

● General Description

The AGM1099EL 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

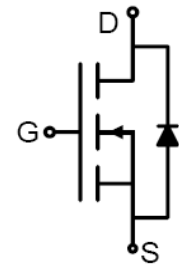
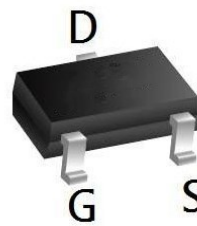
● Application

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

Product Summary

BVDSS	RDSON	ID
100V	100mΩ	5.0A

SOT-23 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
1099EL	AGM1099EL	SOT-23	----	----	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(Tc=25°C) (Note 1)	5.0	A
	Drain Current-Continuous(Tc=100°C)	3.2	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	16	A
PD	Maximum Power Dissipation(Tc=25°C)	3.1	w
	Maximum Power Dissipation(Tc=100°C)	1.25	w
EAS	Avalanche energy (Note 3)	--	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	---	40	°C/W
RθJC	Thermal Resistance Junction-Case ¹	---	--	°C/W

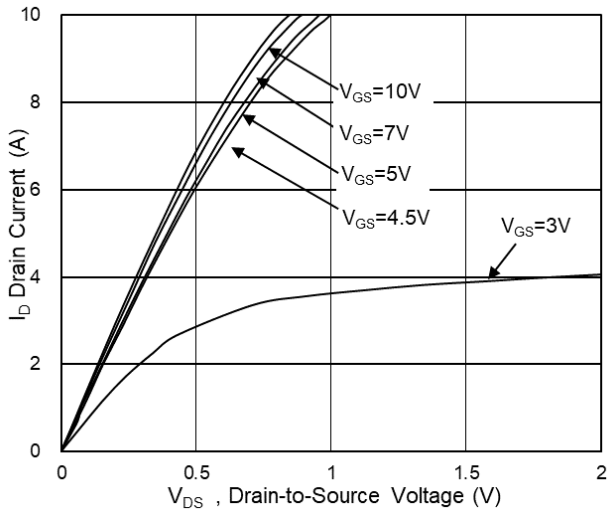
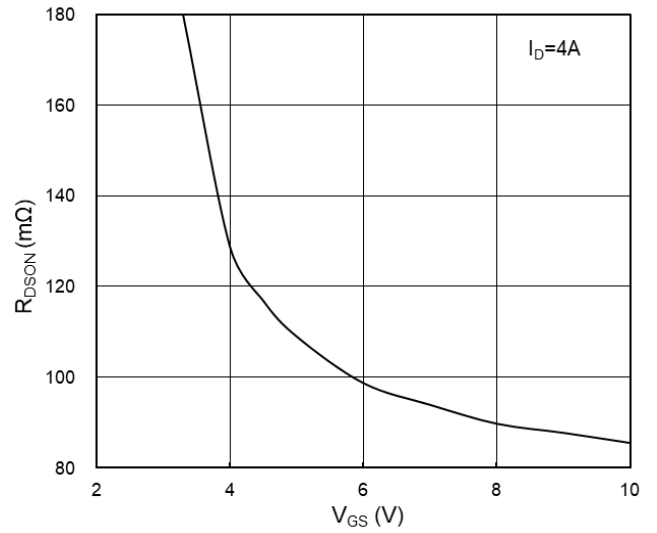
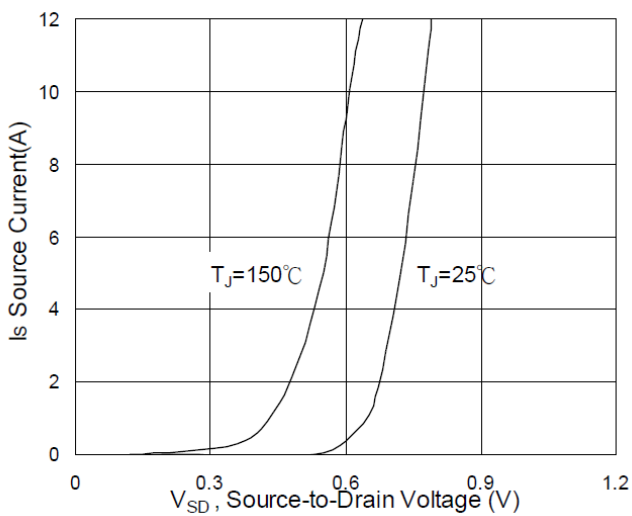
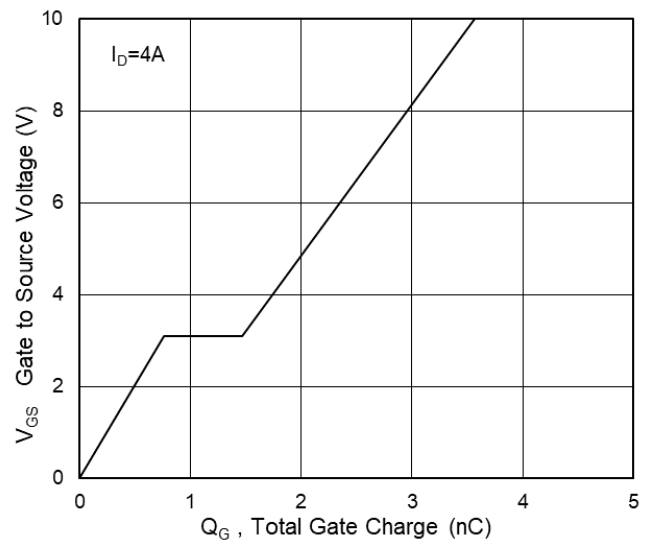
Table 3. Electrical Characteristics (TA=25°C unless otherwise noted)

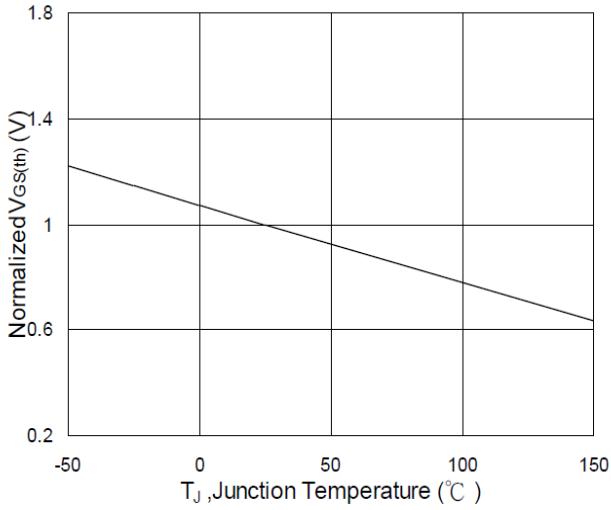
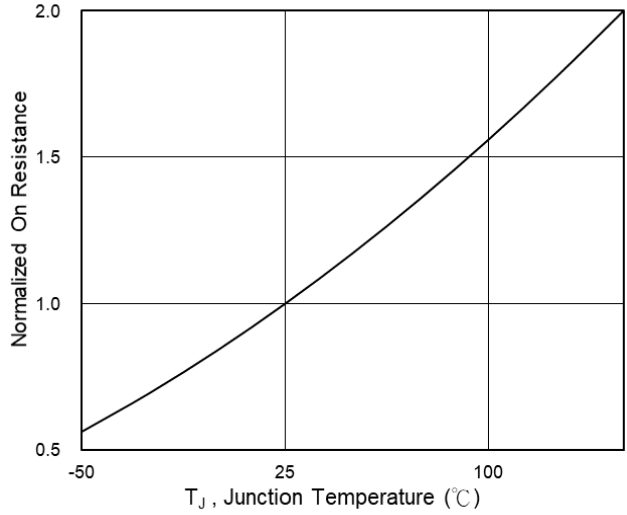
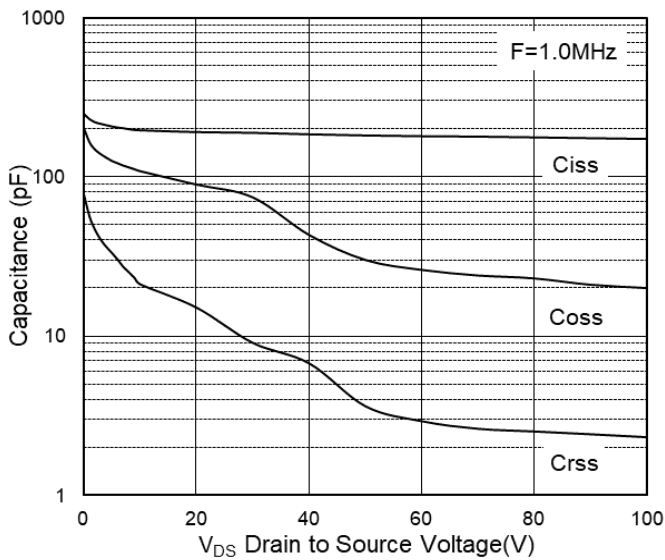
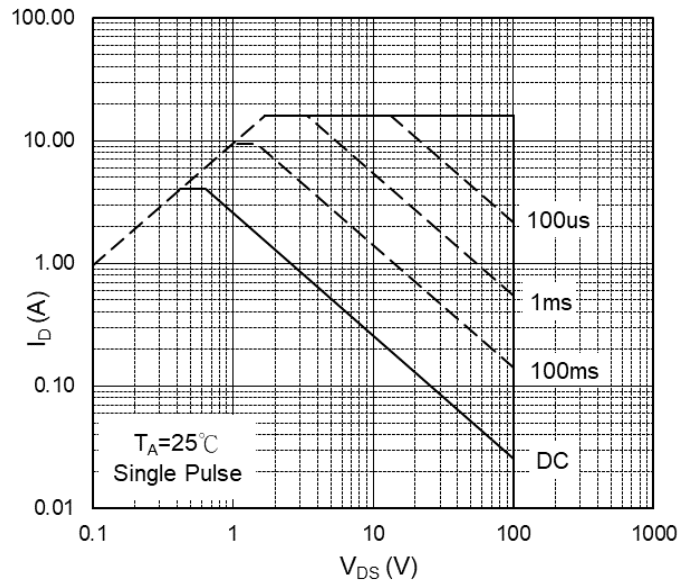
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	100	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=100V,VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	1.3	1.8	2.4	V
gFS	Forward Transconductance	VDS=10V,ID=5A	--	--	--	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=5A	--	--	1.2	V
trr	Reverse Recovery Time	IF=5A , dI/dt=100A/μs ,	--	50	--	ns
Qrr	Reverse Recovery Charge	TJ=25°C	--	102	--	nc

Notes 1.The maximum current rating is package limited.

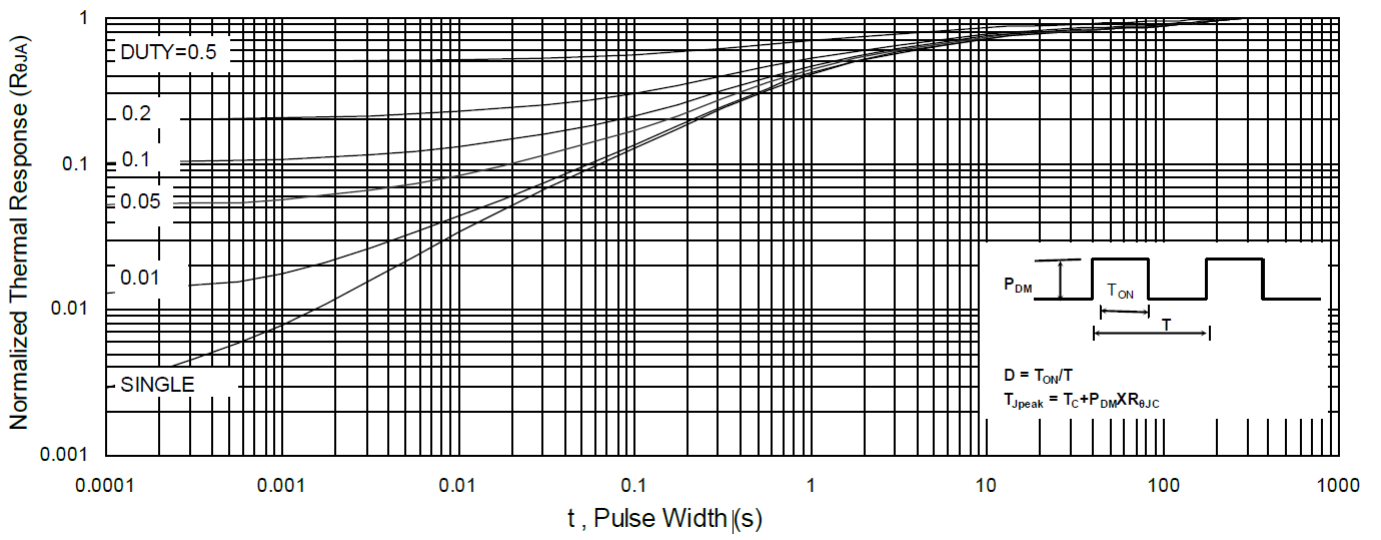
Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

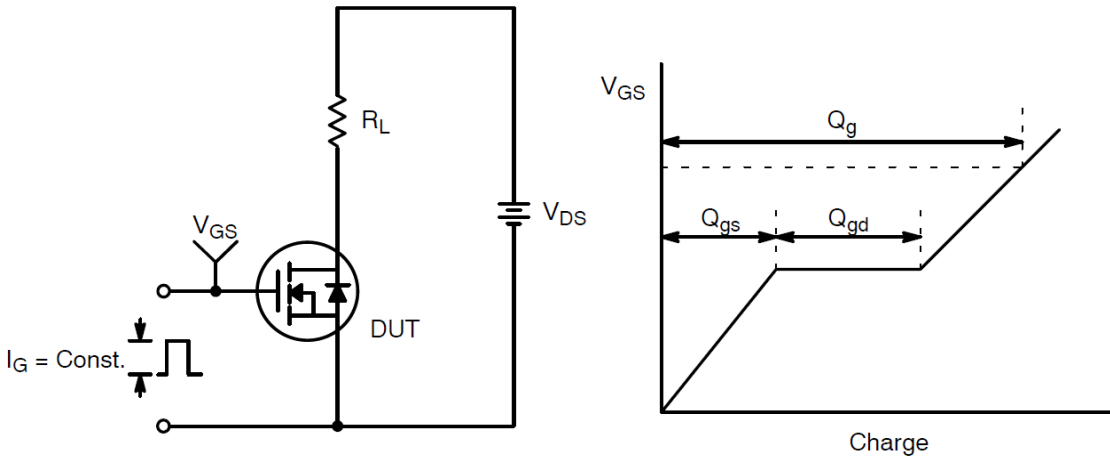
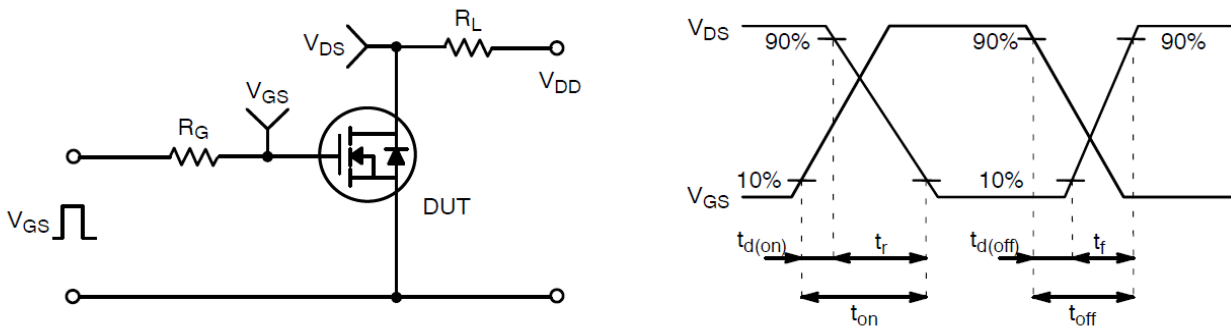
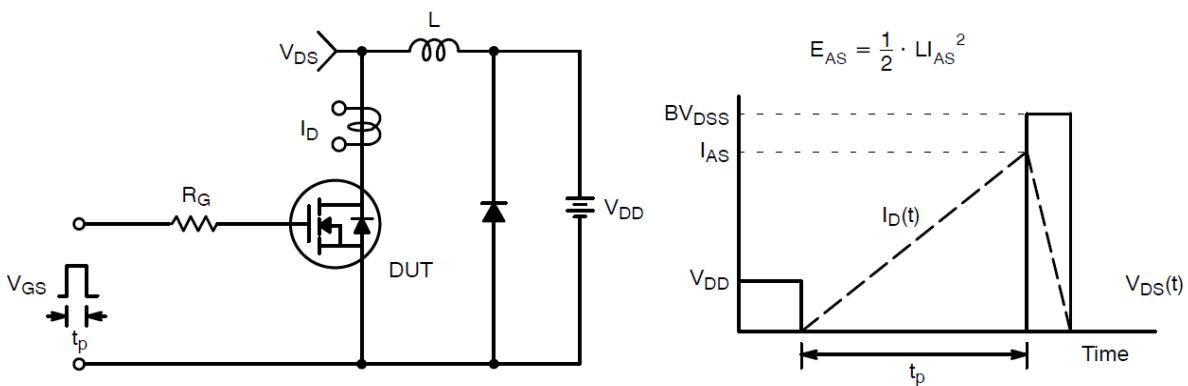
Notes 3.EAS condition: TJ=25°C

Characteristics Curve:
Typ. Output Characteristics

On-Resistance vs G-S Voltage

Source Drain Forward Characteristics

Gate-Charge Characteristics


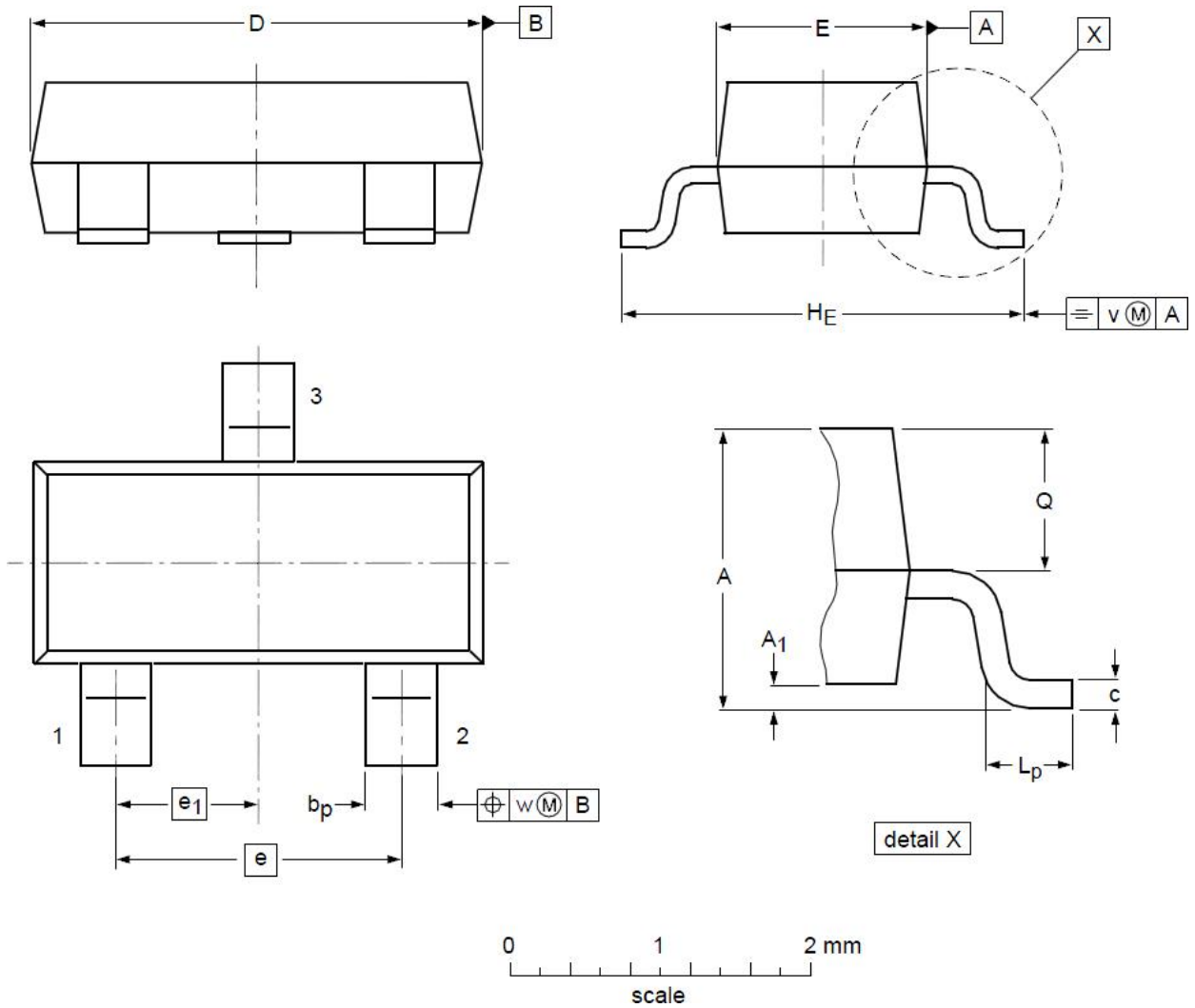
Normalized $V_{GS(th)}$ vs T_J

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

Package Mechanical Data-SOT-23



DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.01	1.15	A ₁	0.01	0.05	0.10
b _p	0.30	0.42	0.50	c	0.08	0.13	0.15
D	2.80	2.92	3.00	E	1.20	1.33	1.40
e	--	1.90	--	e ₁	--	0.95	--
H _E	2.25	2.40	2.55	L _p	0.30	0.42	0.50
Q	0.45	0.49	0.55	v	--	0.20	--
w	--	0.10	--				


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