



**DESCRIPTION**

The AM14NS08L is available in PDFN8(5x6) and TO-252 Packages.

**APPLICATION**

Switching applications  
LED backlighting

BVDSS	RDSON	ID
80V	13.8mΩ	32A

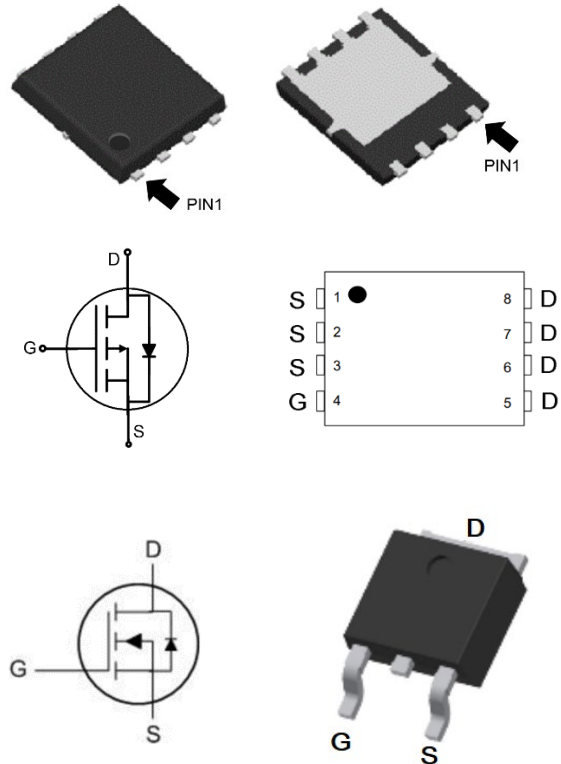
**FEATURE**

- Fast Switching
- Low On-Resistance
- Low Gate Charge
- Low Reverse transfer capacitances
- High avalanche ruggedness

**ORDERING INFORMATION**

Package Type	Part Number	
PDFN8 (5x6) SPQ:5,000pcs /Reel	PJ8	AM14NS08LPJ8R
		AM14NS08LPJ8VR
TO-252 SPQ:2,500pcs /Reel	D	AM14NS08LDR
		AM14NS08LDVR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

**PIN DESCRIPTION**



PDFN8 (5x6)		
Pin#	Symbol	Function
1	S	Source
2	S	Source
3	S	Source
4	G	Gate
5	D	Drain
6	D	Drain
7	D	Drain
8	D	Drain
TO-252		
1	G	Gate
2	D	Drain
3	S	Source

**ABSOLUTE MAXIMUM RATINGS**T<sub>A</sub> = 25°C, unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>	80	V
Continuous Drain Current, Silicon Limited	I <sub>D</sub>	32	A
Continuous Drain Current, TO-252 Package Limited		60	A
Continuous Drain Current, PDFN8(5x6) Package Limited		35	A
Continuous Drain Current @T <sub>C</sub> =100°C, Silicon Limited		20.7	A
Pulsed Drain Current		I <sub>DM</sub> *	128
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Avalanche Energy	E <sub>AS</sub> *	25	mJ
Power Dissipation	P <sub>D</sub>	31.2	W
Derating Factor above 25°C		0.25	W/°C
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	150 , -55 to 150	°C
Maximum Temperature for Soldering	T <sub>L</sub>	260	°C
<b>THERMAL RESISTANCE</b>			
Thermal Resistance, Junction-Case	R <sub>θJC</sub>	4	°C/W
Thermal Resistance, Junction-Ambient	R <sub>θJA</sub>	75	

\* Repetitive Rating : Pulse width limited by maximum junction temperature

\* L=0.5mH, I<sub>as</sub>=10A, Start T<sub>J</sub> =25°C

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



**ELECTRICAL CHARACTERISTICS**

T<sub>A</sub> = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	80	90	-	V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =80V, V <sub>GS</sub> =0V	-	-	1	μA
		V <sub>DS</sub> =64V, V <sub>GS</sub> =0V @T <sub>C</sub> =125°C	-	-	100	μA
Gate-Source Forward Leakage	I <sub>GSS(F)</sub>	V <sub>GS</sub> =+20V	-	-	100	nA
Gate-Source Reverse Leakage	I <sub>GSS(R)</sub>	V <sub>GS</sub> =-20V	-	-	-100	nA
<b>ON CHARACTERISTICS</b>						
Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A	-	21	23	m Ω
		V <sub>GS</sub> =10V, I <sub>D</sub> =20A	-	13.8	15	m Ω
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1	1.8	2.5	V
<b>Dynamic CHARACTERISTICS</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =40V, V <sub>GS</sub> =0, f=1MHz	-	1053	-	pF
Output Capacitance	C <sub>oss</sub>		-	186	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	6.5	-	
Total Gate Charge	Q <sub>g</sub>	V <sub>DD</sub> =40V, I <sub>D</sub> =10A, V <sub>GS</sub> =10V	-	22.4	-	nC
Gate-Source charge	Q <sub>gs</sub>		-	4.3	-	
Gate-Drain charge	Q <sub>gd</sub>		-	4	-	
Gate resistance	R <sub>G</sub>	V <sub>GS</sub> =0, V <sub>DS</sub> =0	-	1	-	Ω
<b>Switching CHARACTERISTICS</b>						
Turn-on Delay Time	t <sub>d(ON)</sub>	V <sub>DD</sub> =40V, I <sub>D</sub> =10A, V <sub>GS</sub> =10V, R <sub>G</sub> =5Ω, Resistive Load	-	9.8	-	nS
Rise Time	t <sub>r</sub>		-	5	-	
Turn-Off Delay Time	t <sub>d(OFF)</sub>		-	18.6	-	
Fall Time	t <sub>f</sub>		-	3.9	-	
<b>Source-Drain Diode CHARACTERISTICS</b>						
Continuous Source Current	I <sub>S</sub>		-	-	32	A
Maximum Pulsed Current	I <sub>SM</sub>		-	-	128	A
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =20A	-	-	1.2	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>S</sub> =20A, V <sub>GS</sub> =0, di/dt=500A/us	-	35	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>		-	136	-	nC

\* Pulse width t<sub>p</sub>≤300μs, δ≤2%.



## TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Safe Operating Area

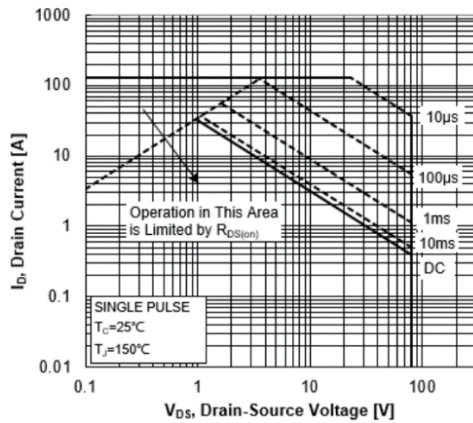


Fig 2. Maximum Power Dissipation vs Case Temperature

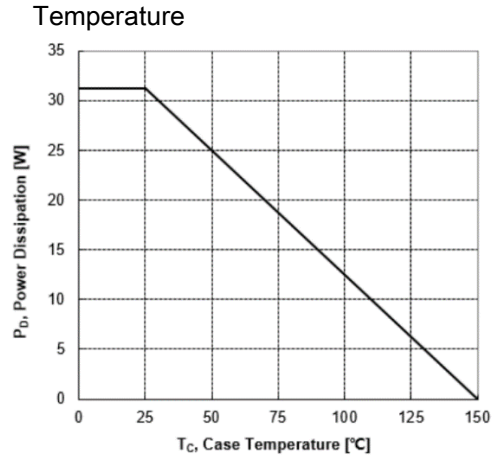


Fig 3. Maximum Continuous Drain Current vs Case Temperature

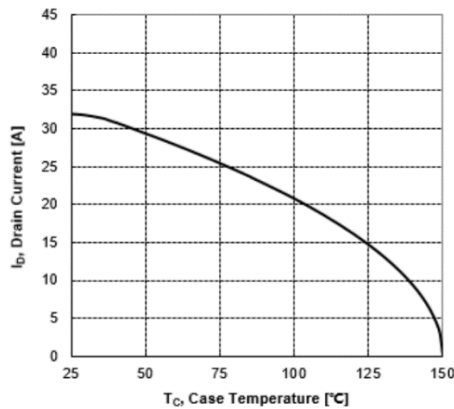


Fig 4. Typical Output Characteristics

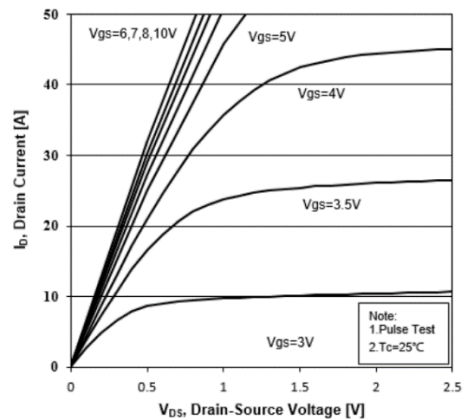


Fig 5. Transient Thermal Impedance

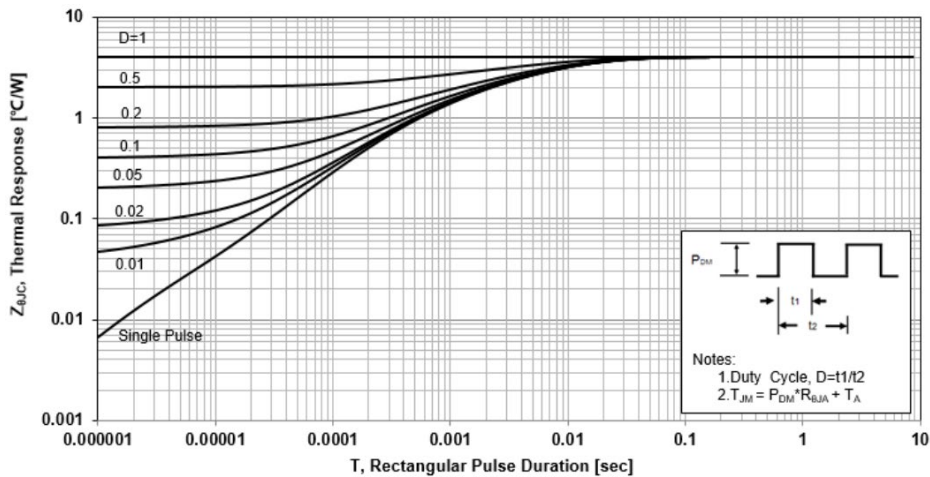




Fig 6. Typical Transfer Characteristics

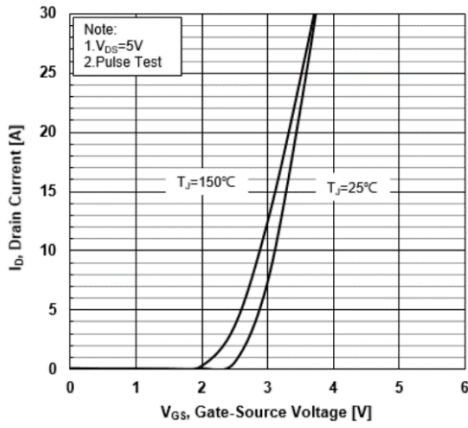


Fig 7. Source-Drain Diode Forward Characteristics

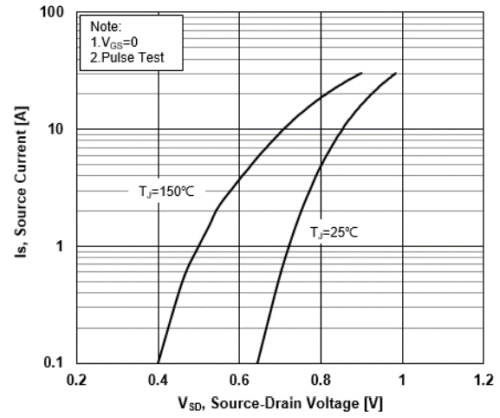


Fig 8. Drain-Source On-Resistance vs Drain Current

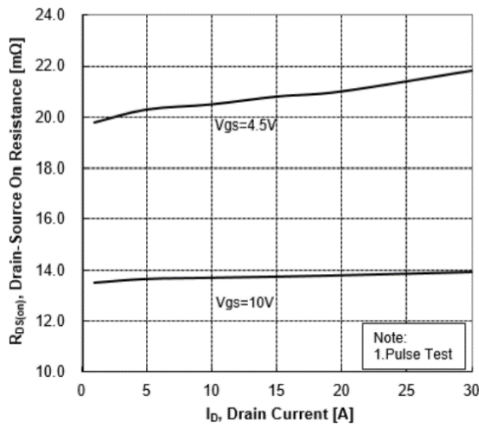


Fig 9. Normalized On-Resistance vs Junction Temperature

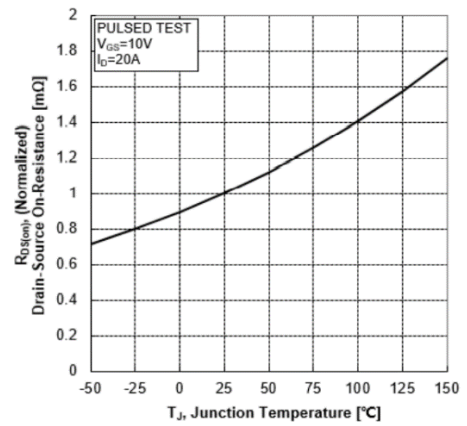


Fig 10. Normalized Threshold Voltage vs Junction Temperature

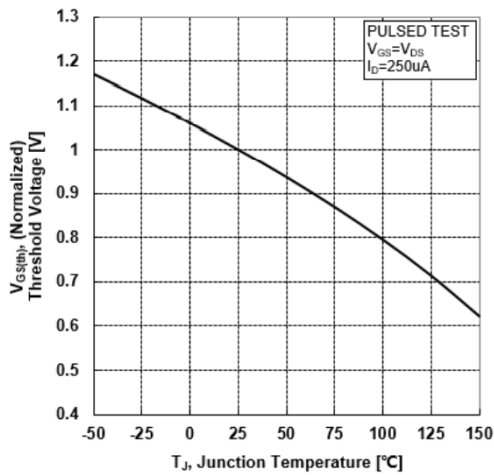


Fig 11. Normalized Breakdown Voltage vs Junction Temperature

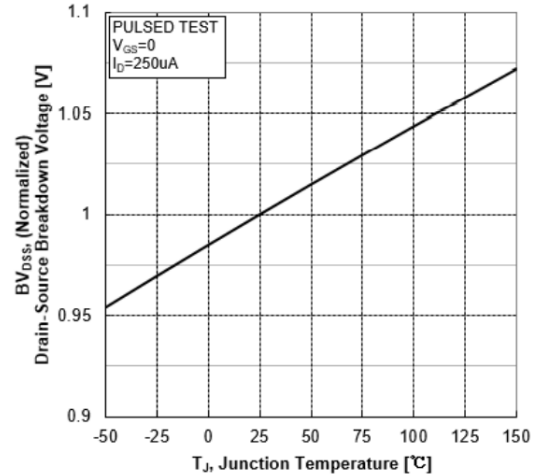




Fig12. Capacitance Characteristics

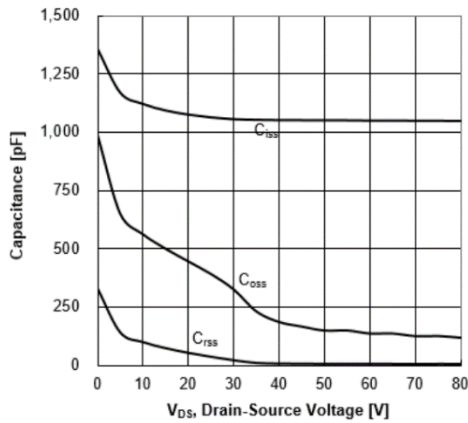


Fig 14. Resistive Switching Test Circuit

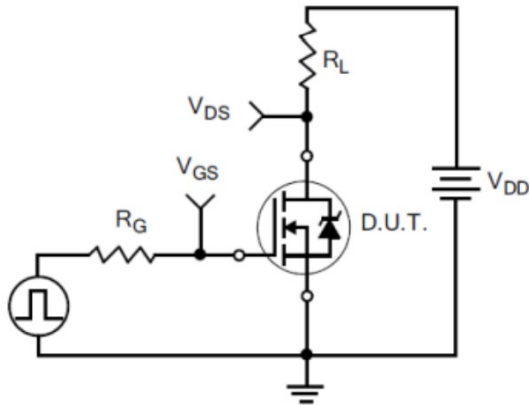


Fig 16. Gate Charge Test Circuit

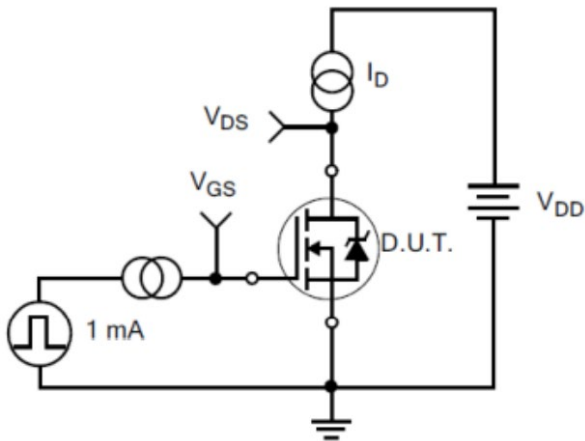


Fig 13. Typical Gate Charge vs Gate-Source Voltage

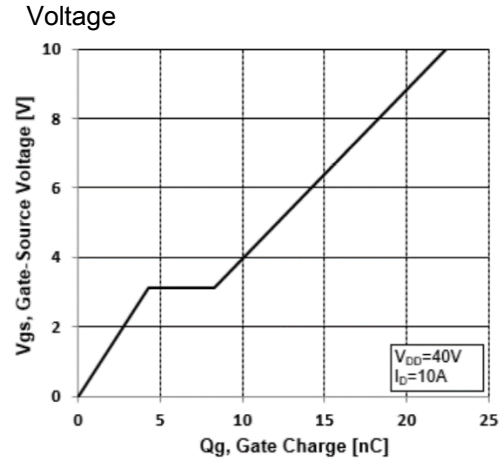


Fig 15. Resistive Switching Waveforms

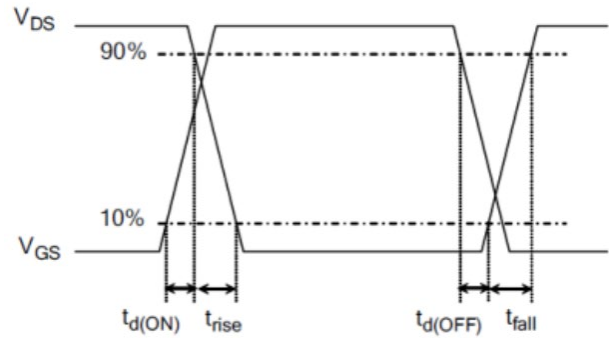


Fig 17. Gate Charge Waveforms

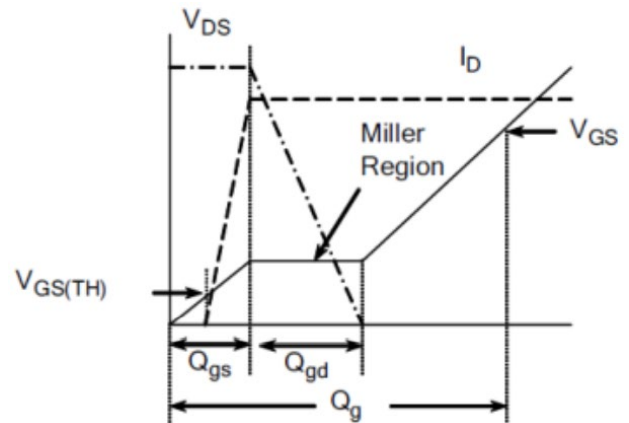




Fig 18. Diode Reverse Recovery Test Circuit

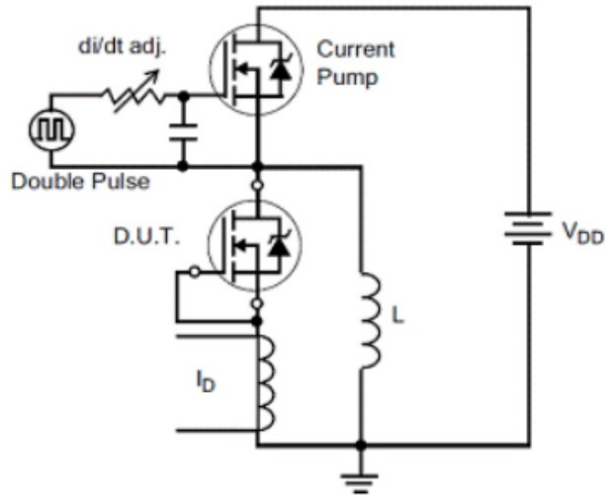


Fig 19. Diode Reverse Recovery Waveform

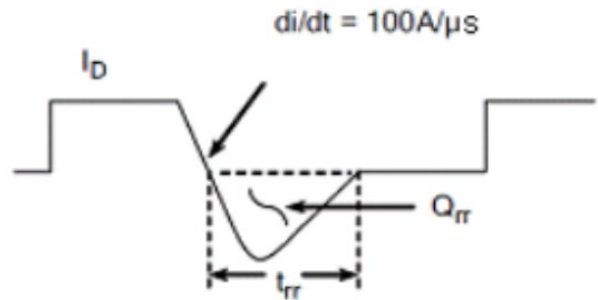


Fig 20. Unclamped Inductive Switching Test Circuit

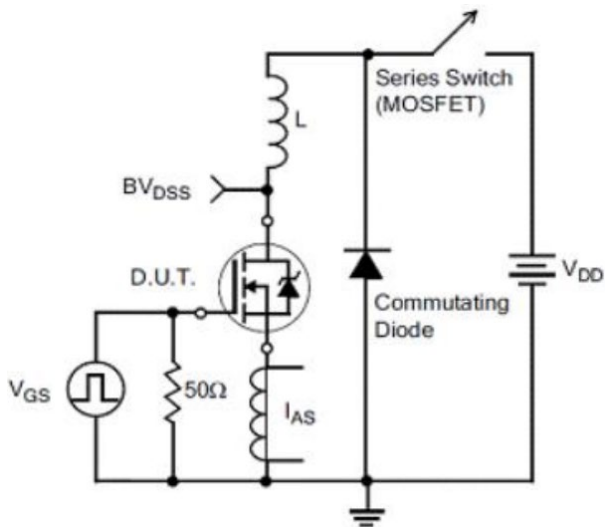
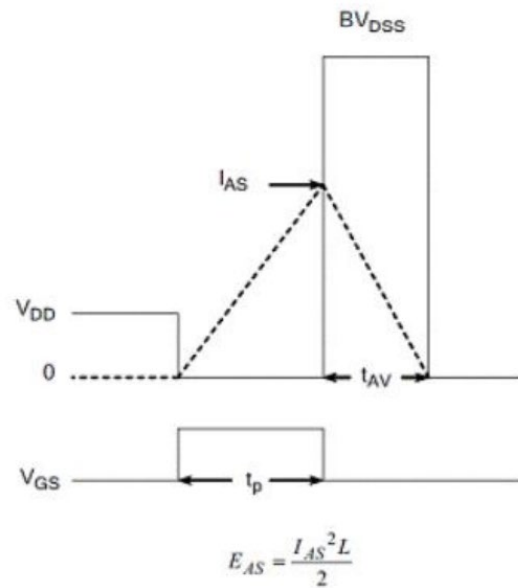


Fig 21. Unclamped Inductive Switching Waveform

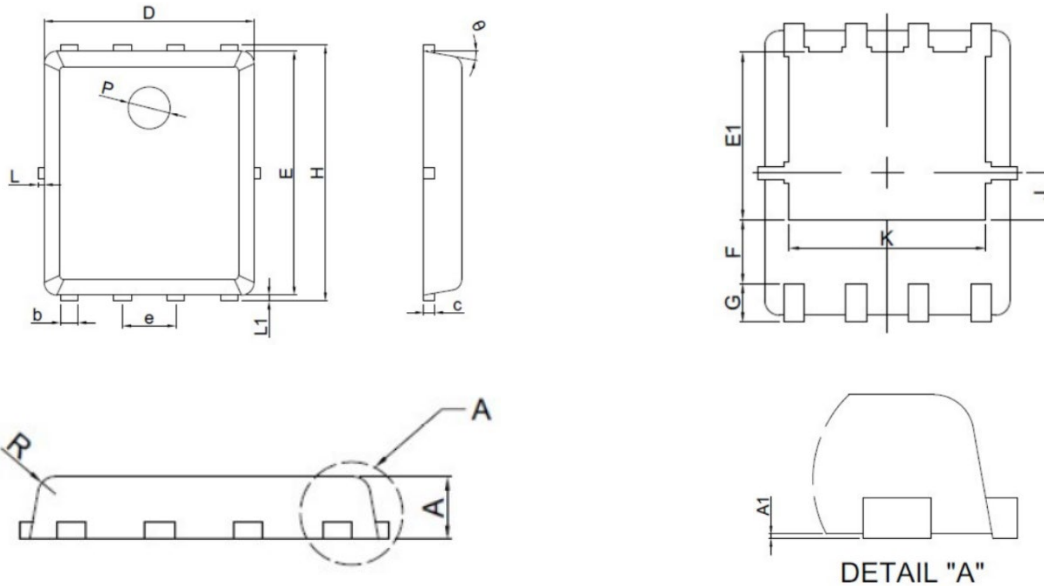






**PACKAGE INFORMATION**

Dimension in PDFN8 (5×6) (Unit: mm)

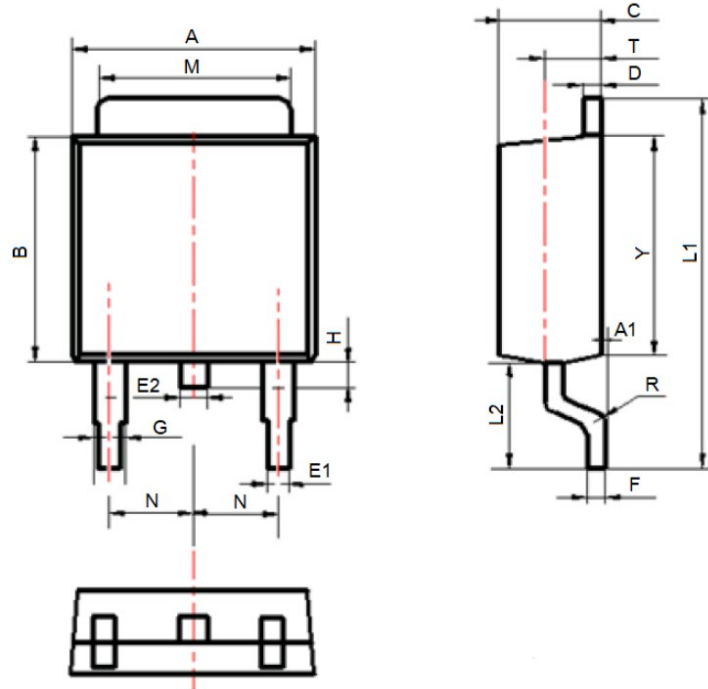


Symbol	Min.	Max.
A	0.80	1.00
A1	0.00	0.05
b	0.35	0.49
c	0.254REF	
D	4.90	5.10
F	1.40REF	
E	5.70	5.90
e	1.27BSC	
H	5.95	6.20
L1	0.10	0.18
G	0.60 REF	
K	4.00 REF	
L	-	0.15
J	0.95BSC	
P	1.00REF	
E1	3.35	3.65
θ	6°	14°
R	0.25REF	





Dimension in TO-252 (Unit: mm)



Symbol	Min.	Max.
A	6.300	6.900
A1	0	0.130
B	5.700	6.300
C	2.100	2.500
D	0.300	0.600
E1	0.600	0.900
E2	0.700	1.000
F	0.300	0.600
G	0.700	1.200
L1	9.600	10.50
L2	2.700	3.100
H	0.600	1.000
M	5.100	5.500
N	2.090	2.490
R	0.300	0.300
T	1.400	1.600
Y	5.100	6.300



## IMPORTANT NOTICE

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