

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- Super Trench technology
- Extremely Low $R_{DS(ON)}$ and Q_g

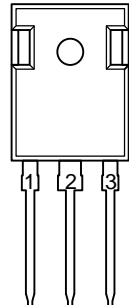
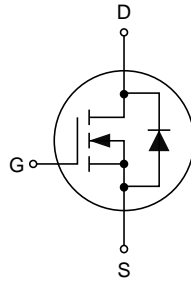
1.2 Applications

- LCD TV appliances
- High power inverter system
- LCDM appliances

1.3 Quick reference

- $BV \geq 250\text{ V}$
- $R_{DS(ON)} \leq 16\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- $P_{tot} \leq 333\text{ W}$
- $I_D \leq 90\text{ A}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 <p>Top View TO-247</p>	
2	Drain(D)		
3	Source(S)		


3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_C=25^{\circ}C$	-	250	V
V_{GS}	Gate-Source Voltage	$T_C=25^{\circ}C$	-	± 20	V
$I_D^{*,***}$	Drain Current (DC)	$T_C=25^{\circ}C, V_{GS}=10\text{ V}$	-	90	A
		$T_C=100^{\circ}C, V_{GS}=10\text{ V}$	-	63	A
$I_{DM}^{*,**}$	Drain Current (Pulsed)	$T_C=25^{\circ}C, V_{GS}=10\text{ V}$	-	360	A
P_{tot}	Drain Power Dissipation	$T_C=25^{\circ}C$	-	333	W
T_J, T_{stg}	Operating Junction and Storage Temperature		-55	175	$^{\circ}C$
I_S	Continuous-Source Current	$T_C=25^{\circ}C$	-	90	A
E_{AS}^*	Single Pulsed Avalanche Energy	$V_{DD}=50\text{ V}, L=0.5\text{ mH}$	-	1680	mJ
$R_{\theta JC}^*$	Thermal Resistance-Junction to Case		-	0.45	$^{\circ}C/W$

Notes:

- * Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec}$
- ** Pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$
- *** Limited by bonding wire

4. Marking Information

Product Name	Marking
KJ15N25P	 AYWWXX: Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ15N25P	TO-247	-	-	600	

Note: KUIJIEXIN 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 _{DS} =250 μA	250	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250 μA	2.5	-	4.5	V
I _{DSS}	Drain Leakage Current	V _{DS} =250 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} =50 A	-	14	16	mΩ
R _G	Gate resistance		-	3.3	-	Ω
g _{FS}	Forward Transconductance	V _{DS} =10 V, I _D =45 A	70	-	-	S
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =90 A, V _{GS} =0 V	-	-	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =45 A, V _{GS} =0 V, dI _{SD} /dt=100 A/μs,	-	208	-	ns
Q _{rr}	Reverse Recovery Charge	T _J =25°C	-	180	-	nC
Dynamic Characteristics^b						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =125 V, Frequency=1 MHz	-	6605	-	pF
C _{oss}	Output Capacitance		-	408	-	
C _{rss}	Reverse Transfer Capacitance		-	11	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =125 V, V _{GEN} =10 V, R _G =4.7 Ω, I _{DS} =45 A	-	20	-	ns
t _r	Turn-on Rise Time		-	27	-	
t _{d(off)}	Turn-off Delay Time		-	46	-	
t _f	Turn-off Fall Time		-	17	-	
Gate Charge Characteristics^b						
Q _g	Total Gate Charge	V _{DS} =125 V, V _{GS} =10 V, I _{DS} =45 A	-	91	-	nC
Q _{gs}	Gate-Source Charge		-	40	-	
Q _{gd}	Gate-Drain Charge		-	18	-	

Notes:

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

7. Typical Characteristics

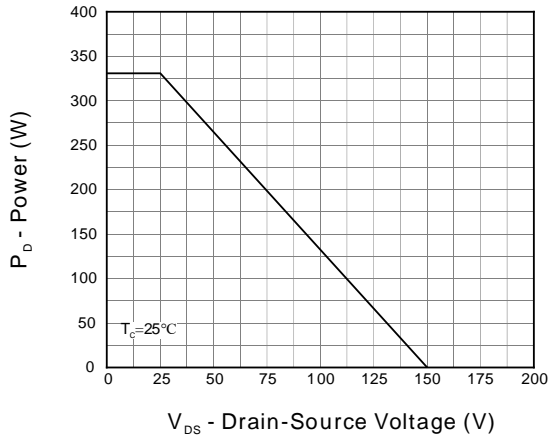


Fig 1. Output Characteristics

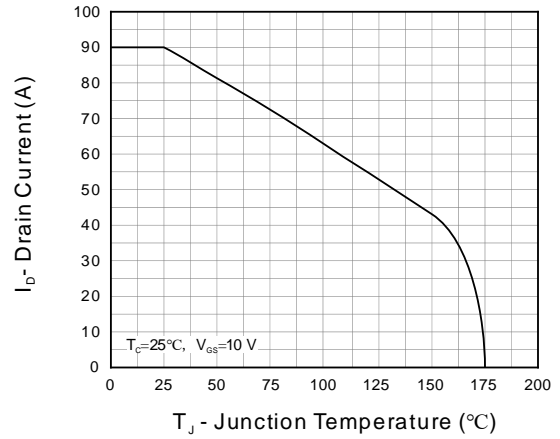


Fig 2. Current Capability

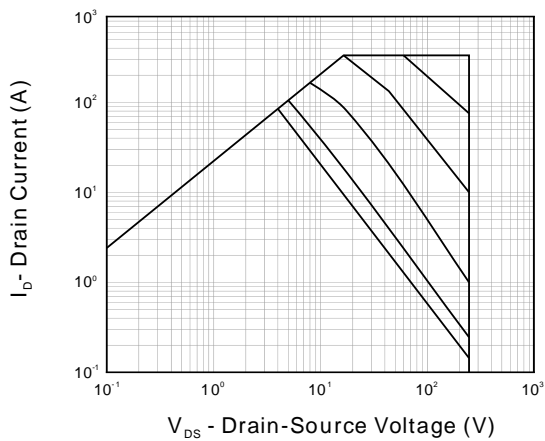


Fig 3. Safe Operation Area

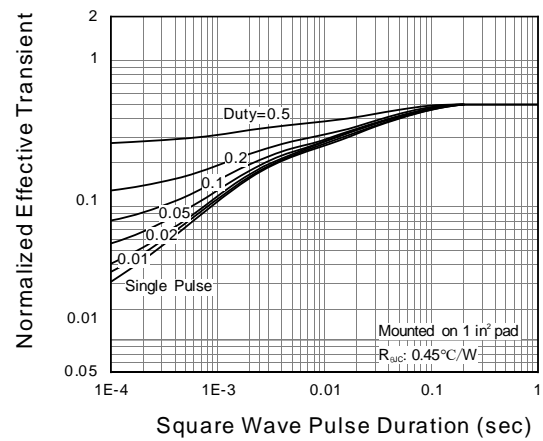


Fig 4. Transient Thermal Impedance

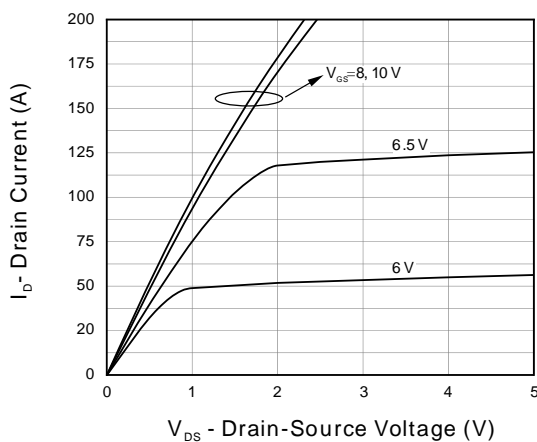


Fig 5. Output Characteristics

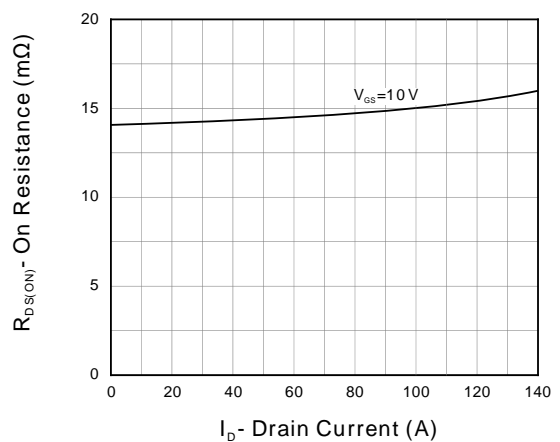


Fig 6. On Resistance

7. Typical Characteristics (cont.)

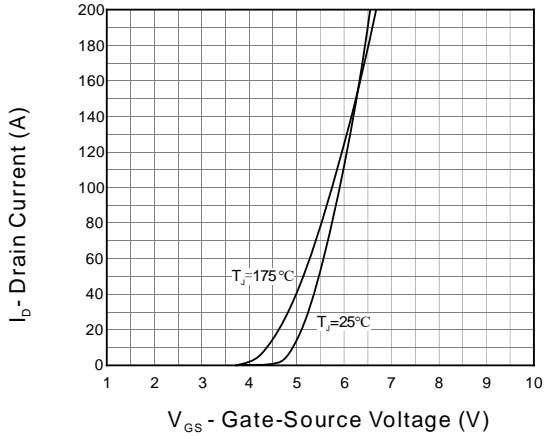


Fig 7. Transfer Characteristics

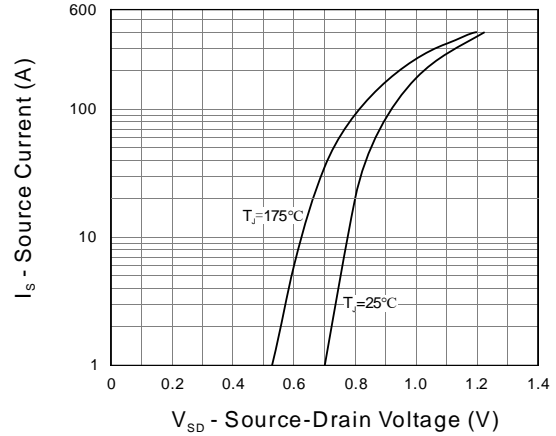


Fig 8. Diode Forward Current

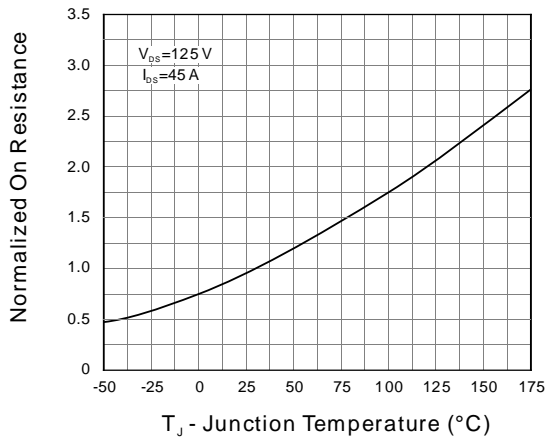


Fig 9. Normalized On Resistance

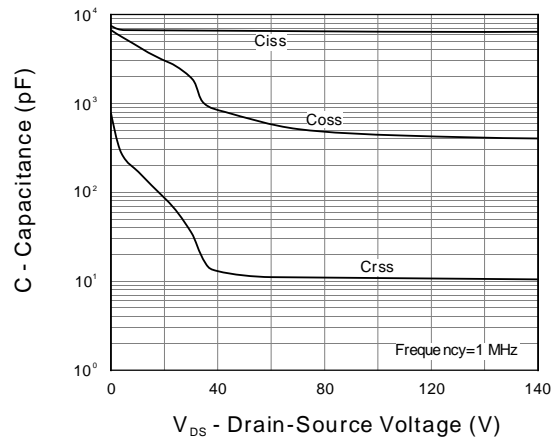


Fig 10. Capacitance

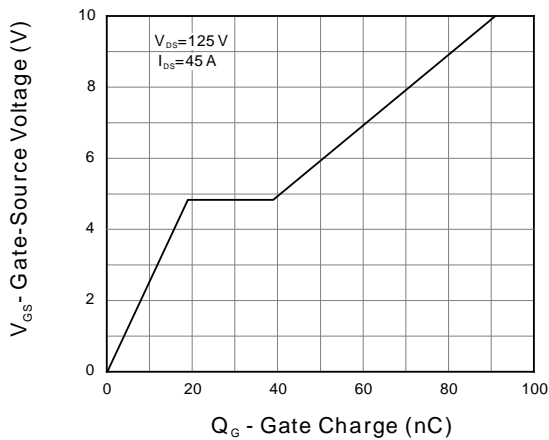
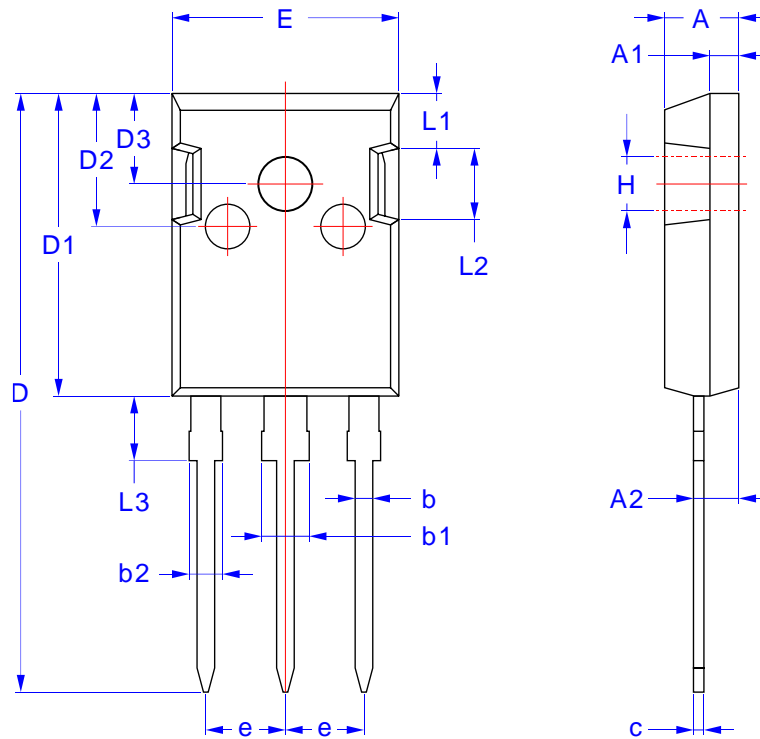


Fig 11. Gate Charge

8. Package Dimensions

TO-247 Package



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	4.90	5.10
A1	1.90	2.10
A2	2.00	3.00
b	0.55	0.75
b1	2.50	3.50
b2	1.75	2.50
c	1.20	1.30
D	41.00	42.00
D1	20.00	21.00
D2	8.00	10.00
D3	5.00	6.00
E	15.00	16.00
e	TYP 5.08	
H	3.00	3.50
L1	3.50	4.00
L2	4.75	5.25
L3	4.00	5.00