

General Description

The AGM1099E 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

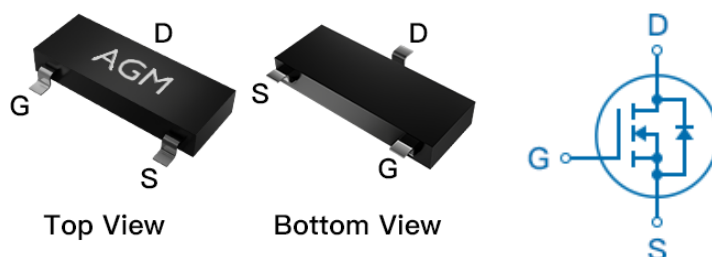
Application

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

Product Summary

BVDSS	RDSON	ID
100V	100mΩ	5.0A

SOT23-3 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
1099	AGM1099E	SOT23-3	178mm	8mm	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) (Note 1)	5.0	A
	Drain Current-Continuous(TA=70°C)	3.2	A
IDM (pulse)	Drain Current-Pulsed (Note 2)	16	A
PD	Maximum Power Dissipation(TA=25°C)	1.25	w
EAS	Avalanche energy (Note 3)	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) ¹	---	100	°C/W

Table 3. Electrical Characteristics (T_J=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	1.8	2.2	V
gFS	Forward Transconductance	VDS=5V,ID=3A	--	5	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=4A	--	100	120	mΩ
		VGS=4.5V, ID=3A	--	120	145	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,RGEN=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 , dI/dt=100A/μs ,TJ=25℃	--	50	--	ns
Qrr	Reverse Recovery Charge		--	102	--	nc

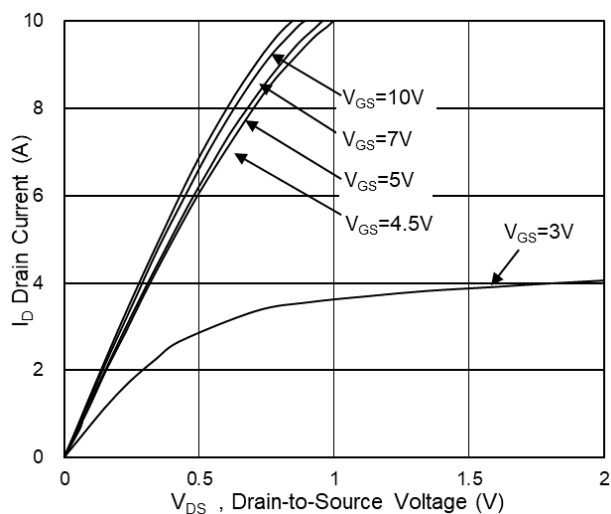
Notes 1.The maximum current rating is package limited.

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

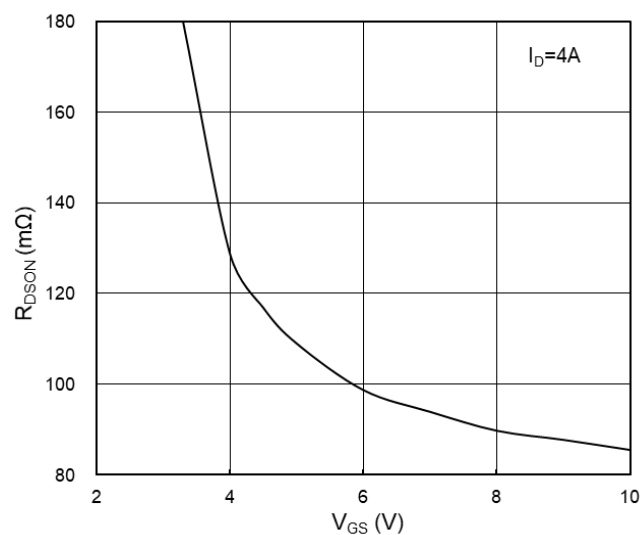
Notes 3.EAS condition: T_J=25°C , V_{DD}=50V, V_{gs}=10V , ID=3.6A, L=0.5mH, R_G=25ohm

Characteristics Curve:

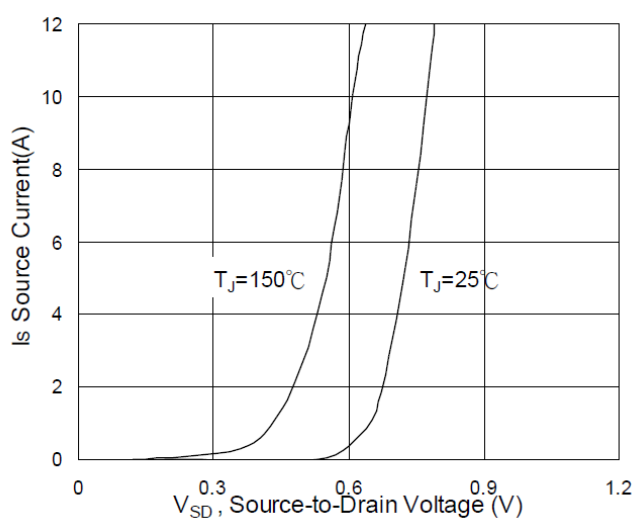
Typ. Output Characteristics



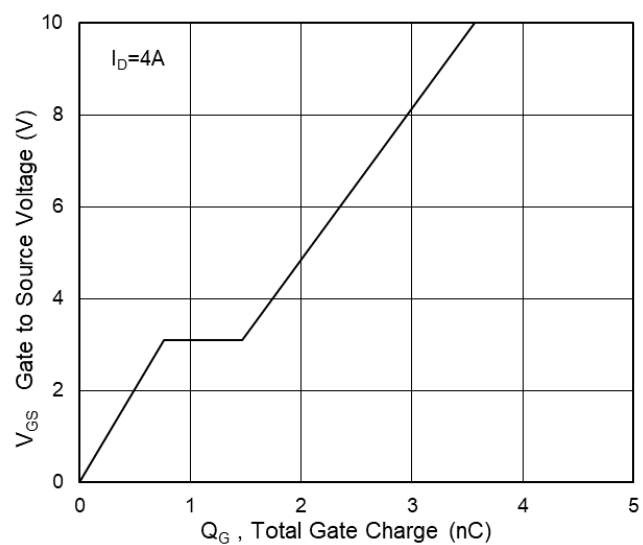
On-Resistance vs G-S Voltage

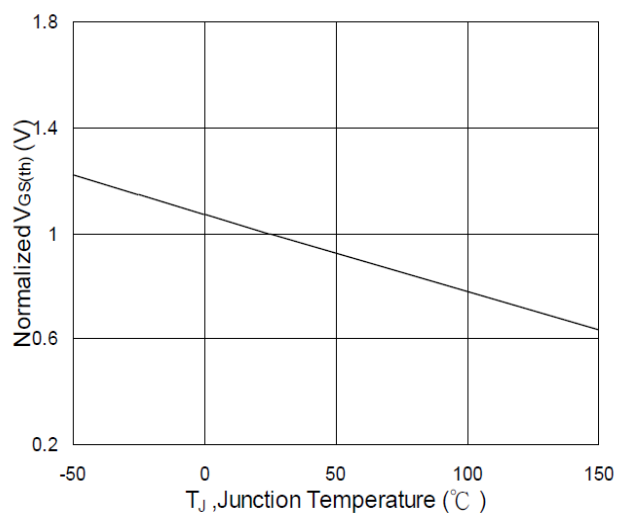
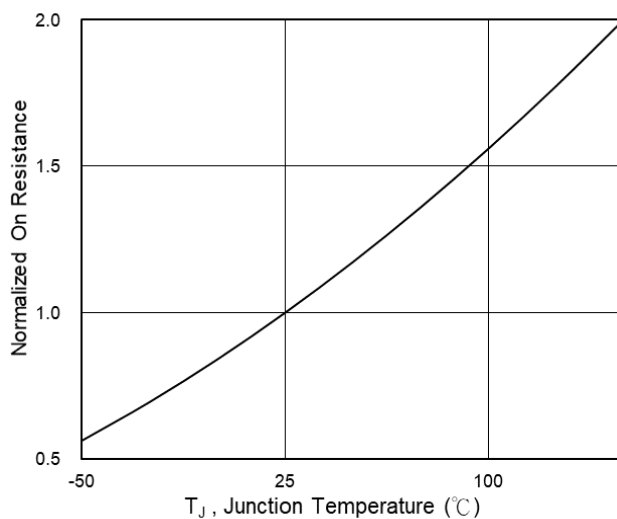
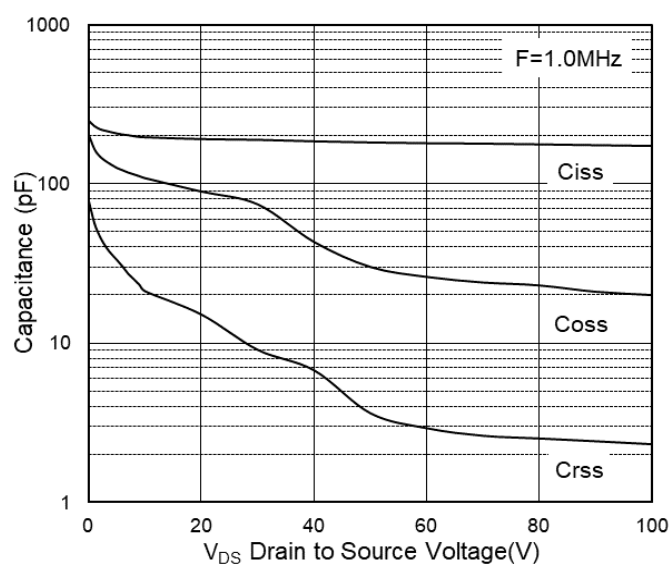
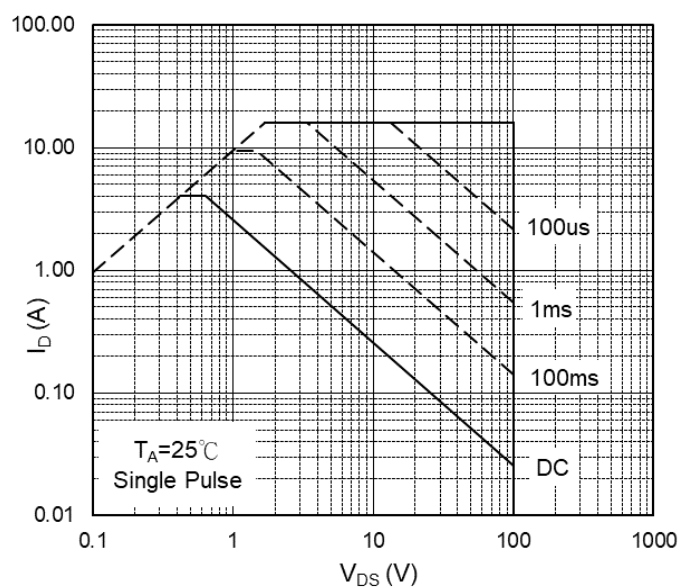


Source Drain Forward Characteristics

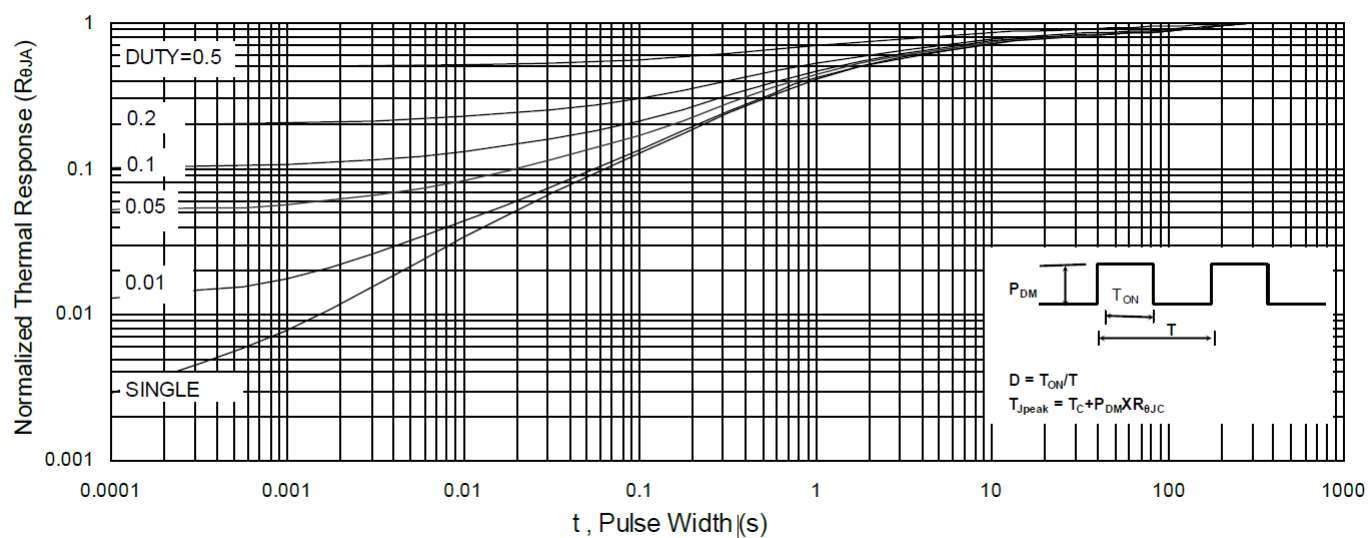


Gate-Charge Characteristics

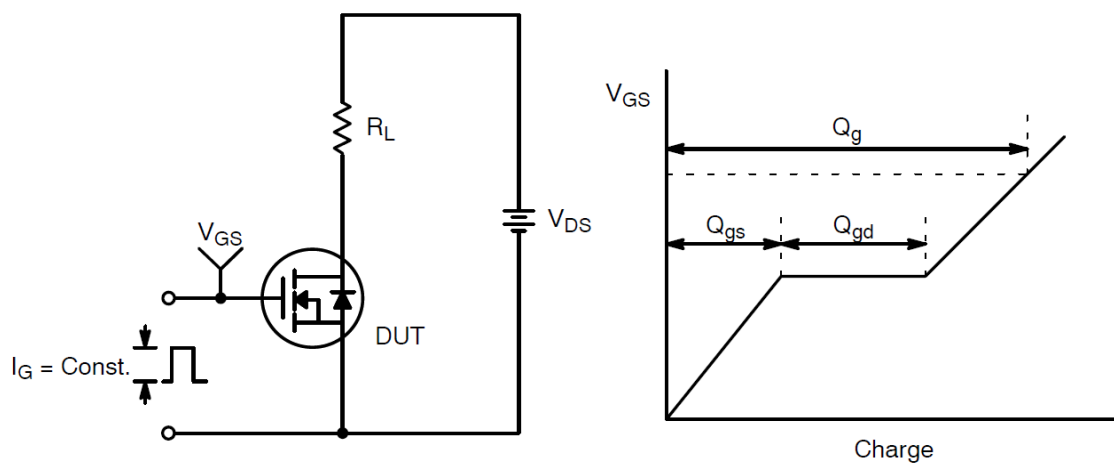


Normalized $V_{GS(th)}$ vs T_J

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

Capacitance

Safe Operating Area


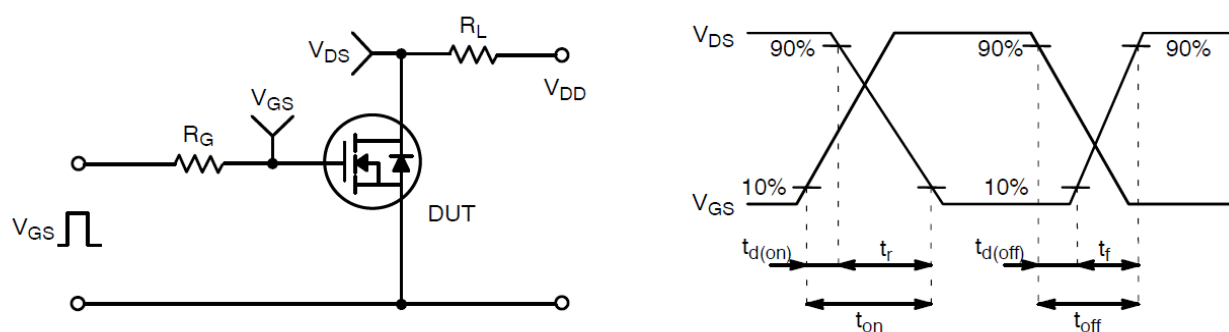
Max. transient thermal impedance



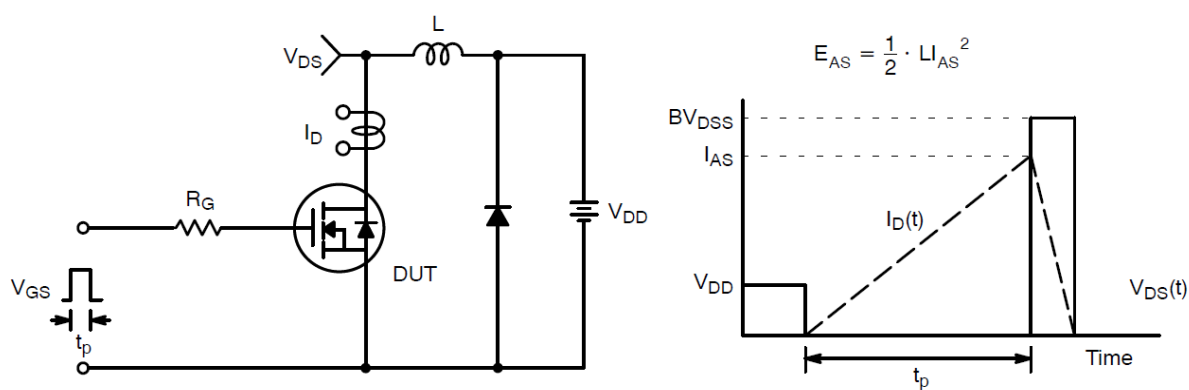
Test Circuit and Waveform:



Gate Charge Test Circuit & Waveform

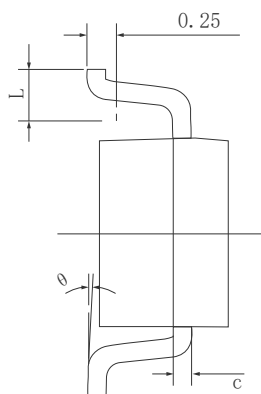
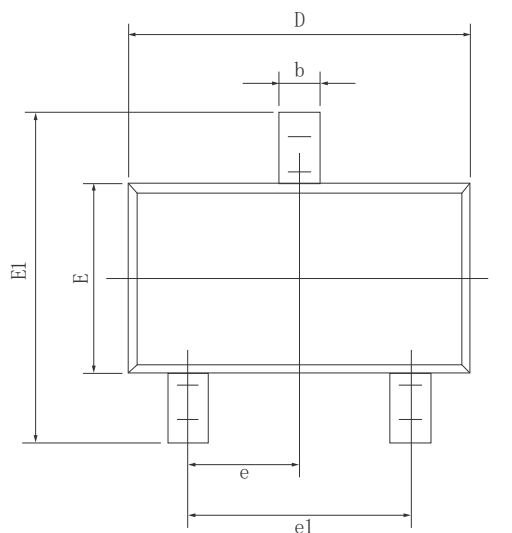


Resistive Switching Test Circuit & Waveforms

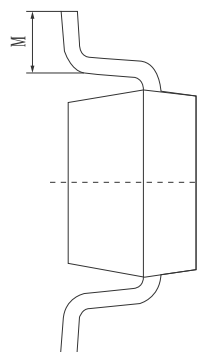
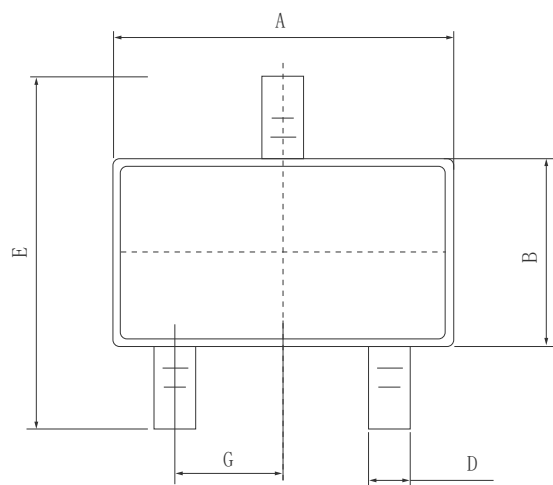
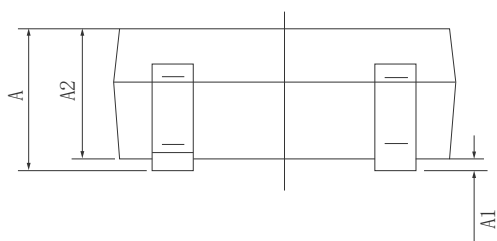


Unclamped Inductive Switching Test Circuit & Waveforms

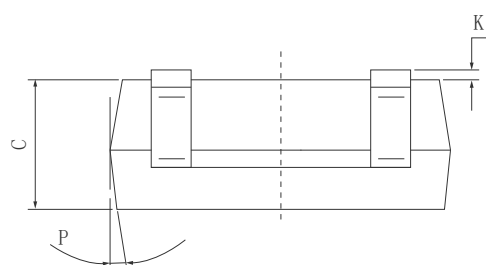
●Dimensions (SOT23-3)



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.25
A1	0.03	—	0.10
A2	1.05	1.10	1.15
b	0.30	0.35	0.40
c	0.13	—	0.17
D	2.87	2.92	2.97
E	1.55	1.60	1.65
E1	2.70	2.85	3.00
e	0.95 BSC.		
e1	1.80	—	2.00
L	0.35	0.45	0.55
θ	0°	—	8°

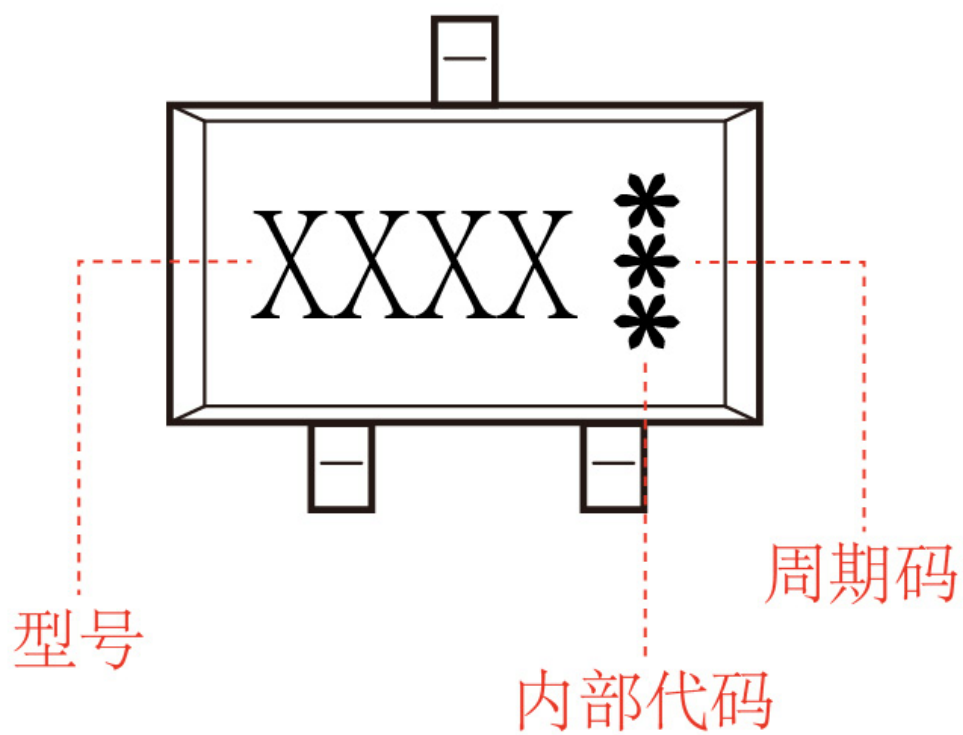


DIM	MILLIMETERS
A	2.82~3.02
B	1.60±0.10
C	1.10±0.05
D	0.40±0.10
E	2.65~2.95
G	0.95typ
K	0.00~0.10
M	0.20MIN
P	9±2°



SOT23-3

Marking Instructions:



Disclaimer:

The information provided in this document is believed to be accurate and reliable. However, Shenzhen Core Control Source Electronics Technology Co., Ltd. does not assume any responsibility for the following consequences. Do not consider the use of such information or use beyond its scope.

The information mentioned in this document may be changed at any time without notice.

The products and information provided in this document do not infringe patents. Shenzhen Core Control Source Electronics Technology Co., Ltd. assumes no responsibility for any infringement of any other rights of third parties. The result of using such products and information.

This document is the fifth version issued on April 10th, 2024. This document replaces all previously provided information.

 It is a registered trademark of Shenzhen Core Control Source Electronics Technology Co., Ltd.

Copyright © 2017 Shenzhen Core Control Source Electronics Technology Co., Ltd. all rights reserved.