

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ Low thermal resistance

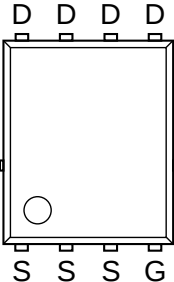
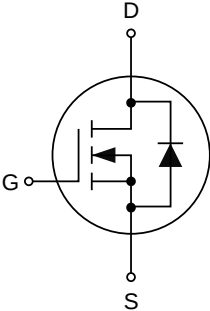
1.2 Applications

- ☒ Motor drivers
- ☒ DC/DC converter

1.3 Quick reference

- ☒ $BV \geq 30\text{ V}$
- ☒ $P_{tot} \leq 37\text{ W}$
- ☒ $I_D \leq 75\text{ A}$
- ☒ $R_{DS(ON)} \leq 3.3\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- ☒ $R_{DS(ON)} \leq 6.0\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1,2,3	Source	 Top View PDFN 5x6-8L	
4	Gate		
5,6,7,8	Drain		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_C=25^{\circ}\text{C}$	-	30	V
V_{GS}	Gate-Source Voltage	$T_C=25^{\circ}\text{C}$	-	± 20	V
I_D^*	Drain Current	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	75	A
		$T_C=100^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	48	A
$I_{DM}^{*,**}$	Pulsed Source Current	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	230	A
P_{tot}^*	Total Power Dissipation	$T_C=25^{\circ}\text{C}$	-	37	W
I_S	Diode Forward Current	$T_C=25^{\circ}\text{C}$	-	75	A
E_{AS}^*	Single Pulsed Avalanche Energy	$V_{DD}=30\text{ V}, L=1.0\text{ mH}$	-	112.5	mJ
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	150	$^{\circ}\text{C}$
$R_{\theta JA}^*$	Thermal Resistance-Junction to Ambient		-	58	$^{\circ}\text{C/W}$
$R_{\theta JC}^*$	Thermal Resistance-Junction to Case		-	3.3	

Notes:

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

4. Marking Information

Product Name	Marking
KJ0303G	0303 YWWXXX YWWXXX: Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity
KJ0303G	PDFN 5x6-8L	13"	12 mm	5000

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)

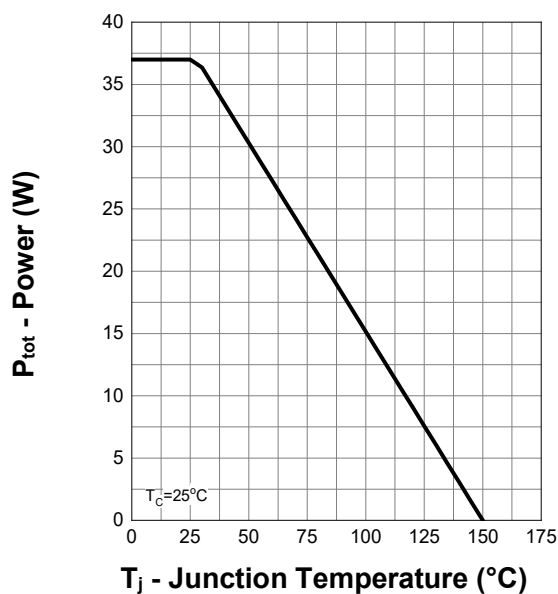
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _{DS} =250 μA	30	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250 μA	1.0	-	2.0	V
I _{DSS}	Zero Gate Voltage Source Current	V _{DS} =24 V, V _{GS} =0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{GS} =±20 V, V _{DS} =0 V	-	-	±100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} =10 V, I _{DS} =15 A	-	3.1	3.3	mΩ
		V _{GS} =4.5 V, I _{DS} =10 A	-	5.5	6.0	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =15 A, V _{GS} =0 V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} =15 A, V _{GS} =0 V, dI _{SD} /dt=100 A/μs	-	18	-	ns
Q _{rr}	Reverse Recovery Charge		-	8	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =15 V, Frequency=1 MHz	-	959	-	pF
C _{oss}	Output Capacitance		-	419	-	
C _{rss}	Reverse Transfer Capacitance		-	57	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =15 V, V _{GEN} =10 V, R _G =3.9 Ω, R _L =1 Ω, I _{DS} =15 A	-	6	-	ns
t _r	Turn-on Rise Time		-	45	-	
t _{d(off)}	Turn-off Delay Time		-	17	-	
t _f	Turn-off Fall Time		-	8	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =15 V, V _{GS} =10 V, I _{DS} =15 A	-	18	-	nC
Q _{gs}	Gate-Source Charge		-	4.3	-	
Q _{gd}	Gate-Drain Charge		-	3	-	

Notes:

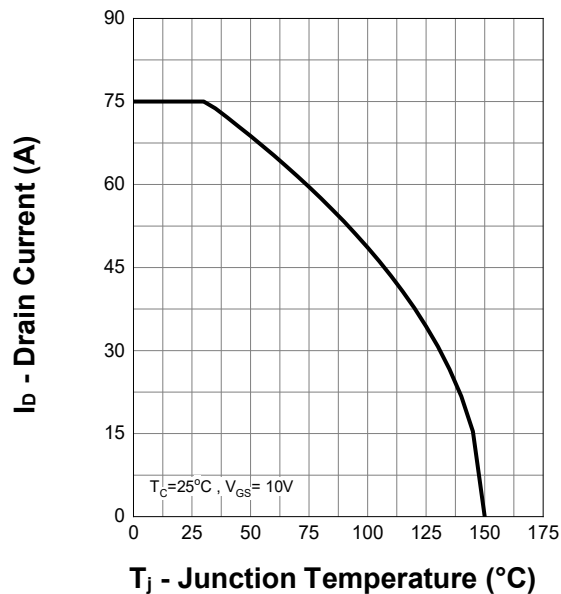
- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

7. Typical Characteristics

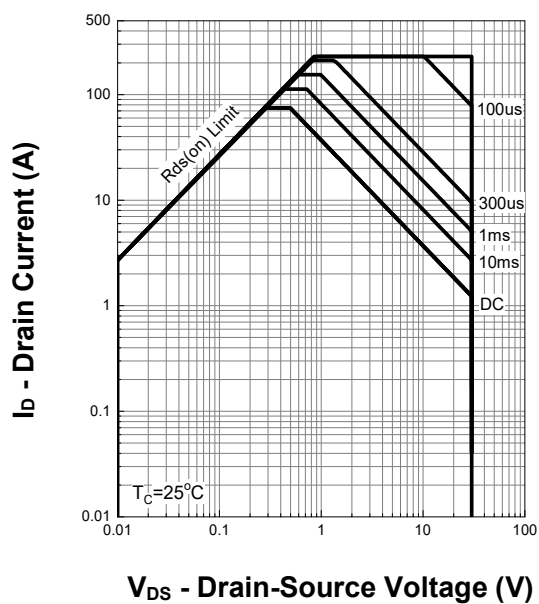
Power Capability



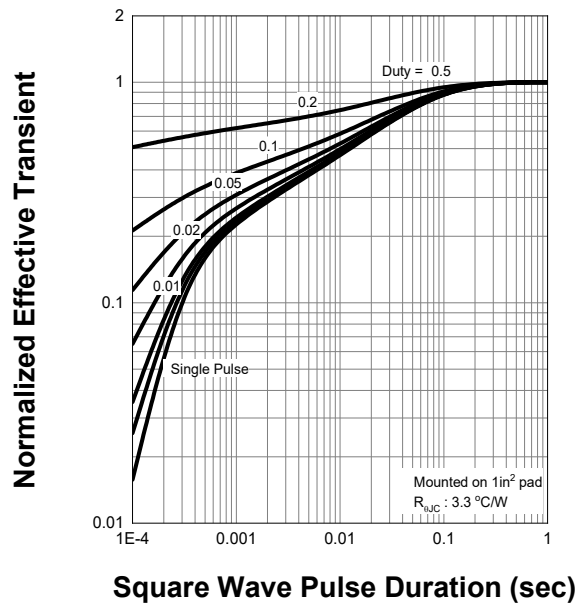
Current Capability



Safe Operating Area

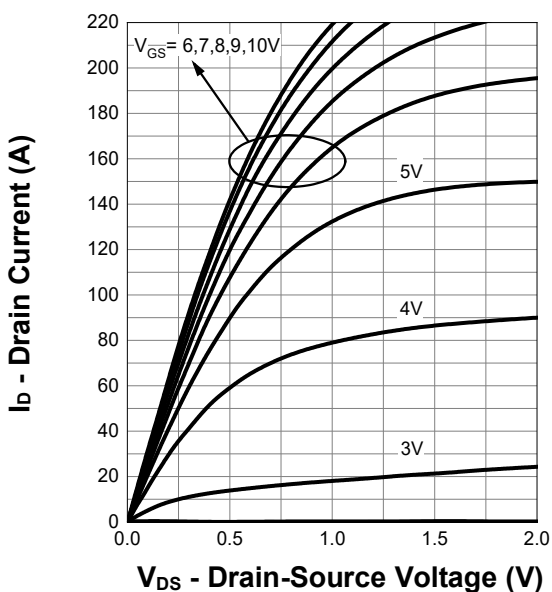


Transient Thermal Impedance

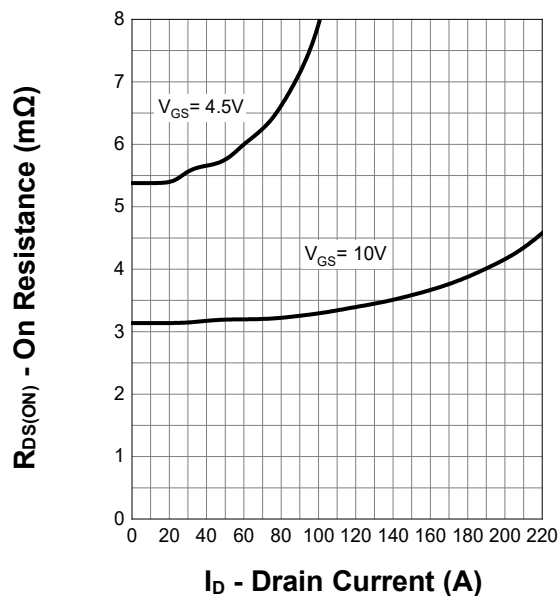


7. Typical Characteristics (Cont.)

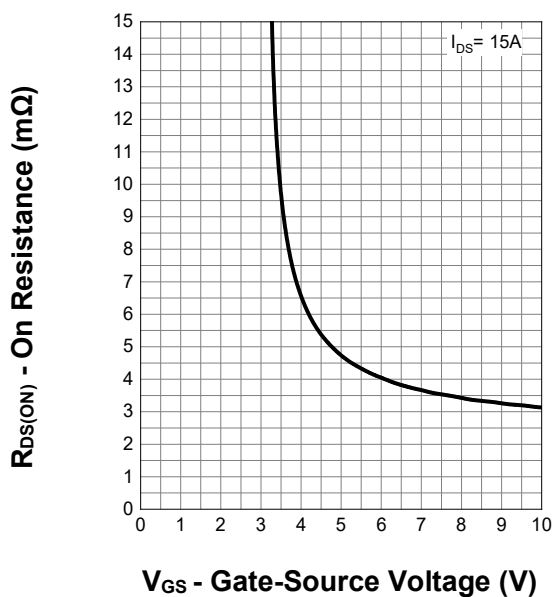
Output Characteristics



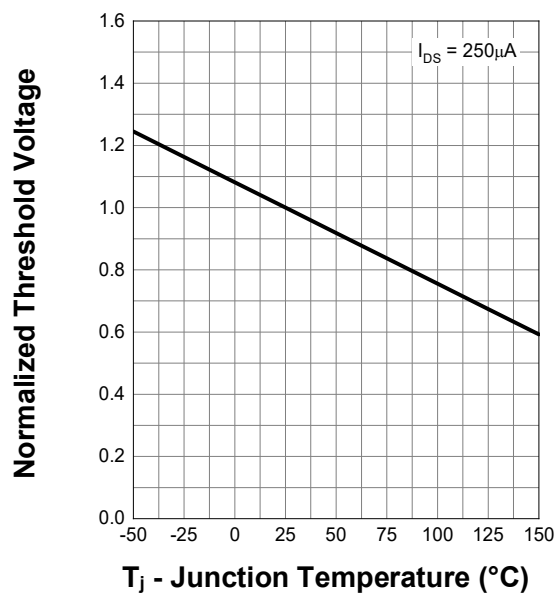
On Resistance



Transfer Characteristics

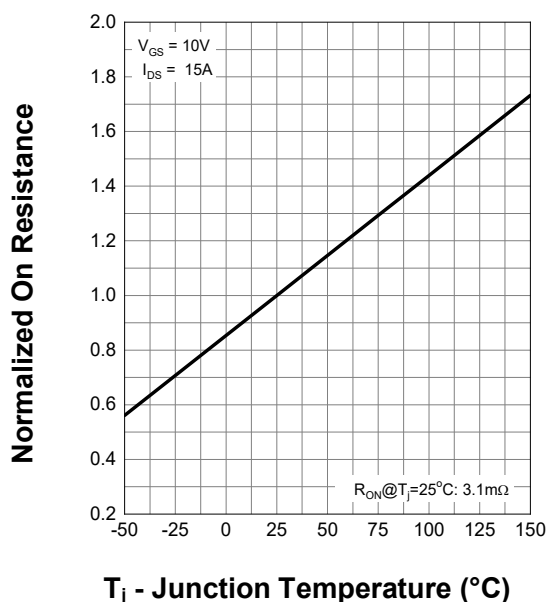


Normalized Threshold Voltage

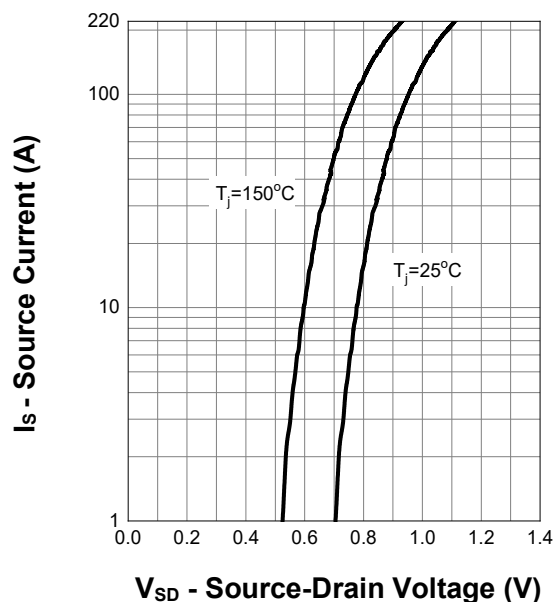


7. Typical Characteristics (Cont.)

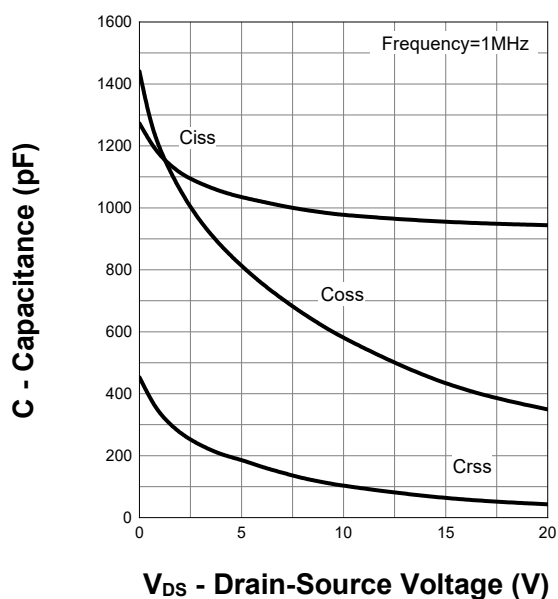
Normalized On Resistance



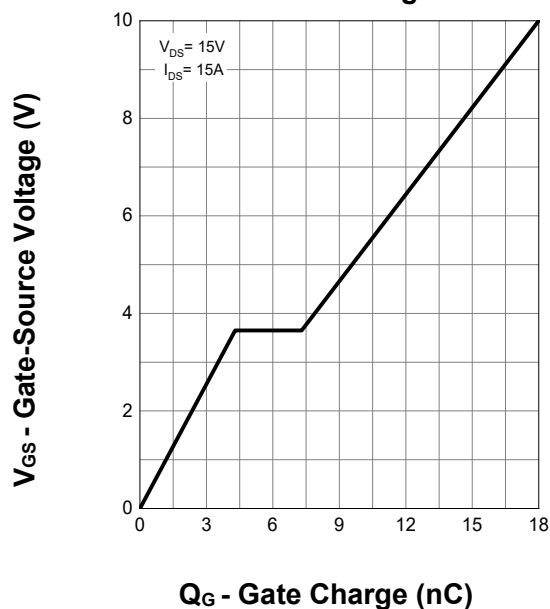
Diode Forward Current



Capacitance

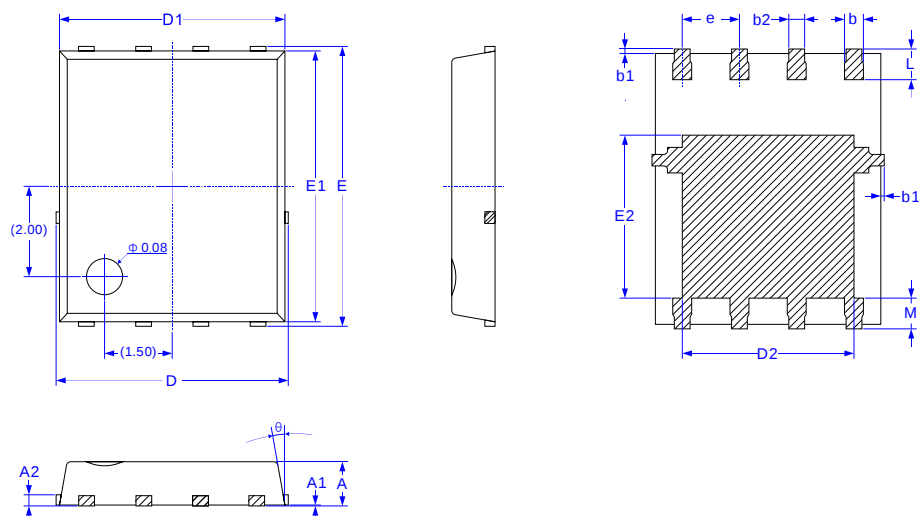


Gate Charge



8. Package Dimensions

PDFN 5x6-8L Package



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	MIN.	MAX.	MIN.	MAX.
A	0.95	1.05	0.0374	0.0413
A1	0	0.05	0.0000	0.0020
A2	0.25 REF		0.0098 REF	
b	0.31	0.51	0.0122	0.0201
b1	0.03	0.13	0.0012	0.0051
b2	0.21	0.41	0.0083	0.0161
D	5.15 BSC		0.2028 BSC	
D1	5.00 BSC		0.1969 BSC	
D2	3.70	3.90	0.1457	0.1535
E	6.15 BSC		0.2421 BSC	
E1	6.00 BSC		0.2362 BSC	
E2	3.56	3.76	0.1402	0.1480
e	1.27 BSC		0.0500 BSC	
L	2.04	2.84	0.0803	0.1118
M	2.04	2.84	0.0803	0.1118
θ	10°	12°	0.3937°	0.4724°