

## General Description

The AGM1099EY combines advanced trench MOSFET technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ .

This device is ideal for load switch and battery protection applications.

## Features

- Advance high cell density Trench technology
- Low  $R_{DS(ON)}$  to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance
- 100% Avalanche tested
- 100% DVDS tested

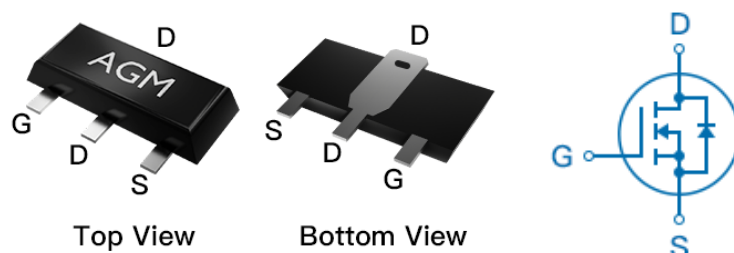
## Application

- MB/VGA Vcore
- SMPS 2<sup>nd</sup> Synchronous Rectifier
- POL application
- BLDC Motor driver

## Product Summary

BVDSS	RDSON	ID
100V	92mΩ	5.0A

## SOT89-3 Pin Configuration



## Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM1099EY	AGM1099EY	SOT89-3	330mm	12mm	3000

**Table 1. Absolute Maximum Ratings (TA=25°C)**

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	100	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(TA=25°C) <b>(Note 1)</b>	5.0	A
	Drain Current-Continuous(TA=100°C)	3.2	A
IDM (pluse)	Drain Current-Pulsed <b>(Note 2)</b>	20	A
PD	Maximum Power Dissipation(TA=25°C)	2.0	w
EAS	Avalanche energy <b>(Note 3)</b>	3.2	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	°C

**Table 2. Thermal Characteristic**

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State) <sup>1</sup>	---	62.5	°C/W

**Table 3. Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	100	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=100V,VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	1.2	1.7	2.2	V
gFS	Forward Transconductance	VDS=5V,ID=3A	--	2	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=4A	--	92	115	mΩ
		VGS=4.5V, ID=3A	--	108	125	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=50V,VGS=0V, F=1MHZ	--	182	--	pF
Coss	Output Capacitance		--	30	--	pF
Crss	Reverse Transfer Capacitance		--	3.6	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	2.5	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=10V,VDS=50V, ID=5A,REGEN=5Ω	--	11	--	nS
tr	Turn-on Rise Time		--	6.0	--	nS
td(off)	Turn-Off Delay Time		--	30	--	nS
tf	Turn-Off Fall Time		--	4.0	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=50V, ID=5A	--	3.57	--	nC
Qgs	Gate-Source Charge		--	0.76	--	nC
Qgd	Gate-Drain Charge		--	0.71	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	5.0	A
VSD	Forward on Voltage	VGS=0V,IS=4A	--	--	1.2	V
trr	Reverse Recovery Time	IF=4A , dl/dt=100A/μs ,TJ=25℃	--	50	--	ns
Qrr	Reverse Recovery Charge		--	102	--	nc

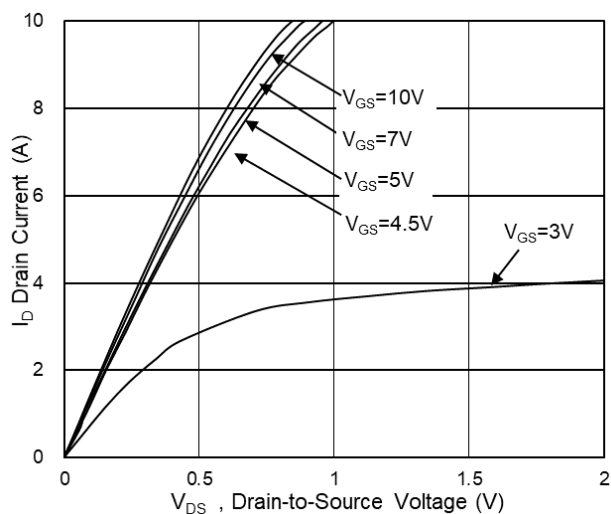
Notes 1.The maximum current rating is package limited.

Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

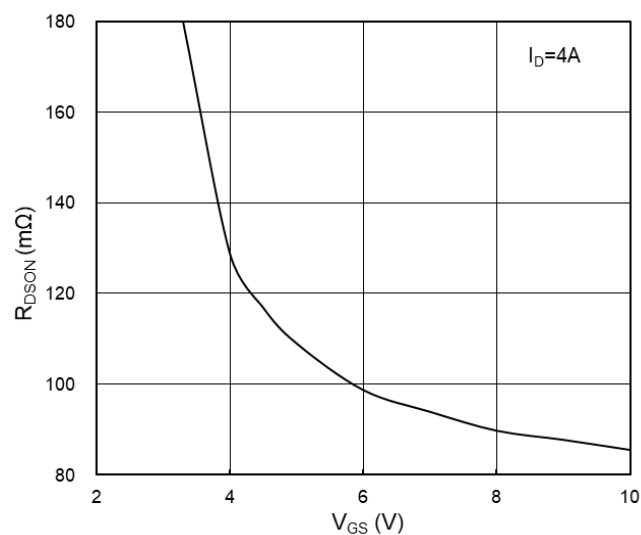
Notes 3.EAS condition: T<sub>J</sub>=25°C , V<sub>DD</sub>=50V, V<sub>gs</sub>=10V , ID=3.6A, L=0.5mH, R<sub>G</sub>=25ohm

## Characteristics Curve:

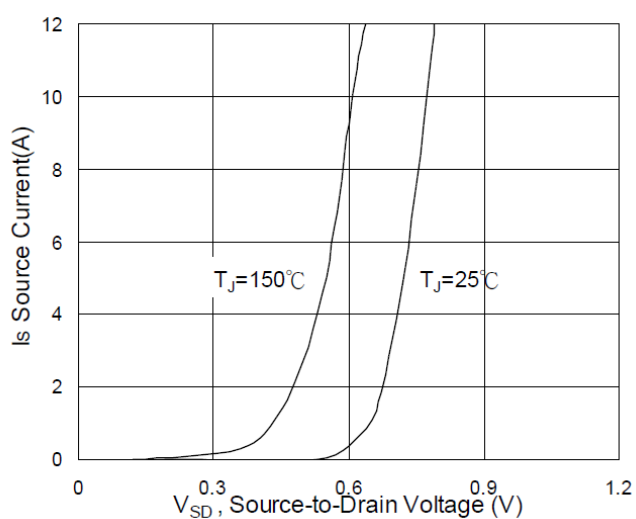
Typ. Output Characteristics



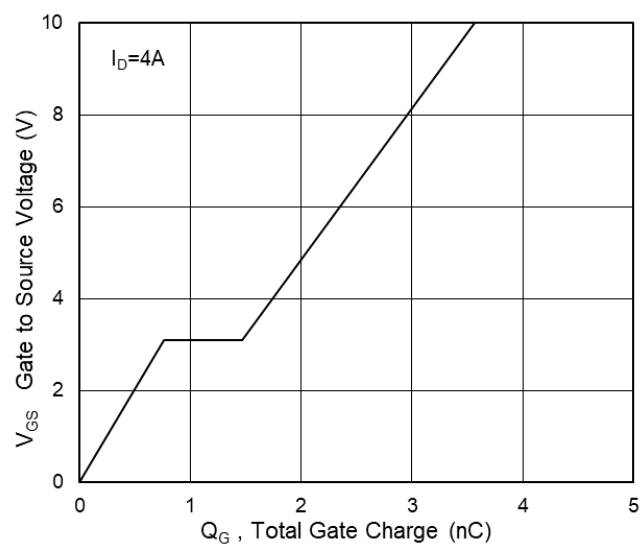
On-Resistance vs G-S Voltage



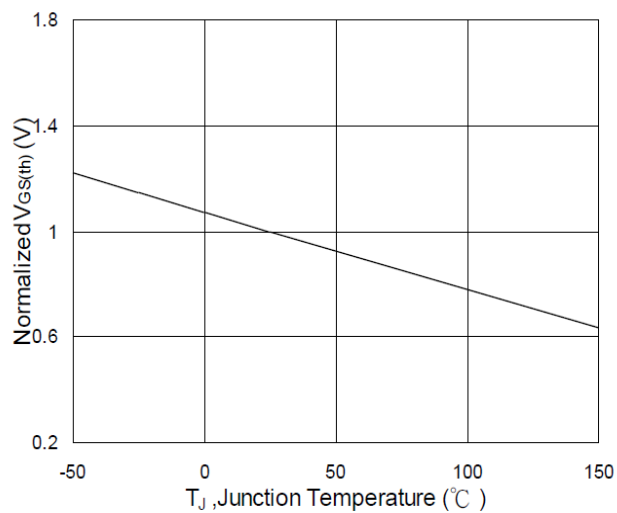
Source Drain Forward Characteristics



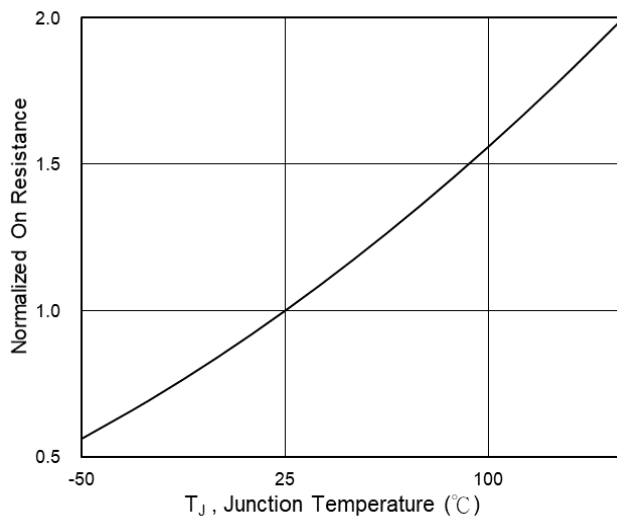
Gate-Charge Characteristics



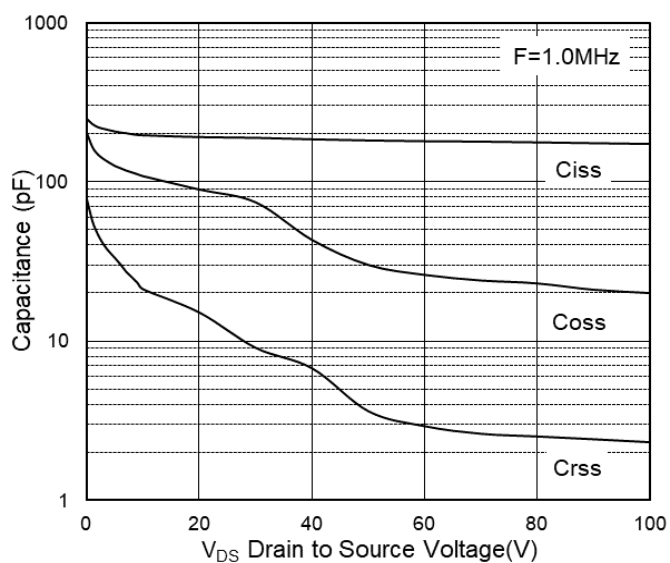
Normalized  $V_{GS(th)}$  vs  $T_J$



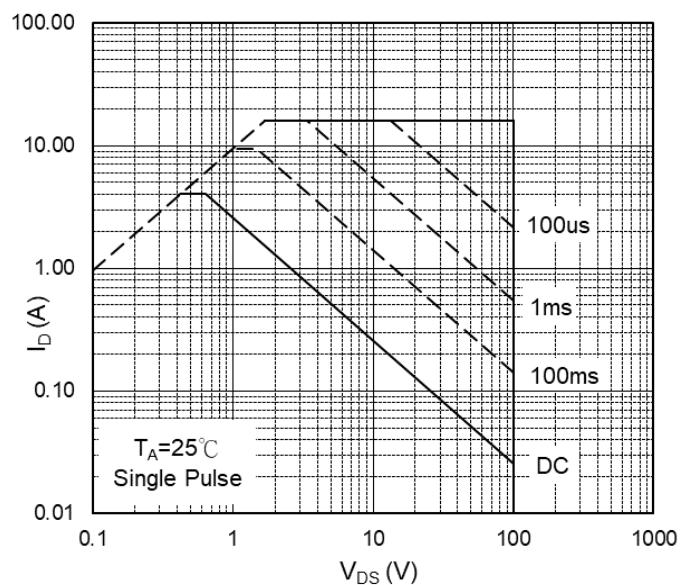
Normalized  $R_{DS(on)}$  vs  $T_J$



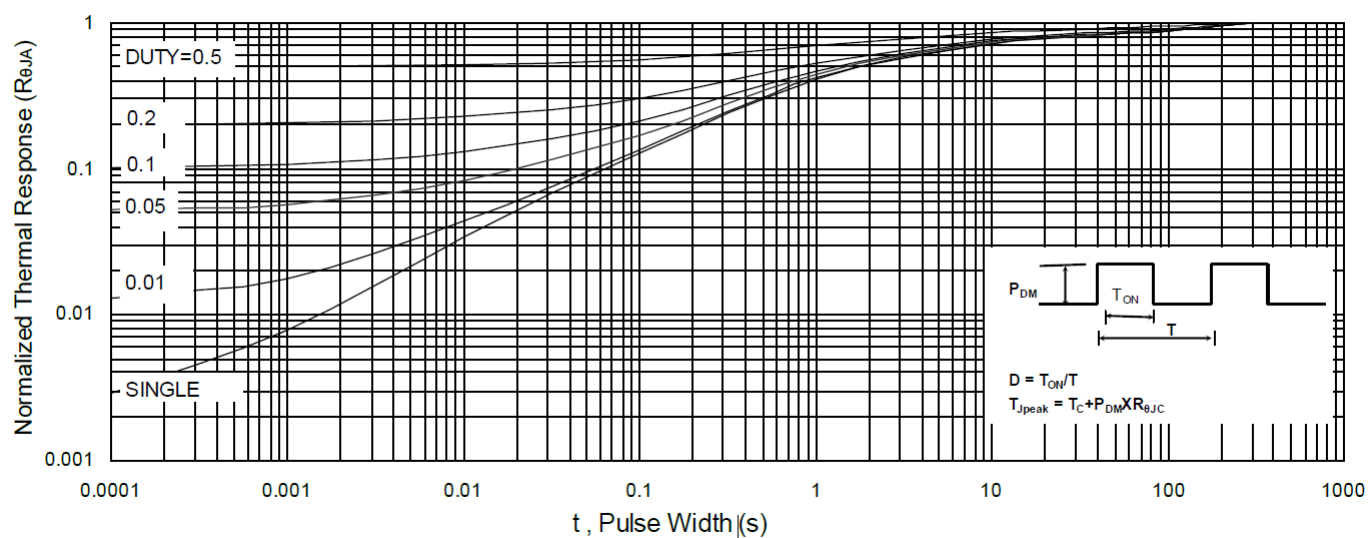
Capacitance



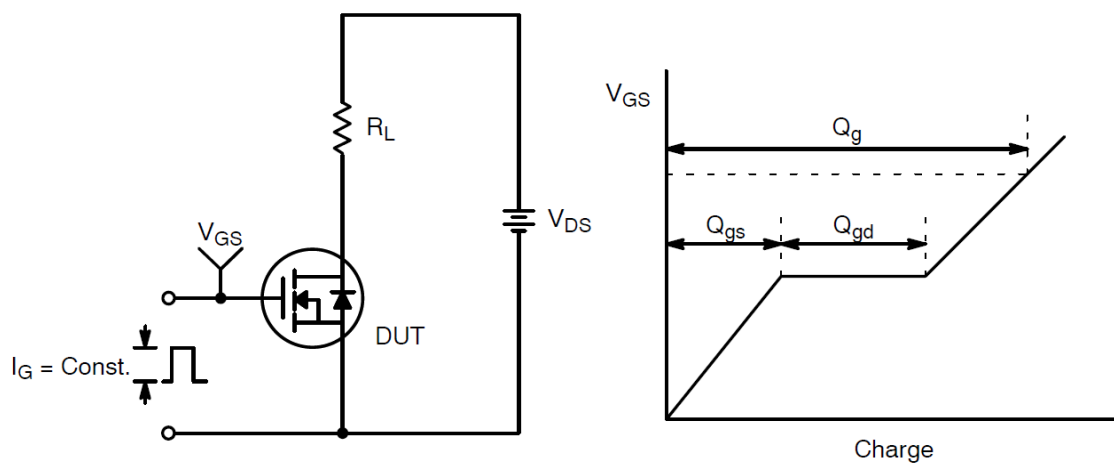
Safe Operating Area



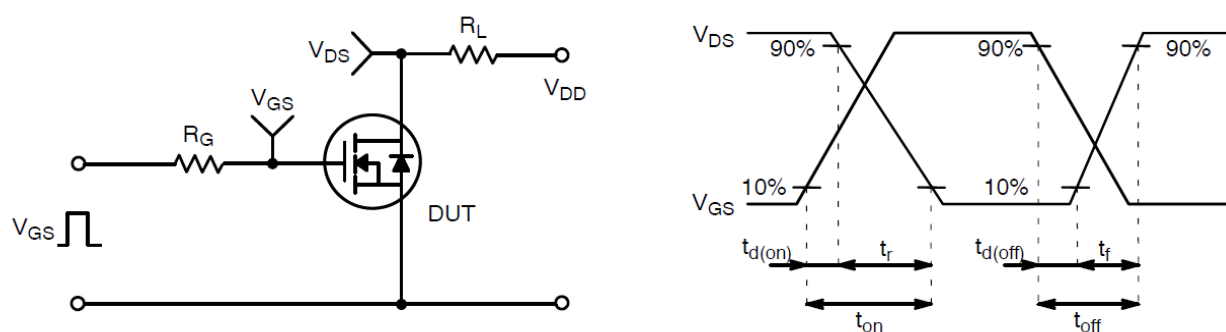
# Max. transient thermal impedance



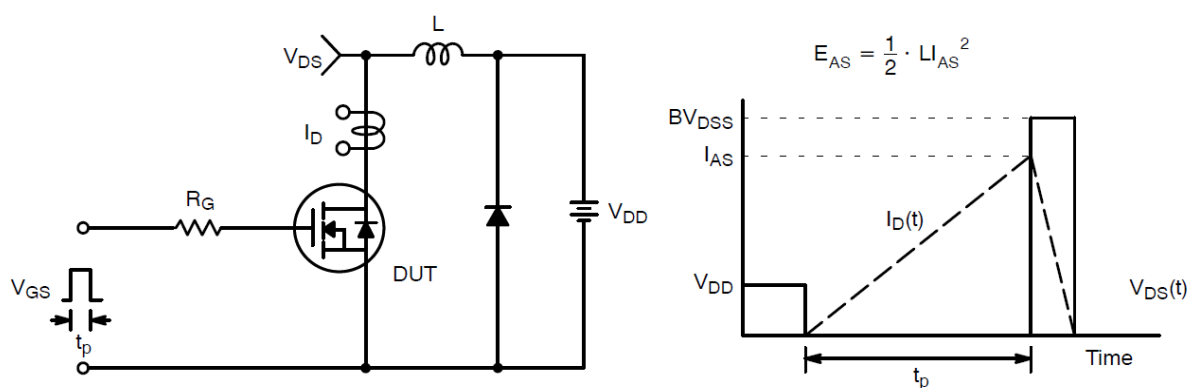
# Test Circuit and Waveform:



Gate Charge Test Circuit & Waveform

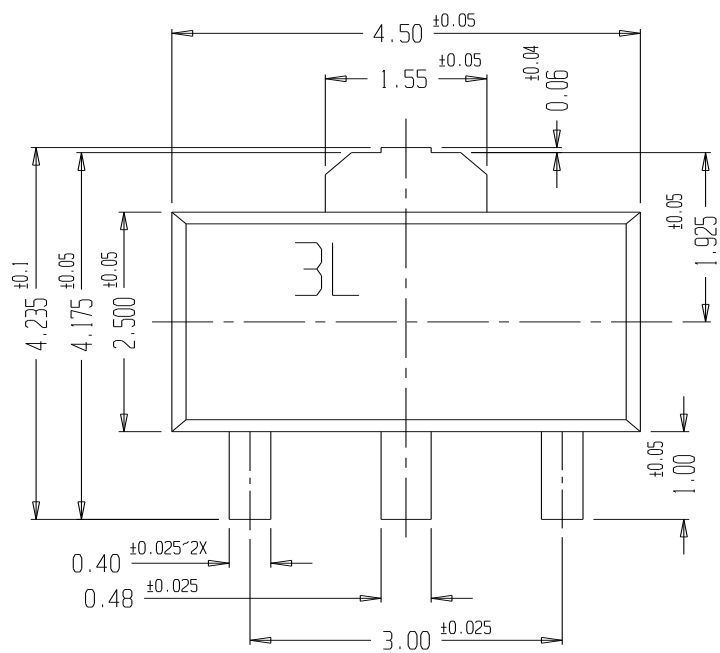


Resistive Switching Test Circuit & Waveforms



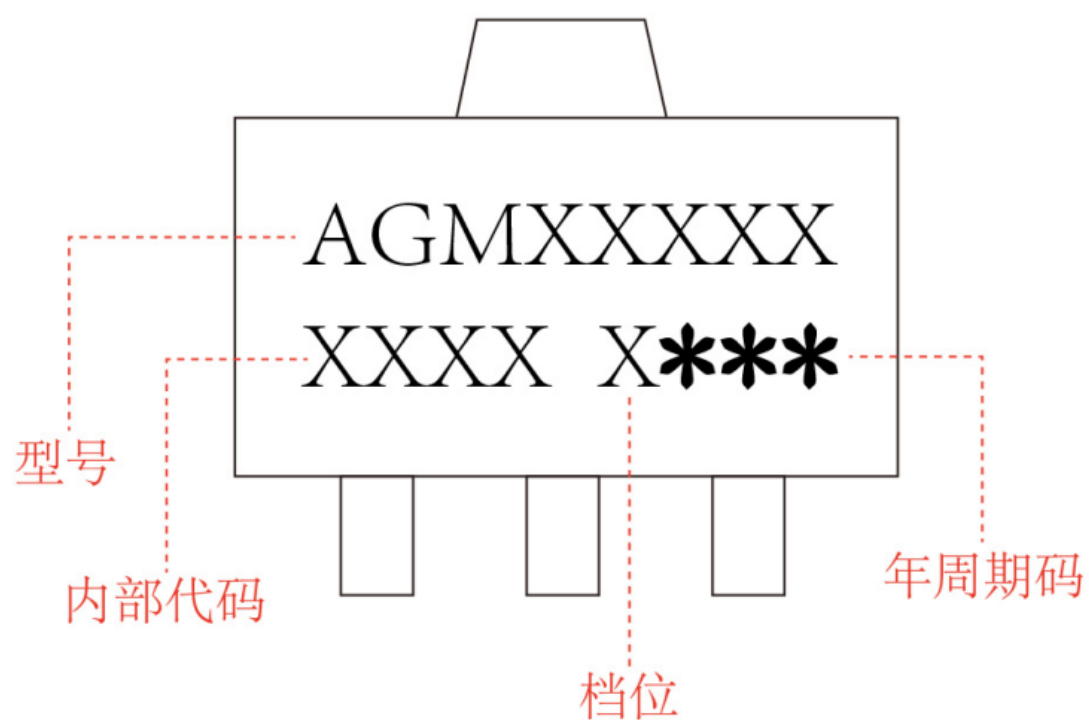
Unclamped Inductive Switching Test Circuit & Waveforms

# ●Dimensions (SOT89-3)



# SOT89-3

## Marking Instructions:






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