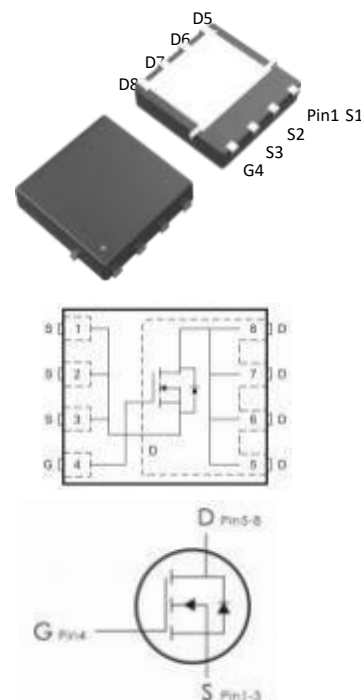


Description:

This N-Channel MOSFET uses advanced trench technology to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

Features:

- 1) $V_{DS}=12V$, $I_D=45A$, $R_{DS(ON)}<5m\ \Omega$ @ $V_{GS}=4.5V$ (Typ: $3.8m\Omega$)
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.
- 6) MSL3



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
ZA005NAG	A005NA	DFN3*3-8	5000 pcs/Reel

Absolute Maximum Ratings: ($T_C=25\ ^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	12	V
V_{GS}	Gate-Source Voltage	12	V
I_D	Continuous Drain Current-Continuous- $T_C=25\ ^\circ C$	45	A
	Continuous Drain Current-Continuous- $T_C=100\ ^\circ C$	31.5	A
I_{DM}	Drain Current – Pulsed	180	A
P_D	Power Dissipation - $T_C=25$	18	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	7	$^\circ C/W$

Electrical Characteristics: ($T_C=25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _b =250 μA	12	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{GS} =0V, V _{DS} =12V	---	---	1	μA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±12V, V _{DS} =0A	---	---	±100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _b =250 μA	0.4	0.7	1	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =4.5V, I _D =5A	---	3.8	5	m Ω
		V _{GS} =2.5V, I _b =3A	---	5.5	7	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =6V, V _{GS} =0V, f=1MHz	---	1500	---	pF
C _{oss}	Output Capacitance		---	350	---	
C _{rss}	Reverse Transfer Capacitance		---	296	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =10V, V _{GS} =4.5V, R _G =3 Ω, I _b =3A	---	0.5	---	ns
t _r	Rise Time		---	1.3	---	ns
t _{d(off)}	Turn-Off Delay Time		---	3.3	---	ns
t _f	Fall Time		---	3.2	---	ns
Q _g	Total Gate Charge	V _{DS} =0 to 4.5V, V _{GS} =4.5V, I _b =3A	---	25	---	nC
Q _{gs}	Gate-Source Charge		---	9	---	nC
Q _{gd}	Gate-Drain “ Miller ” Charge		---	12	---	nC
Drain-Source Diode Characteristics						
I _s	Continuous Source Current	V _G =V _D =0V, Force Current	---	---	37.5	A
I _{SM}	Pulsed Source Current		---	---	150	A
V _{SD}	Forward on voltage	I _s =5A, V _{GS} =0V	---	---	1.2	V
T _{rr}	Body Diode Reverse Recovery Time	IF=2A, dI/dt=100A/μs	---	25	---	nS
Q _{rr}	Body Diode Reverse Recovery Charge		---	10	---	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition : $T_J = 25^\circ\text{C}$, $V_{DD} = 30\text{V}$, $V_G = 10\text{V}$, $L = 0.5\text{mH}$, $R_g = 25\Omega$, $I_{AS} = 16\text{A}$
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$

Test Circuit

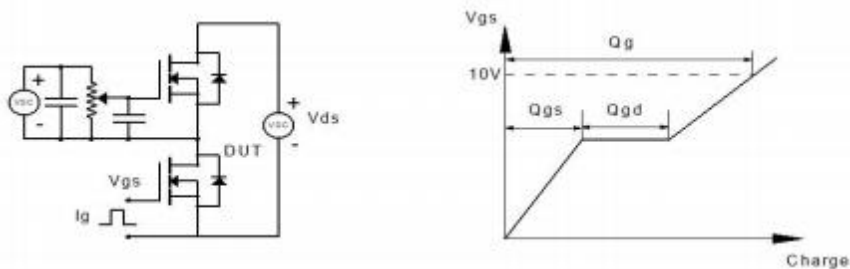


Figure 1: Gate Charge Test Circuit & Waveform

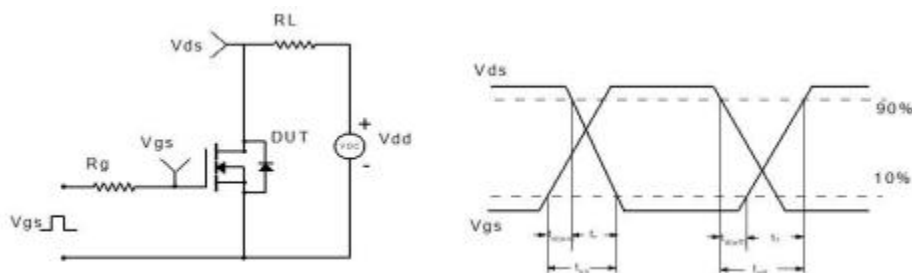


Figure 2: Resistive Switching Test Circuit & Waveform

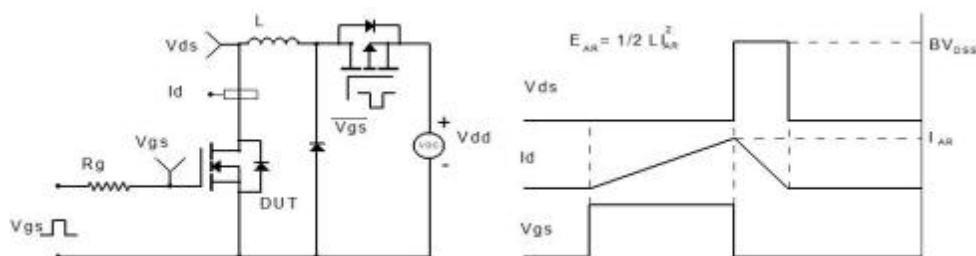


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

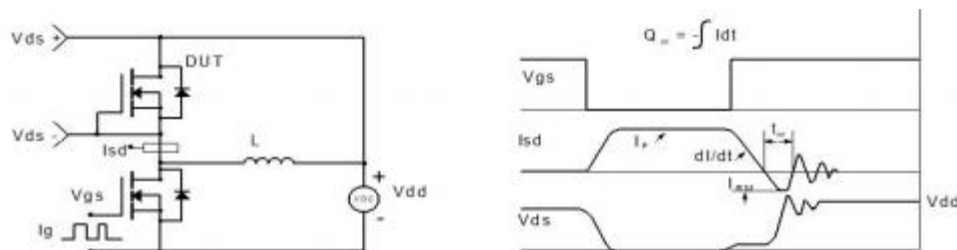
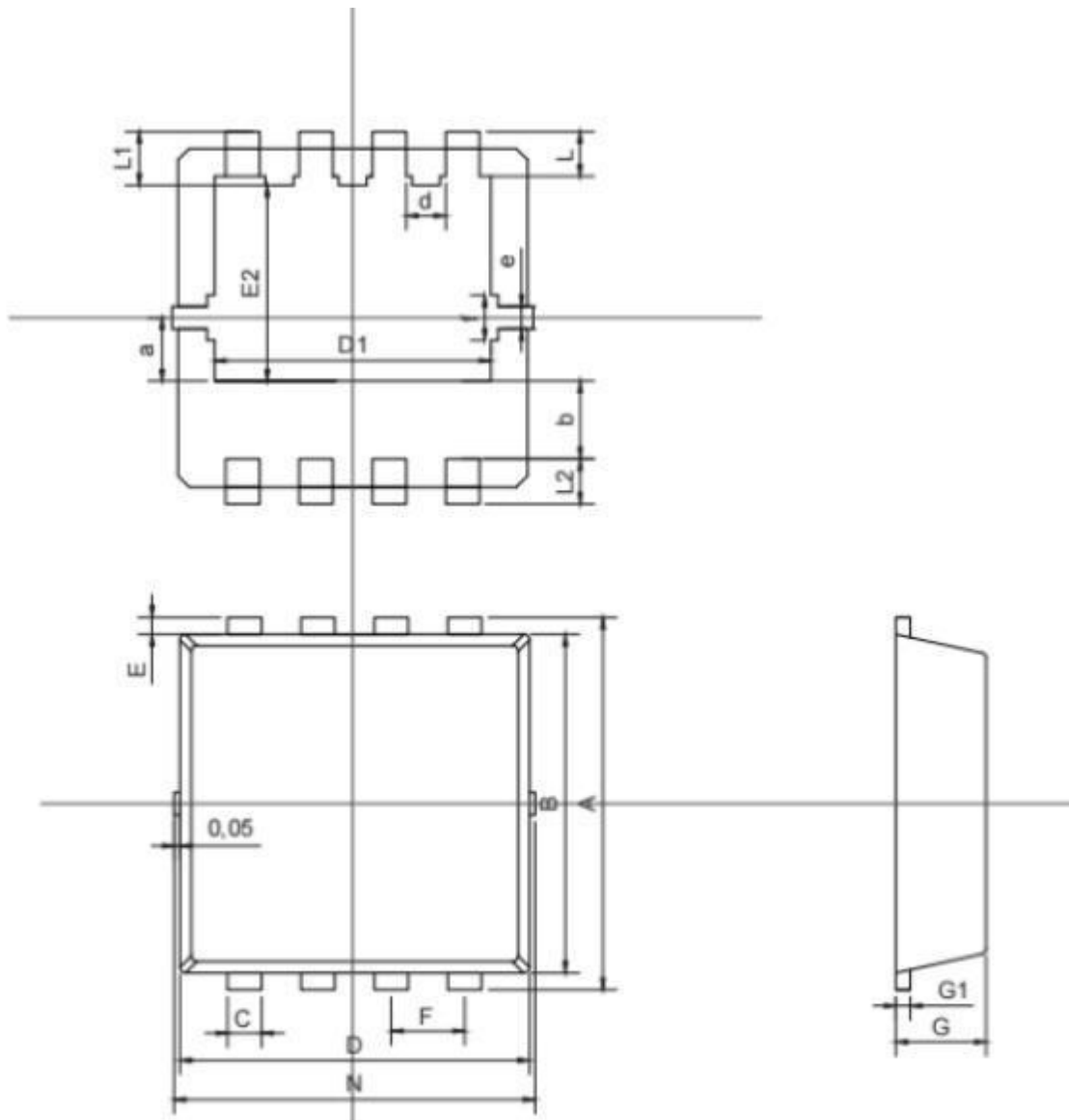


Figure 4: Diode Recovery Test Circuit & Waveform

DFN3X3-8 Package Information:

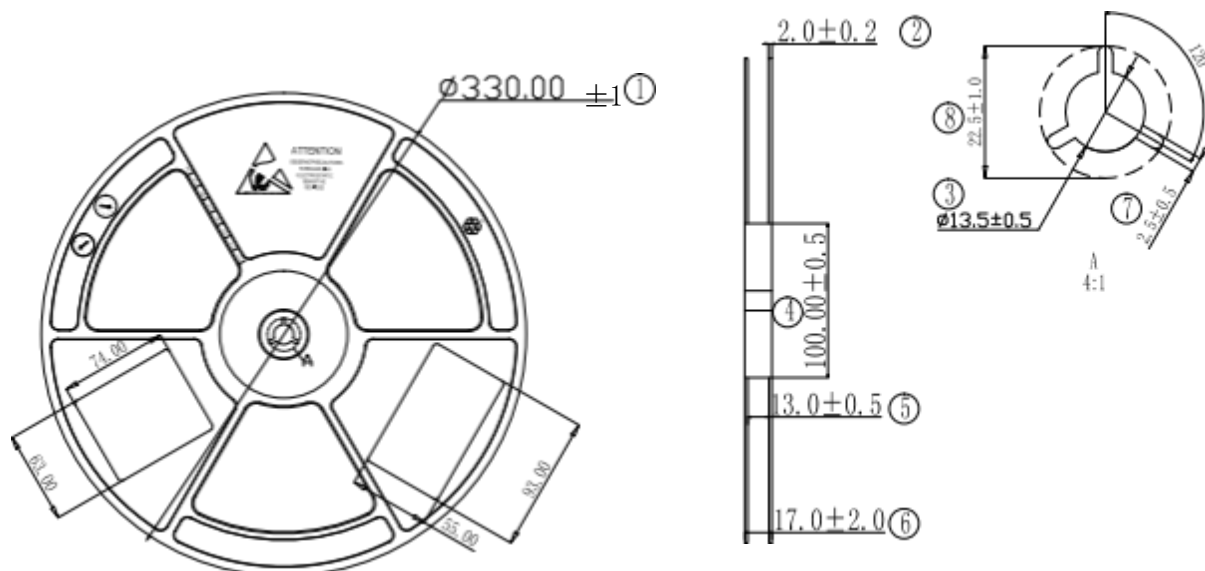


Dimensions

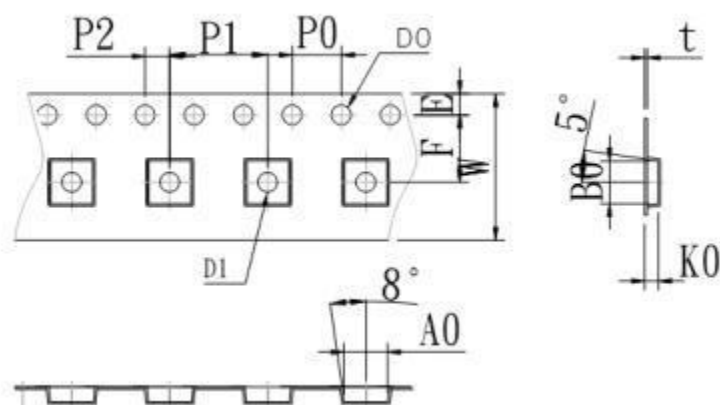
Unit	A	B	C	D	E	F	G	G1	D1	L	N	E2	L1	L2	a	b	d	e	f	n
mm	3.25	2.95	0.25	3.05	0.12	—	0.75	0.135	2.40	0.365	3.15	1.685	0.43	0.35	0.515	0.635	0.35	0.17	0.37	2.08
	(3.35)	(3.05)	(0.30)	(3.10)	(0.15)	(0.65)	(0.80)	(0.15)	(2.45)	(0.41)	(3.20)	(1.73)	(0.48)	(0.40)	(0.56)	(0.68)	(0.40)	(0.20)	(0.40)	(2.58)
	3.45	3.15	0.35	3.15	0.20	—	0.85	0.17	2.50	0.565	3.25	1.785	0.53	0.45	0.615	0.735	0.45	0.25	0.45	3.08

Tape & Reel Information

Dimensions in mm



Symbol	A0	B0	K0	D0	D1	P0	P1	10*P0
Spec	3.55 ± 0.10	3.45 ± 0.10	1.13 ± 0.10	1.55 ± 0.10	1.55 ± 0.10	4.00 ± 0.10	8.00 ± 0.10	40.0 ± 0.10
Symbol	W	E	F	P2	t			
Spec	12.00 ± 0.10	1.75 ± 0.10	5.50 ± 0.10	2.00 ± 0.10	0.20 ± 0.05			



Pulling direction

Marking Information:

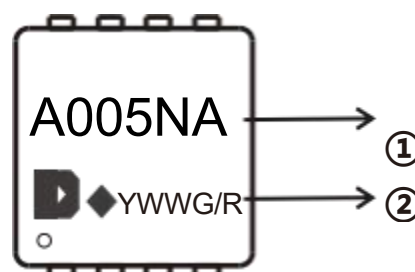
①. Part NO.

②. Date Code(YWWG/ R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

G/R : G(Green) /R(Lead Free)



Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2026-06-10	Release of final version

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