

• General Description

The AGM30P25S 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
-30V	20mΩ	-8A

SOP8 Pin Configuration

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM30P25S	AGM30P25S	SOP8	330mm	12mm	3000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	-30	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) (Note 1)	-8.0	A
	Drain Current-Continuous(Tc=100°C)	-4.8	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	-32	A
PD	Maximum Power Dissipation(Tc=25°C)	2.5	w
	Maximum Power Dissipation(Tc=100°C)	1.0	w
EAS	Avalanche energy (Note 3)	72	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	---	50	°C/W

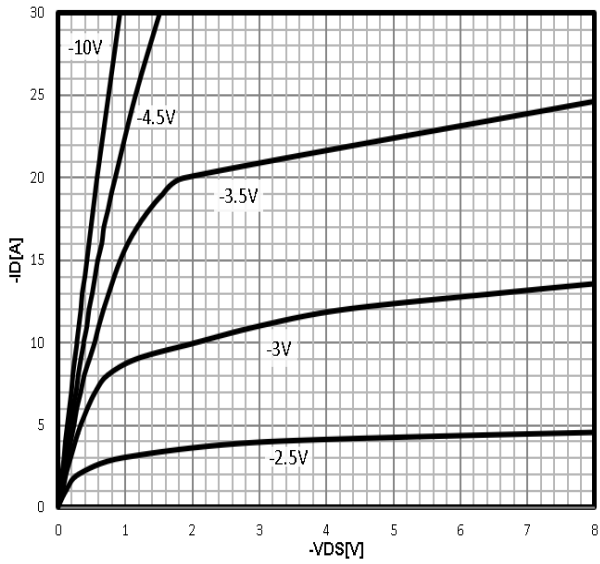
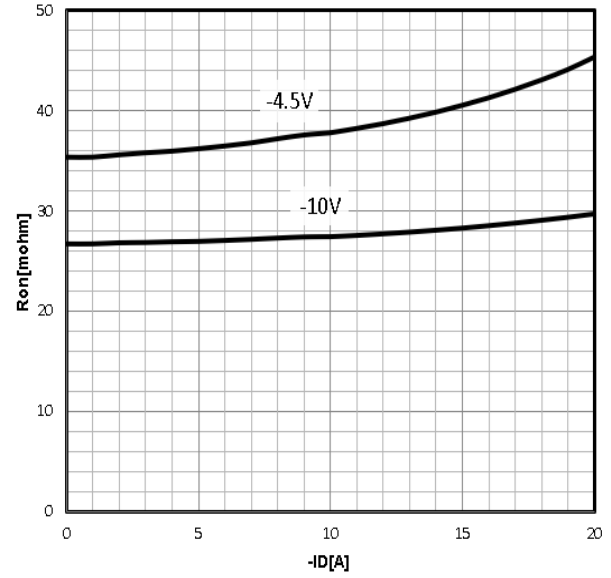
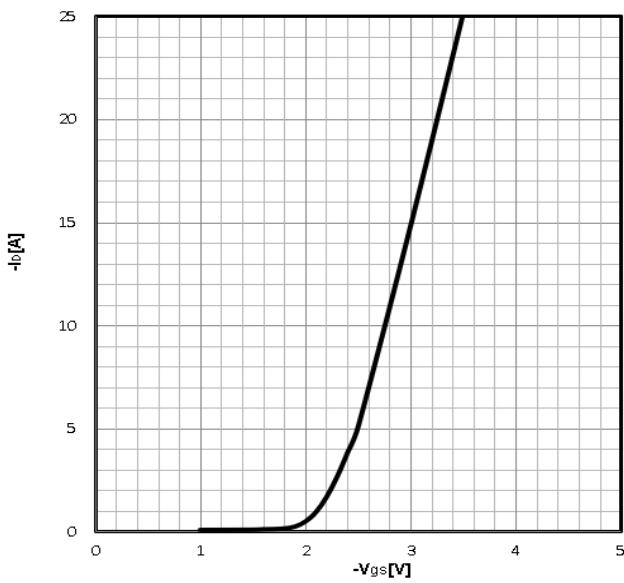
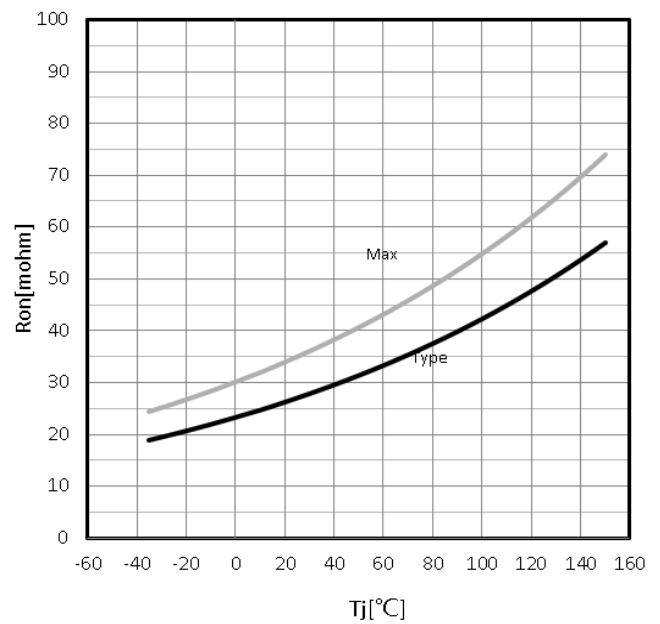
Table 2. P-Channel Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-30	--	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =-30V, V _{GS} =0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-1.2	-1.5	-2.2	V
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-4A	--	7	--	S
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-5A	--	20	28	mΩ
		V _{GS} =-4.5V, I _D =-4A	--	30	40	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, F=1MHZ	--	652	--	pF
C _{oss}	Output Capacitance		--	95	--	pF
C _{rss}	Reverse Transfer Capacitance		--	85.7	--	pF
Switching Times						
t _{d(on)}	Turn-on Delay Time	V _{GS} =-10V, V _{DS} =-15V, I _D =-4A, R _{GEN} =3Ω, R _L =3.6Ω	--	8.0	--	nS
t _r	Turn-on Rise Time		--	4.0	--	nS
t _{d(off)}	Turn-Off Delay Time		--	26	--	nS
t _f	Turn-Off Fall Time		--	12.5	--	nS
Q _g	Total Gate Charge	V _{GS} =-10V, V _{DS} =-15V, I _D =-1A	--	14	--	nC
Q _{gs}	Gate-Source Charge		--	1.3	--	nC
Q _{gd}	Gate-Drain Charge		--	3.0	--	nC
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current(Body Diode)		--	--	-8.0	A
V _{SD}	Forward on Voltage	V _{GS} =0V, I _S =-5A	--	--	-1.2	V
t _{rr}	Reverse Recovery Time	I _F =-5A , dI/dt=100A/μs , T _J =25°C	--	--	--	ns
Q _{rr}	Reverse Recovery Charge		--	--	--	nc

Notes 1.The maximum current rating is package limited.

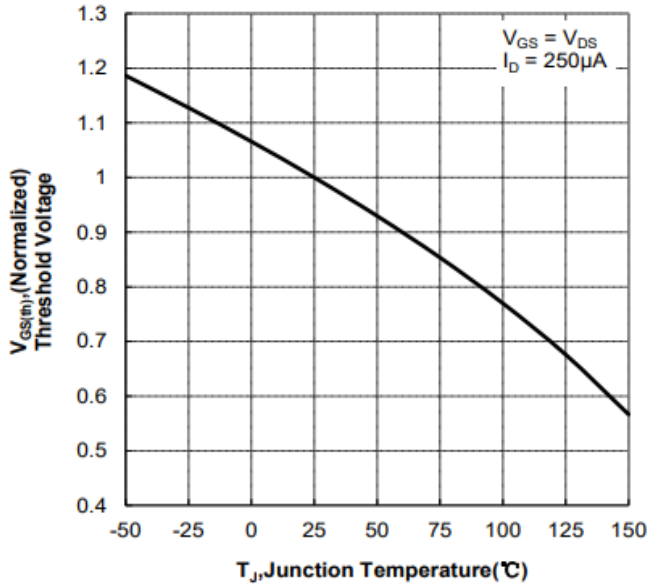
Notes2.Repetitive Rating: Pulse width limited by maximum junction temperature Notes

3.EAS condition: T_J=25°C, V_{DD}=-15V, V_{GS}=-10V, I_D=-17A, L=0.5mH, R_G=25ohm

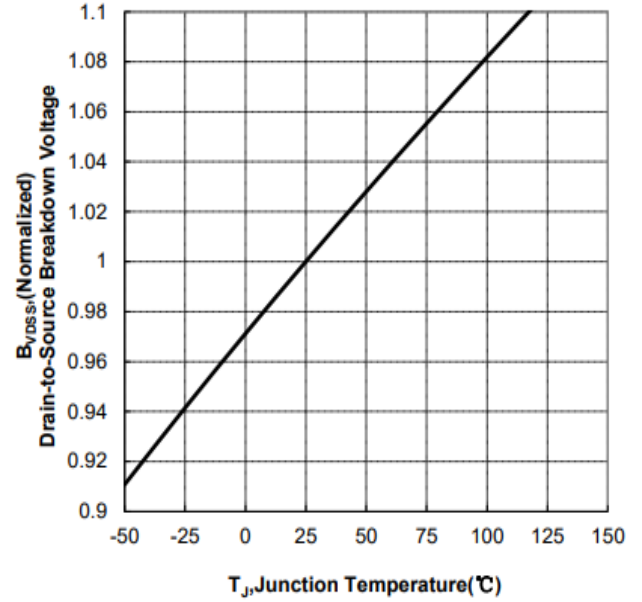
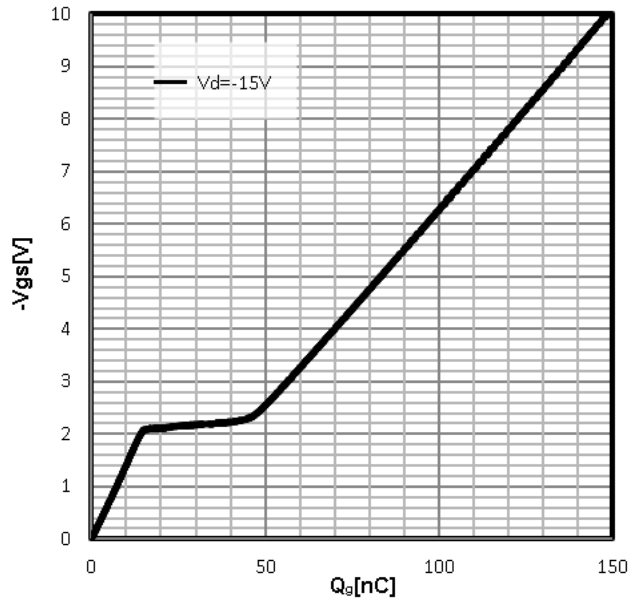
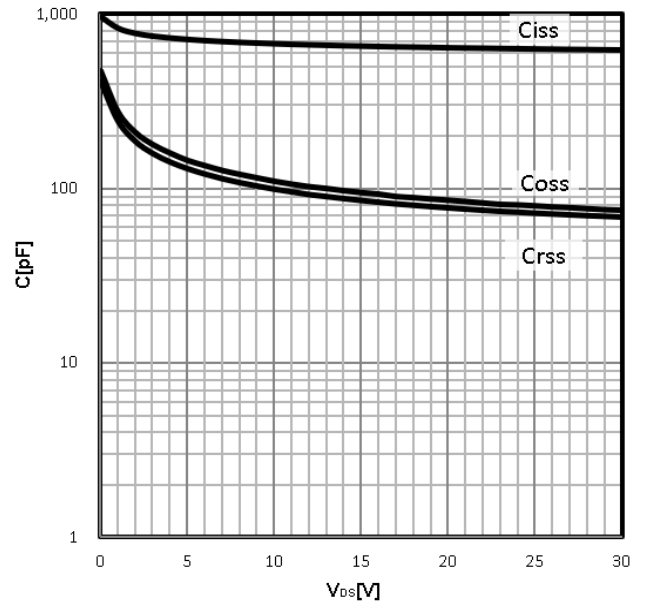
Characteristics Curve:
Typ. output characteristics
 $I_D = f(V_{DS})$

Typ. drain-source on resistance
 $R_{DS(on)} = f(I_D)$

Typ. transfer characteristics
 $I_D = f(V_{GS})$

Drain-source on-state resistance
 $R_{DS(on)} = f(T_j); I_D = -5A; V_{GS} = -10V$


Gate Threshold Voltage

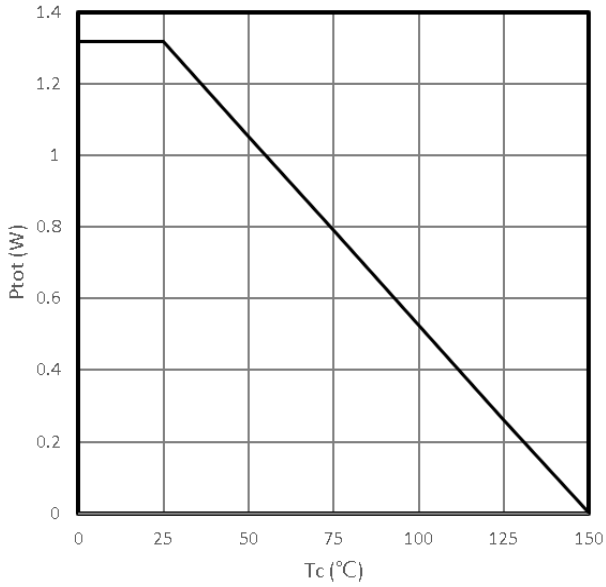
$$-V_{TH} = f(T_j); I_D = -250\mu A$$


Drain-source breakdown voltage

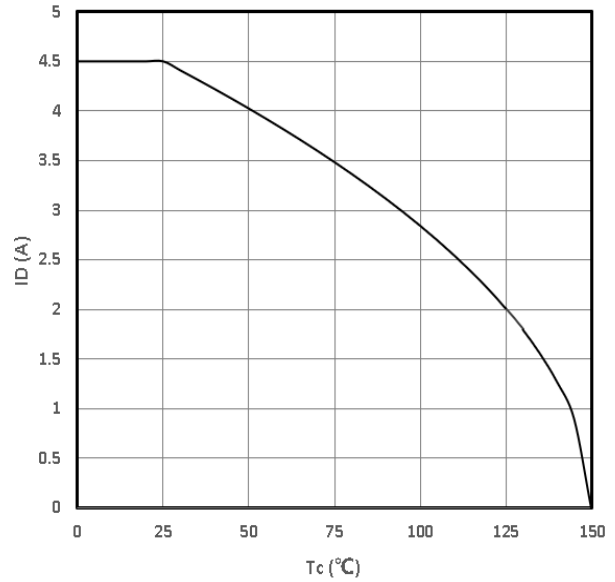
$$V_{BR(DSS)} = f(T_j); I_D = -250\mu A$$


Typ. gate charge
 $V_{GS} = f(Q_{gate}); I_D = -1A$

Typ. capacitances
 $C = f(V_{DS}); V_{GS} = 0V; f = 1MHz$


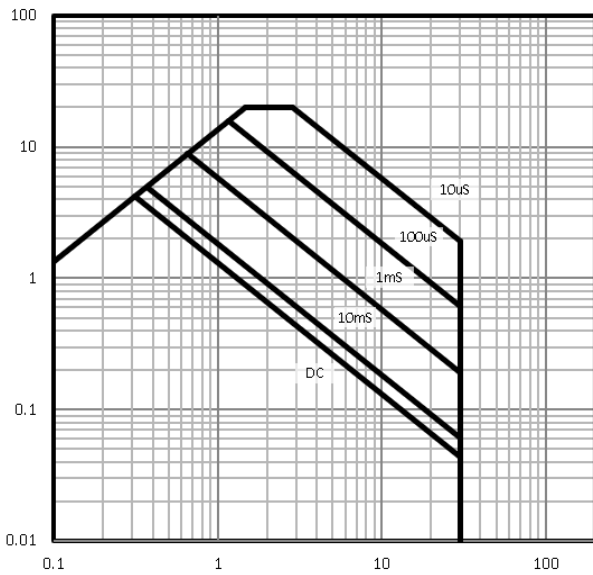
Power Dissipation
 $P_{tot}=f(T_C)$



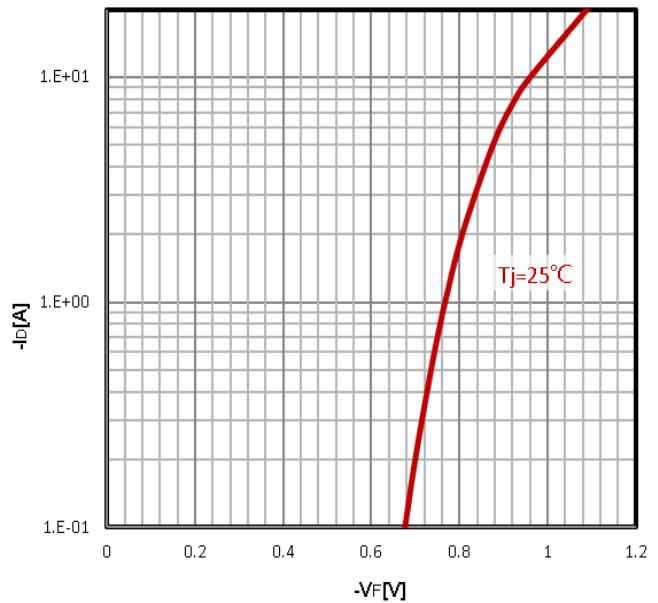
Maximum Drain Current
 $-I_D=f(T_C)$



Safe operating area
 $-I_D=f(-V_{DS})$

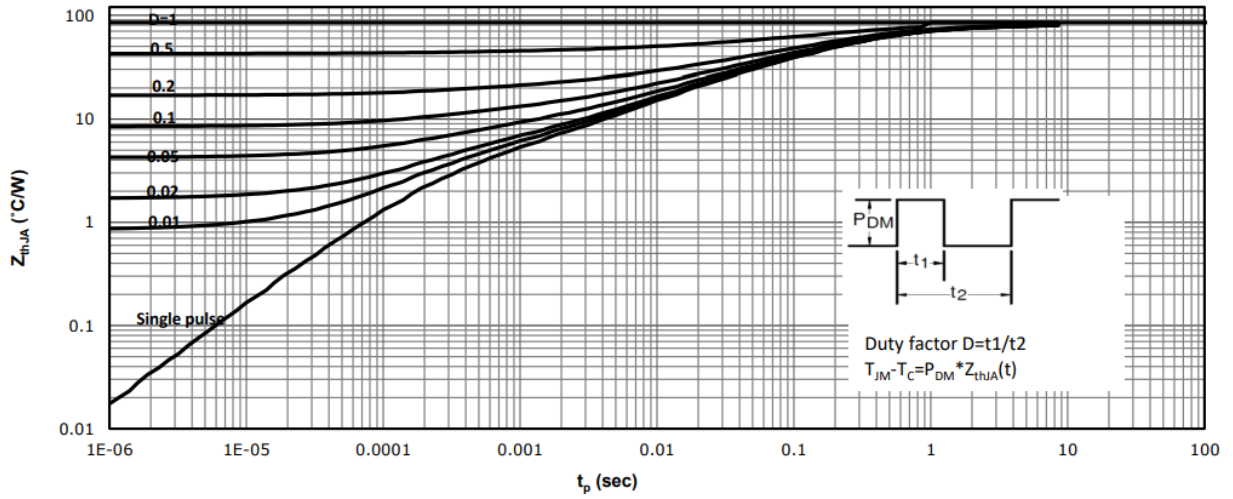


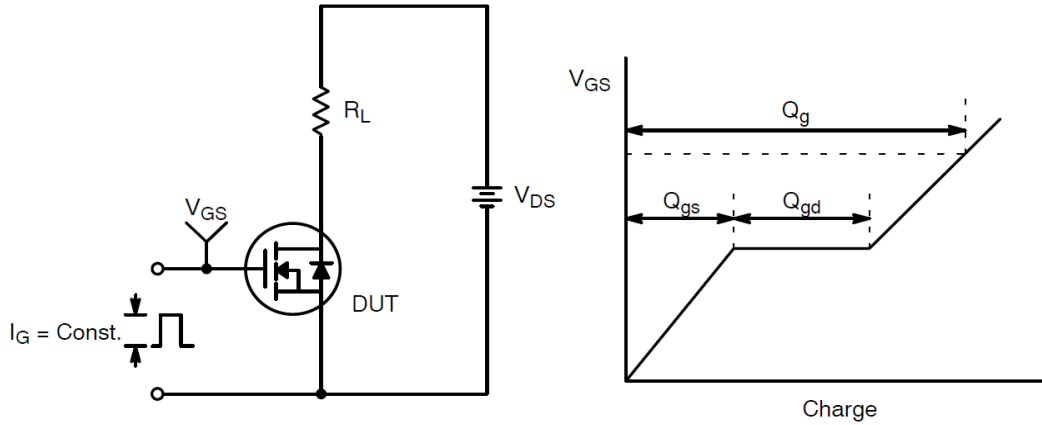
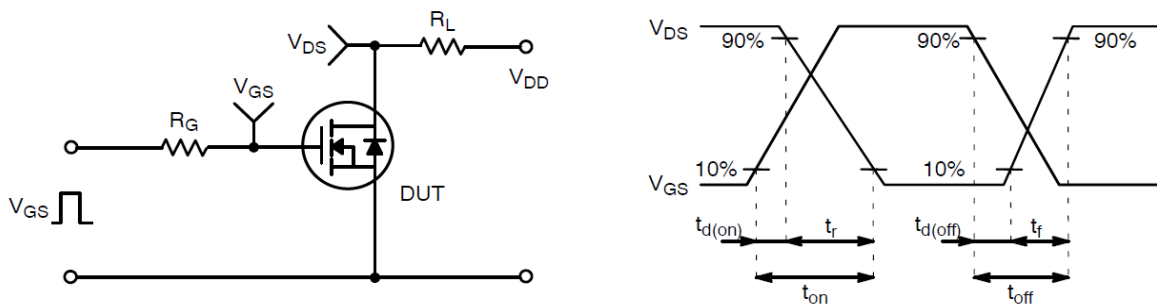
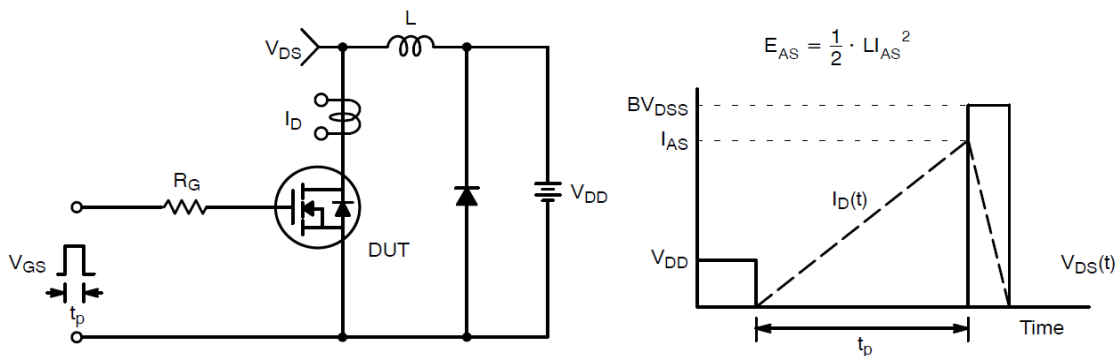
Body Diode Forward Voltage Variation
 $-I_F=f(-V_{DS})$



Max. transient thermal impedance

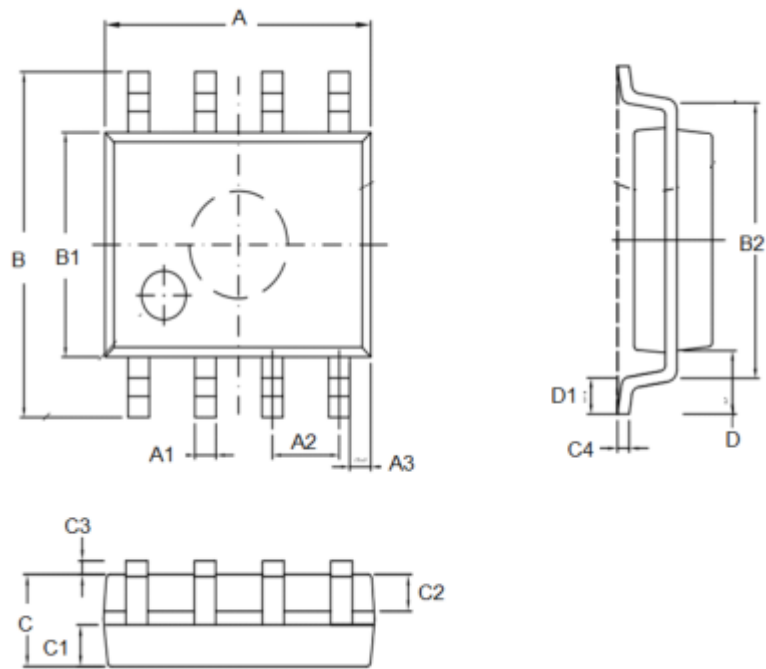
$$Z_{thJC} = f(t_p)$$



Test Circuit and Waveform:

Gate Charge Test Circuit & Waveform

Resistive Switching Test Circuit & Waveforms

Unclamped Inductive Switching Test Circuit & Waveforms

•Dimensions(SOP8)

SYMBOL	min	TYP	max	SYMBOL	min		max
A	4.80		5.00	C	1.30		1.50
A1	0.37		0.47	C1	0.55		0.75
A2		1.27		C2	0.55		0.65
A3		0.41		C3	0.05		0.20
B	5.80		6.20	C4	0.19	0.20	0.23
B1	3.80		4.00	D		1.05	
B2		5.00		D1	0.40		0.62




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