

### • General Description

The AGMH022P10H 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

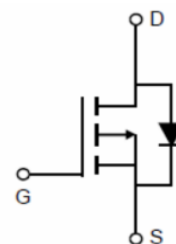
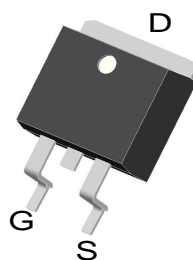
### • Application

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

### Product Summary

BVDSS	RDSON	ID
-100V	20mΩ	-65A

### TO-263 Pin Configuration



### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGMH022P10H	AGMH022P10H	TO-263	330mm	25mm	800

Table 1. Absolute Maximum Ratings (Tc=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)	-65	A
	Drain Current-Continuous(Tc=100°C)	-41	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	-260	A
PD	Maximum Power Dissipation(Tc=25°C)	250	w
	Maximum Power Dissipation(Tc=100°C)	100	w
EAS	Avalanche energy (Note 3)	465	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	°C/W
RθJC	Thermal Resistance Junction-Case <sup>1</sup>	---	0.5	°C/W

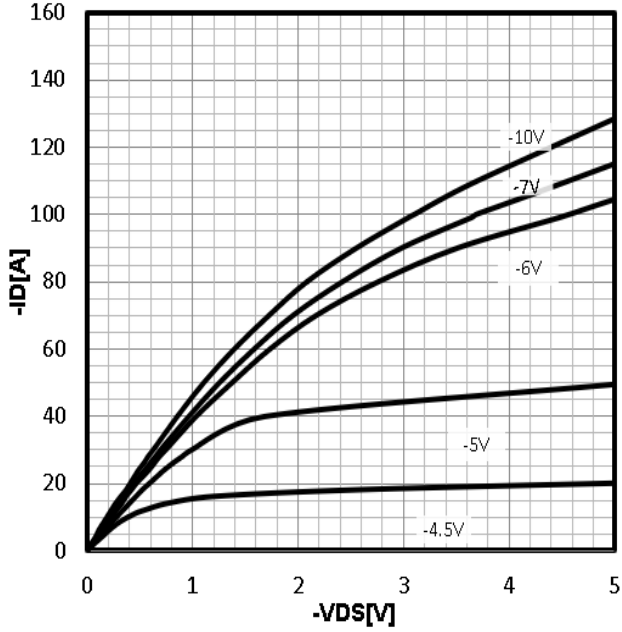
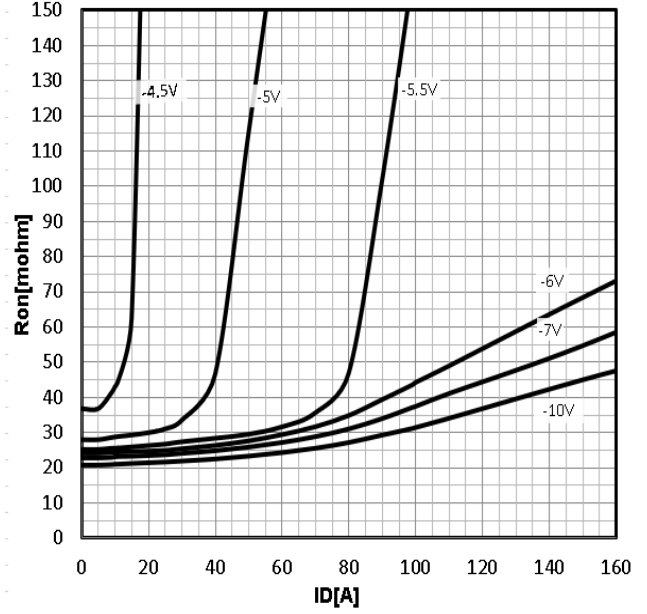
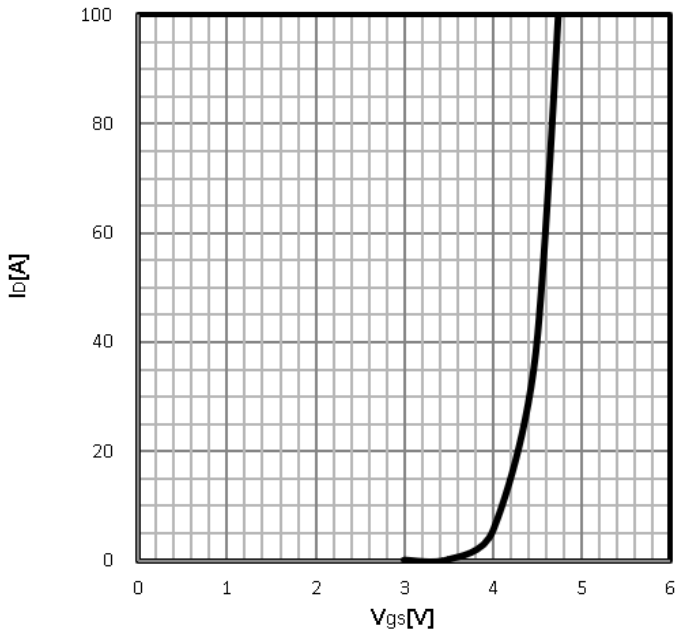
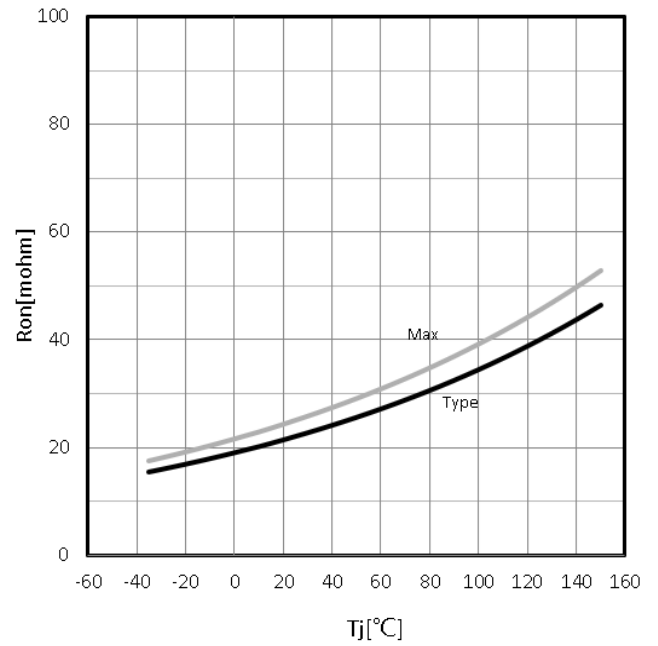
**Table 2. P-Channel Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
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	-2	-3	-4	V
gFS	Forward Transconductance	VDS=-5V,ID=-5A	--	18	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-10A	--	20	30	mΩ
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=-50V,VGS=0V, F=1MHZ	--	4276	--	pF
Coss	Output Capacitance		--	336	--	pF
Crss	Reverse Transfer Capacitance		--	25	--	pF
Rg	Gate resistance	VGS=0V	--	19	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	ID =-20A VDS = -50V VGS = -10V RG = 5Ω	--	15	--	nS
tr	Turn-on Rise Time		--	18	--	nS
td(off)	Turn-Off Delay Time		--	50	--	nS
tf	Turn-Off Fall Time		--	19	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-50V, ID=-20A	--	52.1	--	nC
Qgs	Gate-Source Charge		--	16.7	--	nC
Qgd	Gate-Drain Charge		--	7.1	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	-65	A
VSD	Forward on Voltage	VGS=0V,IS=-10A	--	--	-1.2	V
trr	Reverse Recovery Time	IS=-10A, VDD=-50V dI/dt=100A/μs	--	55	--	ns
Qrr	Reverse Recovery Charge		--	102	--	nc

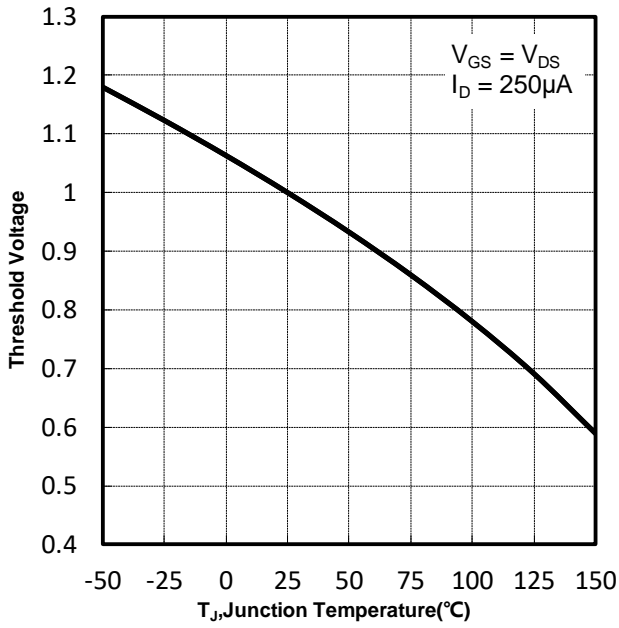
Notes 1.The maximum current rating is package limited.

Notes 2.Repetitive Rating: Pulsewidth limited by maximum junction temperature Notes

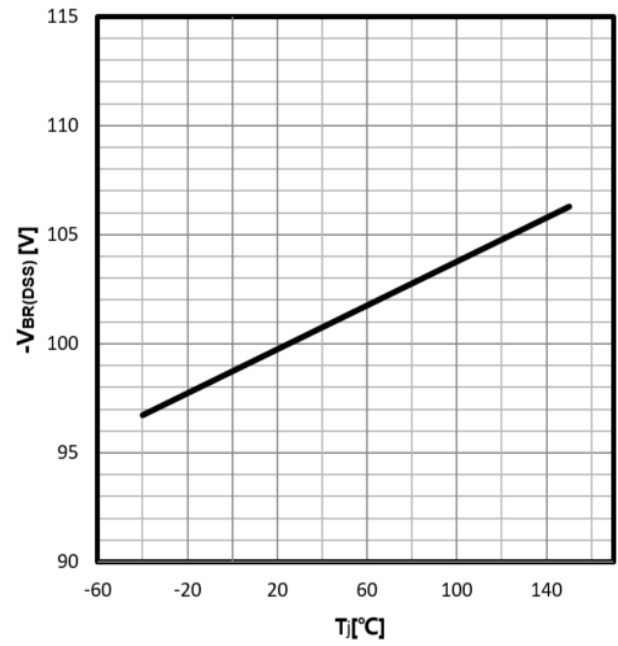
3.EAS condition: T<sub>J</sub>=25°C

**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**  
 $R_{DS(on)} = f(T_j); I_D = -10A; V_{GS} = -10V$ 


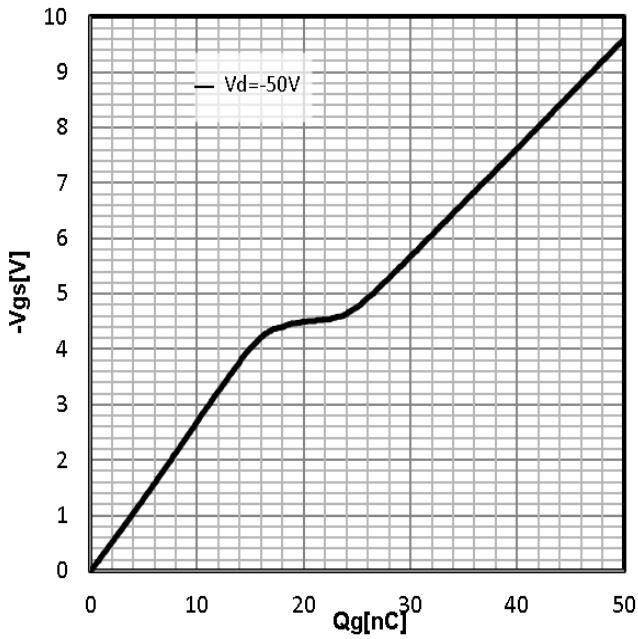
**Gate Threshold Voltage**  
 $-V_{TH}=f(T_j); I_D=-250\mu A$



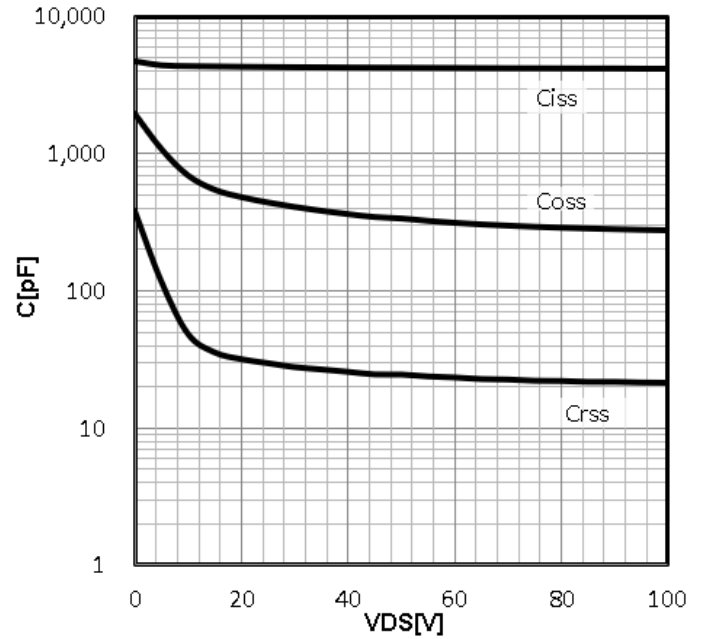
**Drain-source breakdown voltage**  
 $-V_{BR(DSS)}=f(T_j); I_D=-250\mu A$



**Typ. gate charge**  
 $-V_{GS}=f(Q_g); I_D=-20A$

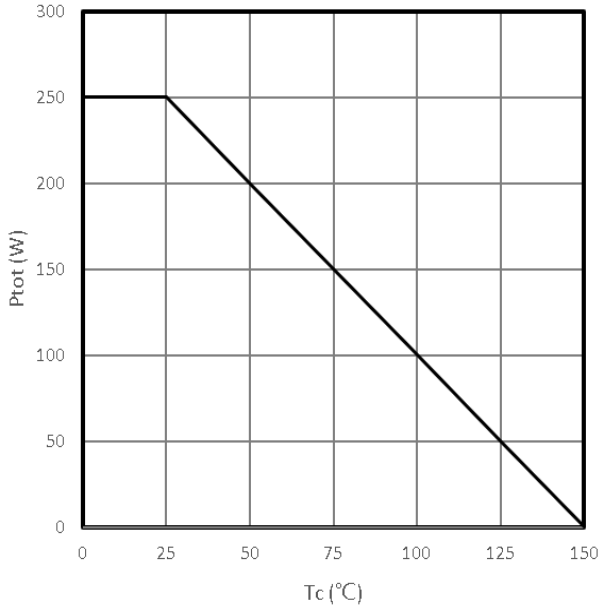


**Typ. capacitances**  
 $C=f(-V_{DS}); V_{GS}=0V; f=1MHz$



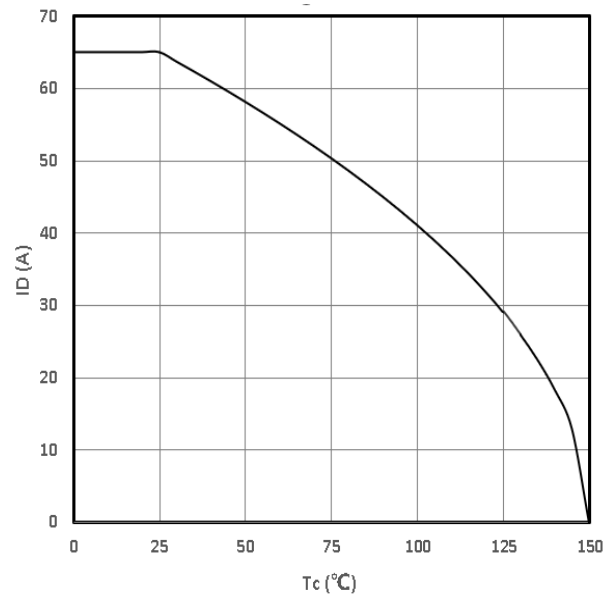
**Power Dissipation**

$P_{tot}=f(T_C)$



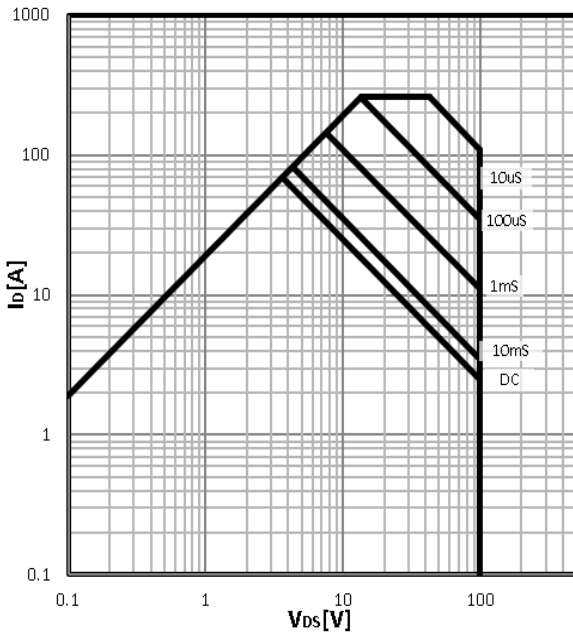
**Maximum Drain Current**

$-I_D=f(T_C)$



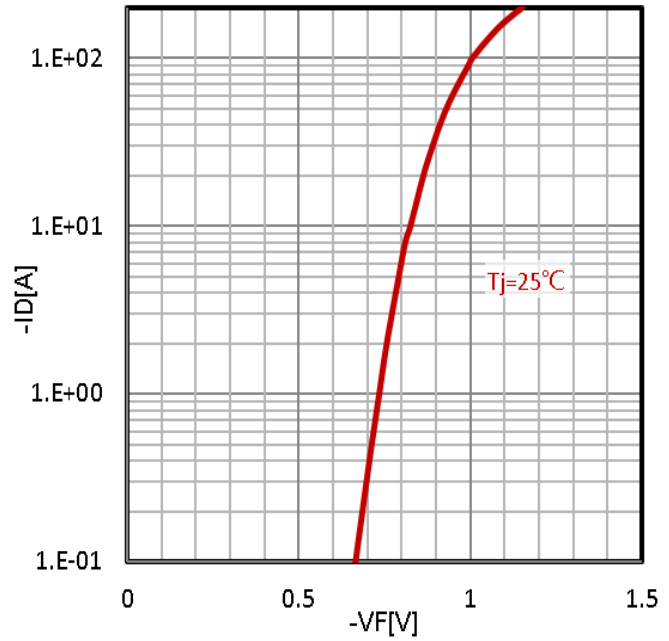
**Safe operating area**

$-I_D=f(-V_{DS})$

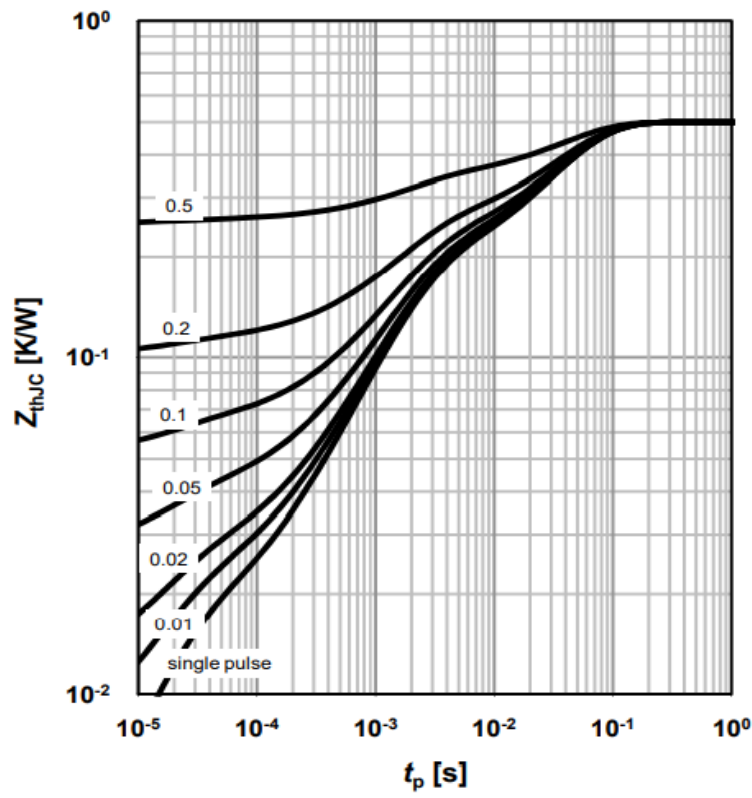


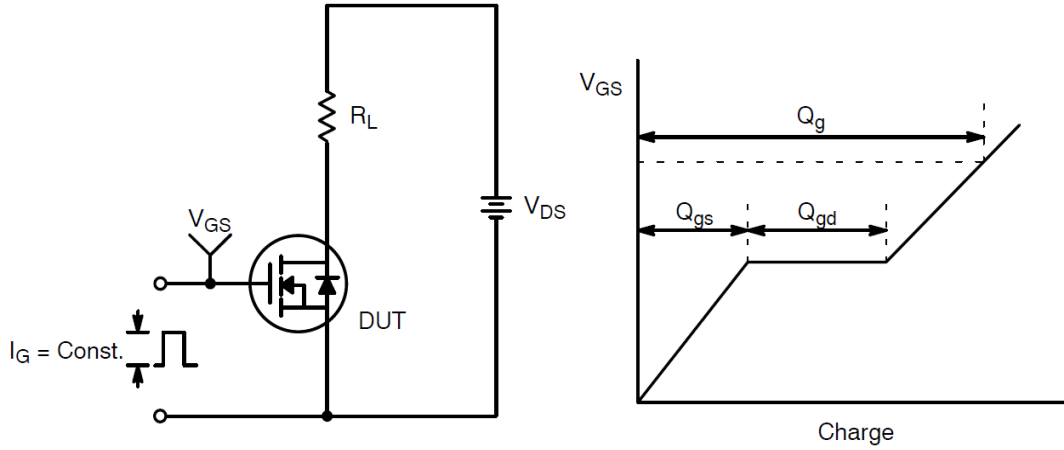
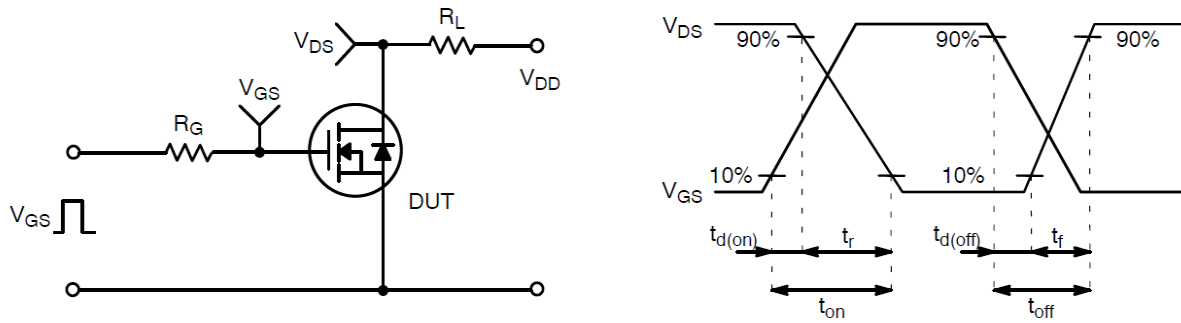
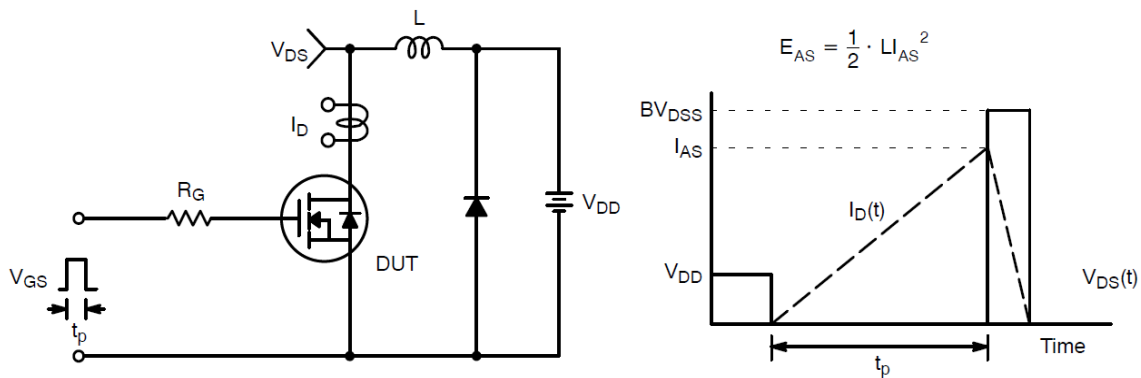
**Body Diode Forward Voltage Variation**

$-I_F=f(-V_{DS})$

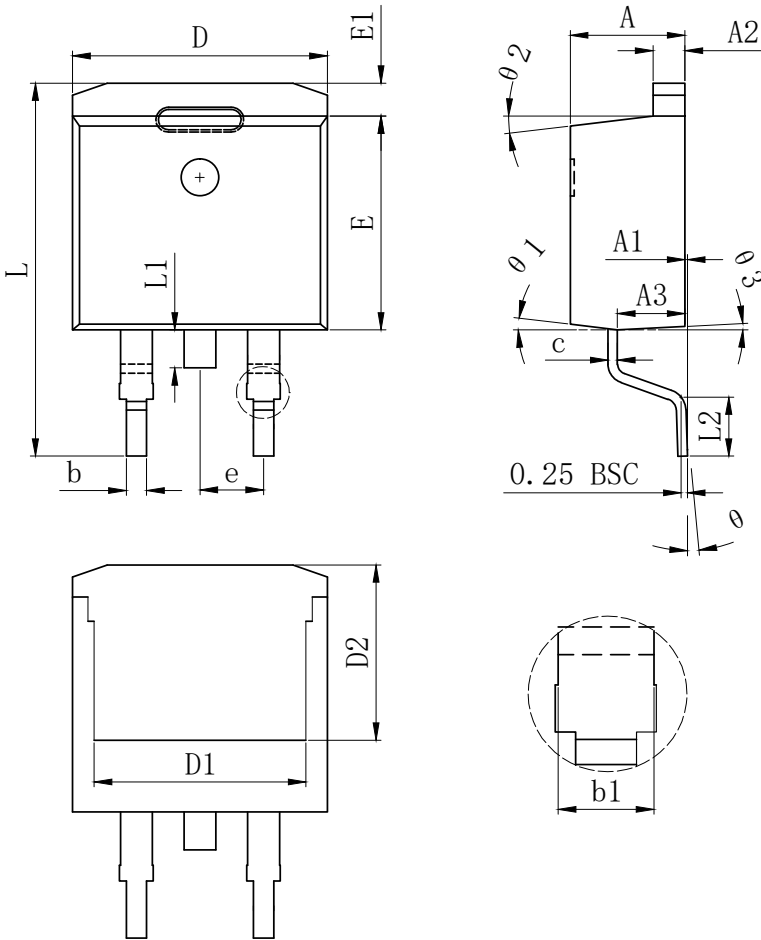


Max. transient thermal impedance  
 $Z_{thJC}=f(t_p)$

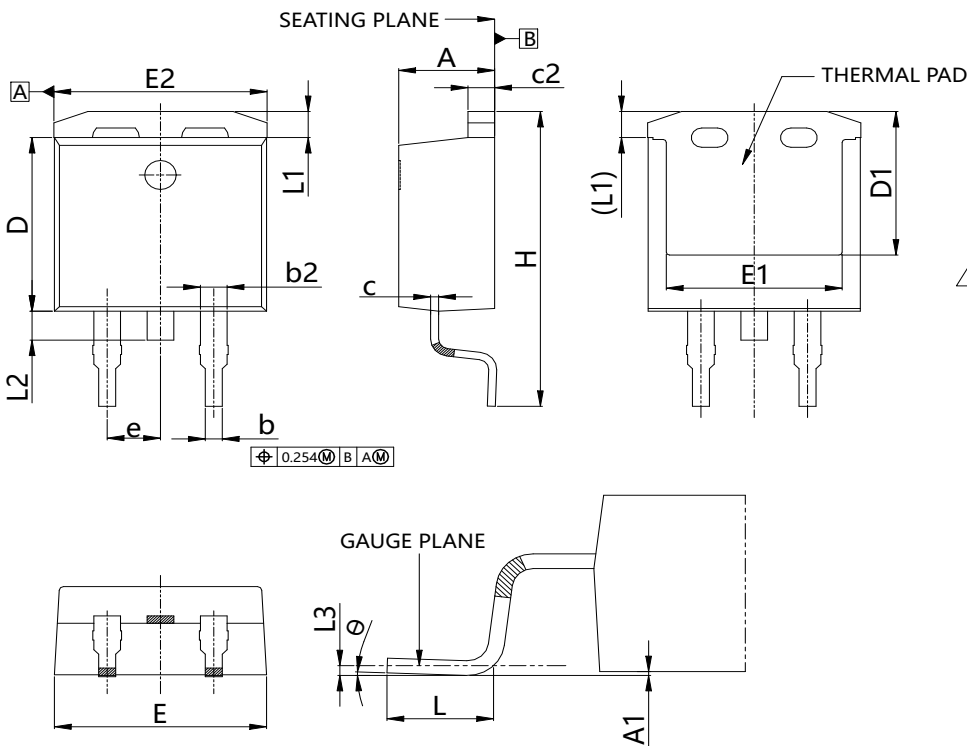


**Test Circuit and Waveform:**

**Gate Charge Test Circuit & Waveform**

**Resistive Switching Test Circuit & Waveforms**

**Unclamped Inductive Switching Test Circuit & Waveforms**

# TO-263 PACKAGE INFORMATION



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	4.370	4.570	4.770
A1	0.000		0.250
A2	1.220	1.270	1.420
A3	2.490	2.690	2.890
b	0.700	0.810	0.960
b1	1.170	1.270	1.470
c	0.300	0.380	0.530
D	9.860	10.160	10.360
D1	8.400 REF		
D2	7.073 REF		
E	8.500	8.700	8.900
E1	1.070	1.270	1.470
e	2.540 TYP		
L	14.700	15.100	15.500
L1	1.400	1.550	1.700
L2	2.000	2.300	2.600
$\theta$	0°		9°
$\theta_1$	7° TYP		
$\theta_2$	7° TYP		
$\theta_3$	3° TYP		



SYMBOL	MILLIMETER		
	MIN.	NOMINAL	MAX.
A	4.47	4.57	4.67
A1	0.00	0.10	0.25
b	0.71	0.81	0.91
b2	1.17	1.27	1.37
c	0.360	0.381	0.500
c2	1.17	1.27	1.37
D	8.70	9.00	9.30
D1	7.10	7.44	7.80
E	9.90	10.11	10.30
E1	8.08	8.38	8.68
E2	10.00	10.16	10.30
e	2.44	2.54	2.64
H	15.00	15.28	15.60
L	2.25	2.54	2.80
L1	1.10	1.35	1.60
L2	---	---	1.78
L3	0.254 BSC		
$\theta$	0°	---	8°




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