

● General Description

The AGM30P05D 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

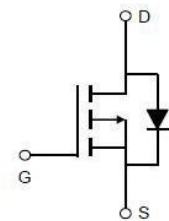
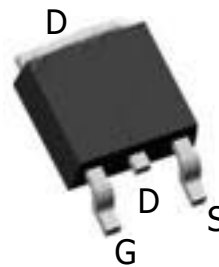
● Application

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

Product Summary

BVDSS	RDSON	ID
-30V	5.5mΩ	-75A

TO-252 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM30P05D	AGM30P05D	TO-252	330mm	16mm	2500

Table 1. Absolute Maximum Ratings (TC=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)	-75	A
	Drain Current-Continuous(Tc=100°C)	-60	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	-240	A
PD	Maximum Power Dissipation(Tc=25°C)	59.5	w
	Maximum Power Dissipation(Tc=100°C)	24	w
EAS	Avalanche energy (Note 3)	93	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	---	--	°C/W
RθJC	Thermal Resistance Junction-Case ¹	---	2.1	°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	-30	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-30V, VGS=0V	--	--	-1.0	μA
IGSS	Gate-Body Leakage Current	VGS=±20V, VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=-250μA	-1.2	-1.6	-2.1	V
gFS	Forward Transconductance	VDS=-10V, ID=-10A	--	20	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-15A	--	5.5	7.0	mΩ
		VGS=-4.5V, ID=-20A	--	8.5	11.3	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=-30V, F=1MHZ	--	2497	--	pF
Coss	Output Capacitance		--	240	--	pF
Crss	Reverse Transfer Capacitance		--	230	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V, f=1.0MHz	--	--	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=-10V, VDS=-15V, ID=-30A, RI=3.0Ω	--	14	--	nS
tr	Turn-on Rise Time		--	20	--	nS
td(off)	Turn-Off Delay Time		--	56	--	nS
tf	Turn-Off Fall Time		--	48	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-15V, ID=-20A	--	32	--	nC
Qgs	Gate-Source Charge		--	6.6	--	nC
Qgd	Gate-Drain Charge		--	8.0	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	-75	A
VSD	Forward on Voltage	VGS=0V, IS=-15A	--	--	-1.2	V
trr	Reverse Recovery Time	IF=-15A ,	--	--	--	ns
Qrr	Reverse Recovery Charge	dI/dt=-500A/μs , T _J =25°C	--	--	--	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

P- Channel Typical Characteristics

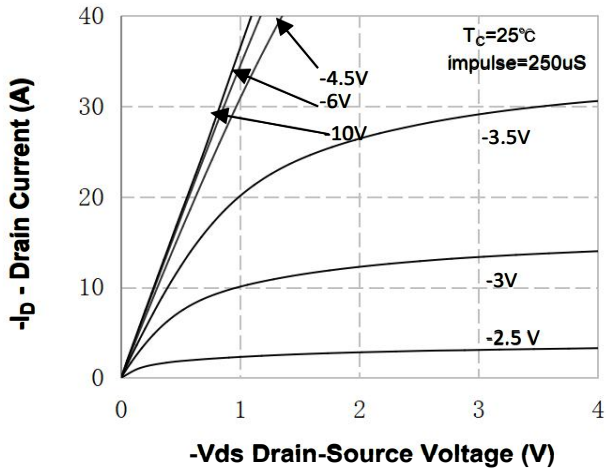


Figure 1. On-Region Characteristics

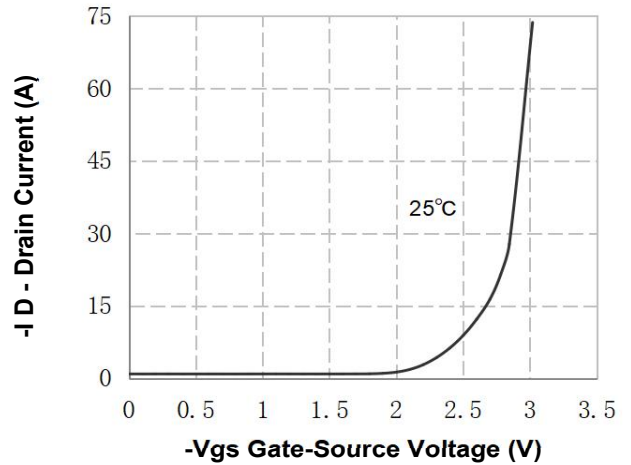


Figure 2. Transfer Characteristics

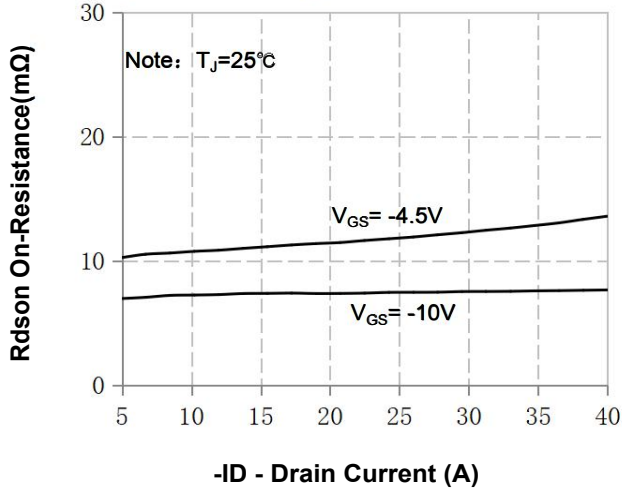


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

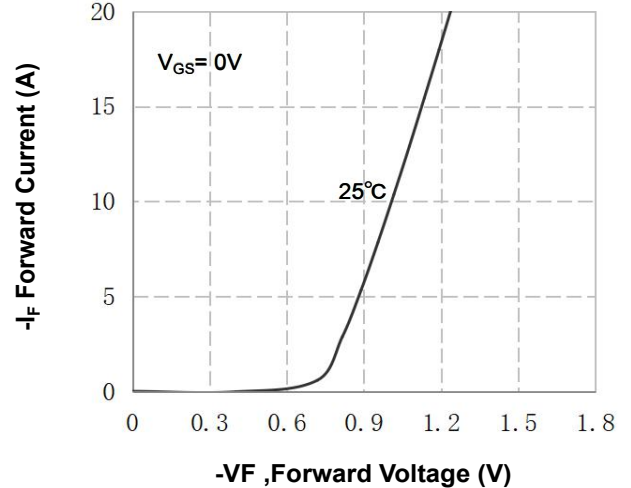


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

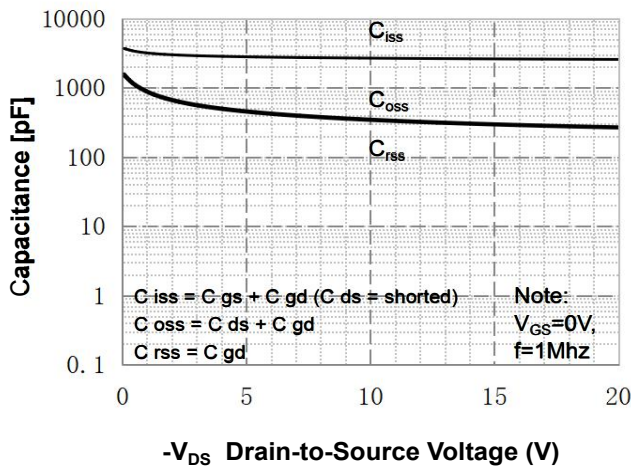


Figure 5. Capacitance Characteristics

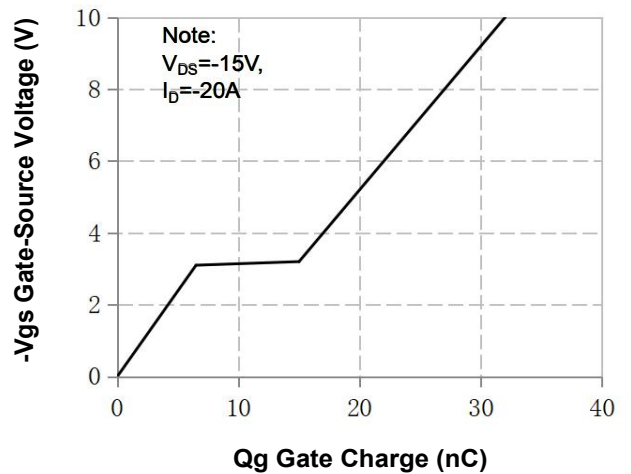
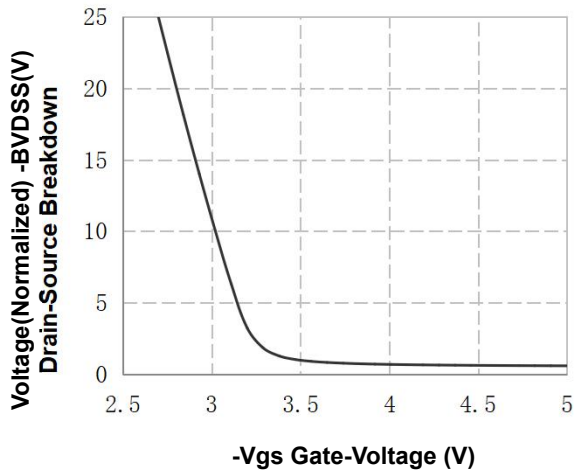
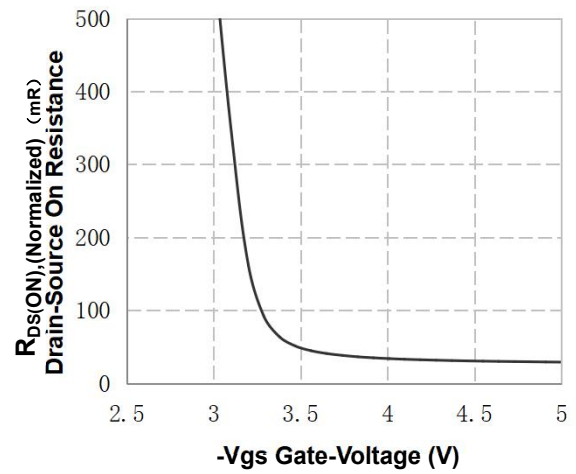
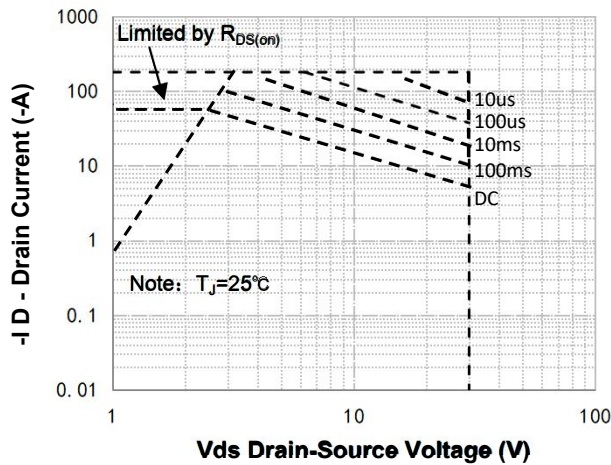
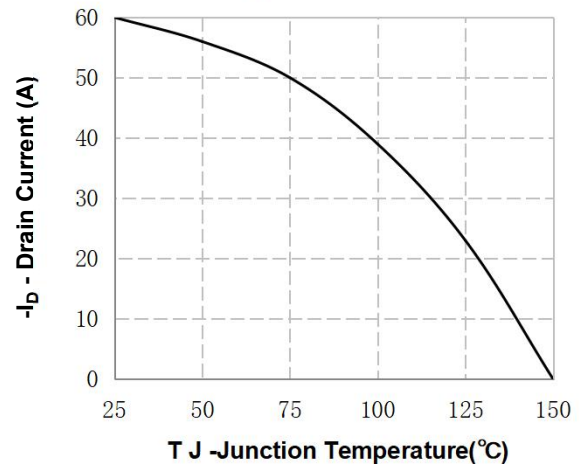
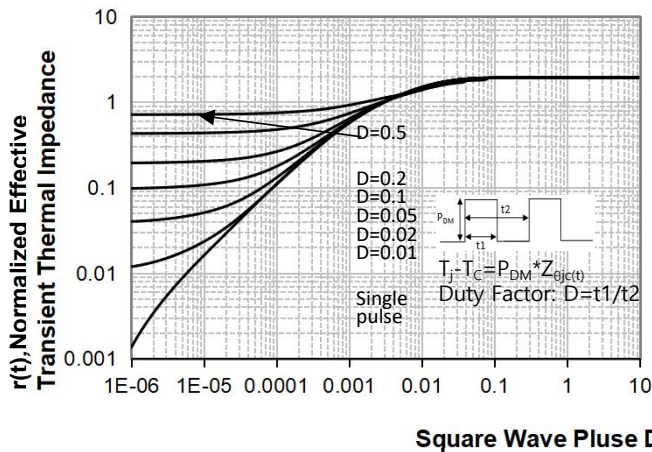
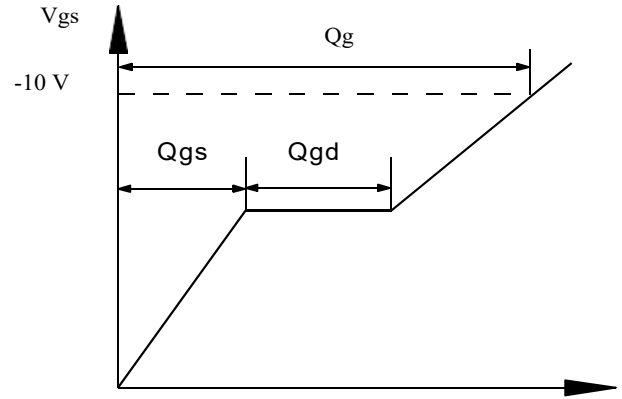
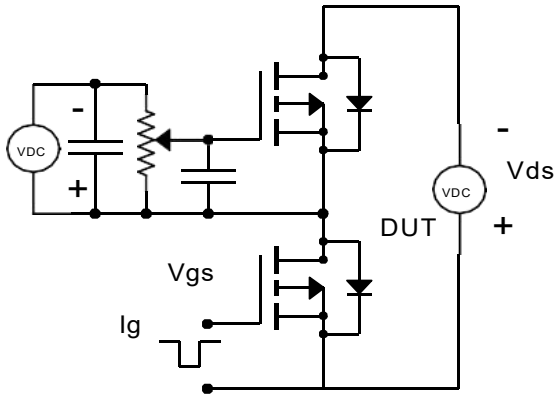


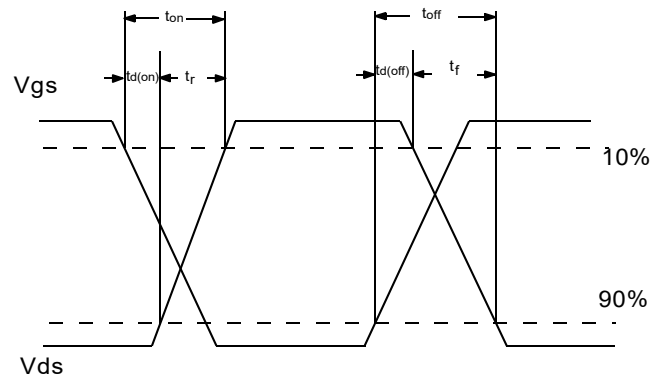
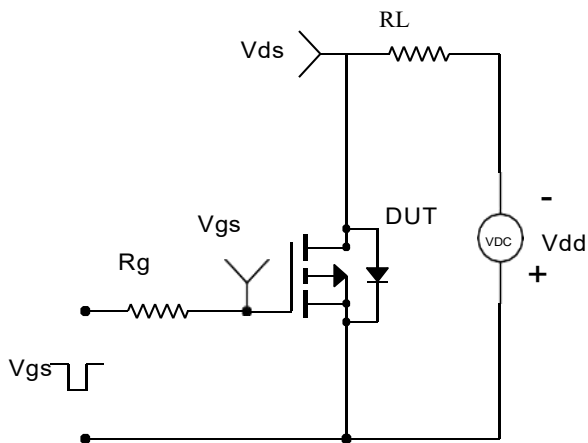
Figure 6. Gate Charge Characteristics

P- Channel Typical Characteristics (Continued)

Figure 7. Breakdown Voltage Variation vs Gate-Voltage

Figure 8. On-Resistance Variation vs Gate Voltage

Figure 9. Maximum Safe Operating Area

Figure 10. Maximum PContinuous Drain Current vs Case Temperature

Figure 11. Transient Thermal Response Curve

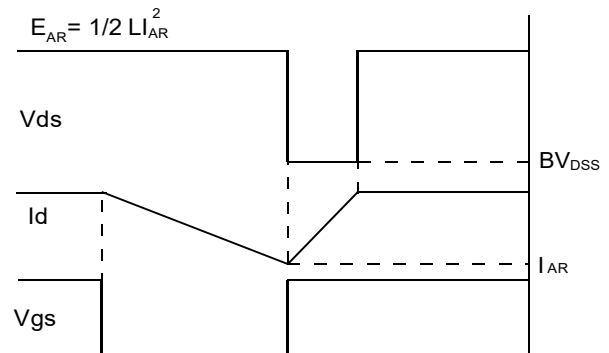
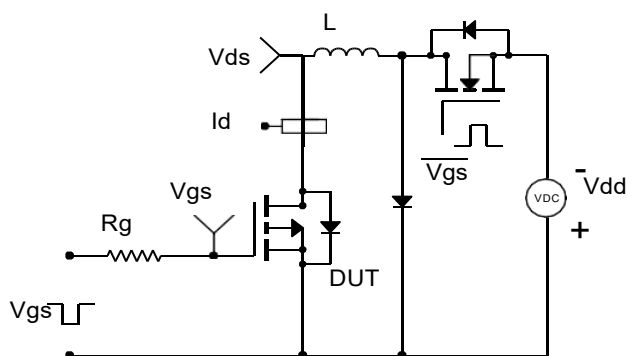
Gate Charge Test Circuit & Waveform



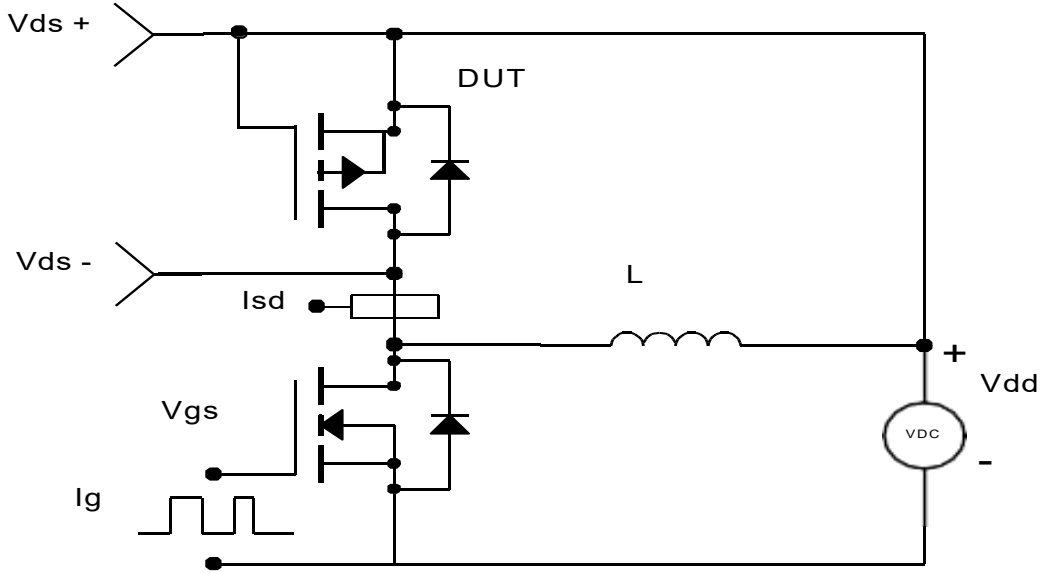
Resistive Switching Test Circuit & Waveforms



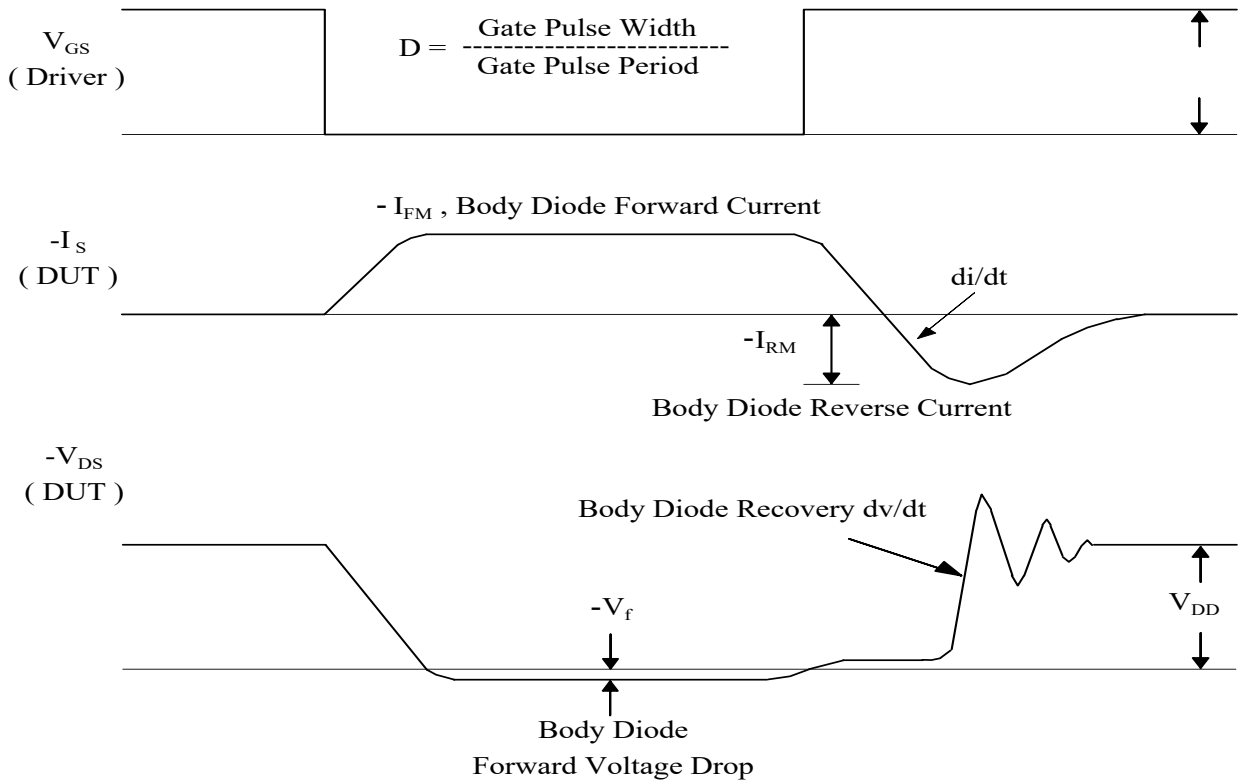
Unclamped Inductive Switching Test Circuit & Waveforms



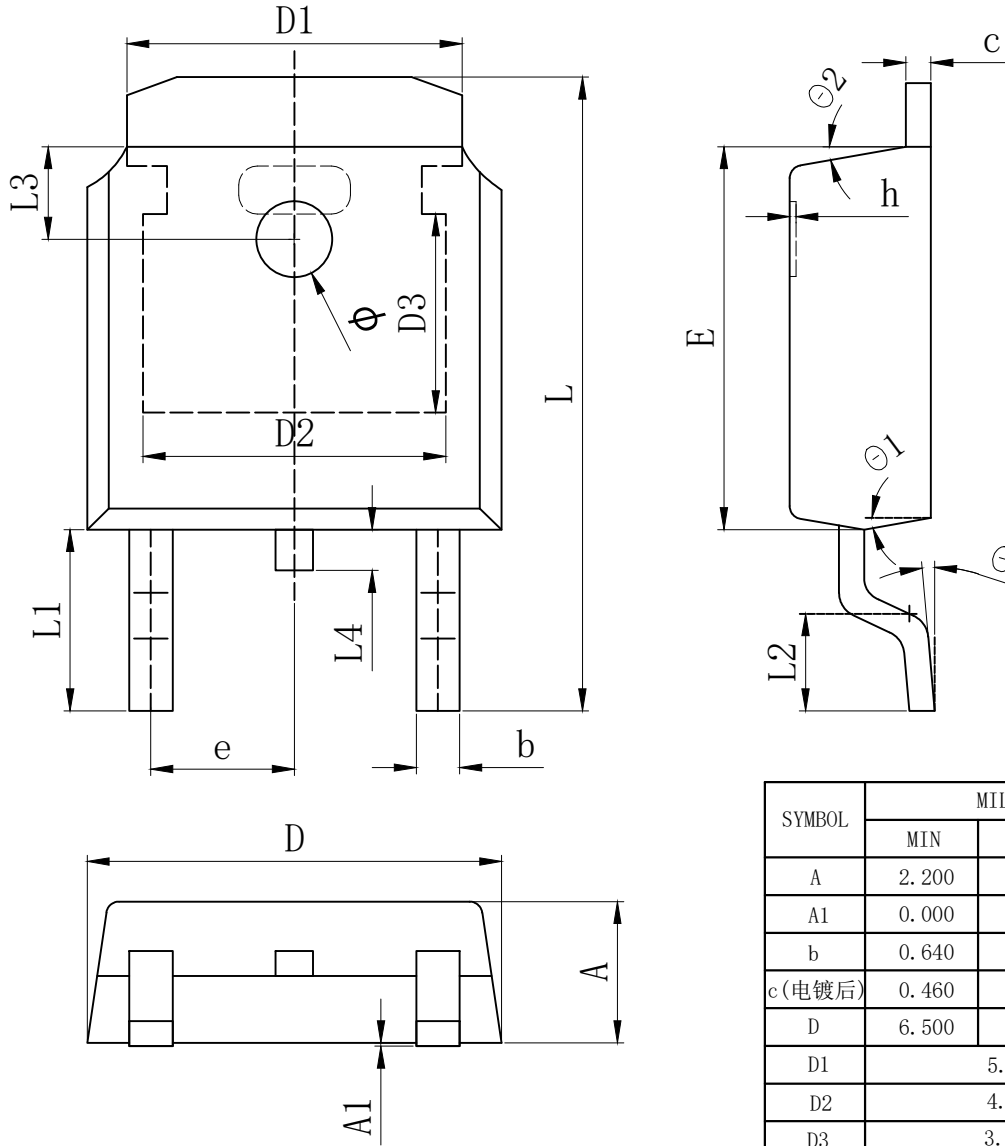
Peak Diode Recovery dv/dt Test Circuit & Waveforms



- dv/dt controlled by R_G
- I_{SD} controlled by pulse period



TO-252 Package Outline Data



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c(电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
phi	1.100	1.200	1.300
theta	0°		8°
theta 1	9° TYP		
theta 2	9° TYP		


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