

Dual N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- Surface-mounted package
 Advanced trench cell design
- Extremely low threshold voltage
 ESD:2KV

1.2 Applications

- Portable appliances
- Battery management

1.3 Quick reference

- $BV \geq 20\text{ V}$
 $P_{tot} \leq 1.25\text{ W}$
 $I_D \leq 10\text{ A}$
- $R_{DS(ON)} \leq 11\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$
 $R_{DS(ON)} \leq 12\text{ m}\Omega @ V_{GS} = 3.9\text{ V}$
 $R_{DS(ON)} \leq 14\text{ m}\Omega @ V_{GS} = 2.5\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
 <p>Schematic diagram</p>	 <p>DFN2x2-6L Pin definition and Top / Bottom View</p>	 <p>Bottom (D1/D2)</p>	



3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	20	-	V
V_{GS}	Gate-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	-	± 12	V
I_D^*	Drain Current	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = 4.5\text{ V}$	-	10	A
$I_{DM}^{*,**}$	Pulsed Drain Current	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = 4.5\text{ V}$	-	30	A
P_{tot}^*	Total Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	-	1.25	W
T_{stg}	Storage Temperature		- 55	150	$^\circ\text{C}$
T_J	Junction Temperature		-	150	$^\circ\text{C}$
I_S^*	Diode Forward Current	$T_A = 25\text{ }^\circ\text{C}$	-	10	A
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	100	$^\circ\text{C} / \text{W}$

Notes :

- * Surface Mounted on 1 in² pad area, $t \leq 10$ sec
- ** Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

4. Marking Information

Product Name	Marking
KJ2R09A	<div style="display: inline-block; background-color: black; color: white; padding: 2px;">2R09A YWWXXX</div> YWWXXX: Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ2R09A	DFN2*2			3000	

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 ($T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
Static Characteristics							
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\text{ }\mu\text{A}$	20	-	-	V	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = 250\text{ }\mu\text{A}$	0.5	-	1.0	V	
I_{DSS}	Drain Leakage Current	$V_{DS} = 16\text{ V}, V_{GS} = 0\text{ V}$ $T_J = 85\text{ }^\circ\text{C}$	-	-	1	μA	
			-	-	30	μA	
I_{GSS}	Gate Leakage Current	$V_{GS} = \pm 10\text{ V}, V_{DS} = 0\text{ V}$	-	-	± 10	μA	
$R_{DS(ON)}^a$	On-State Resistance		$V_{GS} = 4.5\text{ V}, I_{DS} = 7\text{ A}$	-	10	11	m Ω
			$V_{GS} = 3.9\text{ V}, I_{DS} = 5\text{ A}$	-	11	12	
			$V_{GS} = 2.5\text{ V}, I_{DS} = 4\text{ A}$		12	14	
Diode Characteristics							
V_{SD}^a	Diode Forward Voltage	$I_{SD} = 7\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.2	V	
Dynamic Characteristics^b							
C_{iss}	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 10\text{ V}$ Frequency = 10 KHz	-	938	-	pF	
C_{oss}	Output Capacitance		-	139	-		
C_{rss}	Reverse Transfer Capacitance		-	122	-		
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 10\text{ V}, V_{GEN} = 4.5\text{ V},$ $R_G = 4.5\text{ }\Omega, R_L = 1.42\text{ }\Omega,$ $I_{DS} = 7\text{ A}$	-	0.1	-	uS	
t_r	Turn-on Rise Time		-	0.3	-		
$t_d(off)$	Turn-off Delay Time		-	3.4	-		
t_f	Turn-off Fall Time		-	2.8	-		
Gate Charge Characteristics^b							
Q_g	Total Gate Charge	$V_{GS} = 4.5\text{ V}, V_{DS} = 10\text{ V},$ $I_{DS} = 7\text{ A}$	-	15	-	nC	
Q_{gs}	Gate-Source Charge		-	3	-		
Q_{gd}	Gate-Drain Charge		-	4	-		

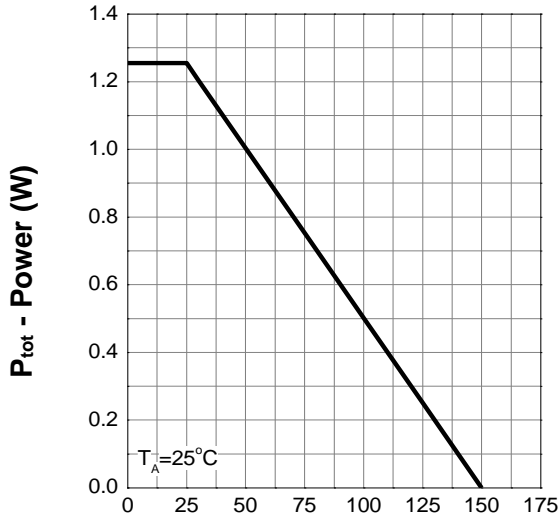
Notes :

- a : Pulse test ; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$
- b : Guaranteed by design, not subject to production testing



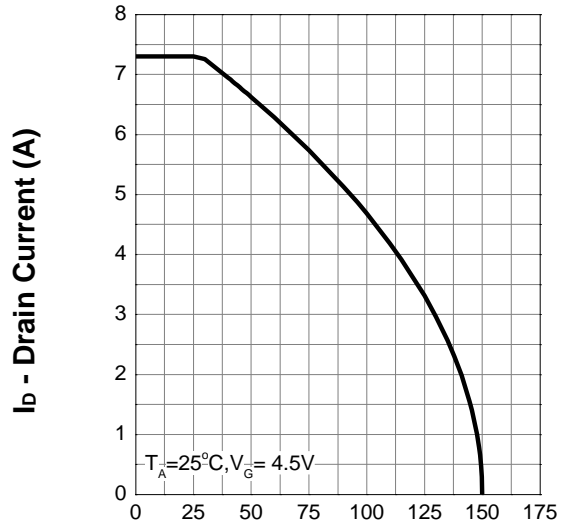
7. Typical Characteristics

Power Capability



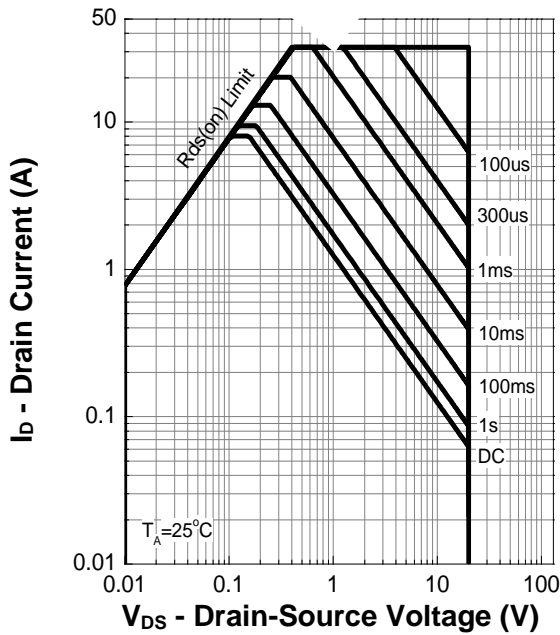
T_j - Junction Temperature (°C)

Current Capability

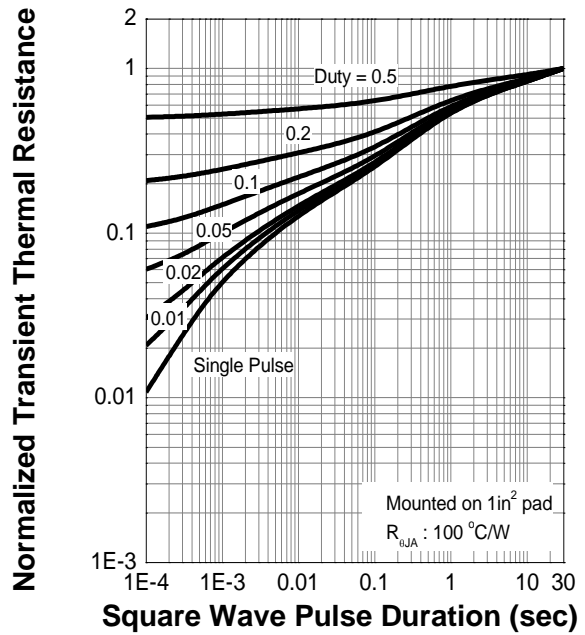


T_j - Junction Temperature (°C)

Safe Operation Area



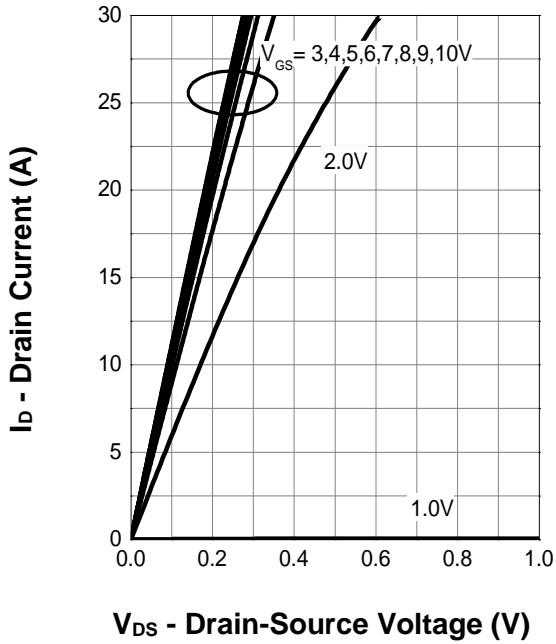
Transient Thermal Impedance



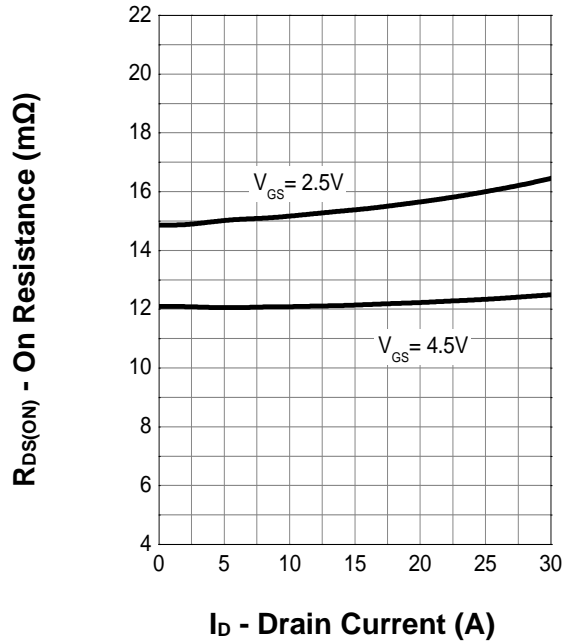


7. Typical Characteristics (cont.)

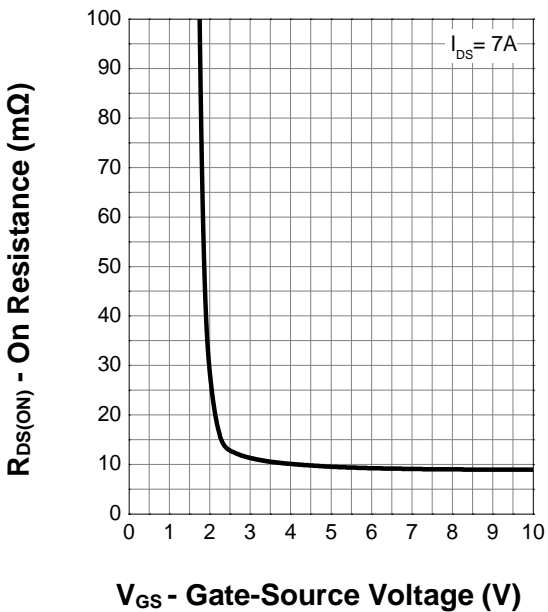
Output Characteristics



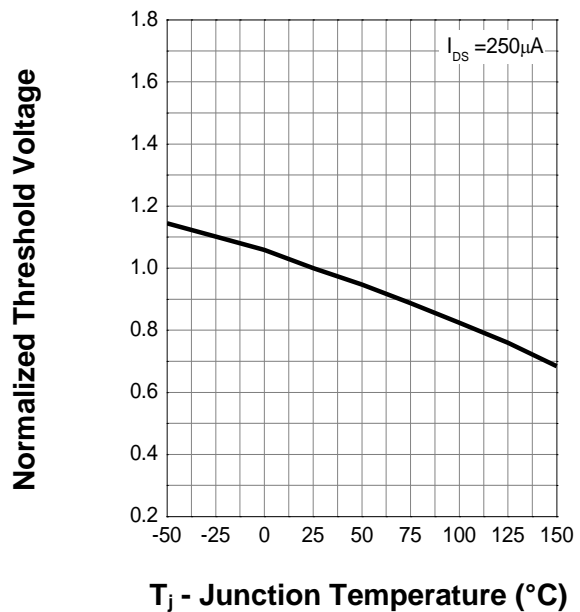
On Resistance



Transfer Characteristics

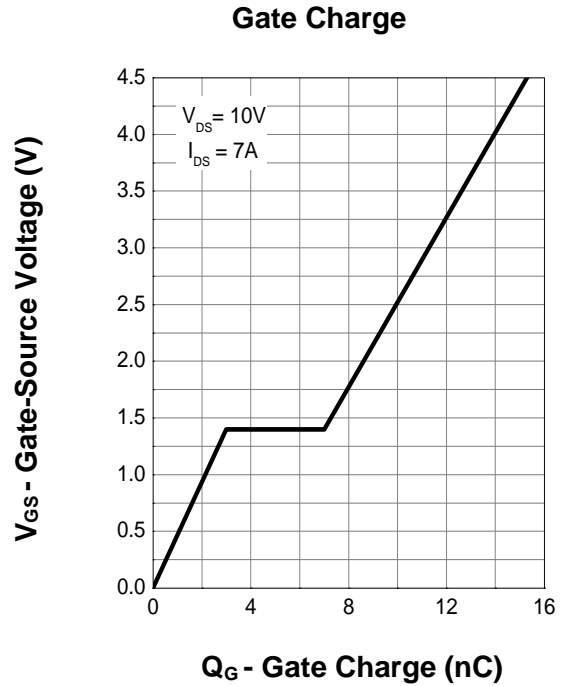
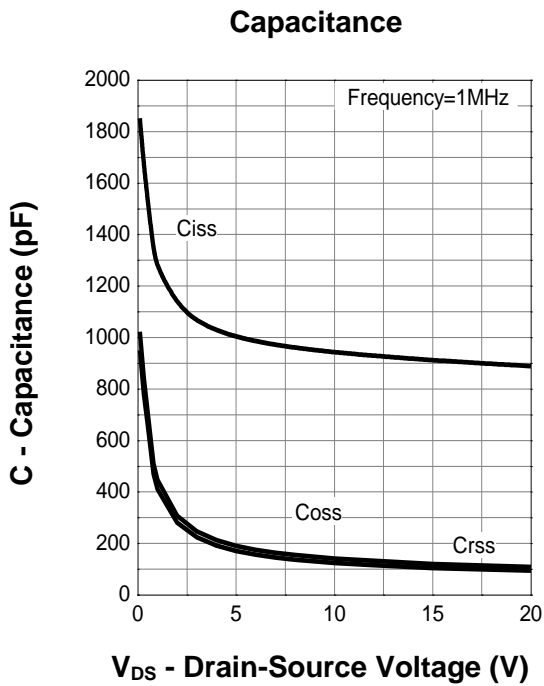
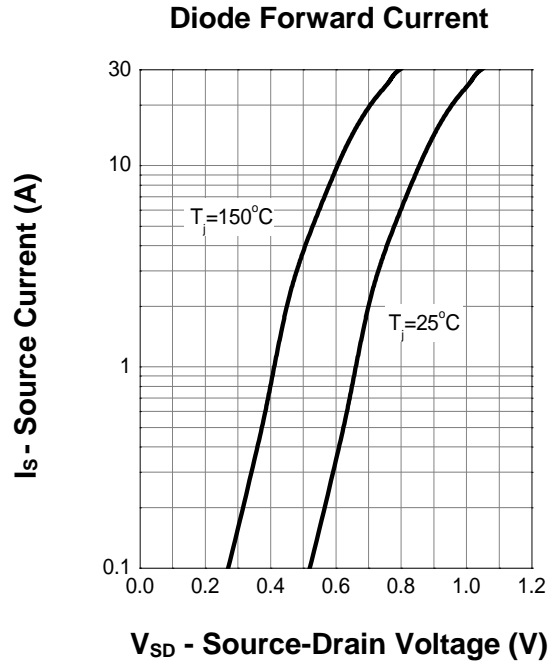
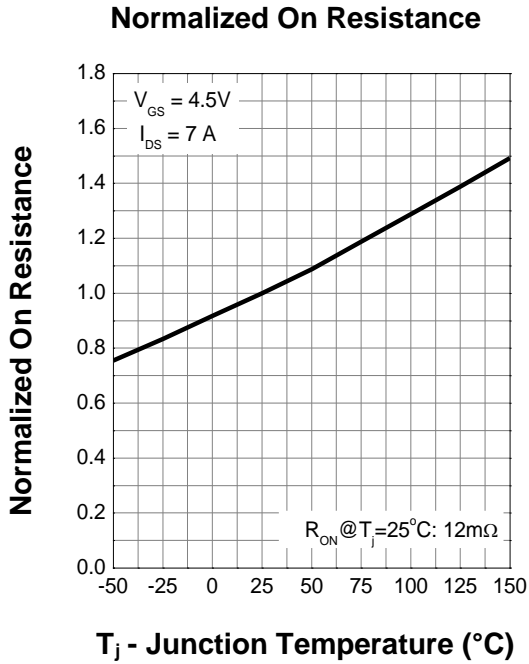


Normalized Threshold Voltage





7. Typical Characteristics (cont.)





8. Package Dimensions DFN2*2-6L

