UNI-SEMICONDUCTOR CO.,LTD

宇力半导体有限公司

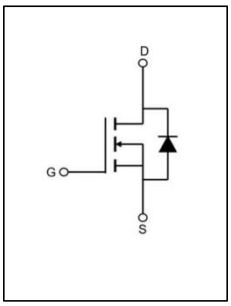
APG095N01K DataSheet

V 1.0

Feature

- 100V,60A
- $R_{DS(ON)}$<9.5mΩ @V_{GS}=10V (TYP:7.5mΩ)
- $R_{DS(ON)}$<13mΩ @V_{GS}=4.5V (TYP:10.5mΩ)
- Split Gate Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(ON)}$ and Low Gate Charge

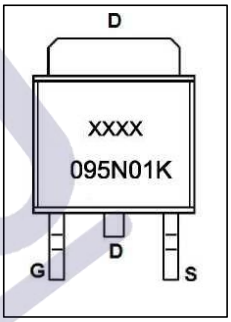
Schematic Diagram



Application

- PWM applications
- Load Switch
- Power management

Marking and Pin Assignment



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G095N01K	APG095N01K	TO-252	13 inch	—	2500

ABSOLUTE MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_a =25°C)	I_D	60	A
Continuous Drain Current (T_a =100°C)	I_D	38	A
Pulsed Drain Current (1)	I_{DM}	240	A
Singel Pulsed Avalanche Energy(2)	E_{AS}	90	mJ
Power Dissipation	P_D	63	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	2.0	^{D}C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55-+150	°C

MOSFET ELECTRICAL CHARACTERISTICS(Ta=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	100	—	—	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =80V, V_{GS} = 0V	—	—	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	—	—	±100	nA
Gate threshold voltage(3)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.2	2.0	2.5	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =10V, I_D =20A	—	7.5	9.5	mΩ
		V_{GS} =4.5V, I_D =10A	—	10.5	13	
Forward Threshold Voltage	g_{fs}	V_{DS} =5V, I_D =20A	—	13.5	—	S
Gate Resistance	R_g	V_{DS} =V_{GS} =0V,f=1MHz	—	1.94	—	Ω
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =50V, V_{GS} =0V, f=1MHz	—	2122	—	pF
Output Capacitance	C_{oss}		—	618	—	
Reverse Transfer Capacitance	C_{rss}		—	25	—	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=50V, I_D=20A, V_{GS}=10V, R_G=3Ω	—	17	—	ns
Turn-on rise time	t_r		—	4	—	
Turn-off delay time	$t_{d(off)}$		—	32	—	
Tum-off fall time	t_f		—	8	—	
Total Gate Charge	Qg	V_{DS}=50V, I_D=20A, V_{GS}=10V	—	41.8	—	nC
Gate-Source Charge	Qgs		—	9	—	
Gate-Drain Charge	Qgd		—	10	—	
Reverse Recovery Chrage	Qrr	I_F=20A，di/dt=100A/us	—	71.5	—	nC
Reverse Recovery Time	Trr	I_F=20A，di/dt=100A/us	—	50.5	—	ns
Source-Drain Diode characteristics						
Diode Forward voltage(3)	V_{DS}	V_{GS} =0V, I_S=20A	—	—	1.2	V
Diode Forward current(4)	I_S		—	—	60	A

Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition:T_J=25°C,V_{DD}=50V,R_G=25Ω,L=0.5mH
3. Pulse Test: pulse width≤300μs, duty cycle≤2%
4. Surface Mounted on FR4 Board,t≤10 sec

Typical Performance Characteristics

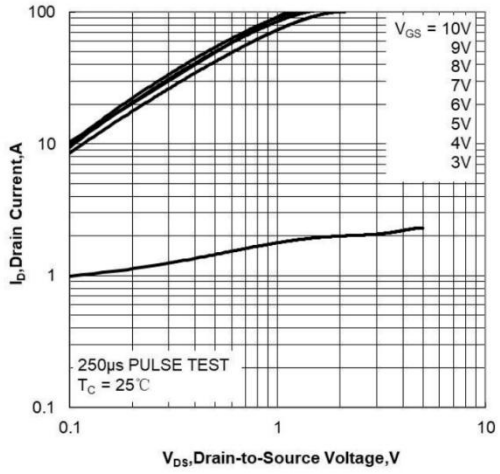


Figure 1. Output Characteristics

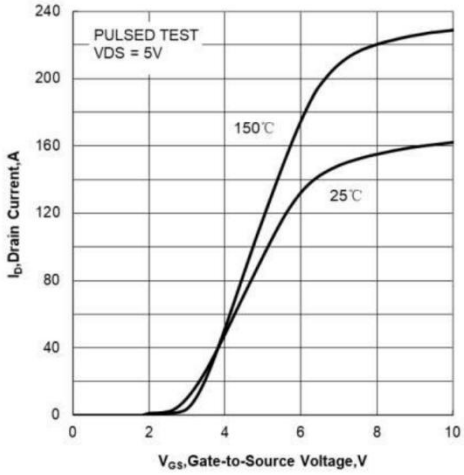


Figure 2. Transfer Characteristics

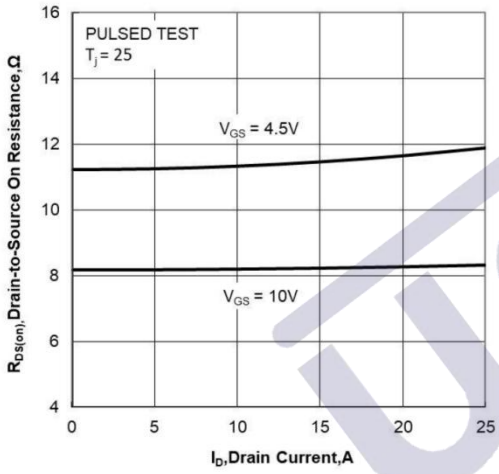


Figure 3. Drain-to-Source On Resistance vs Drain Current

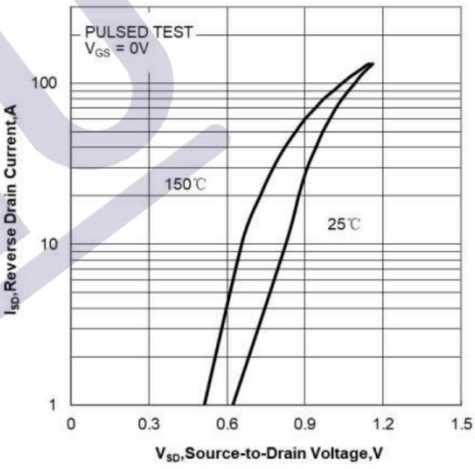


Figure 4. Body Diode Forward Voltage vs Source Current and Temperature

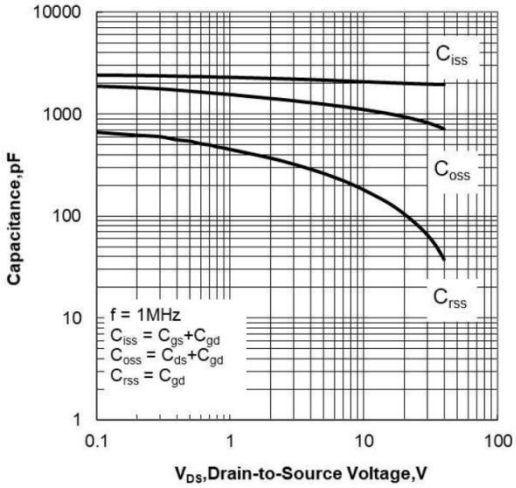


Figure 5. Capacitance Characteristics

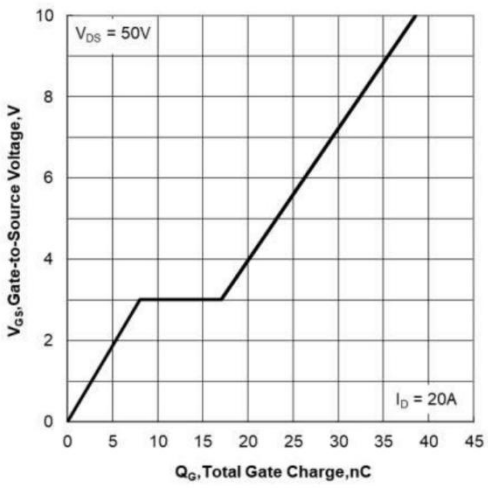


Figure 6. Gate Charge Characteristics

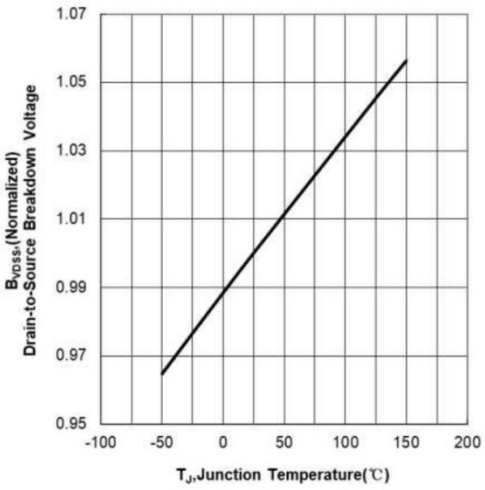


Figure 7. Normalized Breakdown Voltage vs Junction Temperature

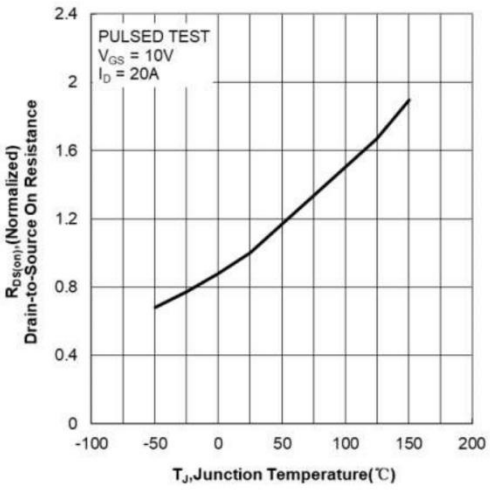


Figure 8. Normalized On Resistance vs Junction Temperature

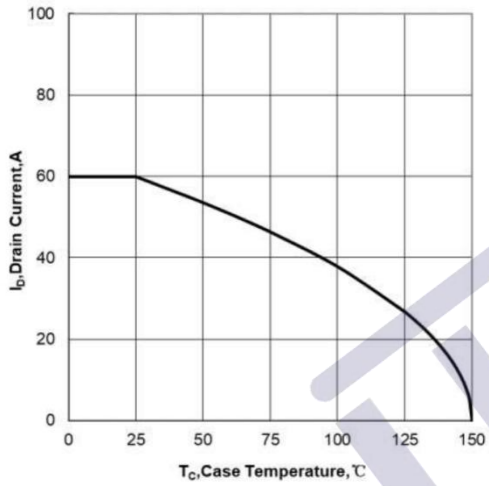


Figure 9. Maximum Continuous Drain Current vs Case Temperature

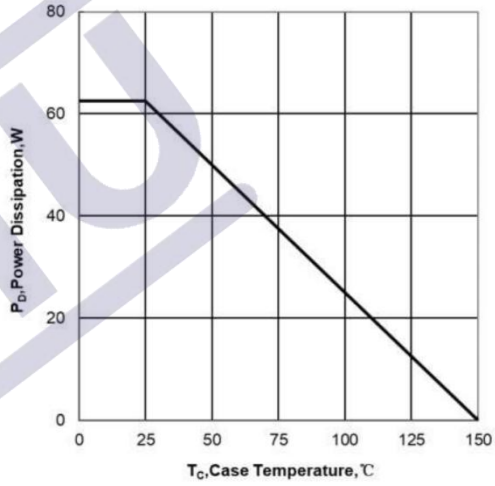


Figure 10. Maximum Power Dissipation vs Case Temperature

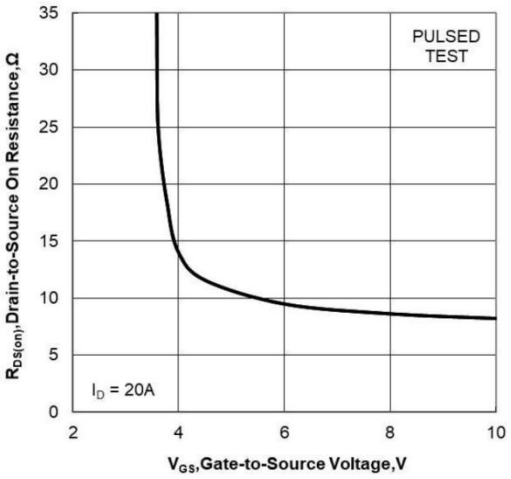


Figure11. Drain-to-Source On Resistance vs Gate Voltage and Drain Current

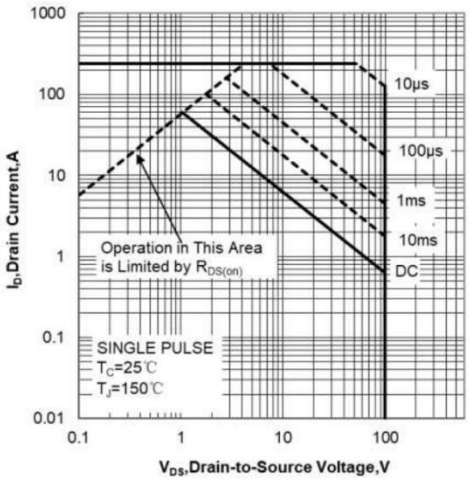


Figure 12. Maximum Safe Operating Area

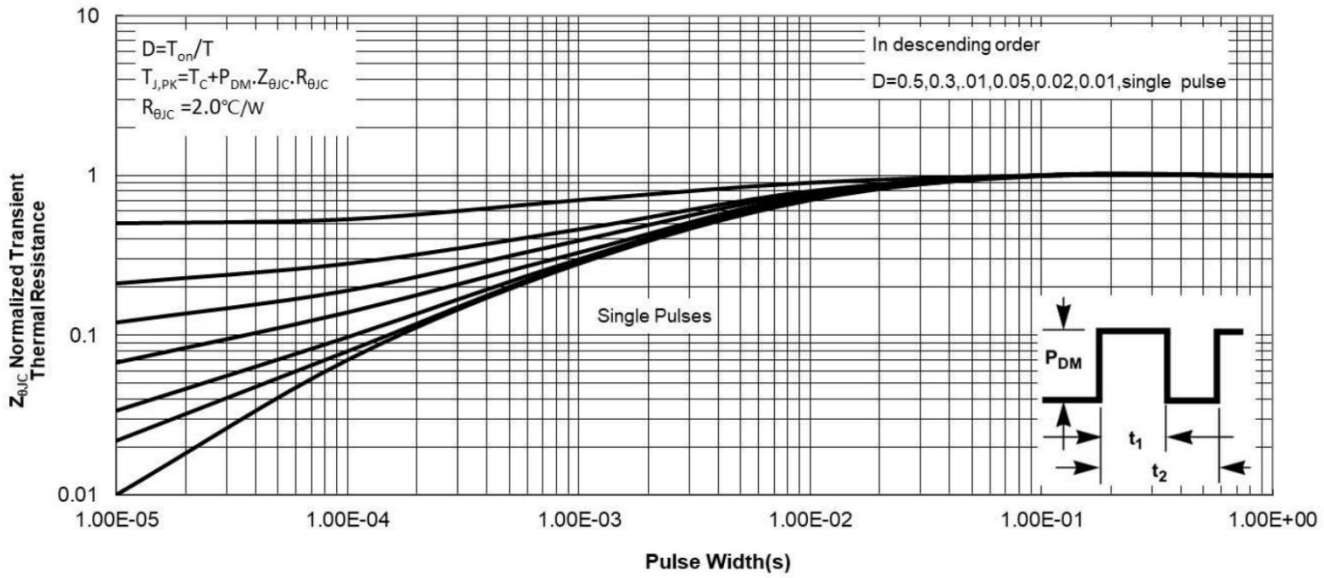
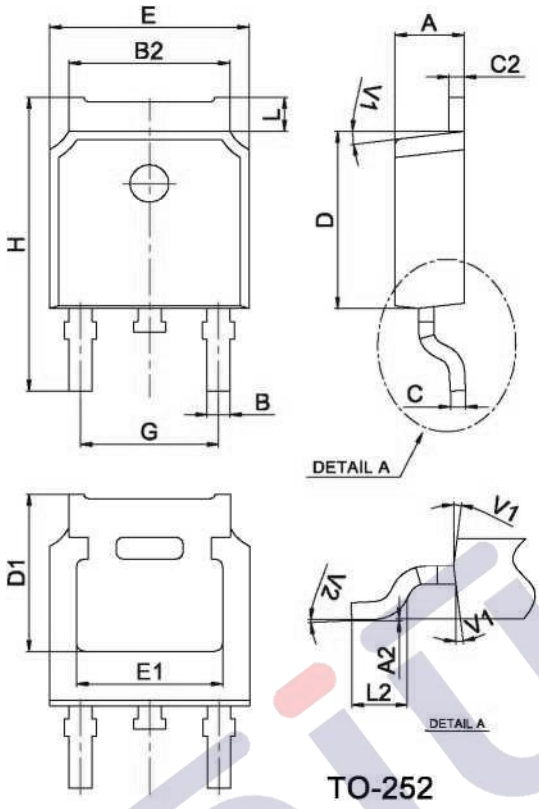


Figure 13. Maximum Effective Transient Thermal Impedance, Junction-to-Case

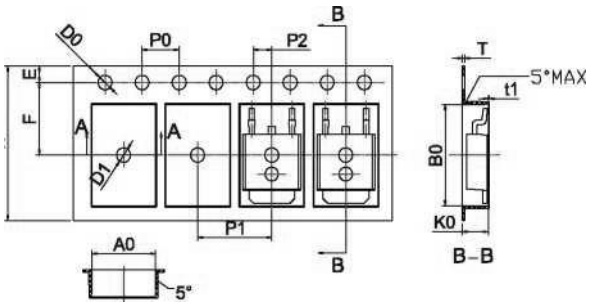
TO-252 Package Information

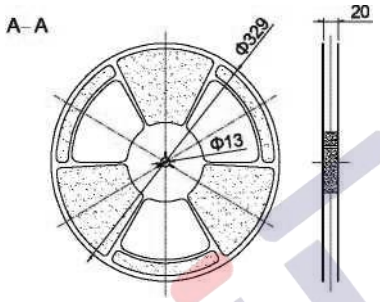


TO-252

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10	—	2.50	0.083	—	0.098
A2	0	—	0.10	0	—	0.004
B	0.66	—	0.86	0.026	—	0.034
B2	5.18	—	5.48	0.202	—	0.216
C	0.40	—	0.60	0.016	—	0.024
C2	0.44	—	0.58	0.017	—	0.023
D	5.90	—	6.30	0.232	—	0.248
D1	5.30REF			0.209REF		
E	6.40	—	6.80	0.252	—	0.268
E1	4.63	—	—	0.182	—	—
G	4.47	—	4.67	0.176	—	0.184
H	9.50	—	10.70	0.374	—	0.421
L	1.09	—	1.21	0.043	—	0.048
L2	1.35	—	1.65	0.053	—	0.065
V1	—	7°	—	—	7°	—
V2	0°	—	6°	0°	—	6°

Reel Spectification-TO-252





Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ-	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24	—	0.27	0.009	—	0.011
t1	0.10	—	—	0.004	—	—
10P0	39.80	40.00	40.20	1.567	1.575	1.583

1.版本记录

DATE	REV.	DESCRIPTION
2018/08/19	1.0	First Release

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