DESCRIPTION

AM0460AH, the silicon N-channel Enhanced VDMOSFETs, is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor can be used in various power switching circuit for system miniaturization and higher efficiency.

The AM0460AH is available in TO-252 package.

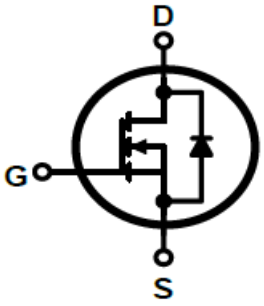
FEATURES

- Fast Switching
- Low ON Resistance ($R_{DS(ON)}$≤2.4Ω)
- Low Gate Charge (Typical Data: 14nC)
- Low Reverse transfer capacitances (Typical:4pF)
- 100% Single Pulse avalanche energy Test
- Available in TO-252 Packages

ORDERING INFORMATION

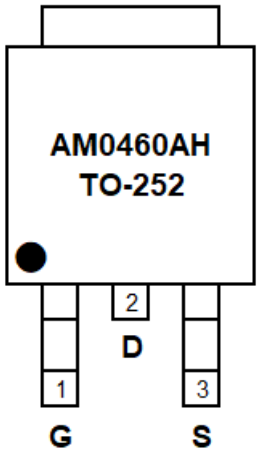
Package Type	Part Number	
TO-252 SPQ: 2,500pcs/Reel	D	AM0460AHDR
		AM0460AHDVR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

TYPICAL APPLICATION



Schematic diagram

PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	G	Gate
2	D	Drain
3	S	Source

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise noted; reference only

V_{DS}, Drain-Source Voltage		600V
V_{GS}, Gate-Source Voltage		±30V
I_D, Drain Current	T_C=25°C	4.0A
	T_C=100°C	2.5A
I_{DM}, Drain Current Pulsed		16A
P_D, Power Dissipation		
T_C=25°C		75W
Derate above 25°C		0.6W/°C
E_{AS}, Single Pulsed Avalanche Energy[NOTE1]		60mJ
T_J, Operation Junction Temperature Range		-55°C ~ 150°C
T_{STG}, Storage Temperature Range		-55°C ~ 150°C

Stress beyond above listed “Absolute Maximum Ratings” may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

THERMAL CHARACTERISTIC

Parameter	Symbol	Value	Units
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.67	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	110	°C/W

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted; reference only

Parameter	Symbol	Conditions		Min	Typ	Max	Units
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	25°C	600	-	-	V
			125°C	600	-	-	
Drain-Source Leakage Current	I_{DSS}	V_{DS}=600V, V_{GS}=0V	25°C	-	-	1	μA
		V_{DS}=480V, V_{GS}=0V	125°C	-	-	100	
		V_{DS}=480V, V_{GS}=0V	150°C	-	-	100	
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±30V, V_{DS}=0V		-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA		2.0	-	4.0	V
Static Drain- Source On State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=2A		-	2.0	2.4	Ω
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V, f=1MHz		-	550	-	pF
Output Capacitance	C_{oss}			-	50	-	
Reverse Transfer Capacitance	C_{rss}			-	2	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=300V, I_D=4.0A, R_G=10Ω[NOTE2,3]		-	14	-	ns
Turn-On Rise Time	t_r			-	15	-	
Turn-Off Delay Time	$t_{d(off)}$			-	34	-	
Turn-Off Fall Time	t_f			-	13	-	
Total Gate Charge	Q_g	V_{DS}=480V, I_D=4.0A, V_{GS}=10V[NOTE2,3]		-	14	-	nC
Gate-Source Charge	Q_{gs}			-	2.5	-	
Gate-Drain Charge	Q_{gd}			-	6.2	-	
Source-Drain Diode Ratings and Characteristics							
Continuous Source Current	I_S	Integral Reverse P-N Junction Diode in the MOSFET		-	-	4.0	A
Pulsed Source Current	I_{SM}			-	-	16	A
Diode Forward Voltage	V_{SD}	I_S=4.0A, V_{GS}=0V		-	-	1.5	V
Reverse Recovery Time	t_{rr}	I_S=4.0A, V_{GS}=0V, dI_F/dt=100A/us		-	250	-	ns
Reverse Recovery Charge	Q_{rr}			-	1.0	-	uC

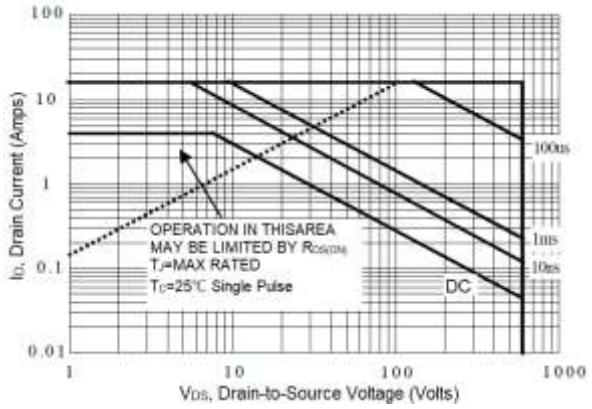
NOTE1: L=30mH, I_{AS}=2A, V_{DD}=50V, R_G=25Ω, Starting T_J=25°C

NOTE2: Pulse test: Pulse width ≤ 300us, Duty cycle ≤ 2%

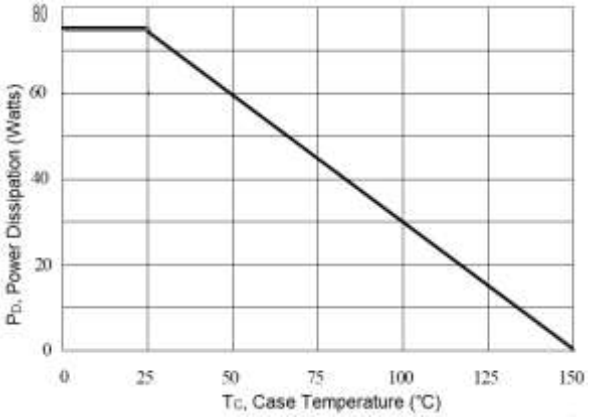
NOTE3: Essentially independent of operating temperature.

TYPICAL ELECTRICAL CHARACTERISTICS

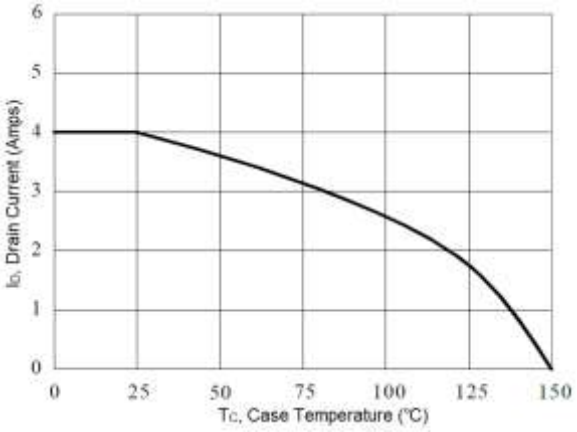
1. Maximum Forward Bias Safe Operating Area



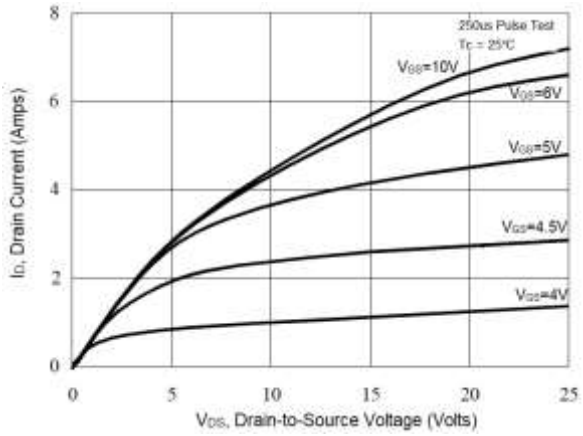
2. Maximum Power Dissipation vs. Case Temperature



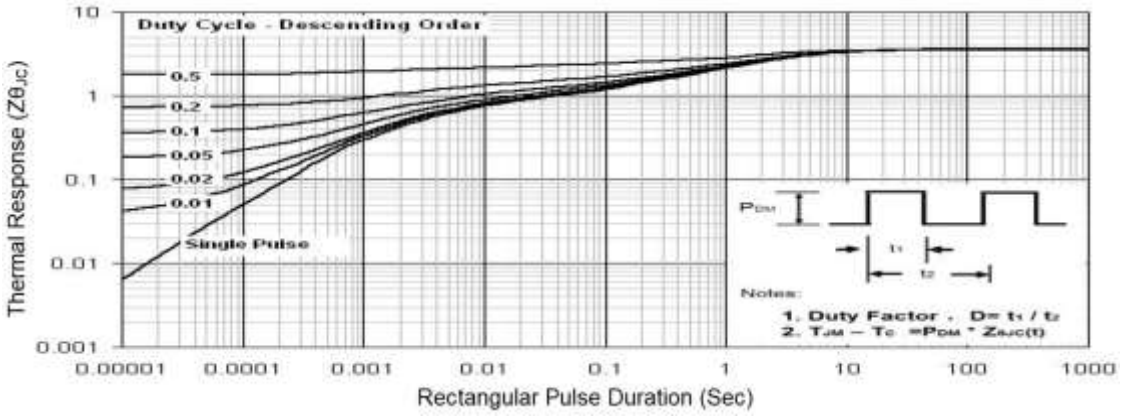
3. Maximum Continuous Drain Current vs. Case Temperature



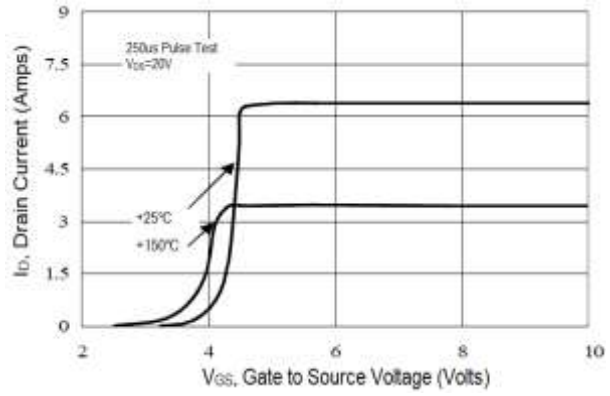
4. Typical Output Characteristics



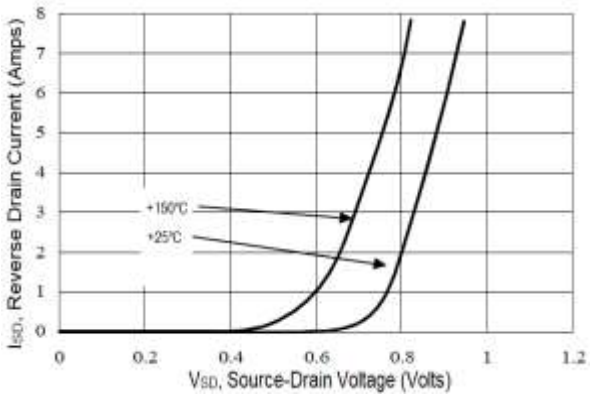
5. Maximum Effective Thermal Impedance, Junction to Case



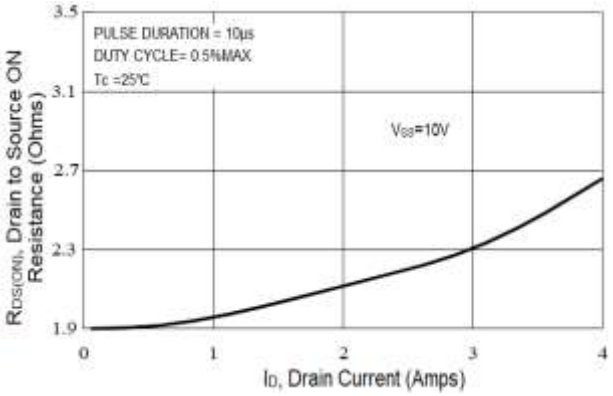
6. Typical Transfer Characteristics



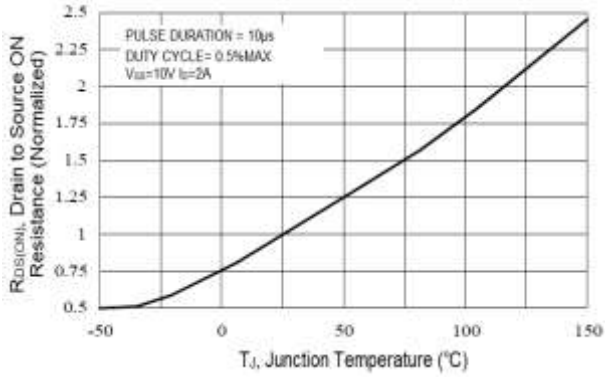
7. Typical Body Diode Transfer Characteristics



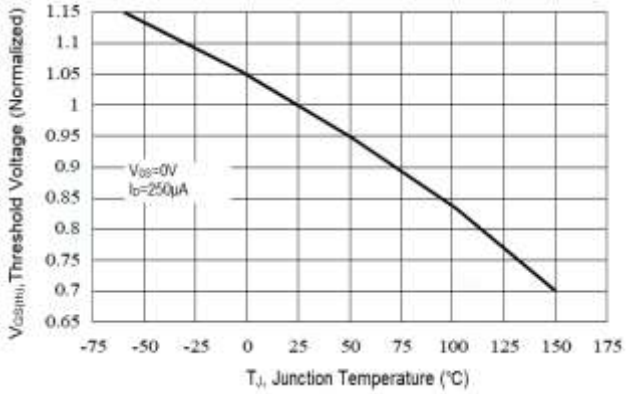
8. Typical Drain to Source ON Resistance vs. Drain Current



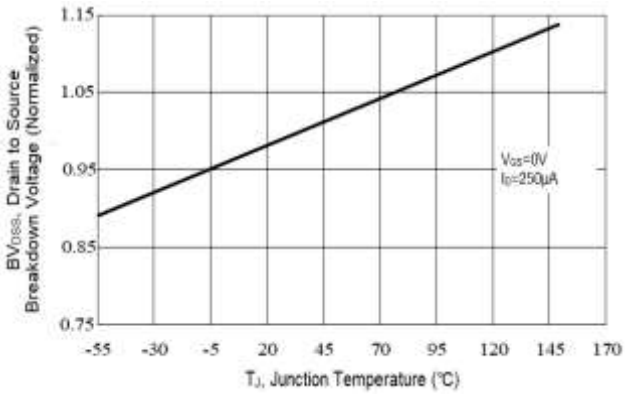
9. Typical Drain to Source on Resistance vs. Junction Temperature



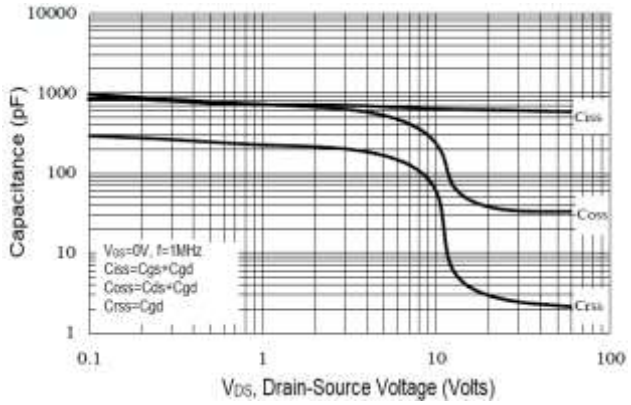
10. Typical Threshold Voltage vs. Junction Temperature



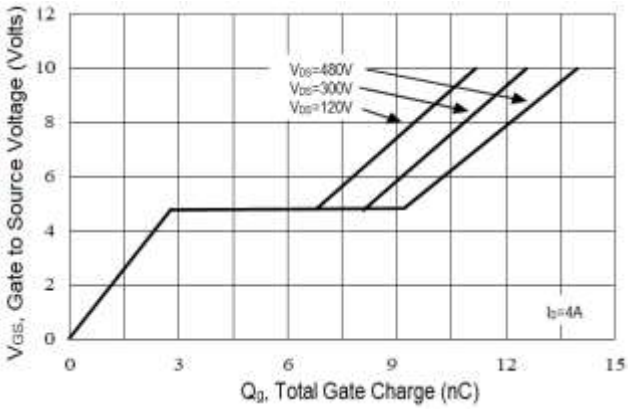
11. Typical Breakdown Voltage vs. Junction Temperature



12. Typical Capacitance vs. Drain to Source Voltage

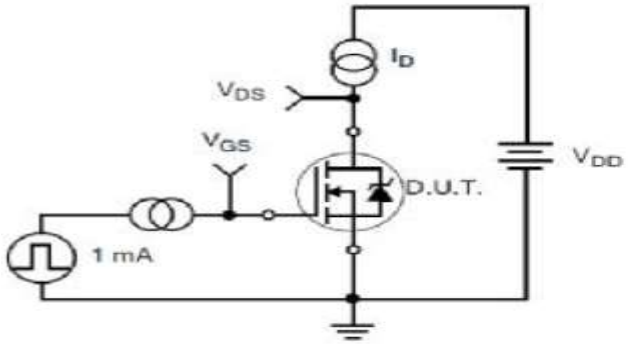


13. Typical Gate Charge vs. Gate to Source Voltage

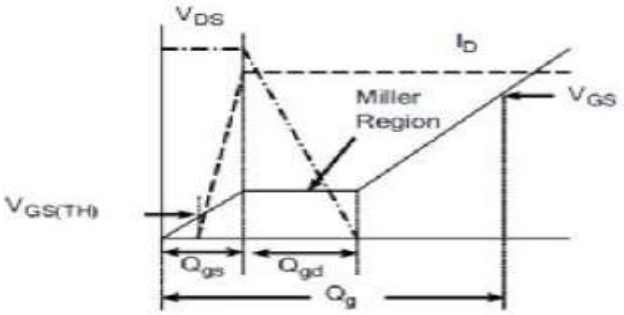


TYPICAL TEST CIRCUIT

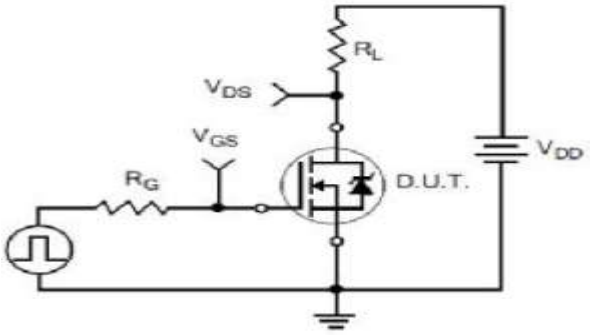
1. Gate Charge Test Circuit



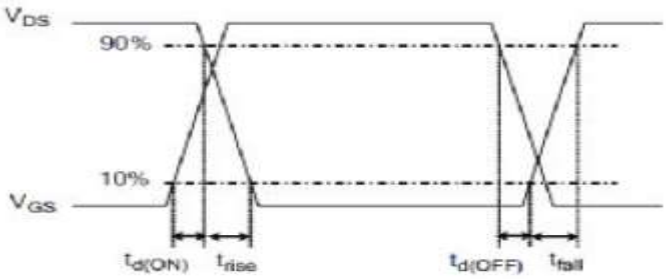
2. Gate Charge Waveform



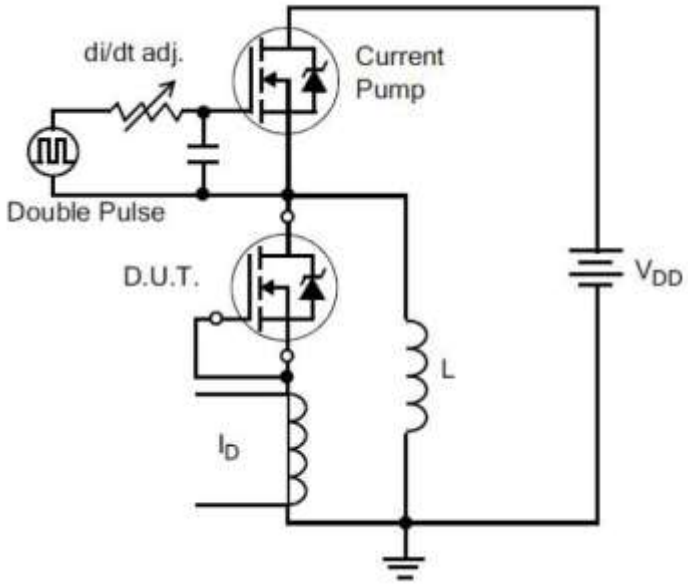
3. Resistive Switching Test Circuit



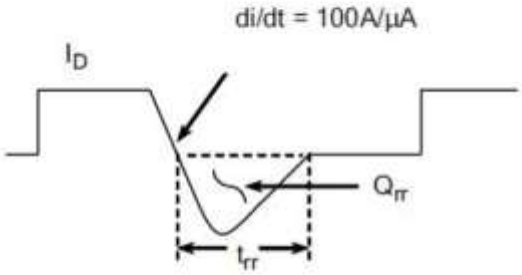
4. Resistive Switching Waveform



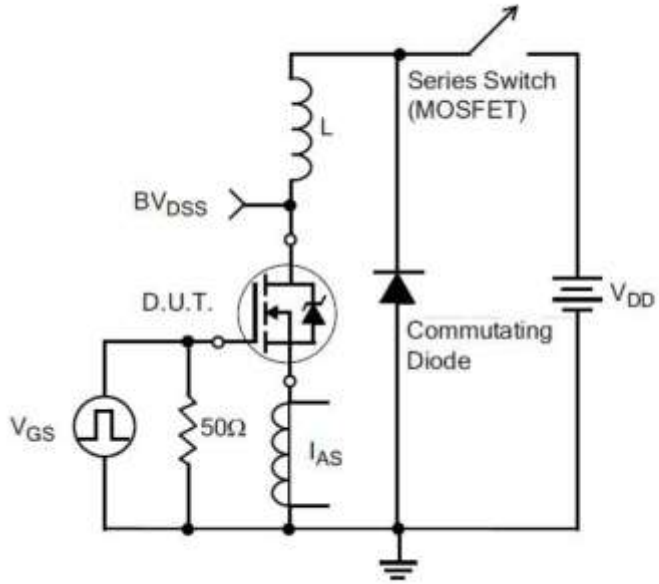
5. Diode Reverse Recovery Test Circuit



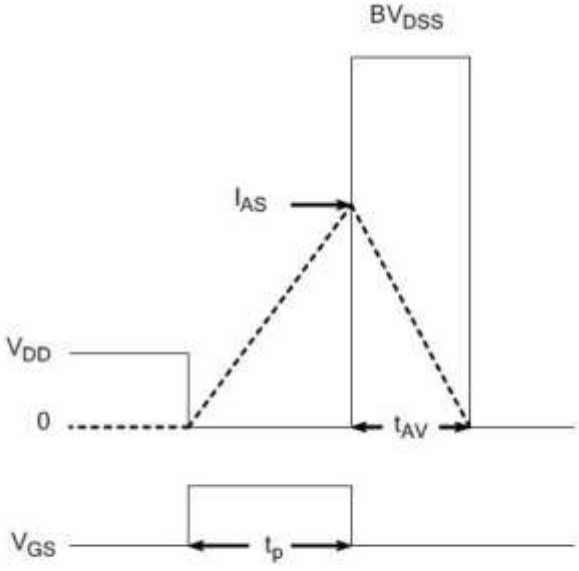
6. Diode Reverse Recovery Waveform



7. Unclamped Inductive Switching Test Circuit



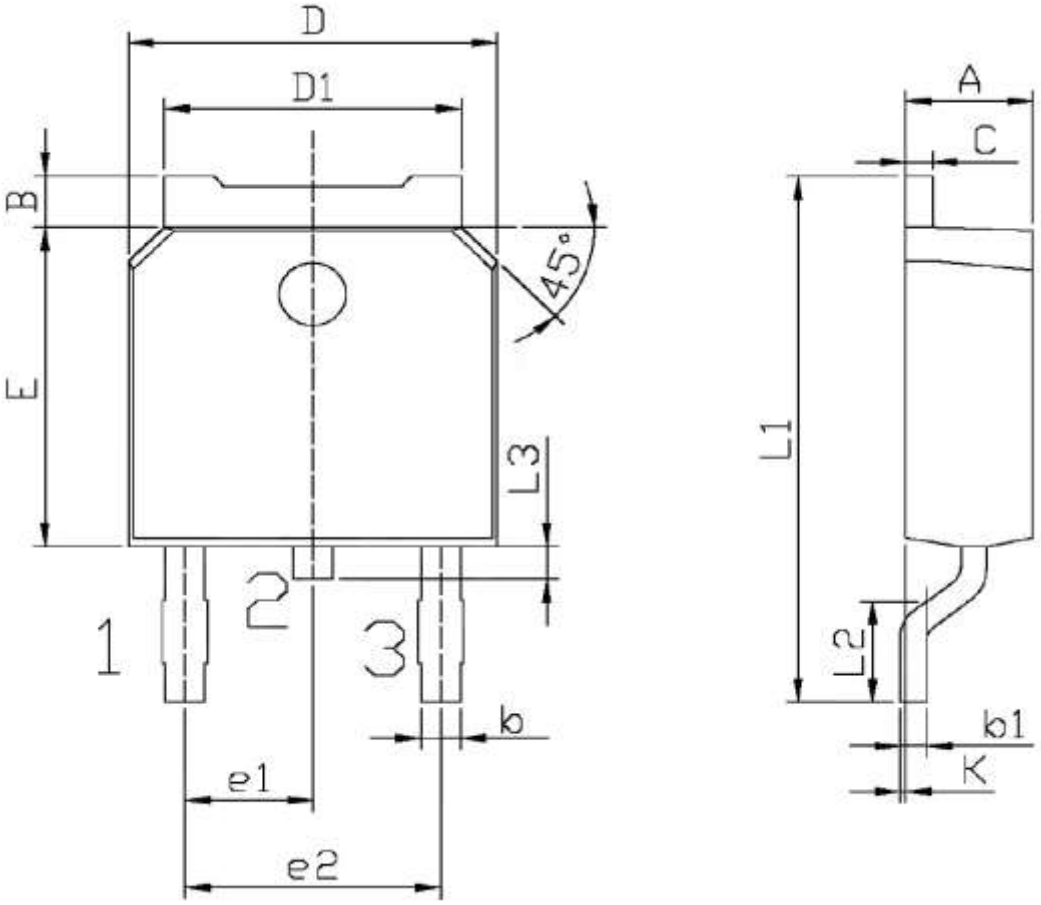
8. Unclamped Inductive Switching Waveform



$$E_{AS} = \frac{I_{AS}^2 L}{2}$$

PACKAGE INFORMATION

Dimension in TO-252 Package (Unit: mm)



Symbol	Min.	Max.
A	2.20	2.40
B	0.95	1.25
b	0.70	0.90
b1	0.45	0.55
C	0.45	0.55
D	6.45	6.75
D1	5.20	5.40
E	5.95	6.25
e1	2.24	2.34
e2	4.43	4.73
L1	9.85	10.35
L2	1.25	1.75
L3	0.60	0.90
K	0.00	0.10

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