

N-Channel Enhancement Mode MOSFET

1. Product Information

Features

Advanced SGT Technology
Excellent $R_{DS(ON)}$ and Switching Performance

Applications

DC/DC Converter
LED Backlighting
Power Management Switches

Quick reference

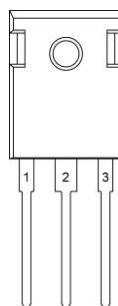
$V_{DS} = 150V$
 $I_D = 200A$
 $R_{DS(ON)} \leq 7.2m\Omega @ V_{GS}=10V$ (Type: 6.2 m Ω)

Pin Description

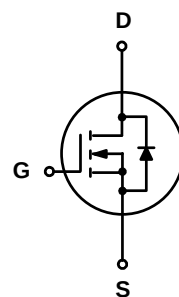
Pin	Description
1	Gate(G)
2	Drain(D)
3	Source(S)

Simplified Outline

Symbol



Top View
TO-247-3L



Package Marking and Ordering Information

Product Name	Package	Marking		Reel Size	Tape Width	Quantity
KJ200N15P	TO-247-3L	200N15 XXXXYY	XXXXYY: Date Code	-	-	300

2. Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Symbol	Parameter	Values	Unit
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current, $V_{GS}@10V$	200	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current, $V_{GS}@10V$	140	A
I_{DM}	Pulsed Drain Current	550	A
E_{AS}	Single Pulse Avalanche Energy ³	506	mJ
I_{AS}	Avalanche Current	53.4	A
$P_D@T_C=25^{\circ}C$	Power Dissipation ⁴	210	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55~150	°C
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	0.84	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case	40	°C/W

3. Electrical Characteristics ($T_c=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	150	-	-	V
I_{GSS}	Gate-body Leakage current	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current, $T_J=25^{\circ}\text{C}$	$V_{DS}=100V, V_{GS}=0V$	-	-	1	μA
I_{DSS}	Zero Gate Voltage Drain Current, $T_J=100^{\circ}\text{C}$		-	-	100	
$V_{GS(th)}$	Gate-Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	2.9	4.0	V
$R_{DS(on)}$	Drain-Source on-Resistance ²	$V_{GS}=10V, I_D=20A$	-	6.2	7.2	m Ω
C_{iss}	Input Capacitance	$V_{DS}=50V, V_{GS}=0V, f=1MHz$	-	5240	-	pF
C_{oss}	Output Capacitance		-	412	-	
C_{rss}	Reverse Transfer Capacitance		-	10	-	
R_g	Total Gate Charge	$V_{GS}=0V, V_{DS}=0V, f=1MHz$	-	1.7	-	Ω
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=50V, I_D=20A$	-	18	-	nC
Q_{gs}	Gate-Source Charge		-	10	-	
Q_{gd}	Gate-Drain Charge		-	72	-	
$t_{d(on)}$	Turn-on Delay Time	$V_{GS}=10V, V_{DS}=50V, R_G=3\Omega, I_D=20A$	-	22	-	ns
t_r	Turn-on Rise Time		-	115	-	
$t_{d(off)}$	Turn-off Delay Time		-	44	-	
t_f	Turn-off Fall Time		-	105	-	
V_{SD}	Diode Forward Voltage ²	$I_F=20A, V_{GS}=0V$	-	-	1.2	V
I_S	Continuous Source Current ^{1, 5}	$V_G=V_D=0V, \text{Force Current}$	-	-	190	A
t_{rr}	Body Diode Reverse Recovery Time	$I_F=20A, di/dt=100A/\mu s$	-	110	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	202	-	nC

Notes:

- 1、The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2、The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、The E_{AS} data shows Max. rating. The test condition is $V_{DD}=50V, V_{GS}=10V, L=0.5mH, I_{AS}=45A$
- 4、The power dissipation is limited by 150°C junction temperature
- 5、The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.

4. Typical Characteristics

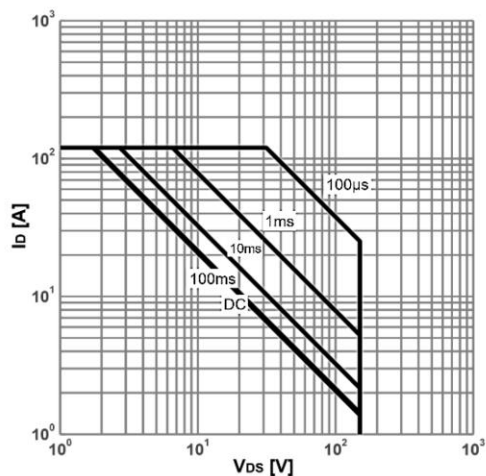


Figure 1. Power dissipation

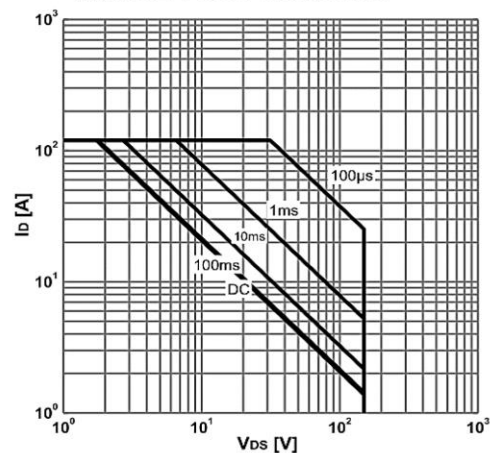


Figure 3. Safe operating area

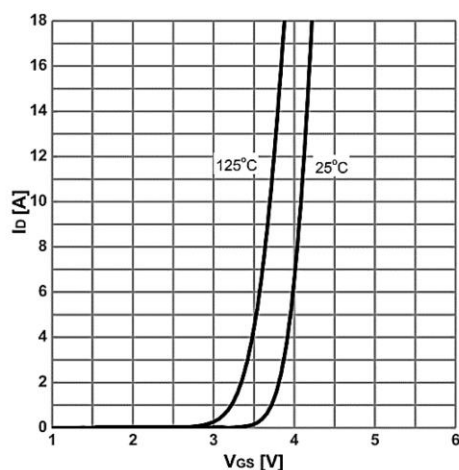


Figure 5. Typ. transfer characteristics

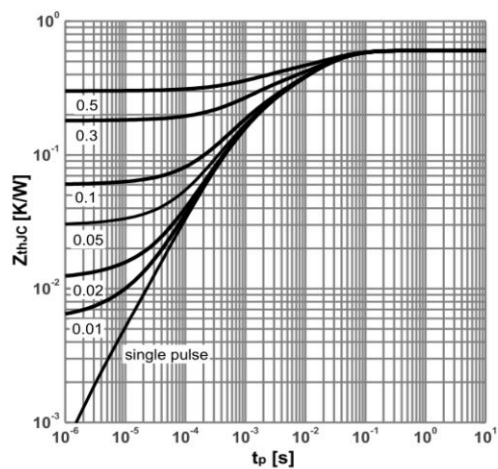


Figure 2. Max. transient thermal impedance

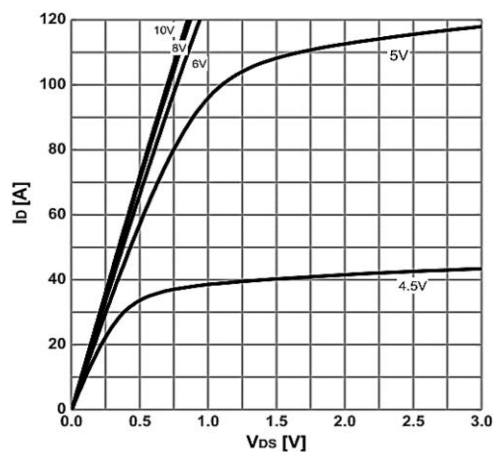


Figure 4. Typ. output characteristics

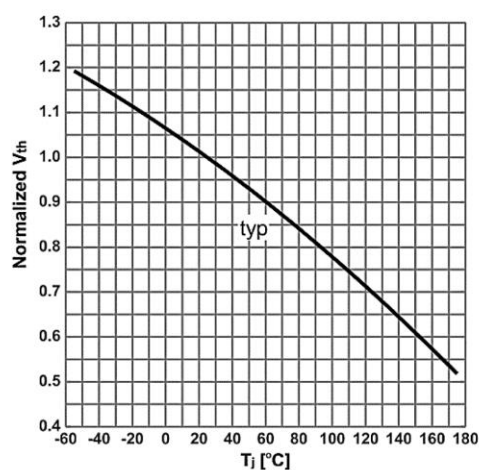


Figure 6. Gate threshold voltage vs. Junction Temperature

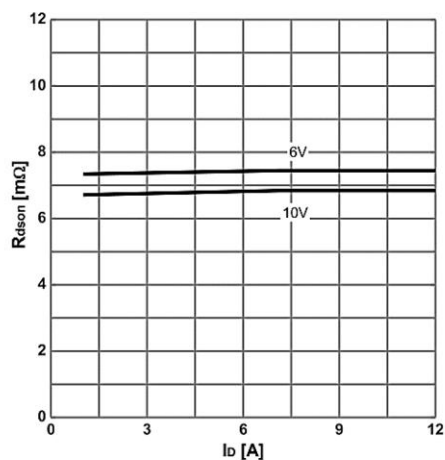


Figure 7. On-state resistance vs. Drain current

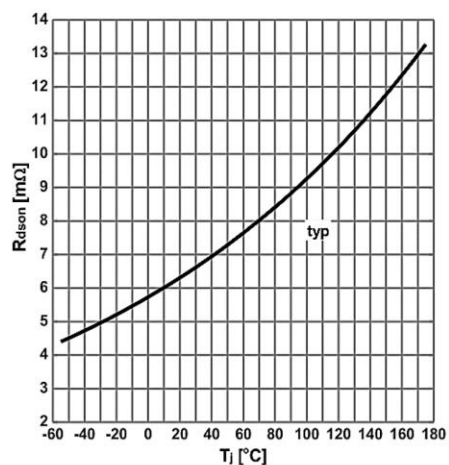


Figure 8. On-state resistance vs. Junction temperature

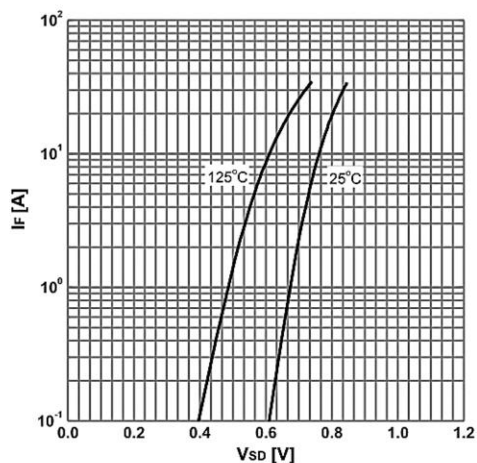


Figure 9. Forward characteristics of reverse diode

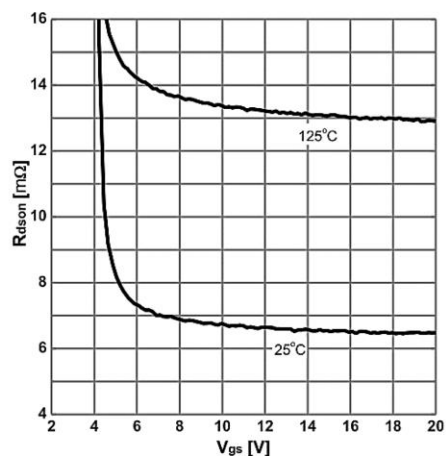


Figure 10. On-state resistance vs. Vgs characteristics

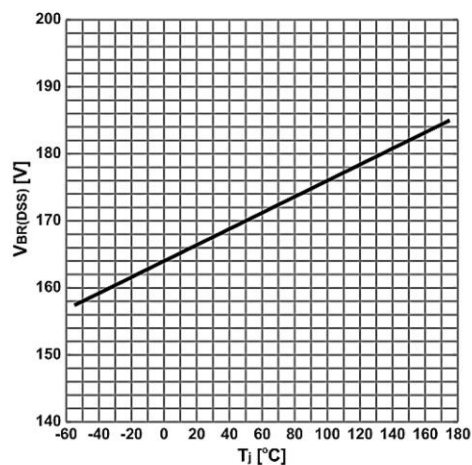


Figure 10: Breakdown Voltage Variation vs. Temperature

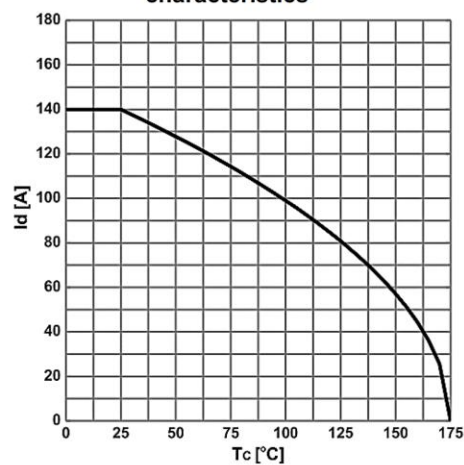
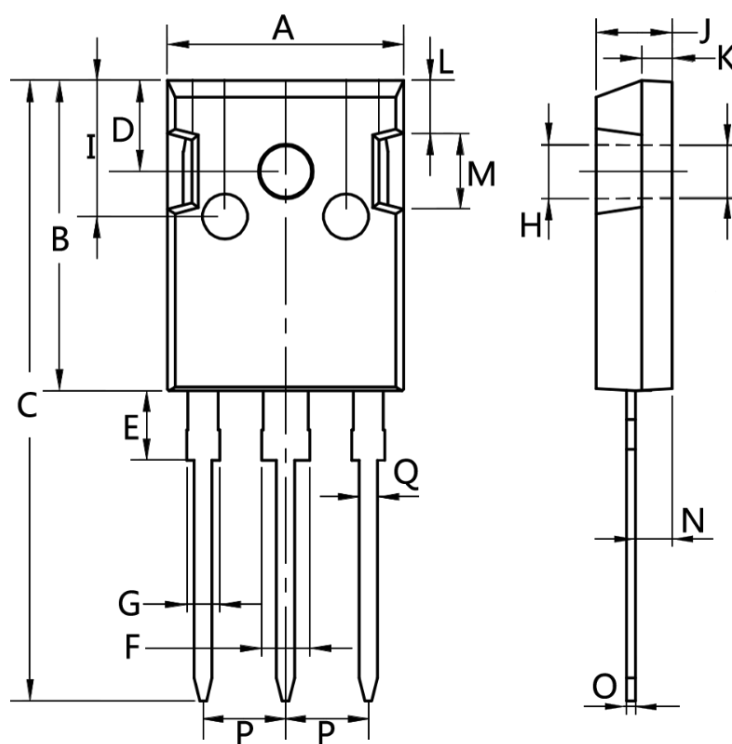


Figure 11: Maximum Drain Current

5.Package Mechanical Data

TO-247-3L



Dim.	Min.	Max.
A	15.0	16.0
B	20.0	21.0
C	41.0	42.0
D	5.0	6.0
E	4.0	5.0
F	2.5	3.5
G	1.75	2.5
H	3.0	3.5
I	8.0	10.0
J	4.9	5.1
K	1.9	2.1
L	3.5	4.0
M	4.75	5.25
N	2.0	3.0
O	0.55	0.75
P	Type 5.08	
Q	1.2	1.3