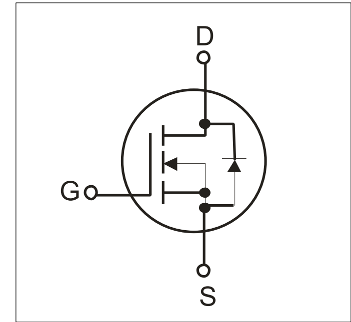
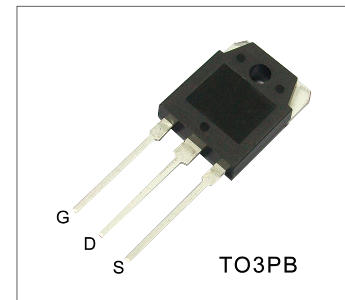
Features

- 11A,900V, $R_{DS(on)}$(Max1.10Ω)@V_{GS}=10V
- Ultra-low Gate charge(Typical 66nC)
- Fast Switching Capability
- 100%Avalanche Tested
- Improved dv/dt capability
- RoHS product



General Description

This N-Channel enhancement mode power field effect transistors are produced using Winsemi's proprietary, planar stripe ,DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance , provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency switch mode power supplies.



Absolute Maximum Ratings

Symbol	Parameter		Value	Units
V_{DSS}	Drain Source Voltage		900	V
I_D	Continuous Drain Current(@Tc=25℃)		11	A
	Continuous Drain Current(@Tc=100℃)		6.9*	A
I_{DM}	Drain Current Pulsed	(Note1)	44	A
V_{GS}	Gate to Source Voltage		±30	V
E_{AS}	Single Pulsed Avalanche Energy	(Note2)	970	mJ
I_{AR}	Avalanche Current	(Note1)	11	A
E_{AR}	Repetitive Avalanche Energy	(Note1)	30.1	mJ
dv/dt	Peak Diode Recovery dv /dt	(Note3)	4.1	V/ ns
P_D	Total Power Dissipation(@Tc=25℃)		277	W
	Derating Factor above 25℃		2.22	W/℃
T_J	Junction Temperature		150	℃
T_{stg}	Storage Temperature		-55~150	℃
T_L	Channel Temperature		300	℃

Thermal Characteristics

Symbol	Parameter	Value			Units
		Min	Typ	Max	
R_{QJC}	Thermal Resistance , Junction -to -Case	-	-	0.45	℃/W
R_{QJA}	Thermal Resistance , Junction-to -Ambient	-	-	40	℃/W

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Electrical Characteristics(Tc=25℃)

Characteristics		Symbol	Test Condition	Min	Type	Max	Unit
Gate leakage current		I_{GSS}	V_{GS}=±30V,V_{DS}=0V	-	-	±100	nA
Gate-source breakdown voltage		$V_{(BR)GSS}$	I_G=±10 μA,V_{DS}=0V	±30	-	-	V
Drain cut -off current		I_{DSS}	V_{DS}=900V,V_{GS}=0V	-	-	1	μA
			V_{DS}=720V,Tc=125℃			10	μA
Drain -source breakdown voltage		$V_{(BR)DSS}$	I_D=250μA,V_{GS}=0V	900	-	-	V
Gate threshold voltage		$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	3.0	-	5.0	V
Drain -source ON resistance		$R_{DS(ON)}$	V_{GS}=10V,I_D=5.5A	-	0.90	1.10	Ω
Forward Transconductance		gfs	V_{DS}=40V,I_D=5.5A	-	9.5	-	S
Input capacitance		C_{iss}	V_{DS}=25V,	-	2550	3340	pF
Reverse transfer capacitance		C_{rss}	V_{GS}=0V,	-	22	30	
Output capacitance		C_{oss}	f=1MHz	-	210	270	
Switching time	Turn-on Rise time	tr	V_{DD}=450V,	-	130	280	ns
	Turn-on Delay time	td(on)	I_D=11A	-	54	122	
	Turn-on Fall time	tf	R_G=25Ω	-	80	181	
	Turn-off Delay time	td(off)	(Note4,5)	-	125	304	
Total gate charge(gate-source plus gate-drain)		Qg	V_{DD}=720V, V_{GS}=10V,	-	66	80	nC
Gate-source charge		Qgs	I_D=11A	-	13	-	
Gate-drain("miller") Charge		Qgd	(Note4,5)	-	35	-	

Source-Drain Ratings and Characteristics(Ta=25℃)

Characteristics	Symbol	Test Condition	Min	Type	Max	Unit
Continuous drain reverse current	I_{DR}	-	-	-	11	A
Pulse drain reverse current	I_{DRP}	-	-	-	44	A
Forward voltage(diode)	V_{DSF}	I_{DR}=11A,V_{GS}=0V	-	-	1.4	V
Reverse recovery time	trr	I_{DR}=11A,V_{GS}=0V,	-	999	-	ns
Reverse recovery charge	Qrr	dI_{DR} / dt =100 A / μs	-	16.9	-	μC

Note 1.Repeativity rating :pulse width limited by junction temperature

2.L=15mH I_{AS}=11A,V_{DD}=50V,R_G=25Ω,Starting T_J=25℃

3.I_{SD}≤11A,di/dt≤200A/us,V_{DD}<BV_{DSS},Starting T_J=25℃

4.Pulse Test:Pulse Width≤300us,Duty Cycle≤2%

5. Essentially independent of operating temperature.

This transistor is an electrostatic sensitive device

Please handle with caution

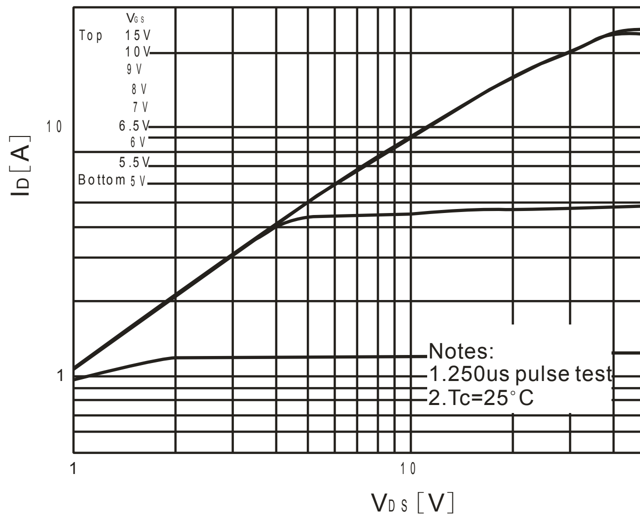

Fig.1 On Region Characteristics

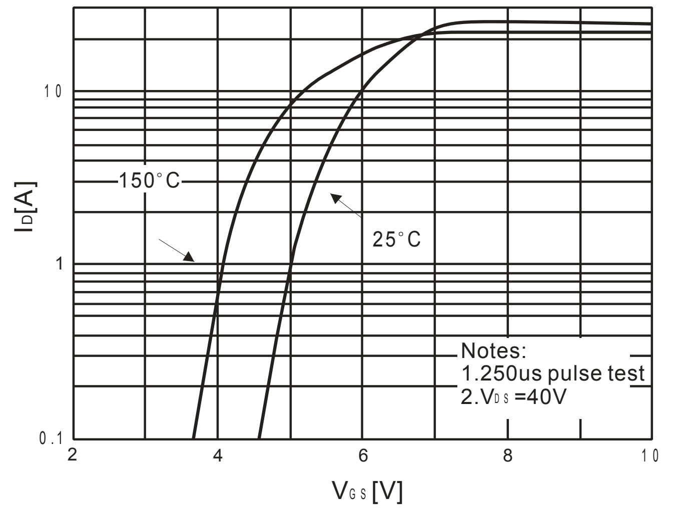

Fig.2 Transfer Characteristics

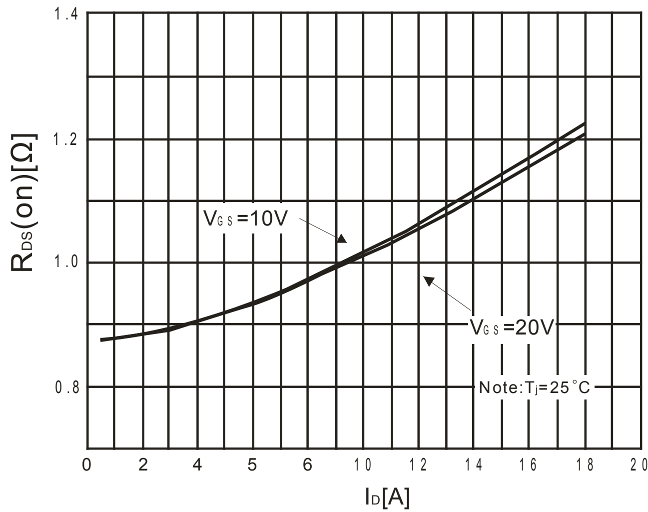

Fig.3 On-Resistance Variation vs Drain current and Gate Voltage

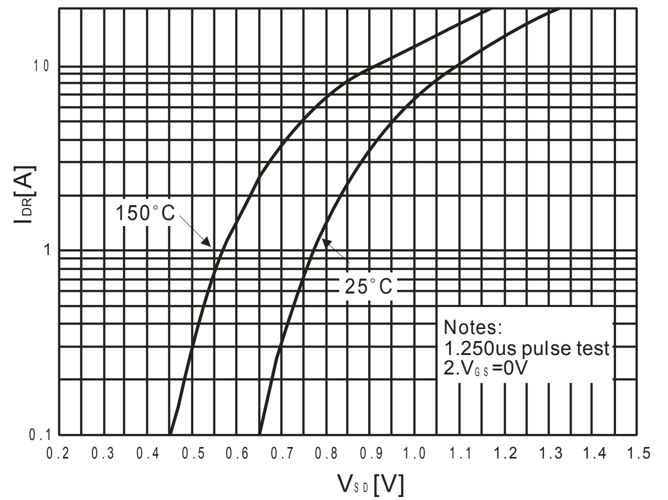

Fig.4 Body Diode Forward voltage Variation with Source Current And Temperature

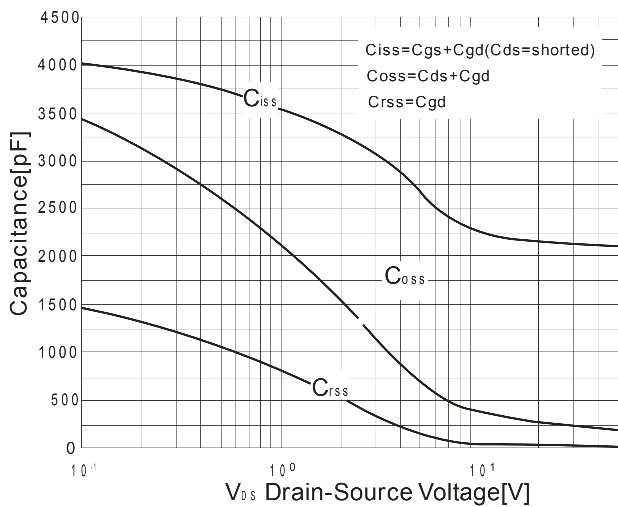

Fig.5 Capacitance Characteristics

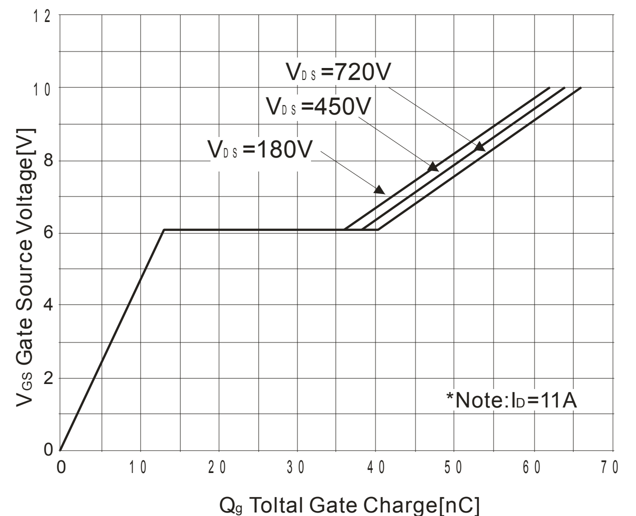

Fig.6 Gate Charge Characteristics

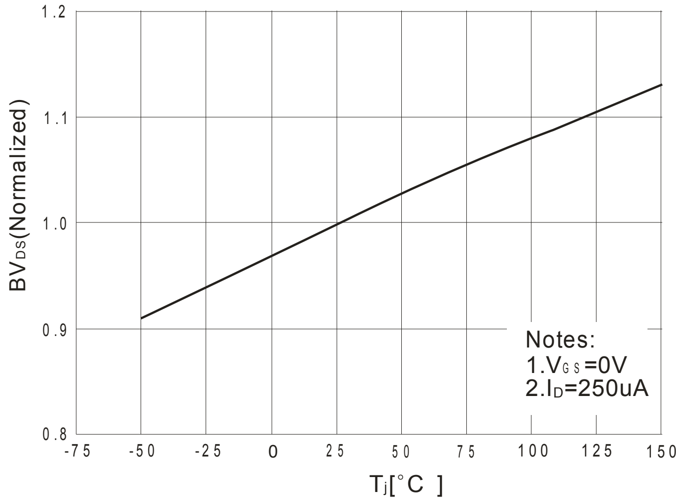

Fig.7 Breakdown Voltage Variation vs.Temperature

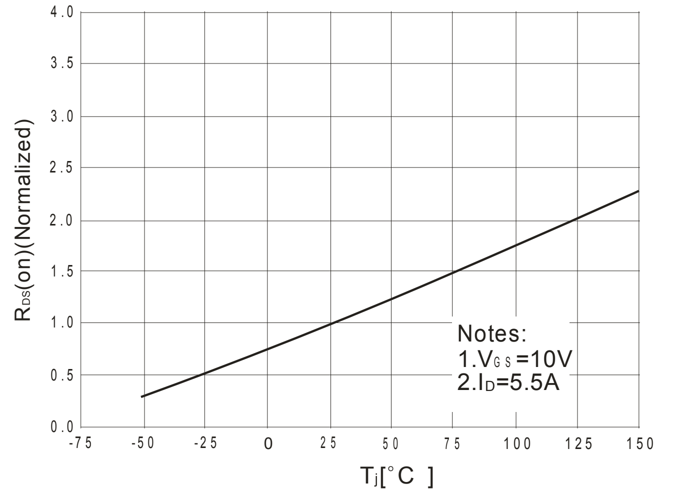

Fig.8 On-Resistance Variation vs.Temperature

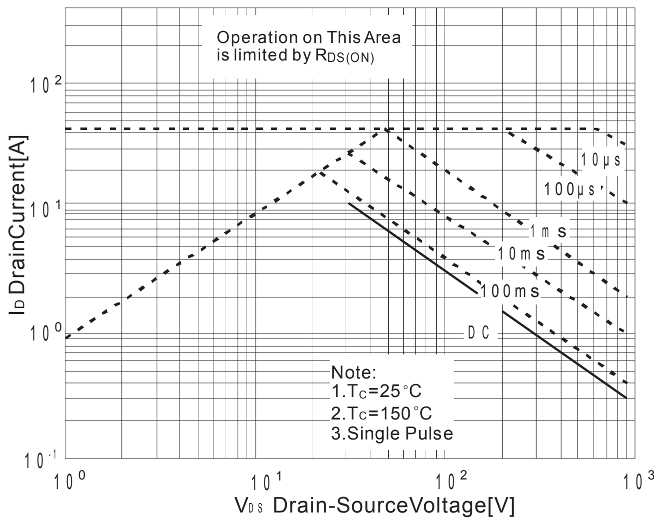

Fig.9 Maximum Safe Operation Area

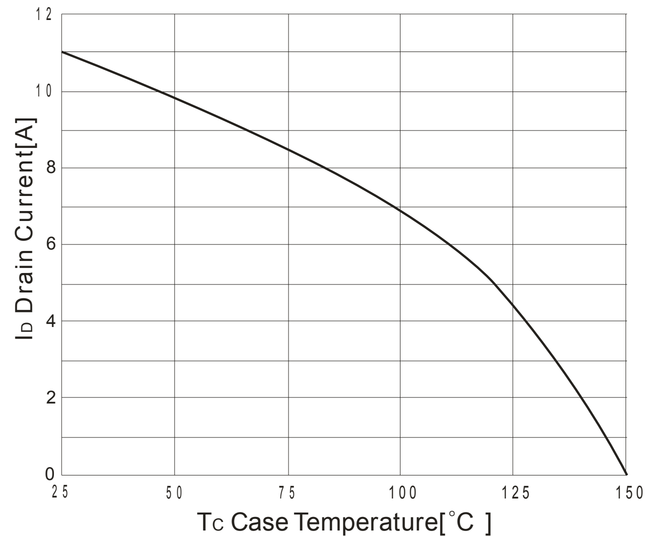

Fig.10 Maximum Drain Current vs Case temperature

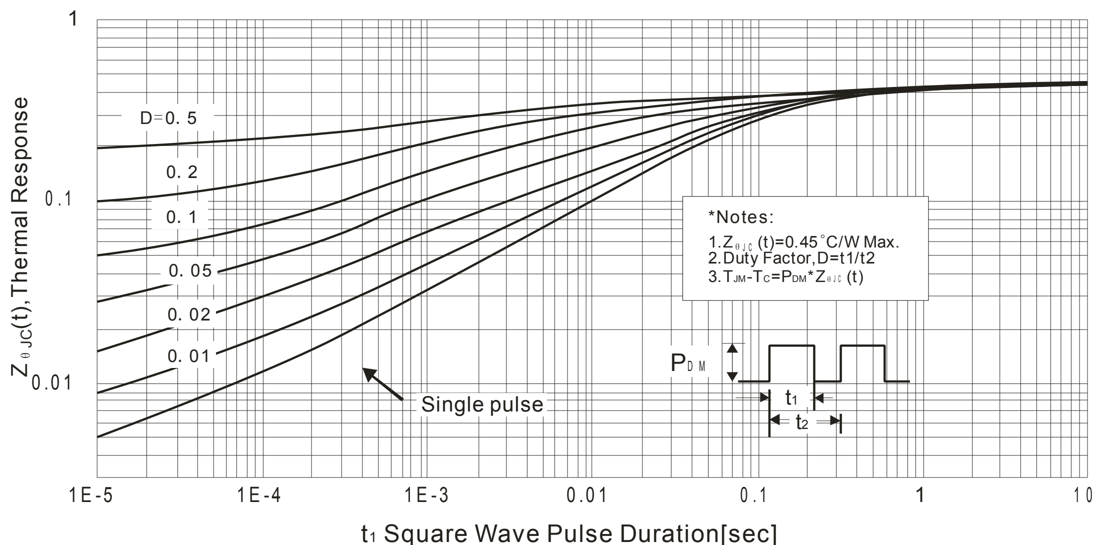

Fig.11 Transient thermal Response Curve

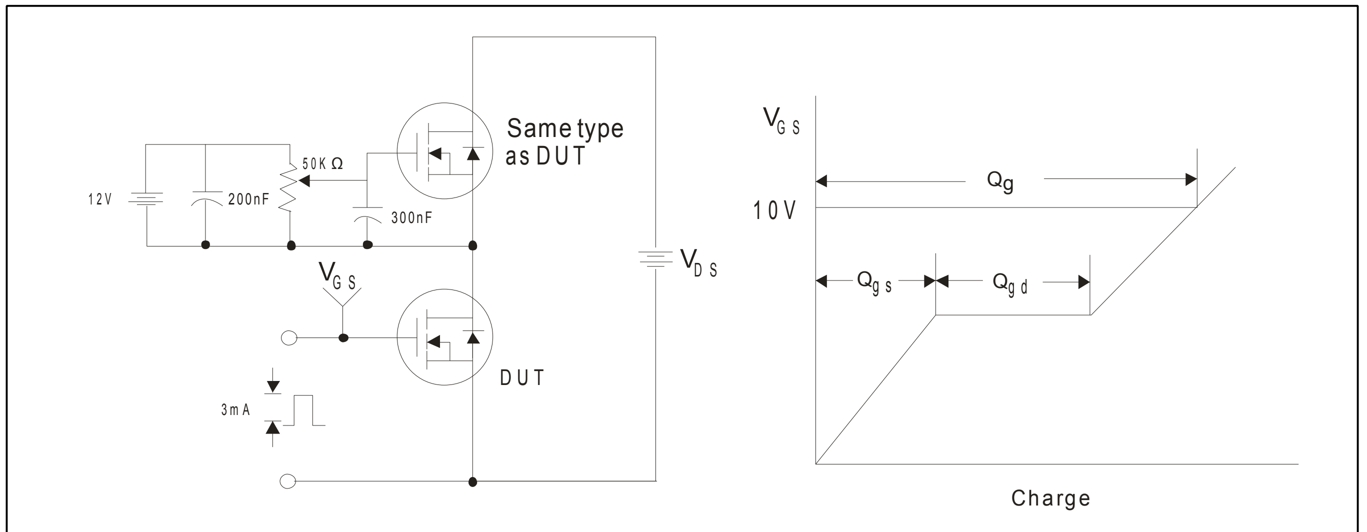

Fig.12 Gate Test circuit & Waveform

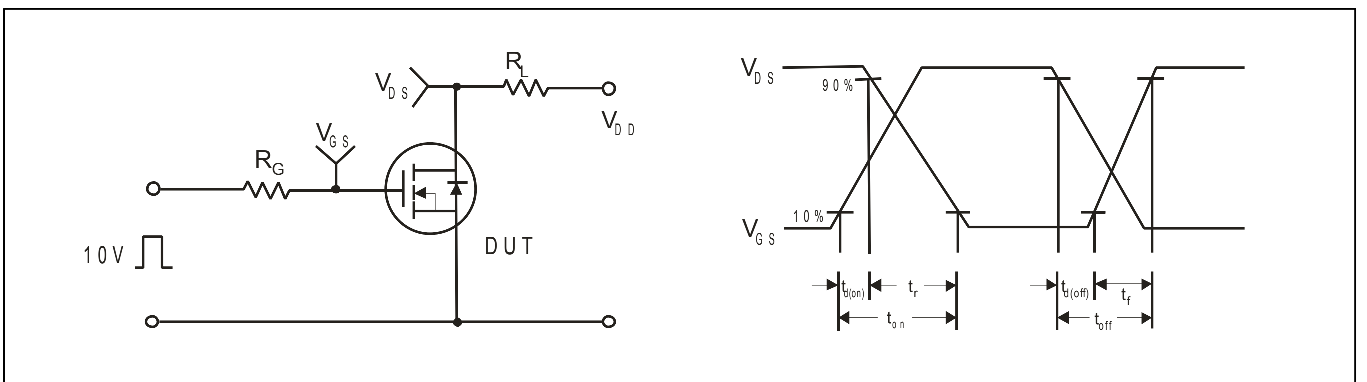

Fig.13 Resistive Switching Test Circuit & Waveform

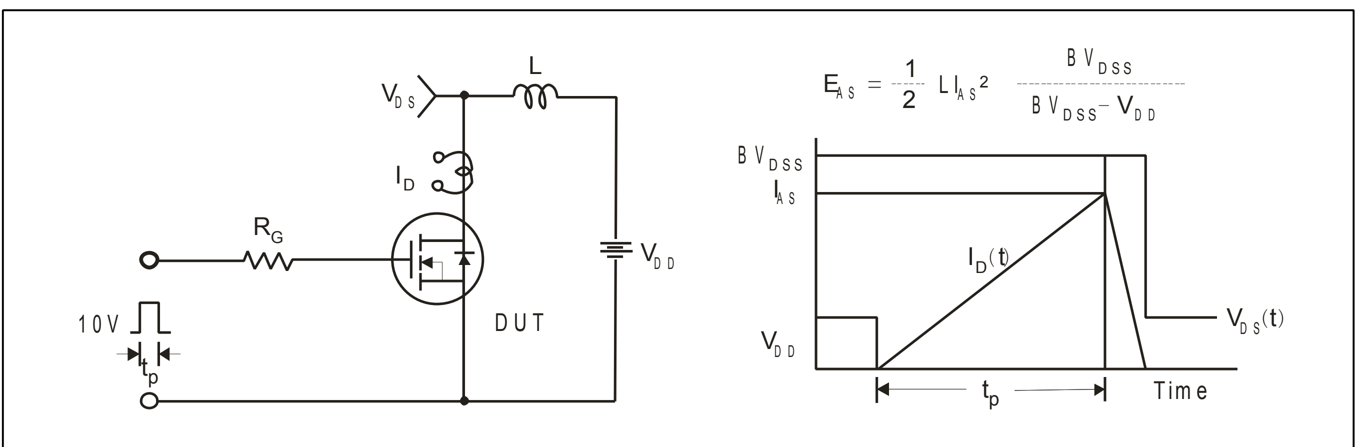

Fig.14 Unclamped Inductive Switching Test Circuit & Waveform

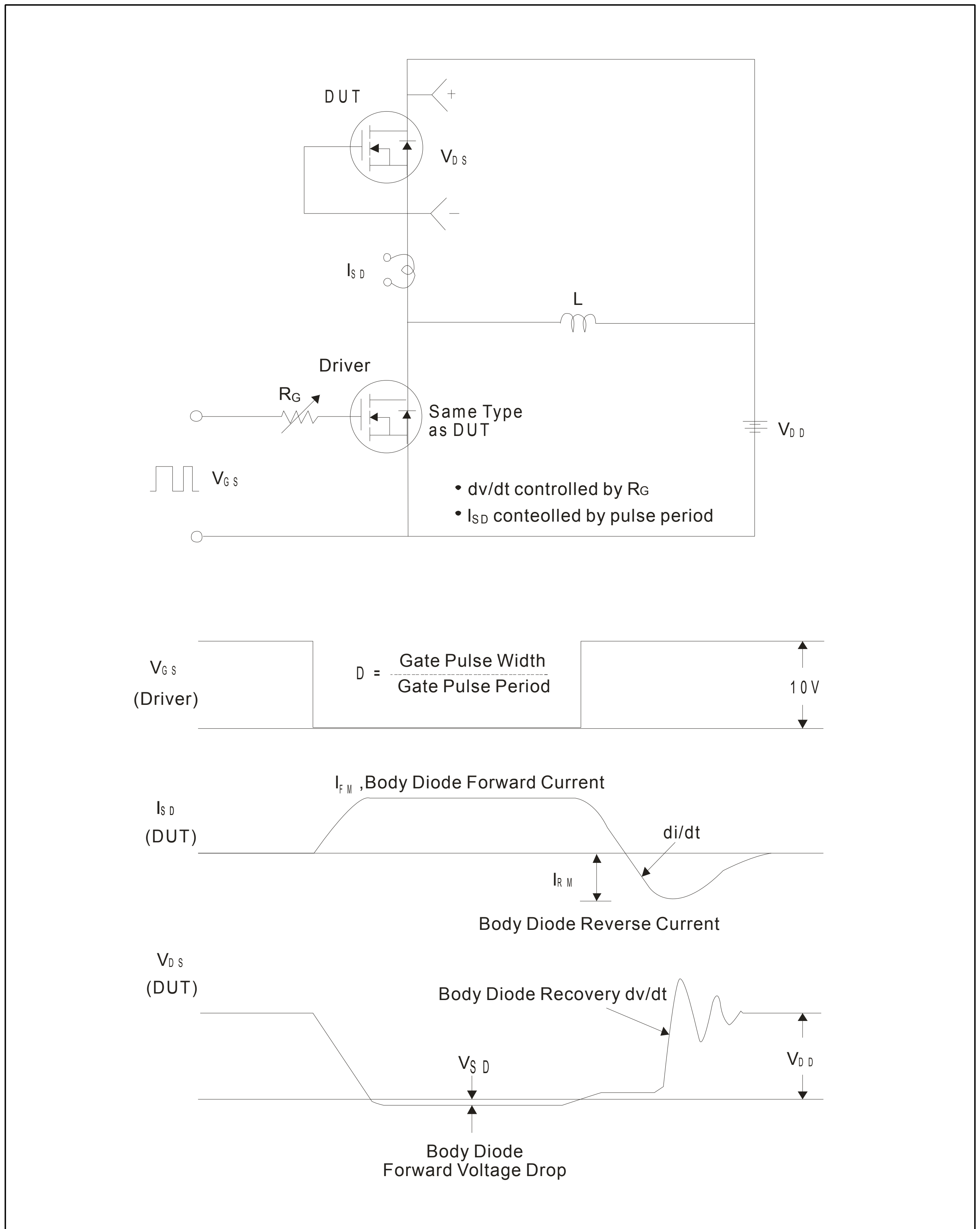

Fig.15 Peak Diode Recovery dv/dt Test Circuit & Waveform

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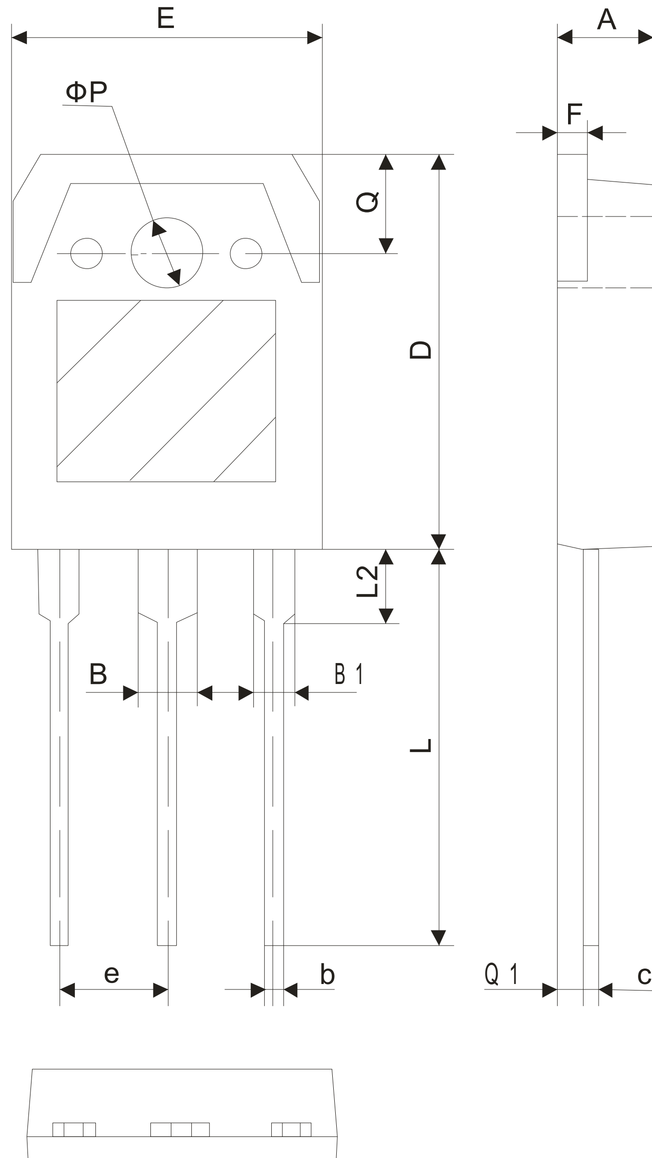
TO-3PB Package Dimension

Unit:mm



符 号 symbol	Min	Max
A	4. 60	5. 00
B	2. 90	3. 20
B1	1. 90	2. 20
b	0. 90	1. 10
c	0. 50	0. 70
D	19. 40	20. 40
E	15. 40	15. 80
e	5. 45（TYP）	
F	1. 40	1. 60
L	19. 50	20. 50
L2	3. 30	3. 70
Q	4. 90	5. 10
Q1	1.30	1. 50
P	3. 10	3. 50

NOTE:

1.We strongly recommend customers check carefully on the trademark when buying our product, if there is any question, please don't be hesitate to contact us.

2.Please do not exceed the absolute maximum ratings of the device when circuit designing.

3.Winsemi Microelectronics Co., Ltd reserved the right to make changes in this specification sheet and is subject to change without prior notice.

CONTACT:

Winsemi Microelectronics Co., Ltd.

ADD:Futian District, ShenZhen Tian An Cyber Tech Plaza two East Wing 1002
Post Code : 518040
Tel : +86-755-8250 6288
FAX : +86-755-8250 6299
Web Site : www.winsemi.com