

# Dual N-Channel Enhancement Mode MOSFET

## 1. Product Information

### 1.1 Features

- Surface-mounted package
- Low gate charge

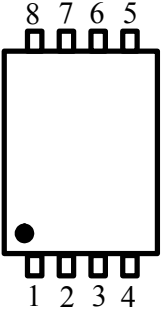
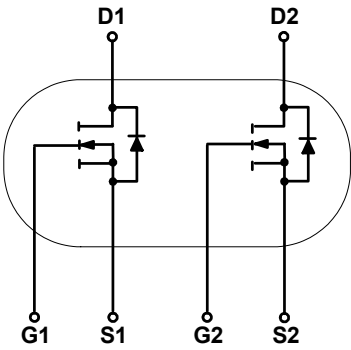
### 1.2 Applications

- Motor driver appliances
- High power inverter system
- Adapter appliances

### 1.3 Quick reference

- $BV \geq 40\text{ V}$
- $R_{DS(ON)} \leq 10\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- $P_{tot} \leq 35\text{ W}$
- $R_{DS(ON)} \leq 13\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$
- $I_D \leq 50\text{ A}$

## 2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Source(S1)	 <p style="text-align: center;">Top View PDFN5x6-8L</p>	
2	Gate(G1)		
3	Source(S2)		
4	Gate(G2)		
5,6	Drain(D2)		
7,8	Drain(D1)		

## 3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{DS}$	Drain-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	40	-	V
$V_{GS}$	Gate-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-	$\pm 20$	V
$I_D^*$	Drain Current	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	50	A
$I_{DM}^{***,***}$	Pulsed Drain Current	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	80	A
$P_{tot}$	Total Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	-	35	W
$T_{stg}$	Storage Temperature		- 55	150	$^\circ\text{C}$
$T_J$	Junction Temperature		- 55	150	$^\circ\text{C}$
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	62.5	$^\circ\text{C} / \text{W}$
$R_{\theta JC}^*$	Thermal Resistance- Junction to Case		-	3.5	$^\circ\text{C} / \text{W}$

Notes :

- \* Surface Mounted on 1 in<sup>2</sup> pad area,  $t \leq 10\text{ sec}$
- \*\* Pulse width  $\leq 10\text{ }\mu\text{s}$ , duty cycle  $\leq 1\%$
- \*\*\* limited by bonding wire

## 4. Marking Information

Product Name	Marking
KJ4010G	<div style="display: flex; align-items: center;"> <div style="background-color: black; color: white; padding: 5px; margin-right: 10px;">           4010 YWWXXX         </div> <div>           YWWXXX: Date Code         </div> </div>

## 5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ4010G	PDFN5*6			5000	

Note: KJ4010G 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)

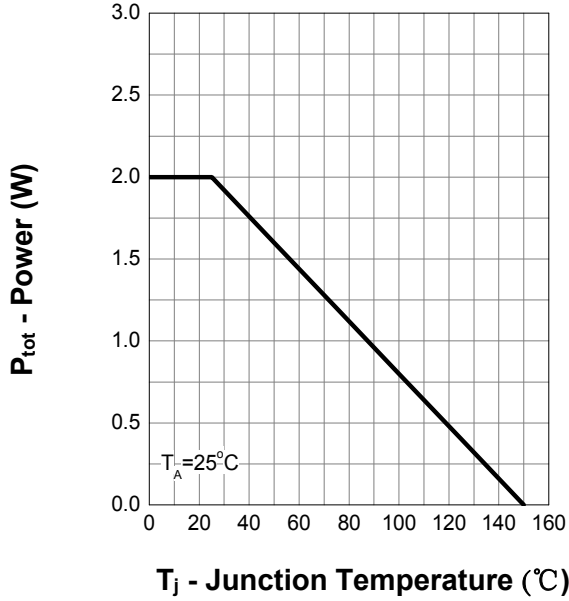
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\text{ }\mu\text{A}$	40	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = 250\text{ }\mu\text{A}$	1.0	-	2.0	V
$I_{DSS}$	Drain Leakage Current	$V_{DS} = 32\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	$\mu\text{A}$
$I_{GSS}$	Gate Leakage Current	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$	-	-	$\pm 100$	nA
$R_{DS(ON)}^a$	Channel On-State Resistance	$V_{GS} = 10\text{ V}, I_D = 10\text{ A}$	-	8	10	m $\Omega$
	Channel On-State Resistance	$V_{GS} = 4.5\text{ V}, I_D = 5\text{ A}$	-	11	13	
<b>Diode Characteristics</b>						
$V_{SD}^a$	Diode Forward Voltage	$I_{SD} = 10\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.3	V
$t_{rr}$	Reverse Recovery Time	$I_{SD} = 10\text{ A}, dI_{SD} / dt = 100\text{ A} / \mu\text{s}$	-	10	-	nS
$Q_{rr}$	Reverse Recovery Charge		-	4	-	nC
<b>Dynamic Characteristics<sup>b</sup></b>						
$C_{iss}$	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 20\text{ V}$ Frequency = 1 MHz	-	1628	-	pF
$C_{oss}$	Output Capacitance		-	112	-	
$C_{rss}$	Reverse Transfer Capacitance		-	87	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 20\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 4.5\text{ }\Omega, R_L = 2\text{ }\Omega,$ $I_{DS} = 10\text{ A}$	-	6.4	-	nS
$t_r$	Turn-on Rise Time		-	26	-	
$t_d(off)$	Turn-off Delay Time		-	34	-	
$t_f$	Turn-off Fall Time		-	25	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
$Q_g$	Total Gate Charge	$V_{GS} = 10\text{ V}, V_{DS} = 20\text{ V},$ $I_{DS} = 10\text{ A}$	-	30	-	nC
$Q_{gs}$	Gate-Source Charge		-	6	-	
$Q_{gd}$	Gate-Drain Charge		-	4.5	-	

Notes :

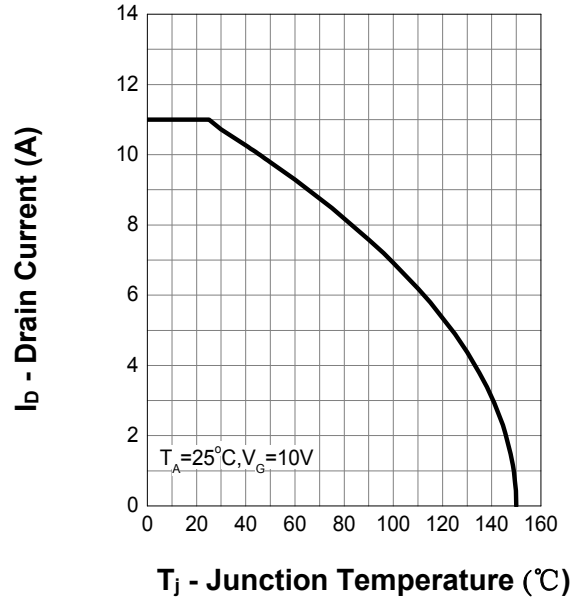
- a : Pulse test ; pulse width  $\leq 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$   
 b : Guaranteed by design, not subject to production testing

## 7. Typical Characteristics

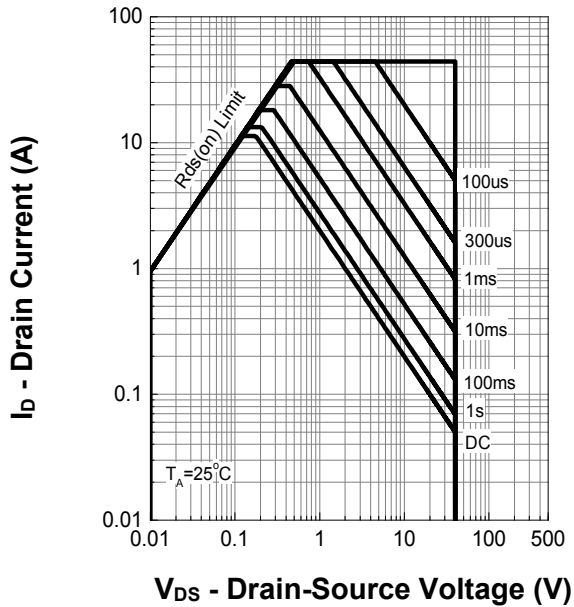
Power Dissipation



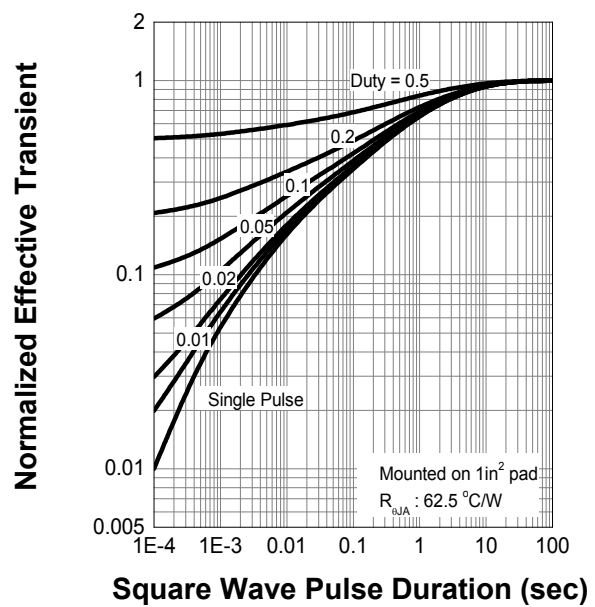
Drain Current



Safe Operation Area

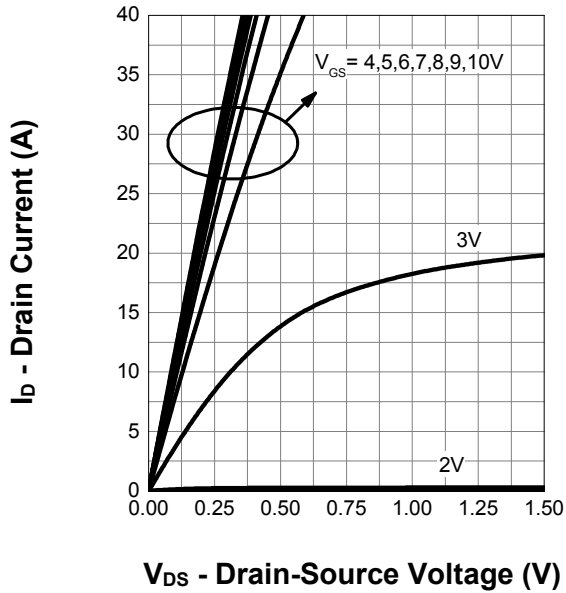


Thermal Transient Impedance

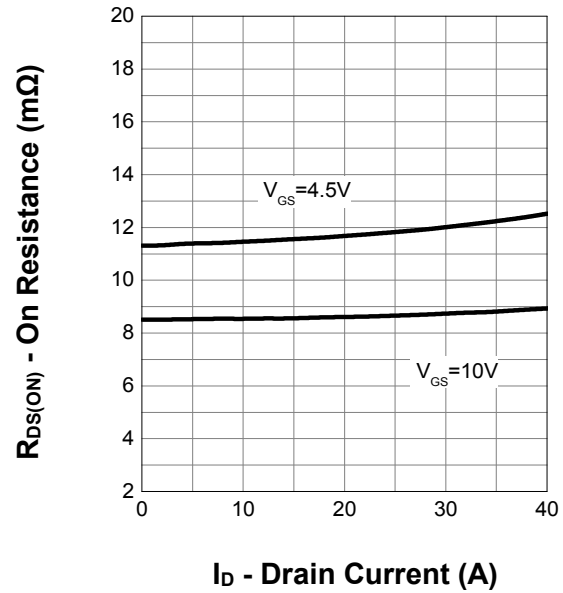


## 7. Typical Characteristics (cont.)

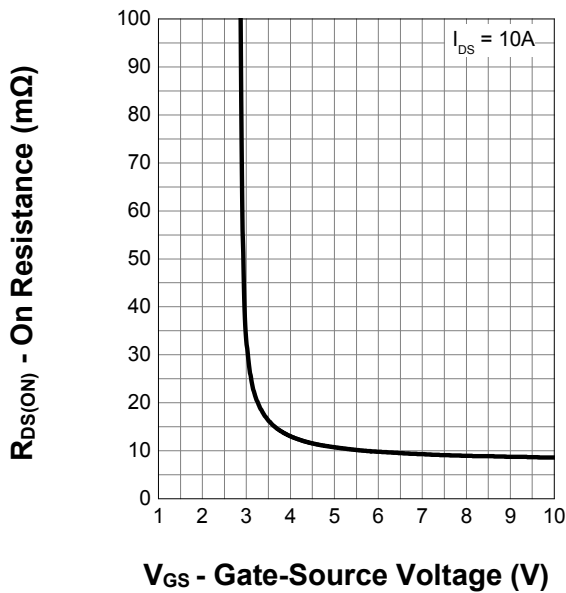
### Output Characteristics



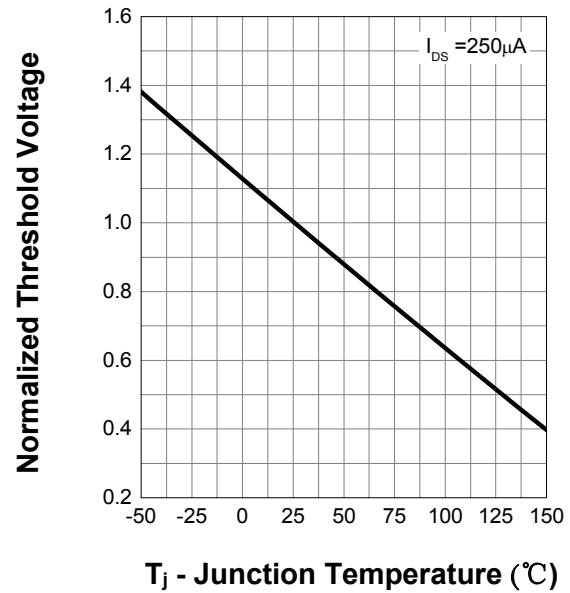
### Drain-Source On Resistance



### Transfer Characteristics

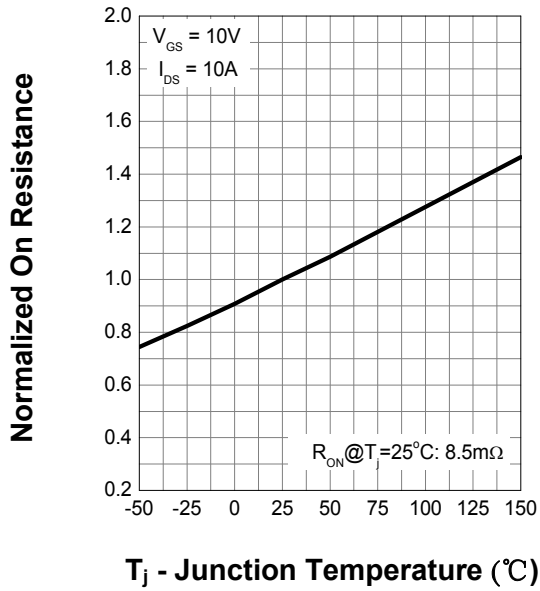


### Gate Threshold Voltage

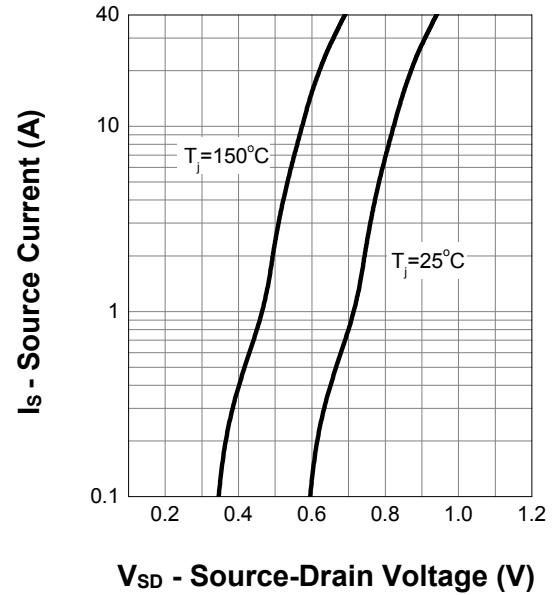


## 7. Typical Characteristics (cont.)

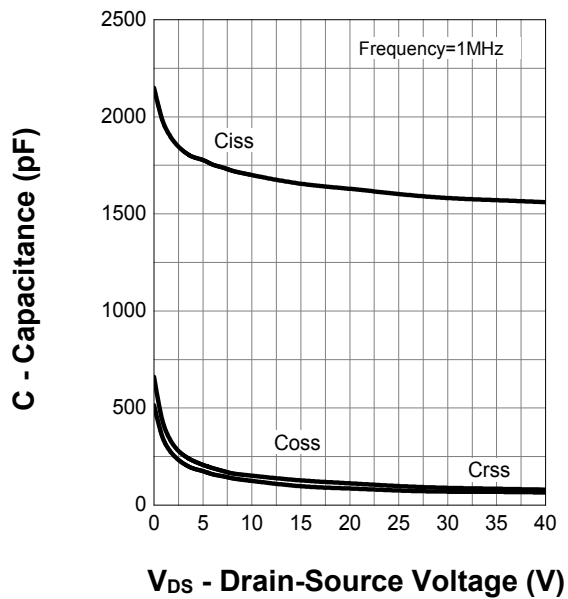
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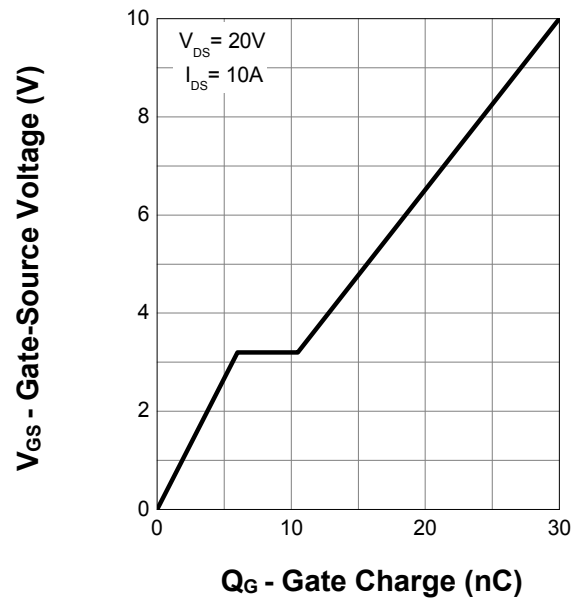
### Source-Drain Diode Forward



### Capacitance

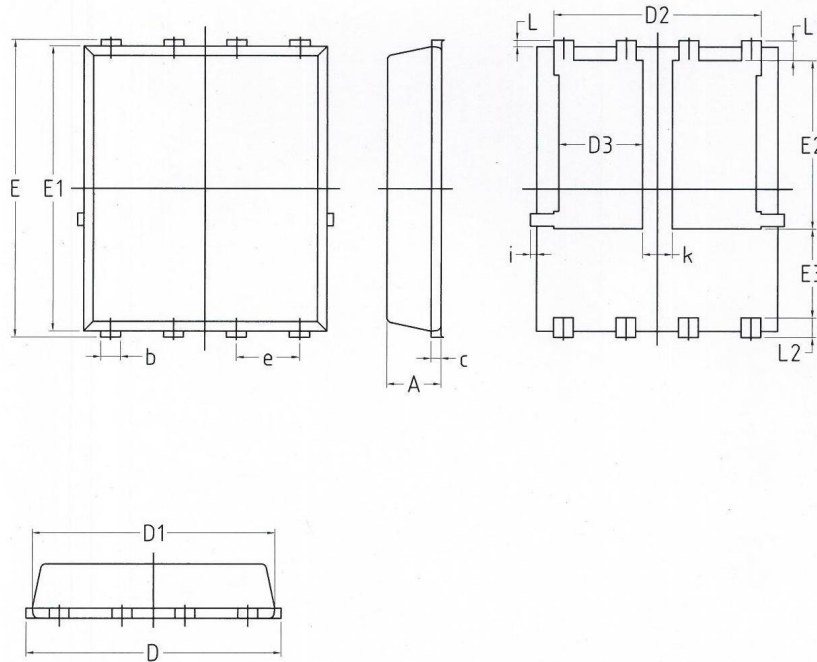


### Gate Charge



## 8. Package Dimensions

PDFN5x6 - 8L (Dual) Package



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	1.03	1.17
B	0.34	0.48
c	0.203 BSC	
D	4.8	5.4
D1	4.8	5.0
D2	4.11	4.31
D3	1.6	1.8
E	5.95	6.15
E1	5.65	5.85
E2	3.3	3.5
E3	1.7	-
e	1.27 BSC	
L	0.05	0.25
L1	0.38	0.5
L2	0.38	0.5
i	-	0.18
k	0.5	0.7