

## N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

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

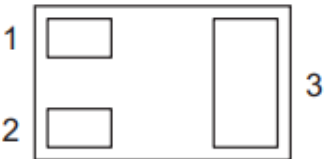
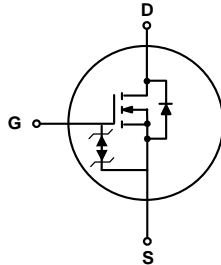
#### 1.2 Applications

- Portable appliances

#### 1.3 Quick reference

- $BV \geq 60\text{ V}$
- $R_{DS(ON)} \leq 1.2\ \Omega @ V_{GS} = 10\text{ V}$
- $P_{tot} \leq 0.43\text{ W}$
- $R_{DS(ON)} \leq 1.5\ \Omega @ V_{GS} = 5\text{ V}$
- $I_D \leq 0.5\text{ A}$

### 2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)		
2	Source(S)		
3	Drain(D)		

**Bottom View  
DFN1006-3L**



### 3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>DS</sub>	Drain-Source Voltage	T <sub>A</sub> = 25 °C	60	-	V
V <sub>GS</sub>	Gate-Source Voltage	T <sub>A</sub> = 25 °C	-	± 20	V
I <sub>D</sub> *	Drain Current	T <sub>A</sub> = 25 °C, V <sub>GS</sub> = 10 V	-	0.5	A
I <sub>DM</sub> **	Pulsed Drain Current	T <sub>A</sub> = 25 °C, V <sub>GS</sub> = 10 V	-	1.6	A
P <sub>tot</sub> *	Total Power Dissipation	T <sub>A</sub> = 25 °C	-	0.43	W
T <sub>stg</sub>	Storage Temperature		- 55	150	°C
T <sub>J</sub>	Junction Temperature		-	150	°C
I <sub>S</sub>	Diode Forward Current	T <sub>A</sub> = 25 °C	-	0.5	A
R <sub>θJA</sub> *	Thermal Resistance- Junction to Ambient		-	290	°C / W

Notes :

- \* Surface Mounted on 1 in<sup>2</sup> pad area, t ≤ 10 sec
- \*\* Pulse width ≤ 300 μs, duty cycle ≤ 2 %

### 4. Marking Information

Product Name	Marking
KJSS138N1	

### 5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJSS138N1	DFN1006-3			10000	

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 )



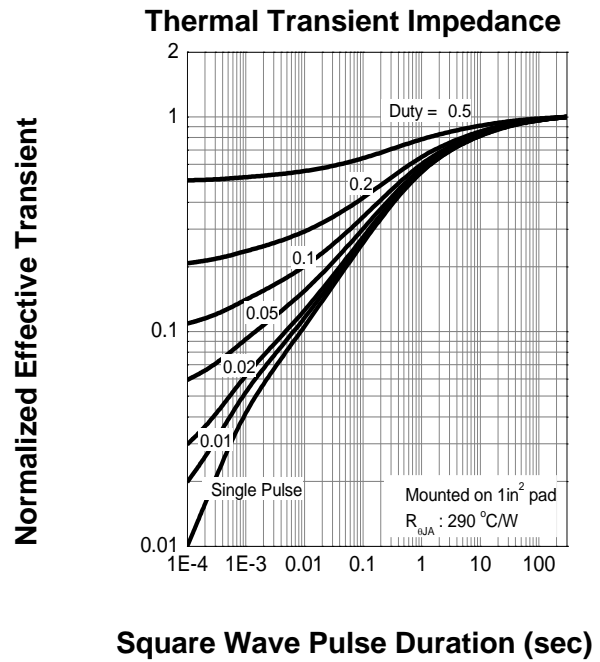
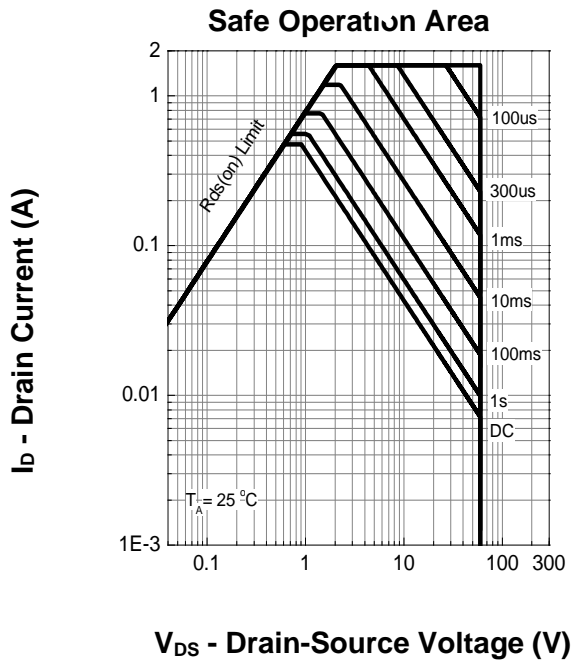
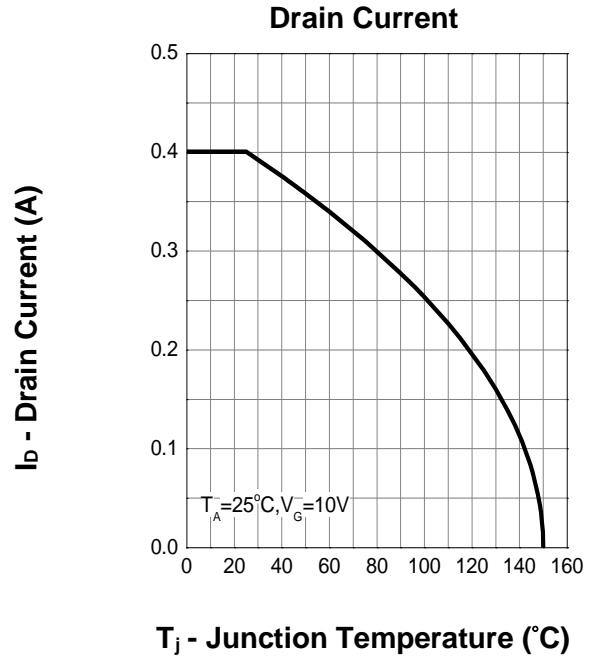
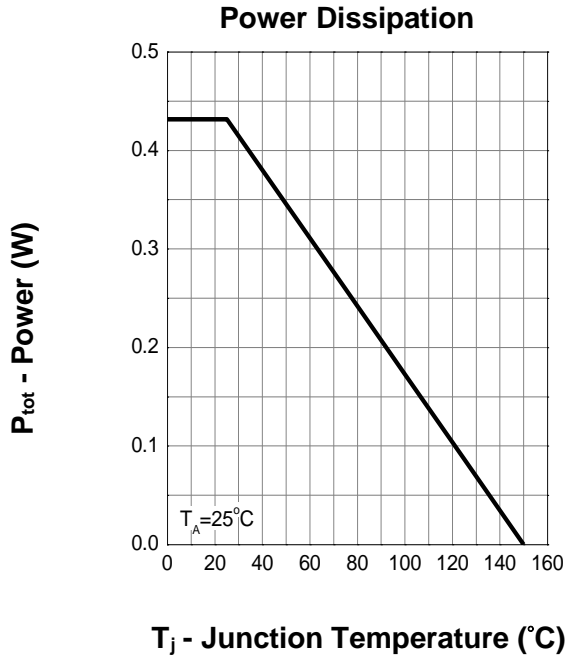
6. Electrical Characteristics (  $T_A = 25\text{ }^\circ\text{C}$  Unless Otherwise Noted )

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\text{ }\mu\text{A}$	60	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = 250\text{ }\mu\text{A}$	0.5	-	1.5	V
$I_{DSS}$	Drain Leakage Current	$V_{DS} = 48, V_{GS} = 0\text{ V}$	-	-	1	$\mu\text{A}$
		$T_J = 85\text{ }^\circ\text{C}$	-	-	30	$\mu\text{A}$
$I_{GSS}$	Gate Leakage Current	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$	-	-	$\pm 10$	$\mu\text{A}$
$R_{DS(ON)}^a$	On-State Resistance	$V_{GS} = 10\text{ V}, I_{DS} = 0.2\text{ A}$	-	1	1.2	$\Omega$
		$V_{GS} = 5\text{ V}, I_{DS} = 0.1\text{ A}$	-	1.1	1.5	
<b>Diode Characteristics</b>						
$V_{SD}^a$	Diode Forward Voltage	$I_{SD} = 0.2\text{ A}, V_{GS} = 0\text{ V}$	-	-	1	V
<b>Dynamic Characteristics<sup>b</sup></b>						
$C_{iss}$	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}$ Frequency = 1 MHz	-	34	-	pF
$C_{oss}$	Output Capacitance		-	3.6	-	
$C_{rss}$	Reverse Transfer Capacitance		-	2.3	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 30\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 4.5\text{ }\Omega, R_L = 150\text{ }\Omega,$ $I_{DS} = 0.2\text{ A}$	-	2.7	-	nS
$t_r$	Turn-on Rise Time		-	2.7	-	
$t_d(off)$	Turn-off Delay Time		-	9.9	-	
$t_f$	Turn-off Fall Time		-	10.8	-	
$Q_g$	Total Gate Charge	$V_{GS} = 10\text{ V}, V_{DS} = 30\text{ V},$ $I_{DS} = 0.2\text{ A}$	-	1.4	-	nC
$Q_{gs}$	Gate-Source Charge		-	0.4	-	
$Q_{gd}$	Gate-Drain Charge		-	0.2	-	

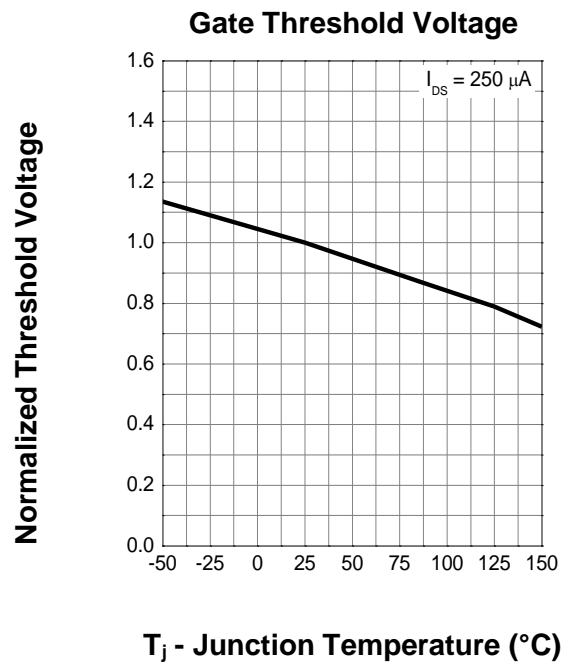
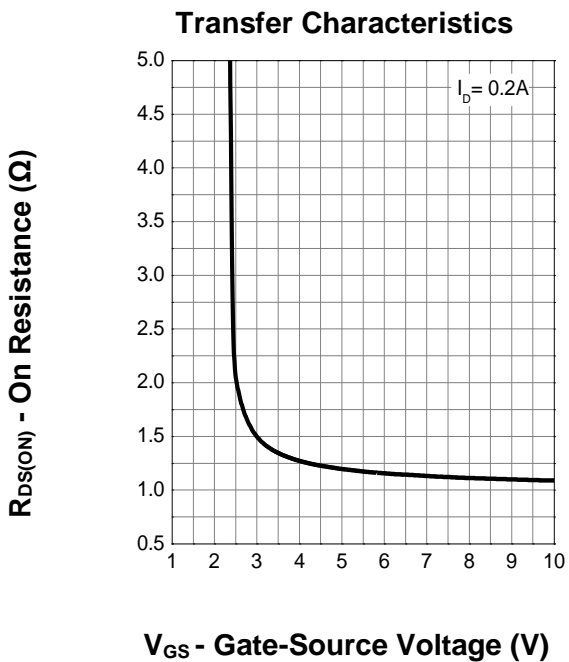
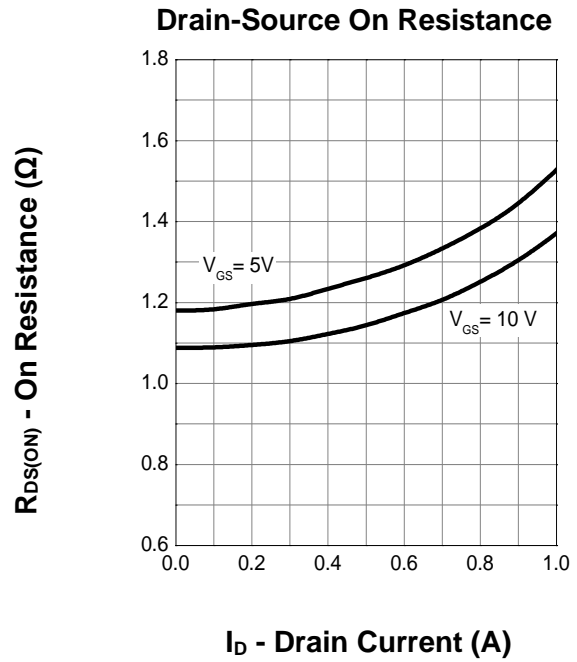
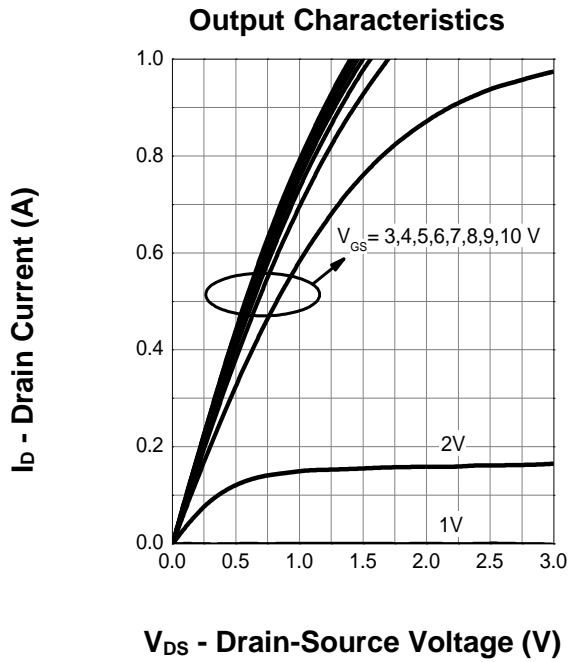
Notes :

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

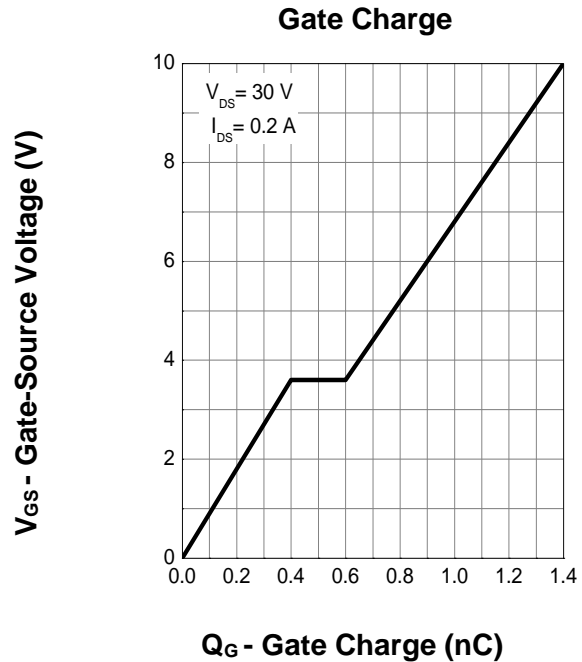
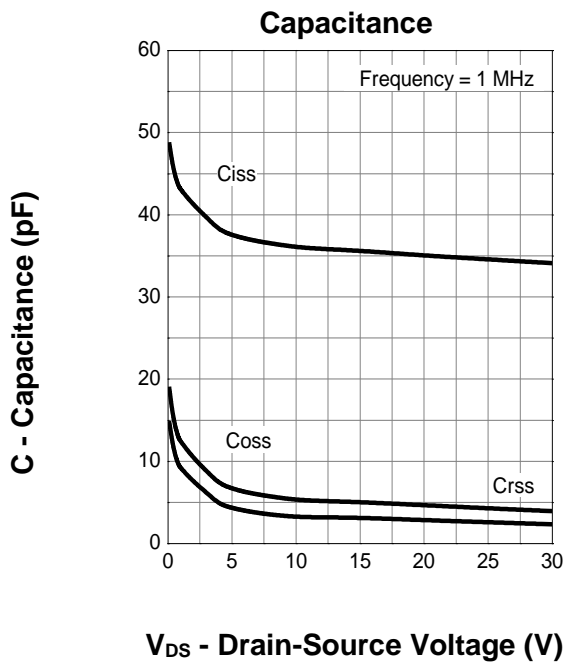
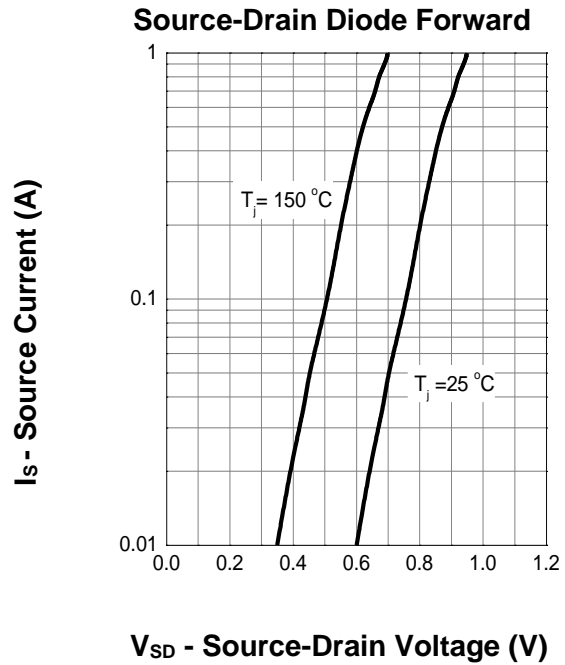
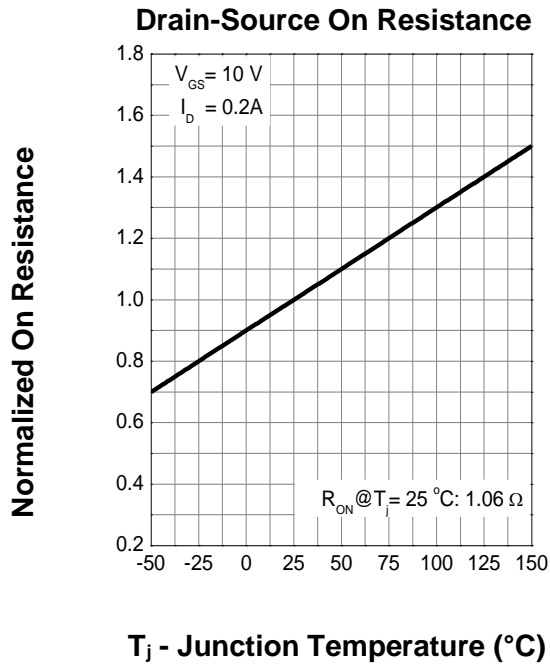
## 7. Typical Characteristics



## 7. Typical Characteristics (cont.)



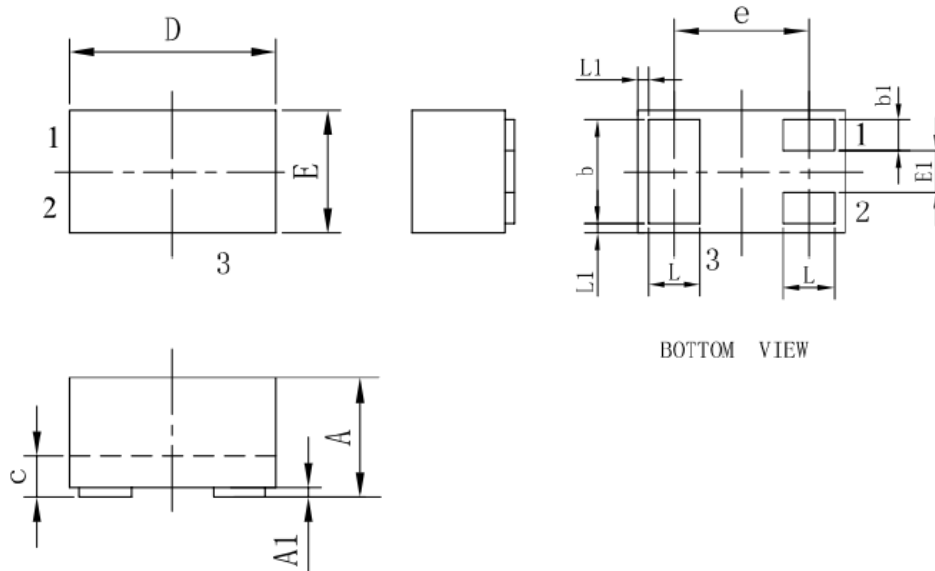
## 7. Typical Characteristics (cont.)





### 8. Package Dimensions

DFN1006-3L



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	0	0.02	0.05
b	0.45	0.50	0.55
b1	0.10	0.15	0.20
c	0.12	0.15	0.18
D	0.95	1.00	1.05
e	0.65BSC		
E	0.55	0.60	0.65
E1	0.15	0.20	0.25
L	0.20	0.25	0.30
L1	0.05REF		