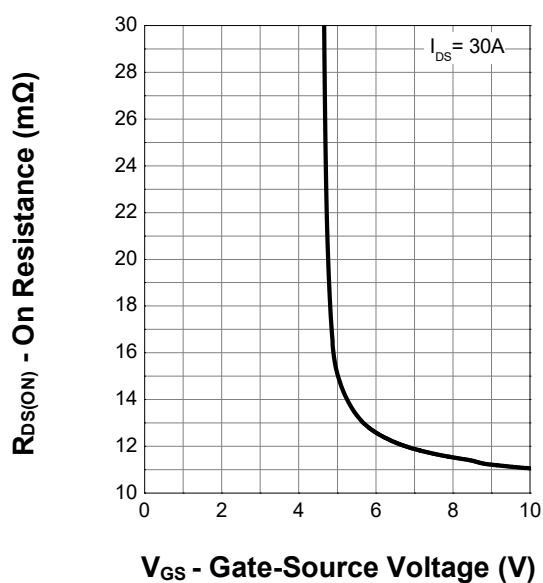
Output Characteristics



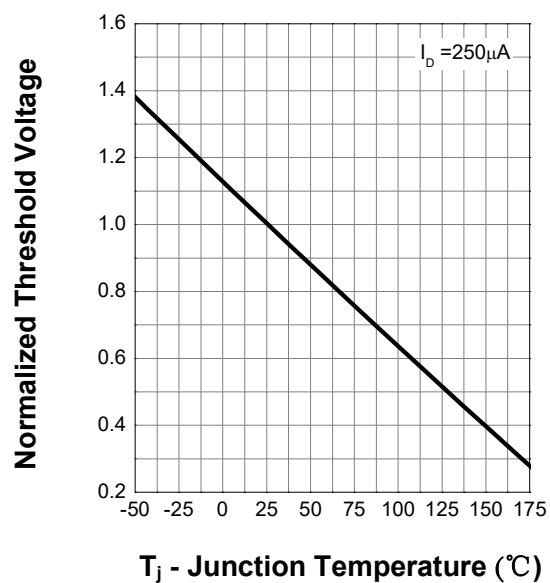
Drain-Source On Resistance



Transfer Characteristics

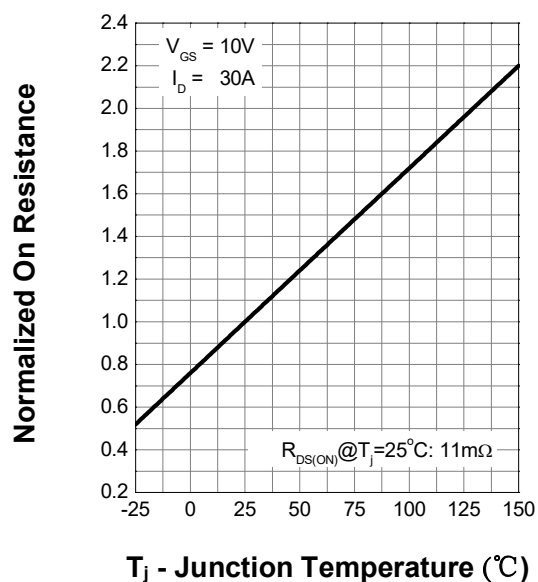


Gate Threshold Voltage

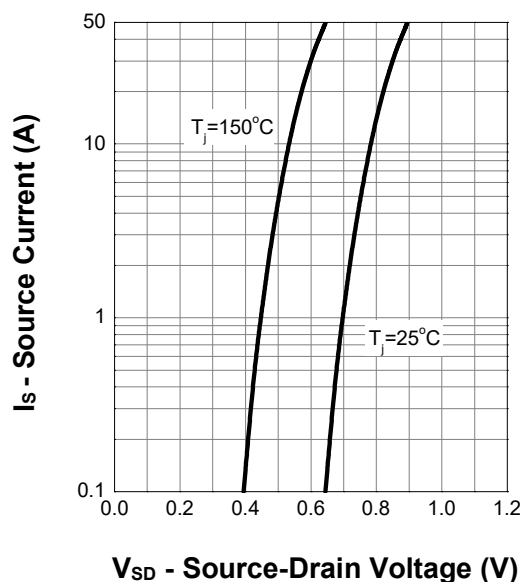


7. Typical Characteristics (cont.)

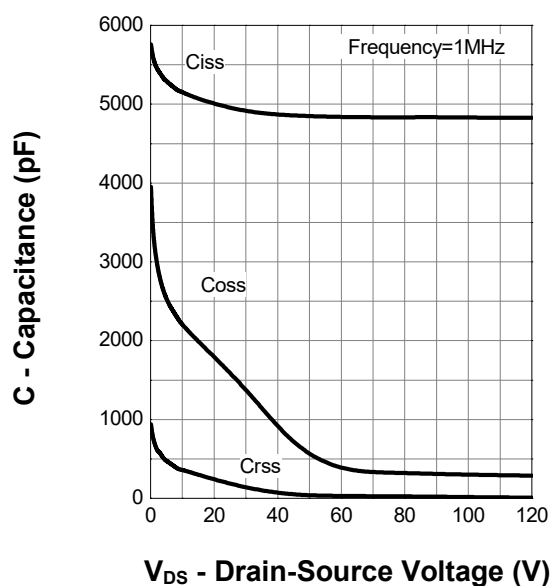
Drain-Source On Resistance



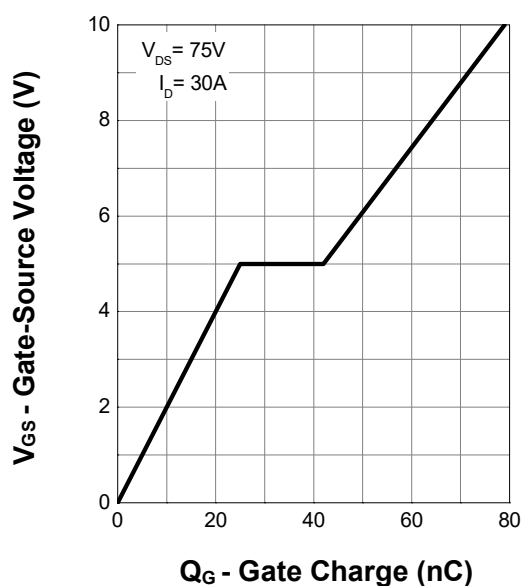
Body Diode Characteristics



Capacitance

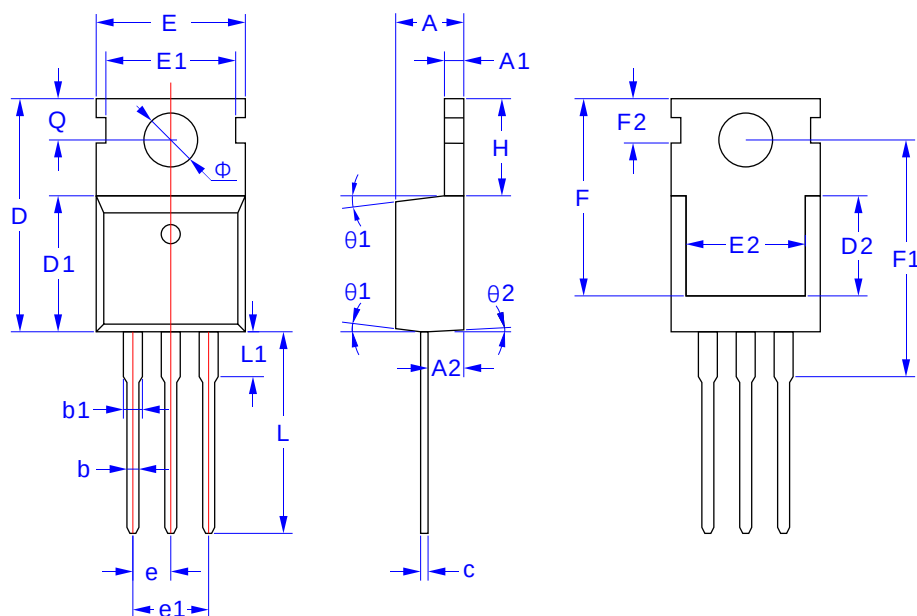


Gate Charge



8. Package Dimensions

TO-220 Package



Symbol	Dimensions in Millimeters		
	MIN.	NOM.	MAX.
A	4.27	4.57	4.87
A1	1.15	1.30	1.45
A2	2.10	2.40	2.70
b	0.70	0.80	1.00
b1	1.17	1.27	1.50
c	0.40	0.50	0.65
D	15.50	15.80	16.10
D1	8.80	9.10	9.40
D2	5.70	6.70	7.00
E	9.70	10.00	10.30
E1	-	8.70	-
E2	7.00	8.00	8.40
e	2.54		
e1	5.08		
F	13.30	13.50	13.70
F1	15.50	15.90	16.30
F2	2.80	3.00	3.20
H	6.00	6.50	6.85
L	12.75	13.50	13.90
L1	-	3.10	3.40
Q	2.60	2.80	3.00
Φ	3.45	3.60	3.75
θ1	4°	7°	10°
θ2	0°	3°	6°