

Dual N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ Low thermal resistance

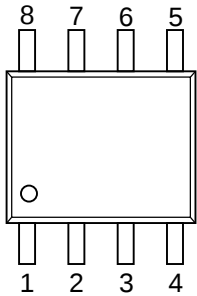
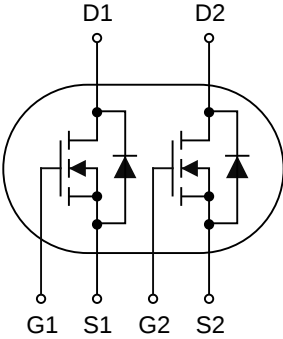
1.2 Applications

- ☒ Motor drivers
- ☒ DC/DC converter

1.3 Quick reference

- ☒ $BV \geq 66\text{ V}$
- ☒ $P_D \leq 25\text{ W}$
- ☒ $I_D \leq 30\text{ A}$
- ☒ $R_{DS(ON)} \leq 16\text{ m}\Omega @ V_{GS} = 10\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Source(S1)	 Top View SOP8	
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	$T_C=25^{\circ}\text{C}$	66	-	V
V_{GS}	Gate-Source Voltage	$T_C=25^{\circ}\text{C}$	-	± 20	V
I_D	Drain Current (DC)	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	30	A
		$T_C=100^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	23	A
$I_{DM}^{*,***}$	Drain Current (Pulsed)	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	120	A
P_D	Drain Power Dissipation	$T_C=25^{\circ}\text{C}$	-	25	W
E_{AS}	Single Pulsed Avalanche Energy	$V_{DD}=30\text{ V}, L=0.3\text{ mH}$	-	27	mJ
I_S	Continuous-Source Current	$T_C=25^{\circ}\text{C}$	-	30	A
T_J, T_{stg}	Operating Junction and Storage Temperature Range		-55	150	$^{\circ}\text{C}$
$R_{\theta JA}^{**}$	Thermal Resistance-Junction to Ambient		-	50	$^{\circ}\text{C/W}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case		-	5	

Notes :

- * Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- ** Mounted on Large Heat Sink.
- *** Limited by bonding wire.

4. Marking Information

Product Name	Marking
KJ60D12SA	60D12SA XXXXXX

5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ60D12SA	SOP8	13"	12 mm	3000 or 4000

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)

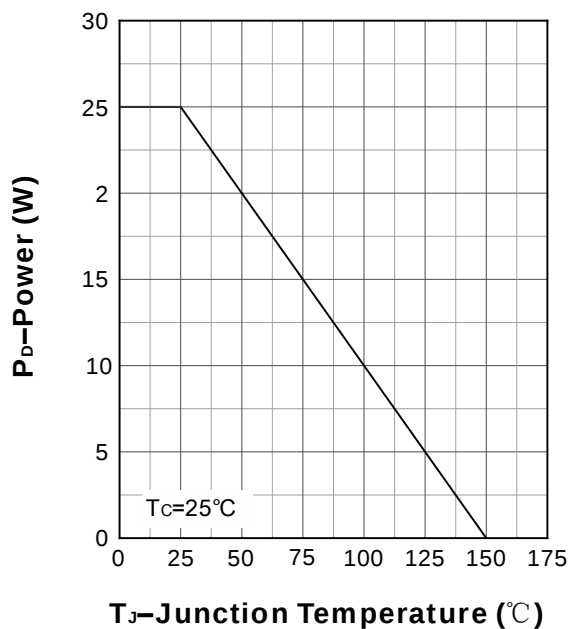
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _{DS} =250 μA	66	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250 μA	1.5	-	2.0	V
I _{DSS}	Drain Leakage Current	V _{DS} =48 V, V _{GS} =0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{DS} =0 V, V _{GS} =±20 V	-	-	±100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} =10 V, I _{DS} =12 A	-	12	16	mΩ
		V _{GS} =4.5 V, I _{DS} =6 A	-	18	22	mΩ
g _{fs}	Forward transconductance	V _{DS} =5 V, I _{DS} =12 A	-	36	-	S
R _g	Gate resistance	Frequency=1 MHz	-	1.2	-	Ω
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =12 A, V _{GS} =0 V	-	0.9	1.2	V
t _{rr}	Reverse Recovery Time	I _{DS} =12 A, V _{GS} =0 V dI _{SD} /dt=100 A/μs	-	31	-	ns
Q _{rr}	Reverse Recovery Charge		-	11	-	μC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =30 V Frequency=1 MHz	-	735	-	pF
C _{oss}	Output Capacitance		-	250	-	
C _{rss}	Reverse Transfer Capacitance		-	22	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =30 V, V _{GEN} =10 V, R _G =4.5 Ω, R _L =2.5 Ω, I _{DS} =12 A	-	7	-	ns
t _r	Turn-on Rise Time		-	24	-	
t _{d(off)}	Turn-off Delay Time		-	14	-	
t _f	Turn-off Fall Time		-	16	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =30 V, V _{GS} =10 V, I _{DS} =12 A	-	15	-	nC
Q _{gs}	Gate-Source Charge		-	3.4	-	
Q _{gd}	Gate-Drain Charge		-	6	-	

Notes:

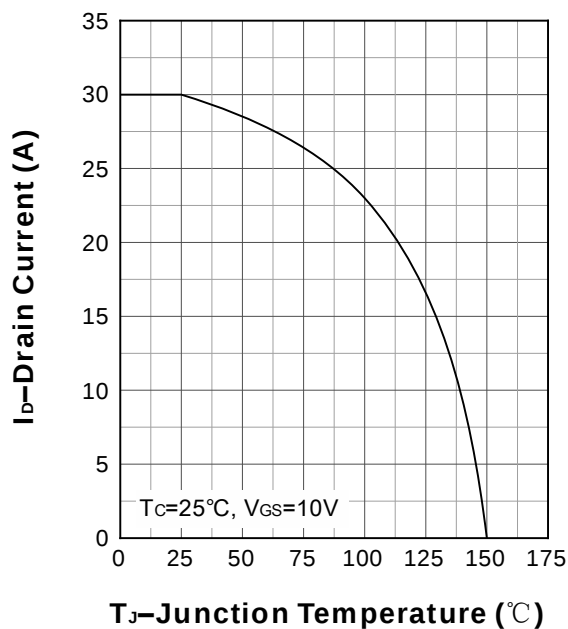
- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

7. Typical Characteristics

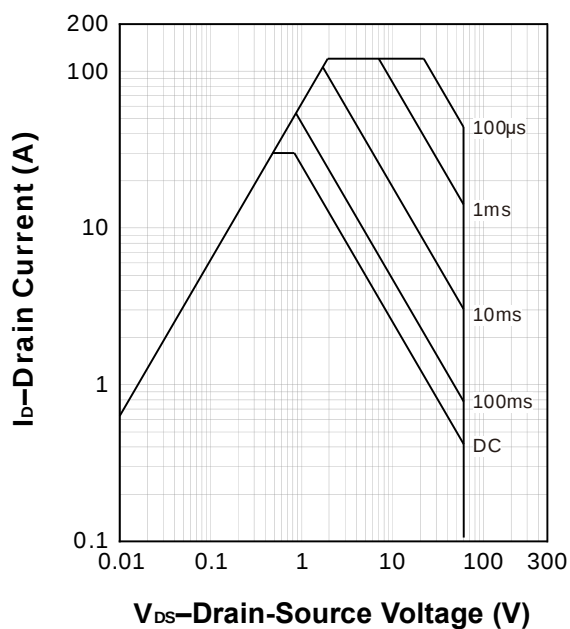
Power Capability



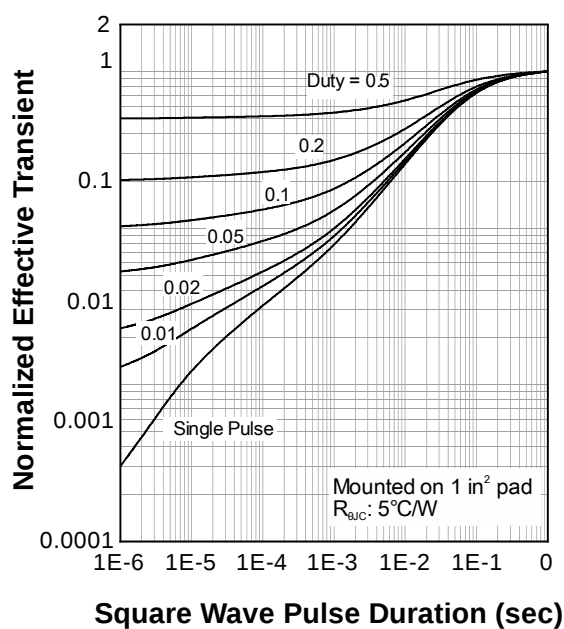
Current Capability



Safe Operating Area

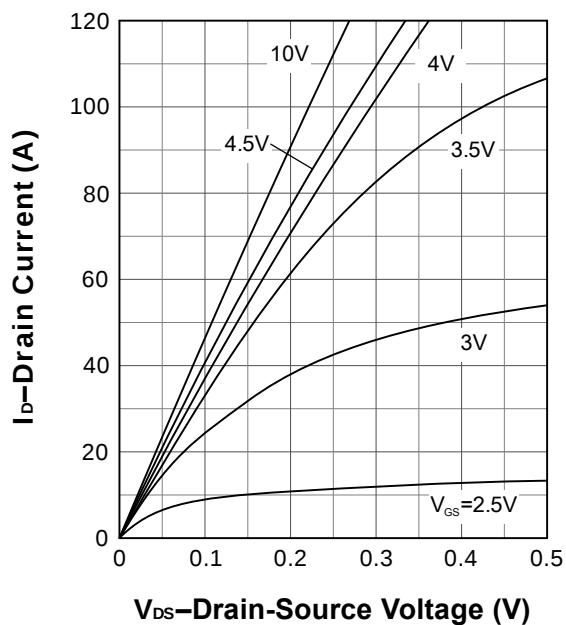


Transient Thermal Impedance

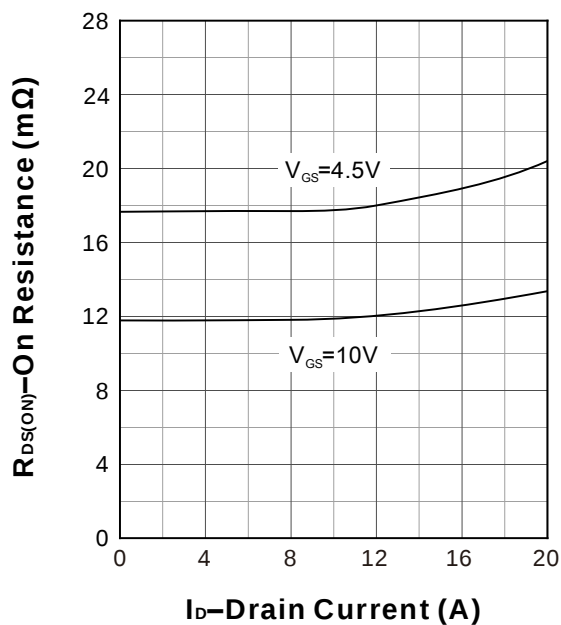


7. Typical Characteristics (cont.)

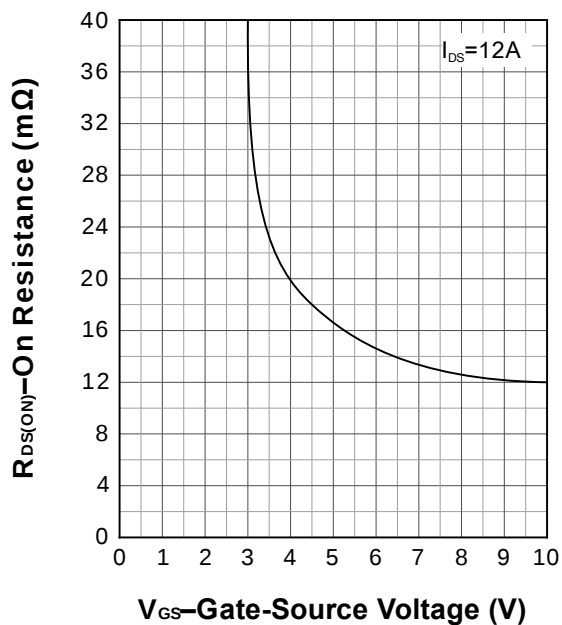
Output Characteristics



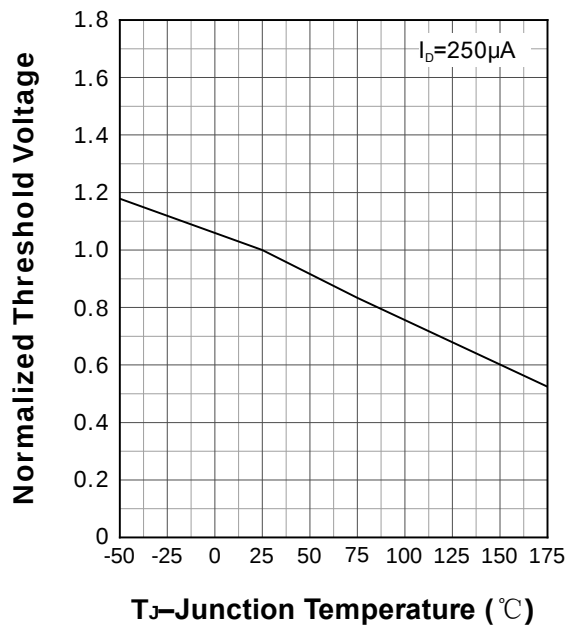
On Resistance



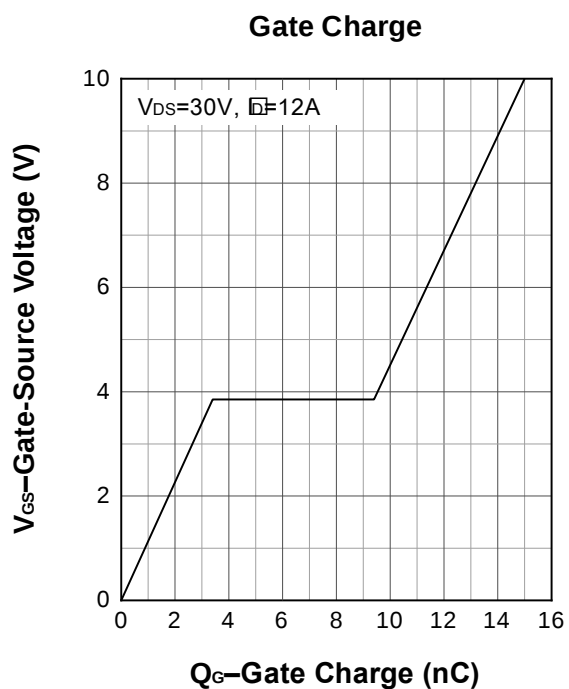
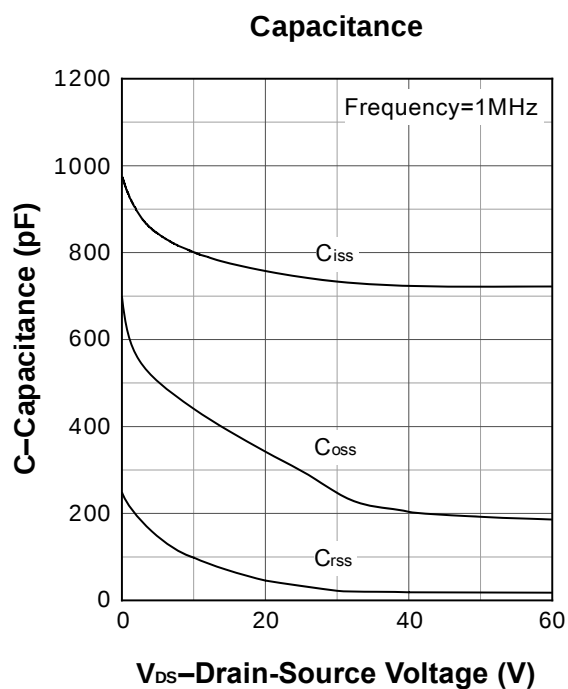
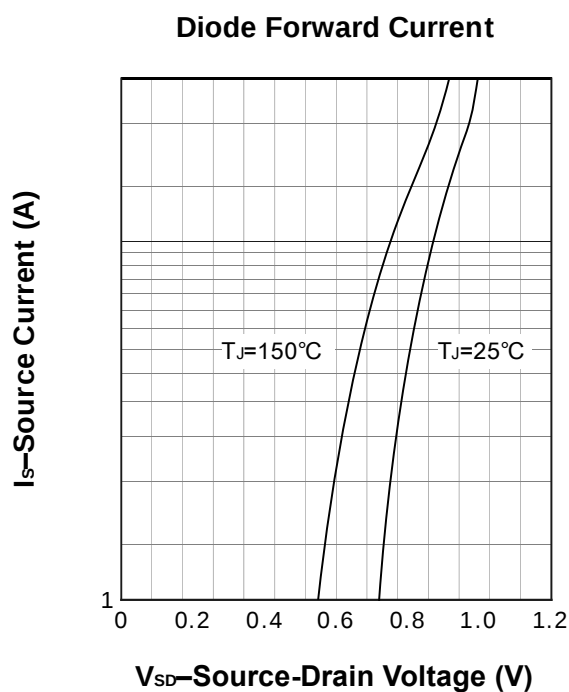
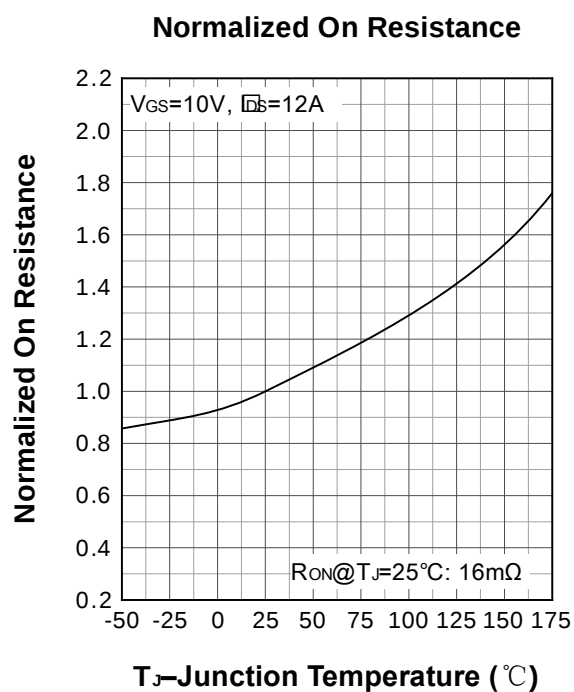
Transfer Characteristics



Normalized Threshold Voltage

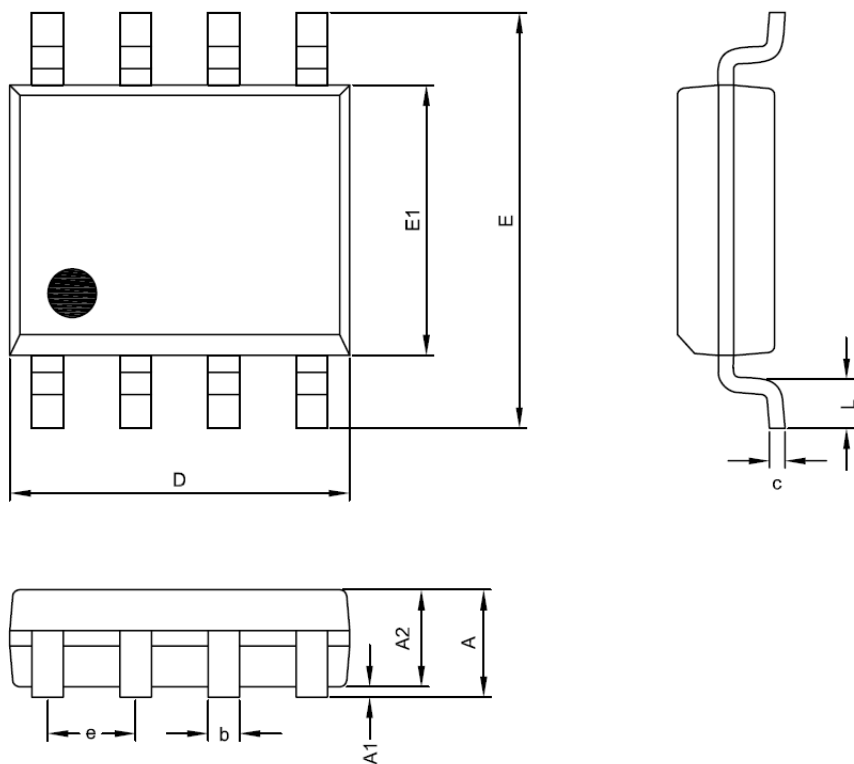


7. Typical Characteristics (cont.)



8. Package Dimensions

SOP8 Package



Symbol	Dimensions in Millimeters	
	MIN	MAX
A	1.35	1.75
A1	0.00	0.25
A2	1.15	1.50
D	4.90	5.10
E	5.80	6.20
E1	3.80	4.00
c	0.19	0.27
b	0.33	0.53
e	1.27 BSC	
L	0.40	1.27