

P-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Advanced trench cell design
- ☒ Low Thermal Resistance

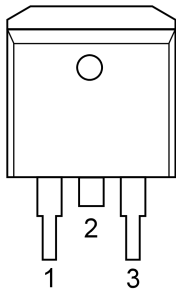
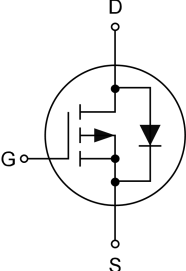
1.2 Applications

- ☒ Motor drivers
- ☒ DC\DC Converter

1.3 Quick reference

- ☒ $BV \leq -150\text{ V}$
- ☒ $P_{tot} \leq 192\text{ W}$
- ☒ $I_D \leq -30\text{ A}$
- ☒ $R_{DS(ON)} \leq 135\text{ m}\Omega @V_{GS} = -10\text{ V}$
- ☒ $R_{DS(ON)} \leq 150\text{ m}\Omega @V_{GS} = -4.5\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate	 Top View TO-263	
2	Drain		
3	Source		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V _{DS}	Drain-Source Voltage	T _C =25°C	-	-150	V
V _{GS}	Gate-Source Voltage	T _C =25°C	-	±20	V
I _D	Drain Current (DC)	T _C =25°C, V _{GS} =-10 V	-	-30	A
I _D	Drain Current (DC)	T _C =100°C, V _{GS} =-10 V	-	-19	A
I _{DM} *	Pulsed Source Current	T _C =25°C, V _{GS} =-10 V	-	-120	A
P _{tot}	Total Power Dissipation	T _C =25°C	-	192	W
E _{AS}	Single Pulsed Avalanche Energy	V _{DD} =-50 V, L=3 mH	-	540	mJ
T _{stg} , T _J	Operating Junction and Storage Temperature Range		-55	150	°C
R _{θJA}	Thermal Resistance, Junction to Ambient		-	62.5	°C/W
R _{θJC}	Thermal Resistance, Junction to Case		-	0.62	

Notes:

- * Pulse width ≤ 300 μs, duty cycle ≤ 2%.
- ** Surface mounted on 1 in² pad area, t ≤ 10 sec.
- *** Limited by bonding wire.

4. Marking Information

Product Name	Marking
KJ30P15D	KJ30P15D XXXXXX

5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ30P15D	TO-263	13"	24 mm	800

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_C=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 _D =-250 μA	-150	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250 μA	-1.0	-	-2.5	V
I _{DSS}	Zero Gate Voltage Source Current	V _{DS} =-150 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)}	Drain-Source On-State Resistance	V _{GS} =-10 V, I _D =-20 A	-	120	135	mΩ
		V _{GS} =-4.5V, I _D =-10 A	-	130	150	mΩ
Diode Characteristics						
V _{SD}	Diode Forward Voltage	I _{SD} =-20 A, V _{GS} =0 V	-	-	-1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} =-20 A dI _{SD} /dt=100 A/μs	-	75	-	ns
Q _{rr}	Reverse Recovery Charge		-	250	-	nC
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =-75 V Frequency=1 MHz	-	2850	-	pF
C _{oss}	Output Capacitance		-	150	-	
C _{rss}	Reverse Transfer Capacitance		-	45	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =-75 V, V _{GEN} =-10 V R _G =3.3 Ω, I _D =-20 A	-	11	-	ns
t _r	Turn-on Rise Time		-	26	-	
t _{d(off)}	Turn-off Delay Time		-	67	-	
t _f	Turn-off Fall Time		-	60	-	
Gate Charge Characteristics						
Q _g	Total Gate Charge	V _{DS} =-75 V, V _{GS} =-10 V I _{DS} =-20 A	-	55	-	nC
Q _{gs}	Gate-Source Charge		-	8.5	-	
Q _{gd}	Gate-Drain Charge		-	16.5	-	

7. Typical Characteristics

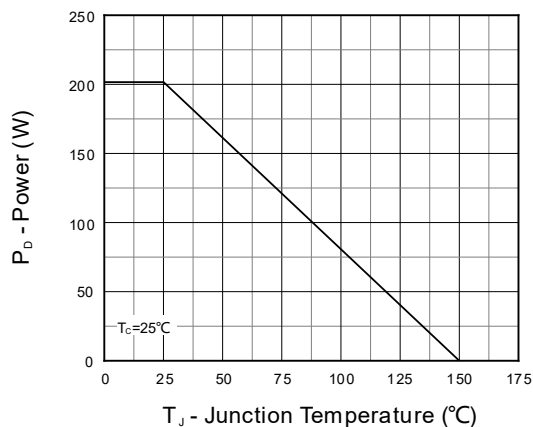


Fig 1. Power Dissipation

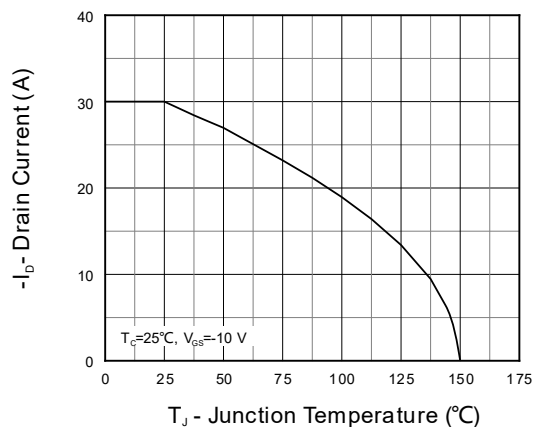


Fig 2. Current Capability

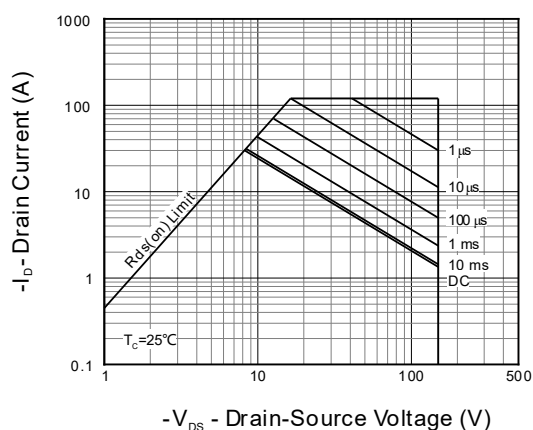


Fig 3. Safe Operation Area

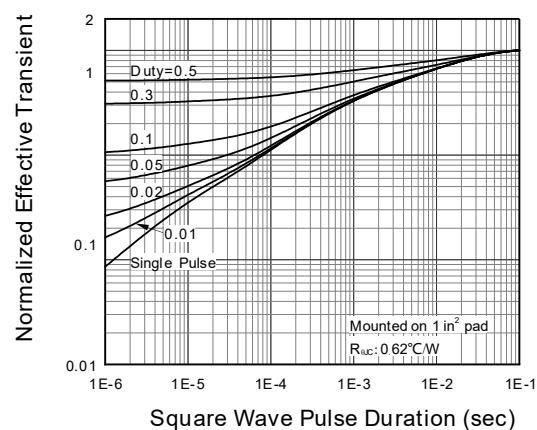


Fig 4. Transient Thermal Impedance

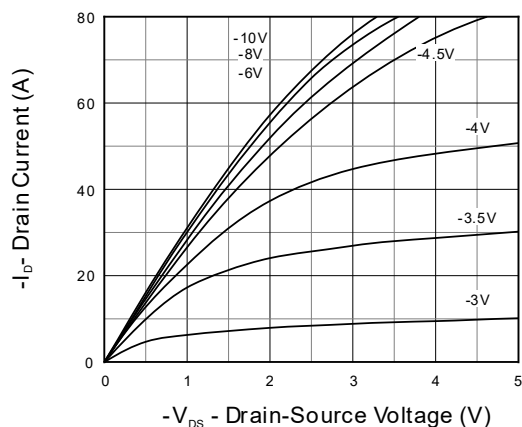


Fig 5. Output Characteristics

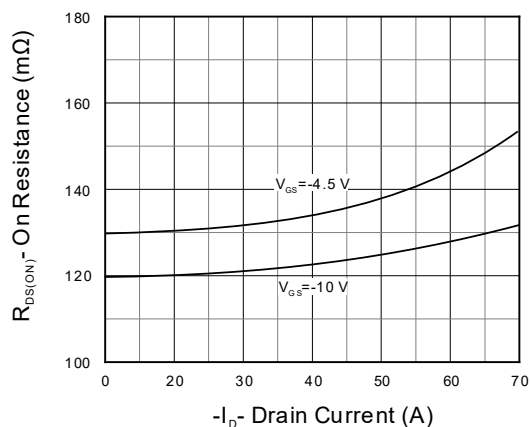


Fig 6. On Resistance

7. Typical Characteristics (cont.)

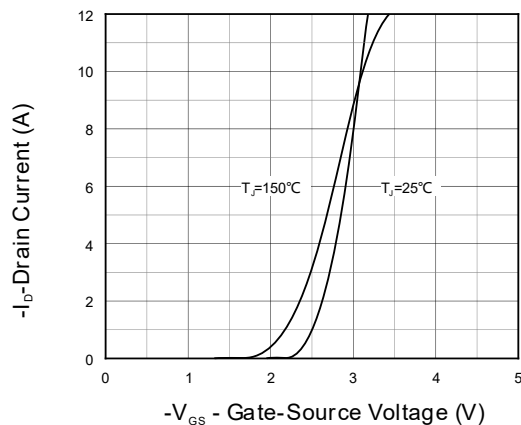


Fig 7. Transfer Characteristics

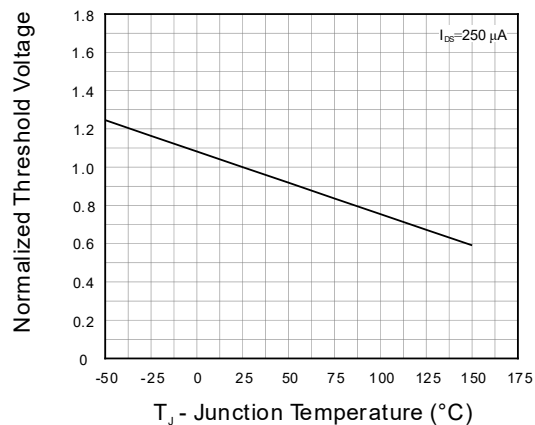


Fig 8. Normalized Threshold Voltage

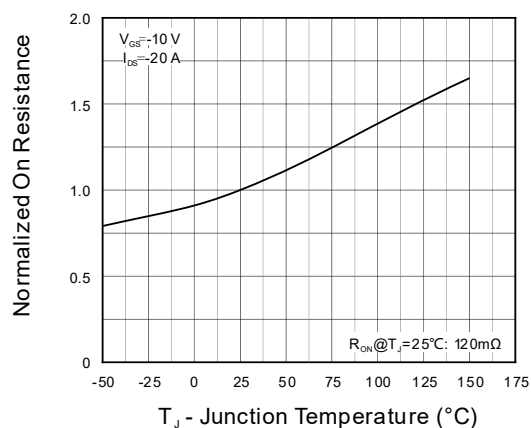


Fig 9. Normalized On Resistance

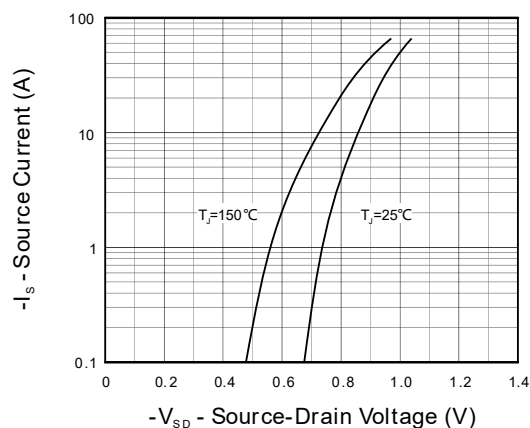


Fig 10. Diode Forward Current

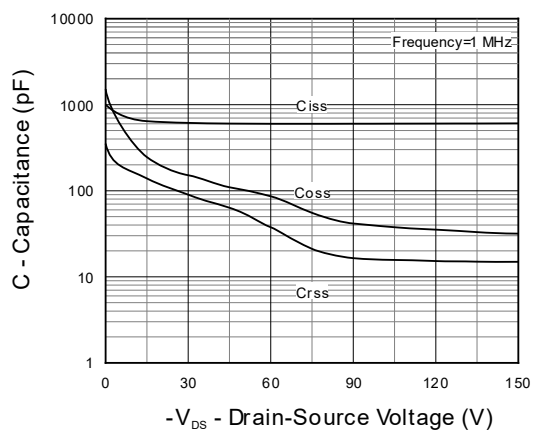


Fig 11. Capacitance

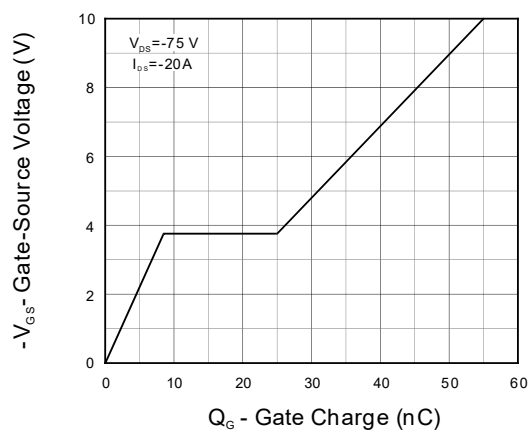
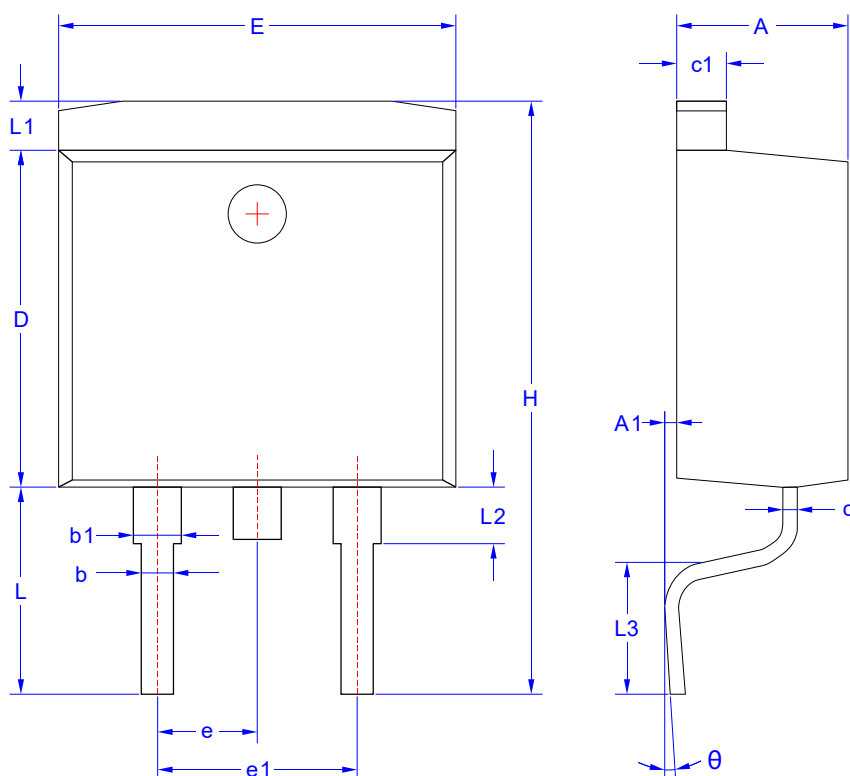


Fig 12. Gate Charge

8. Package Dimensions

TO-263 Package



Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
A	4.470	-	4.670
A1	0.000	-	0.150
b	0.710	-	0.910
b1	1.170	-	1.370
c	0.310	-	0.530
c1	1.170	-	1.370
D	8.500	-	8.900
E	10.01	-	10.31
e	2.540 BSC		
e1	4.980	-	5.180
H	14.940	-	15.500
L	4.950	-	5.450
L1	1.120	-	1.420
L2	1.300	-	1.700
L3	2.340	-	2.740
θ	0°	-	8°