N-Channel Enhancement Mode MOSFET

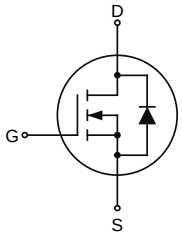
1. Product Information

1.1 Features

Advanced SGT Technology

Excellent $R_{DS(ON)}$

Low gate charge



1.2 Applications

DC/DC Converter

LED Backlighting

Power Management Switches

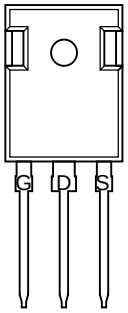
1.3 Quick reference

V_{DS}=150 V

I_D=260 A

P_D=326 W

$R_{DS(ON)}$≦5.8 mΩ@V_{GS}=10 V (Type:4.8 mΩ)



Top View
TO-247

2. Package Marking and Ordering Information

Product Name	Package	Marking	Reel Size	Tape width	Quantity
KJ260N15P	TO-247	KJ260N15P	-	-	1000

3. Absolute Maximum Ratings (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current (T_C=25℃)	260	A
I_D	Continuous Drain Current (T_C=100℃)	185	A
I_{DM}	Pulsed Drain Current	720	A
I_{AS}	Avalanche Current	64	A
E_{AS}	Single Pulse Avalanche Energy	1764	mJ
P_D	Power Dissipation (T_C=25℃) [4]	326	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	–55 to 150	℃
$R_{\theta JA}$	Thermal Resistance, Junction-Ambient	62	℃/W
$R_{\theta JC}$	Thermal Resistance, Junction-Case	0.46	℃/W

4. Electrical Characteristics (T_C=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0 V, I_{DS}=250 μA	150	165	-	V
Zero Gate Voltage Source Current	I_{DSS}	V_{DS}=140 V, V_{GS}=0 V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20 V, V_{DS}=0 V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250 μA	2.0	2.9	4.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10 V, I_D=40 A	-	4.8	5.8	mΩ
Forward Transconductance	G_{FS}	V_{DS}=5 V, V_{GS}=15 A		33	-	S
Diode Characteristics						
Diode Forward Voltage [3]	V_{SD}	I_{SD}=20 A, V_{GS}=0 V	-	-	1.2	V
Reverse Recovery Time	t_{rr}	I_{DS}=20 A, V_{GS}=0 V, dI_{SD}/dt=500 A/μs	-	101	-	ns
Reverse Recovery Charge	Q_{rr}		-	1240	-	nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0 V, V_{DS}=25 V, Frequency=1 MHz	-	4200	-	pF
Output Capacitance	C_{oss}		-	2867	-	
Reverse Transfer Capacitance	C_{rss}		-	215	-	
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=75 V, V_{GEN}=10 V, R_G=3 Ω, R_L=1.07 Ω,	-	18	-	ns
Turn-on Rise Time	t_r		-	22	-	
Turn-off Delay Time	$t_{d(off)}$		-	35	-	
Turn-off Fall Time	t_f		-	10	-	
Gate Charge Characteristics						
Total Gate Charge	Q_g	V_{GS}=10 V, V_{DS}=75 V, I_{DS}=70 A	-	65	-	nC
Gate-Source Charge	Q_{gs}		-	20	-	
Gate-Drain Charge	Q_{gd}		-	19	-	

Notes:

1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2 OZ copper.

3. The test condition is Pulse Test: Pulse width ≤ 300 μs, Duty Cycle ≤ 2%.

2. The E_{AS} data shows Max. rating. The test condition is V_{DD}=50 V, V_{GS}=10 V, L=0.5 mH, I_{AS}=64 A

4. The power dissipation is limited by 150℃ 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.

7. Typical Characteristics

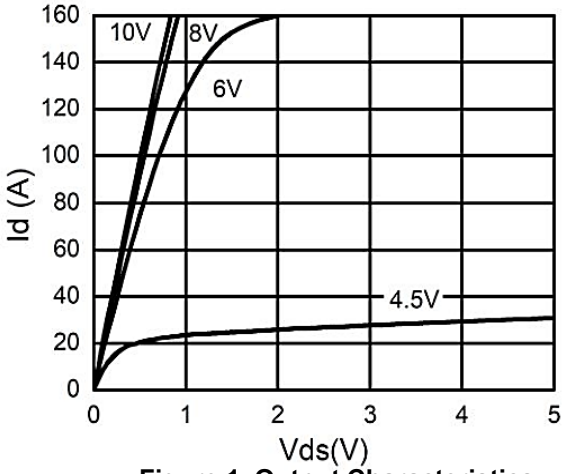


Figure 1. Output Characteristics

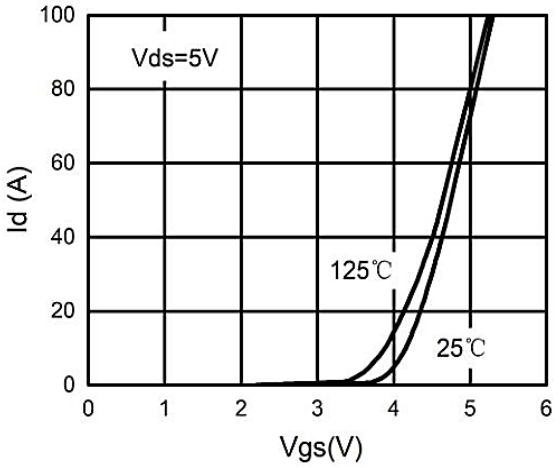


Figure 2. Transfer Characteristics

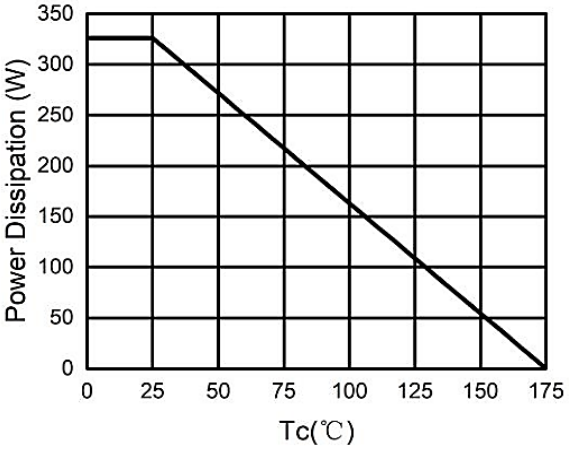


Figure 3. Power Dissipation

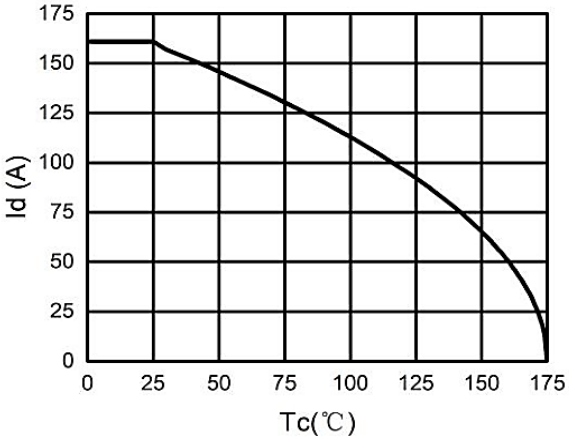


Figure 4. Drain Current

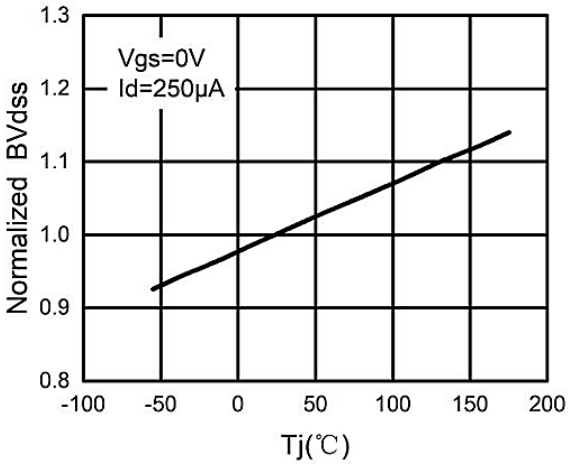


Figure5. BVDSS vs Junction Temperature

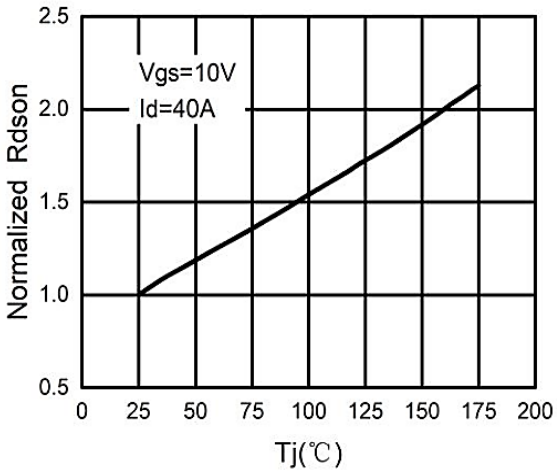


Figure6. RDS(ON) vs Junction Temperature

7. Typical Characteristics (cont.)

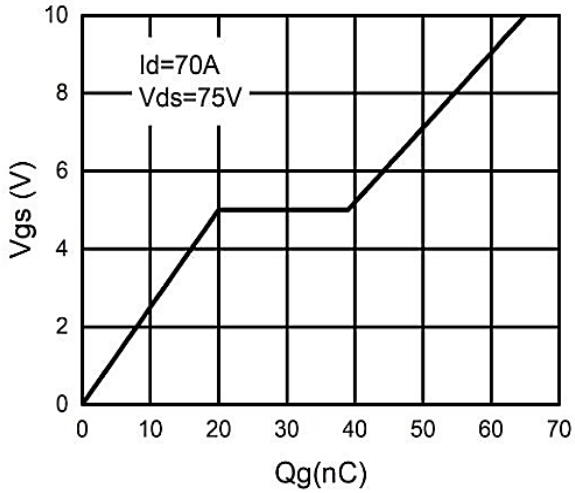


Figure 7. Gate Charge Waveforms

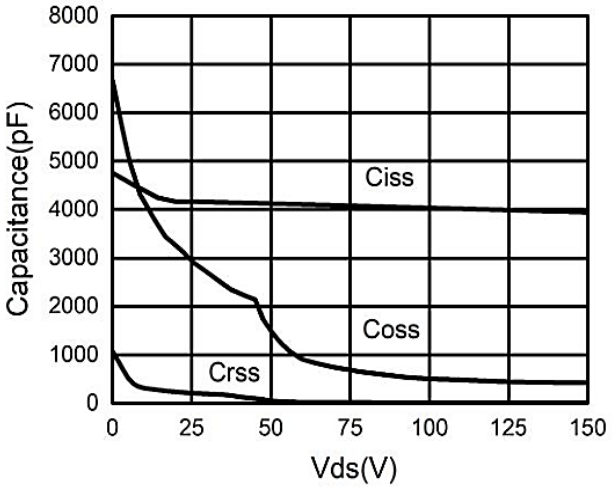


Figure 8. Capacitance

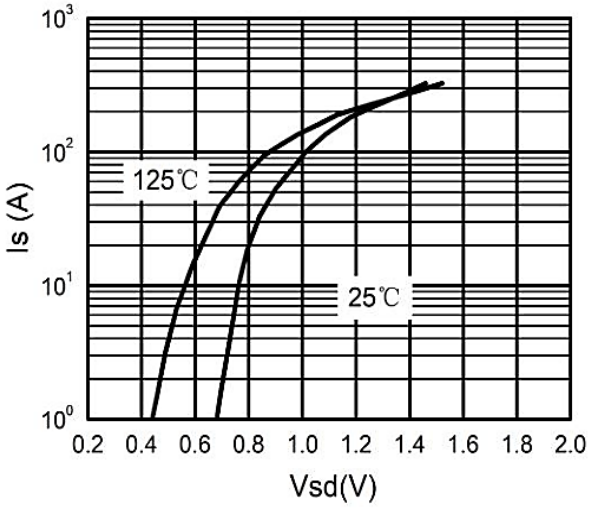


Figure 9. Body-Diode Characteristics

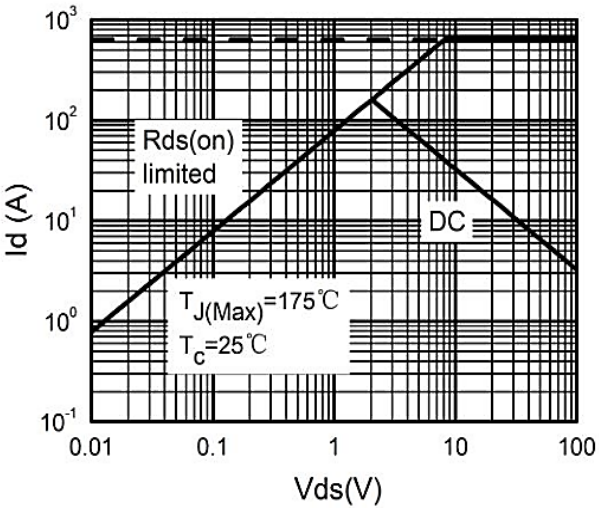


Figure 10. Maximum Safe Operating Area

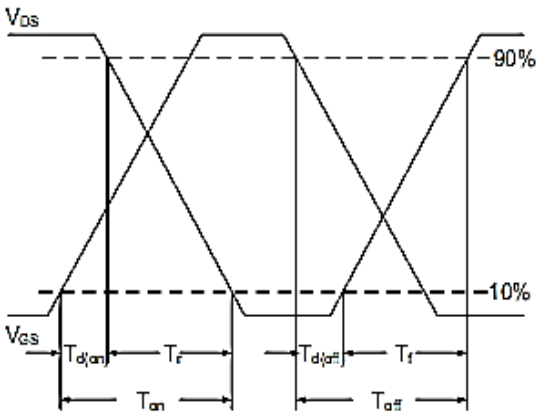


Figure11.Switching Time Waveform

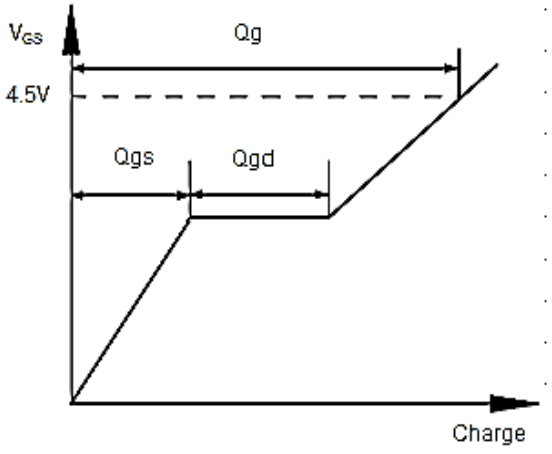
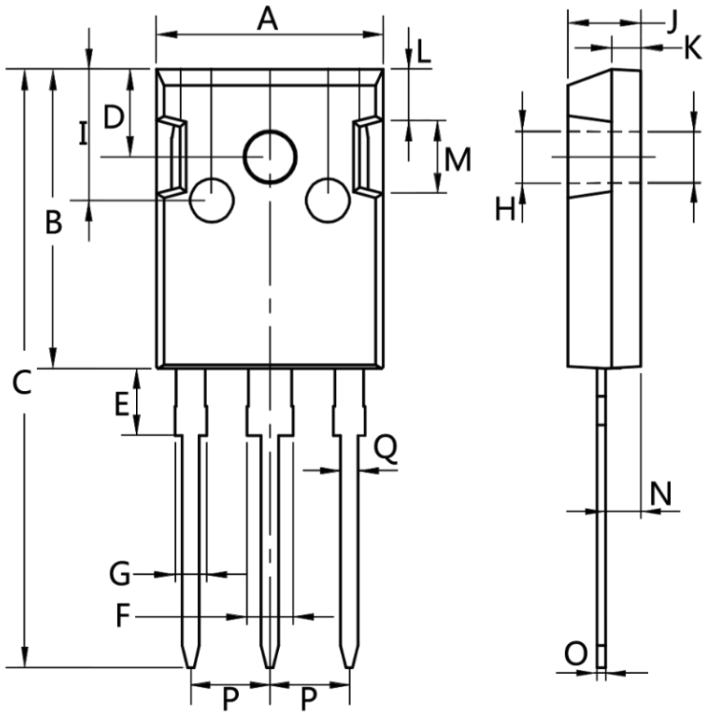


Figure12.Gate Charge Waveform

8. Package Dimensions

TO-247 Package



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	MIN.	MAX.	MIN.	MAX.
A	15.00	16.00	0.5906	0.6299
B	20.00	21.00	0.7874	0.8268
C	41.00	42.00	1.6142	1.6535
D	5.00	6.00	0.1969	0.2362
E	4.00	5.00	0.1575	0.1969
F	2.50	3.50	0.0984	0.1378
G	1.75	2.50	0.0689	0.0984
H	3.00	3.50	0.1181	0.1378
I	8.00	10.00	0.3150	0.3937
J	4.90	5.10	0.1929	0.2008
K	1.90	2.10	0.0748	0.0827
J	4.90	5.10	0.1929	0.2008
K	1.90	2.10	0.0748	0.0827
L	3.50	4.00	0.1378	0.1575
M	4.75	5.25	0.1870	0.2067
N	2.00	3.00	0.0787	0.1181
O	0.55	0.75	0.0217	0.0295
P	TYP 5.08		TYP 0.2000	
Q	1.20	1.30	0.0472	0.0512