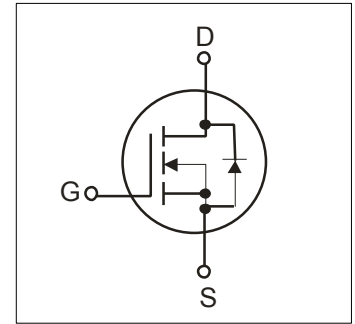


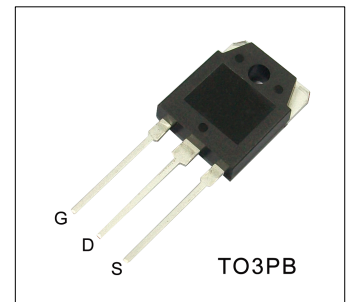
**Features**

- 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°C)	11	A
	Continuous Drain Current(@Tc=100°C)	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°C)	277	W
	Derating Factor above 25°C	2.22	W/°C
$T_J$	Junction Temperature	150	°C
$T_{stg}$	Storage Temperature	-55~150	°C
$T_L$	Channel Temperature	300	°C

**Thermal Characteristics**

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

## Electrical Characteristics(Tc=25°C)

Characteristics		Symbol	Test Condition	Min	Type	Max	Unit
Gate leakage current		I <sub>GSS</sub>	V <sub>GS</sub> =±30V,V <sub>DS</sub> =0V	-	-	±100	nA
Gate-source breakdown voltage		V <sub>(BR)GSS</sub>	I <sub>G</sub> =±10 μA,V <sub>DS</sub> =0V	±30	-	-	V
Drain cut -off current		I <sub>DSS</sub>	V <sub>DS</sub> =900V,V <sub>GS</sub> =0V	-	-	1	μA
			V <sub>DS</sub> =720V,Tc=125°C			10	μA
Drain -source breakdown voltage		V <sub>(BR)DSS</sub>	I <sub>D</sub> =250μA,V <sub>GS</sub> =0V	900	-	-	V
Gate threshold voltage		V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> ,I <sub>D</sub> =250μA	3.0	-	5.0	V
Drain -source ON resistance		R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V,I <sub>D</sub> =5.5A	-	0.90	1.10	Ω
Forward Transconductance		g <sub>fs</sub>	V <sub>DS</sub> =40V,I <sub>D</sub> =5.5A	-	9.5	-	S
Input capacitance		C <sub>iss</sub>	V <sub>DS</sub> =25V,	-	2550	3340	pF
Reverse transfer capacitance		C <sub>rss</sub>	V <sub>GS</sub> =0V,	-	22	30	
Output capacitance		C <sub>oss</sub>	f=1MHz	-	210	270	
Switching time	Turn-on Rise time	t <sub>r</sub>	V <sub>DD</sub> =450V,	-	130	280	ns
	Turn-on Delay time	t <sub>d(on)</sub>	I <sub>D</sub> =11A	-	54	122	
	Turn-on Fall time	t <sub>f</sub>	R <sub>G</sub> =25Ω	-	80	181	
	Turn-off Delay time	t <sub>d(off)</sub>	(Note4,5)	-	125	304	
Total gate charge(gate-source plus gate-drain)		Q <sub>g</sub>	V <sub>DD</sub> =720V, V <sub>GS</sub> =10V,	-	66	80	nC
Gate-source charge		Q <sub>gs</sub>	I <sub>D</sub> =11A	-	13	-	
Gate-drain("miller") Charge		Q <sub>gd</sub>	(Note4,5)	-	35	-	

## Source-Drain Ratings and Characteristics(Ta=25°C)

Characteristics	Symbol	Test Condition	Min	Type	Max	Unit
Continuous drain reverse current	I <sub>DR</sub>	-	-	-	11	A
Pulse drain reverse current	I <sub>DRP</sub>	-	-	-	44	A
Forward voltage(diode)	V <sub>DSF</sub>	I <sub>DR</sub> =11A,V <sub>GS</sub> =0V	-	-	1.4	V
Reverse recovery time	t <sub>rr</sub>	I <sub>DR</sub> =11A,V <sub>GS</sub> =0V,	-	999	-	ns
Reverse recovery charge	Q <sub>rr</sub>	dI <sub>DR</sub> / dt =100 A / μs	-	16.9	-	μC

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

2.L=15mH I<sub>AS</sub>=11A,V<sub>DD</sub>=50V,R<sub>G</sub>=25Ω,Starting T<sub>J</sub>=25°C

3.I<sub>SD</sub>≤11A,di/dt≤200A/us,V<sub>DD</sub><BV<sub>DSS</sub>,Starting T<sub>J</sub>=25°C

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

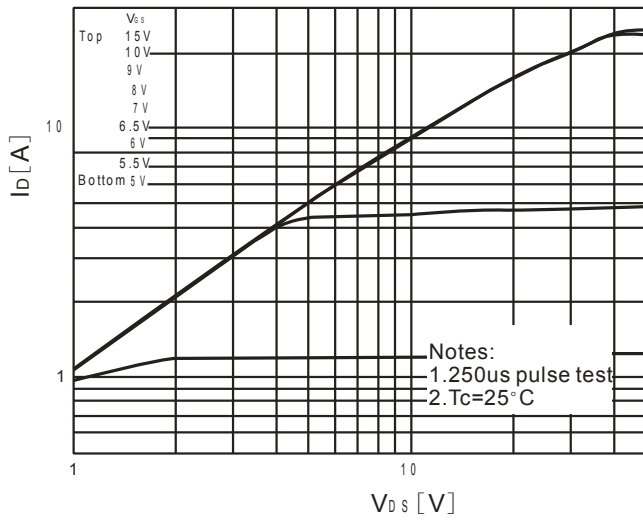


Fig.1 On Region Characteristics

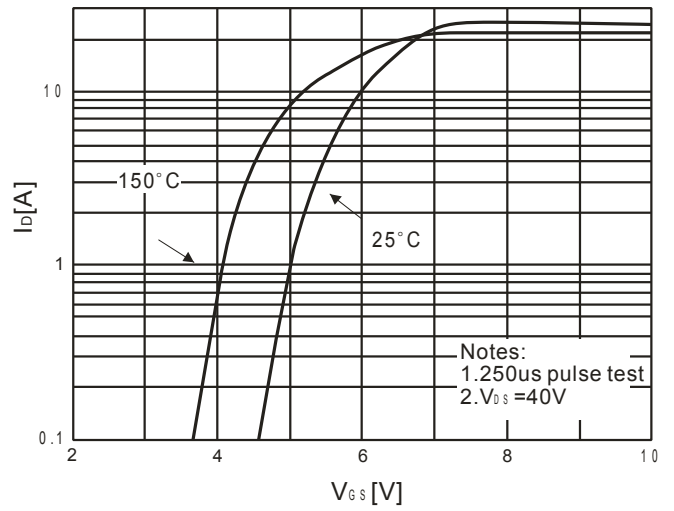


Fig.2 Transfer Characteristics

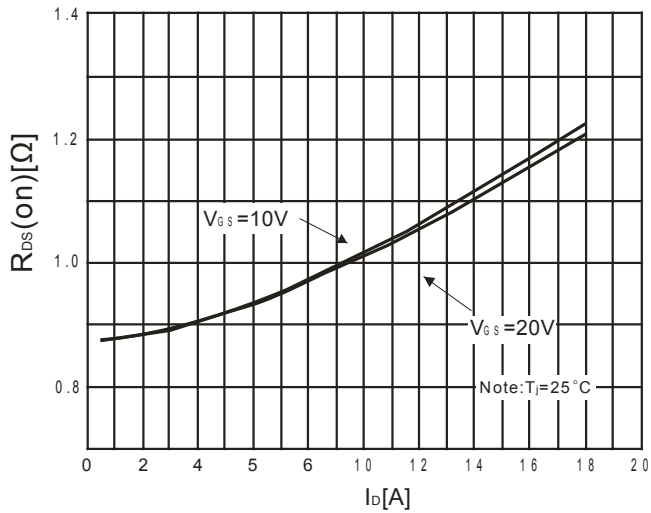


Fig.3 On-Resistance Variation vs Drain current and Gate Voltage

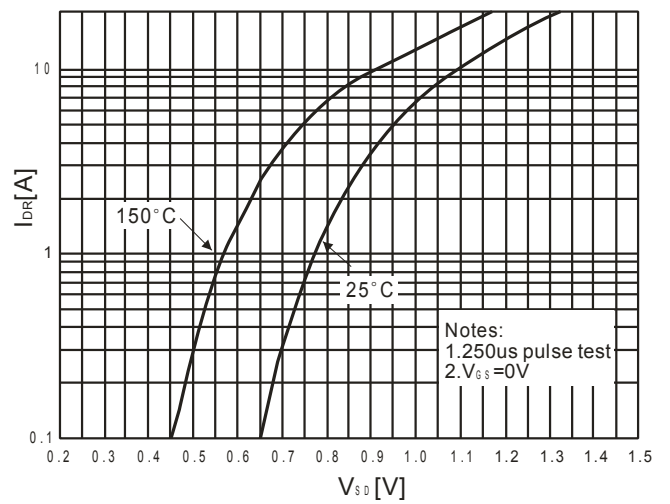


Fig.4 Body Diode Forward voltage Variation with Source Current And Temperature

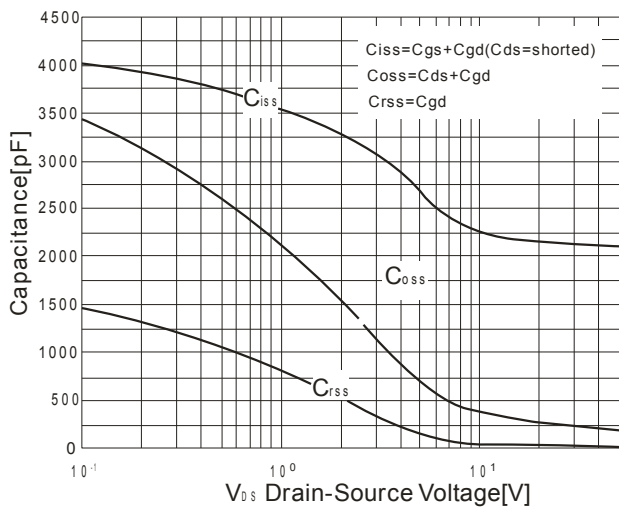


Fig.5 Capacitance Characteristics

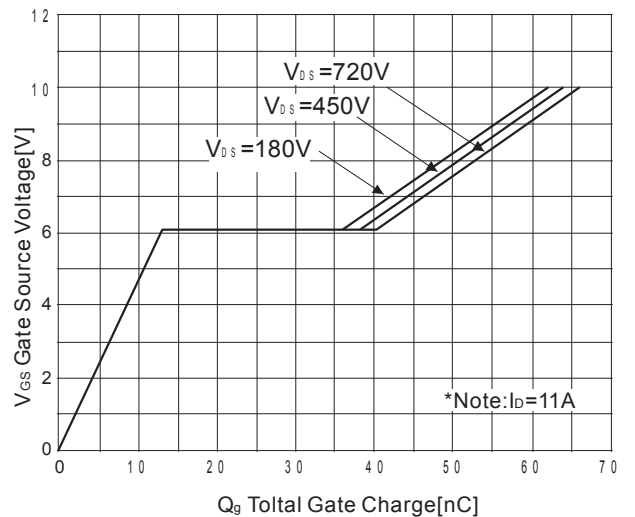


Fig.6 Gate Charge Characteristics

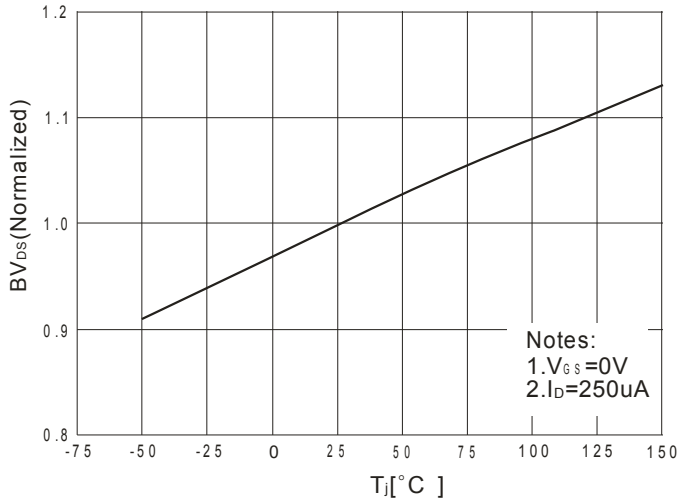


Fig.7 Breakdown Voltage Variation vs. Temperature

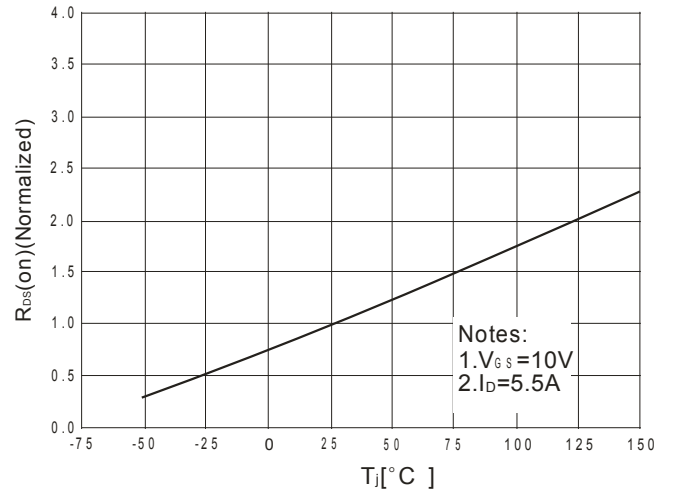


Fig.8 On-Resistance Variation vs. Temperature

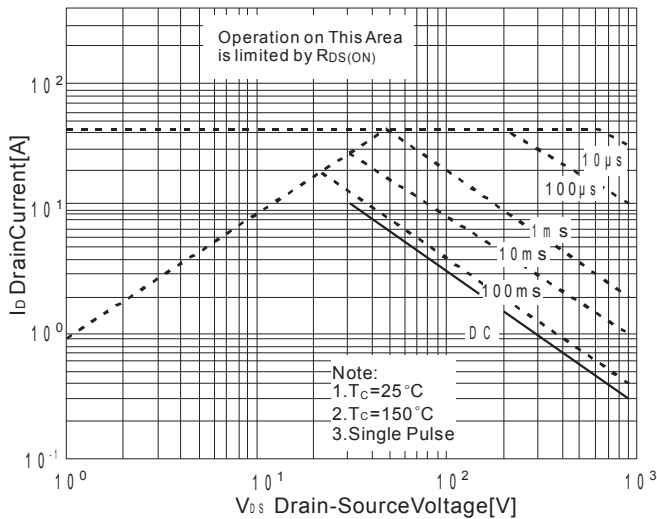


Fig.9 Maximum Safe Operation Area

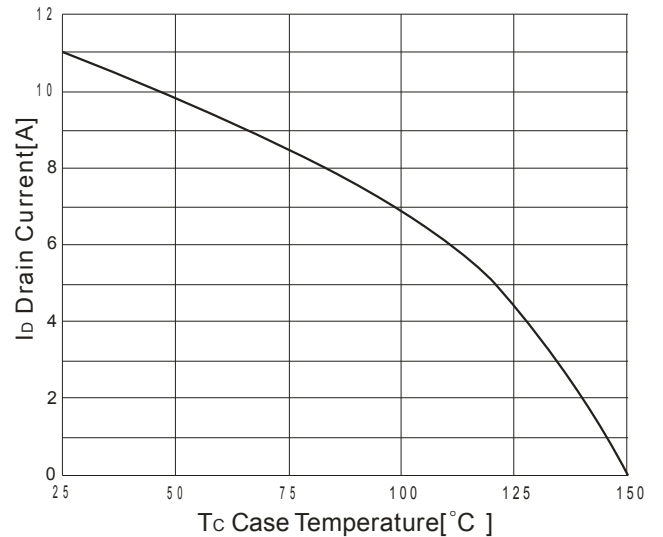


Fig.10 Maximum Drain Current vs Case temperature

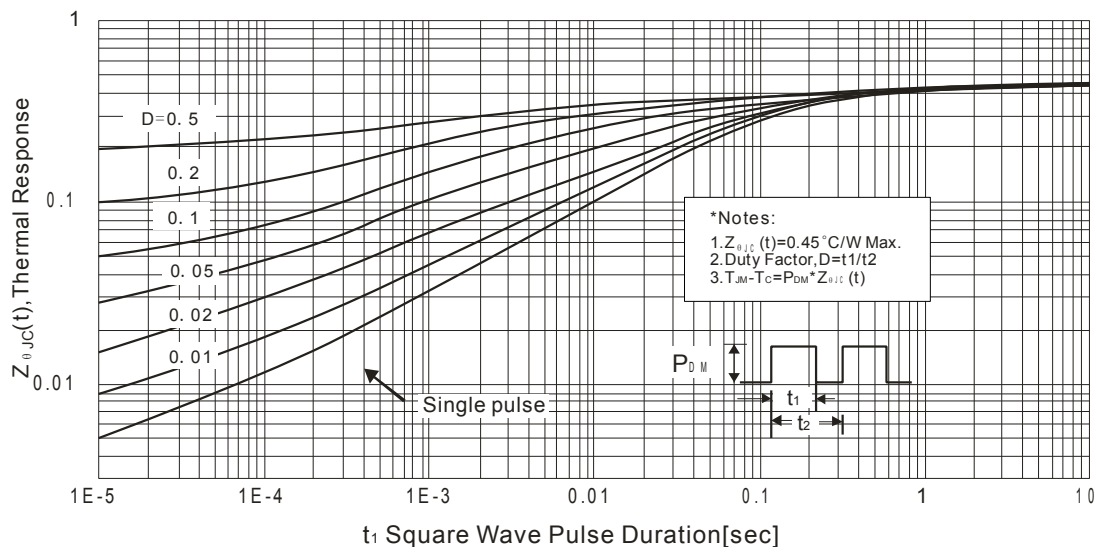


Fig.11 Transient thermal Response Curve

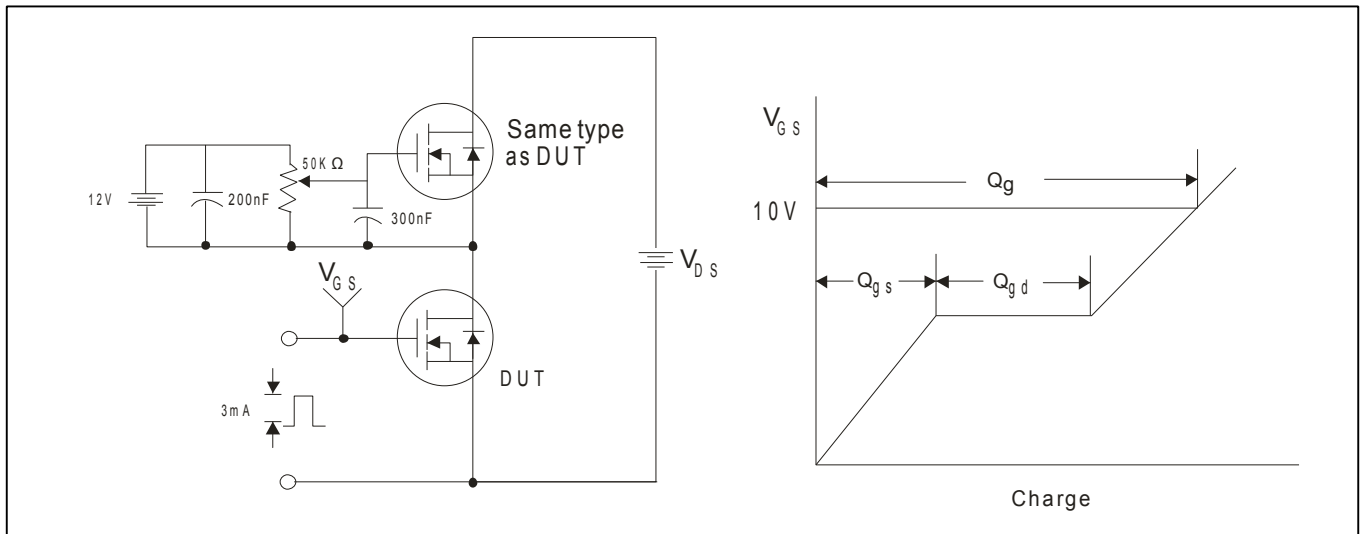


Fig.12 Gate Test circuit & Waveform

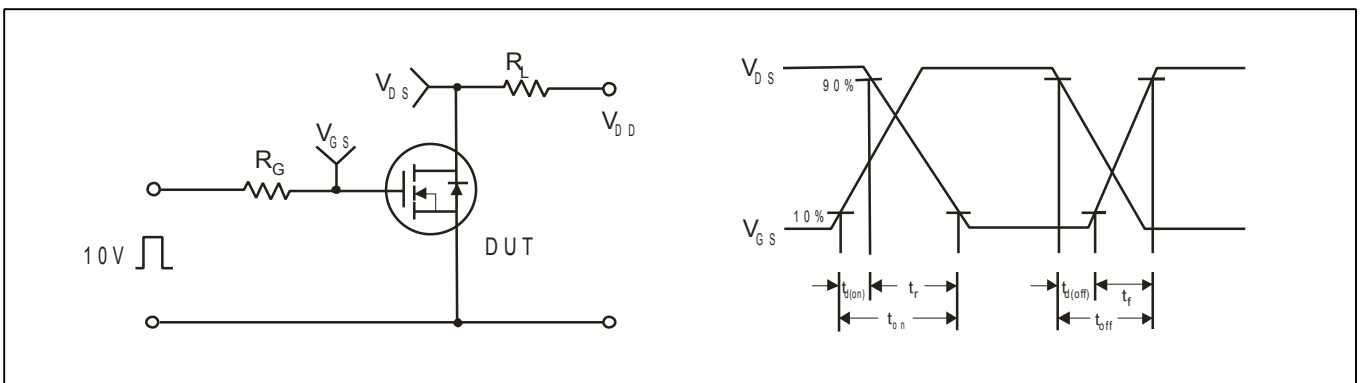


Fig.13 Resistive Switching Test Circuit & Waveform

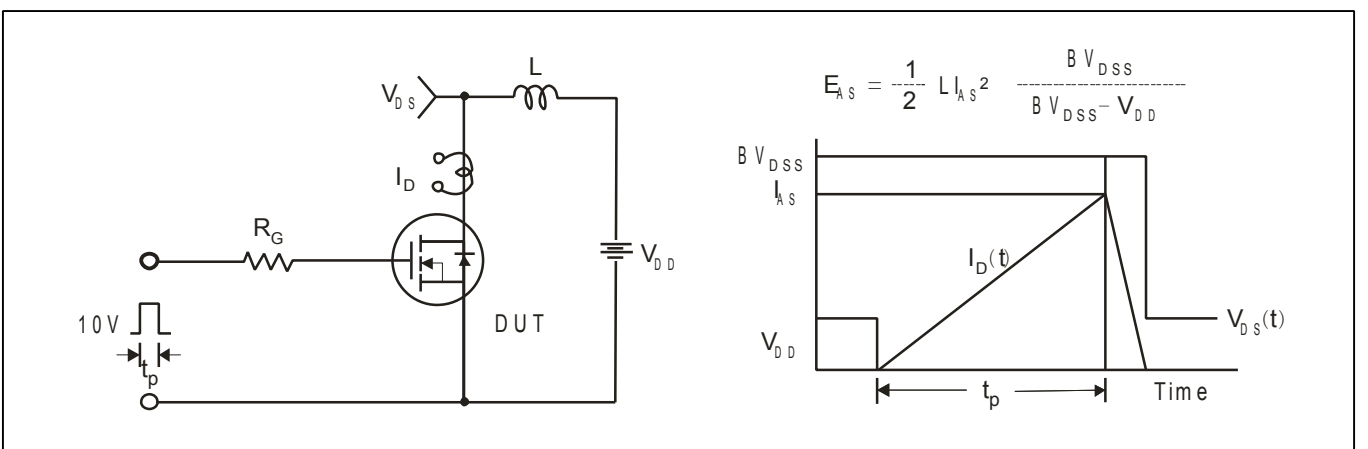


Fig.14 Unclamped Inductive Switching Test Circuit & Waveform

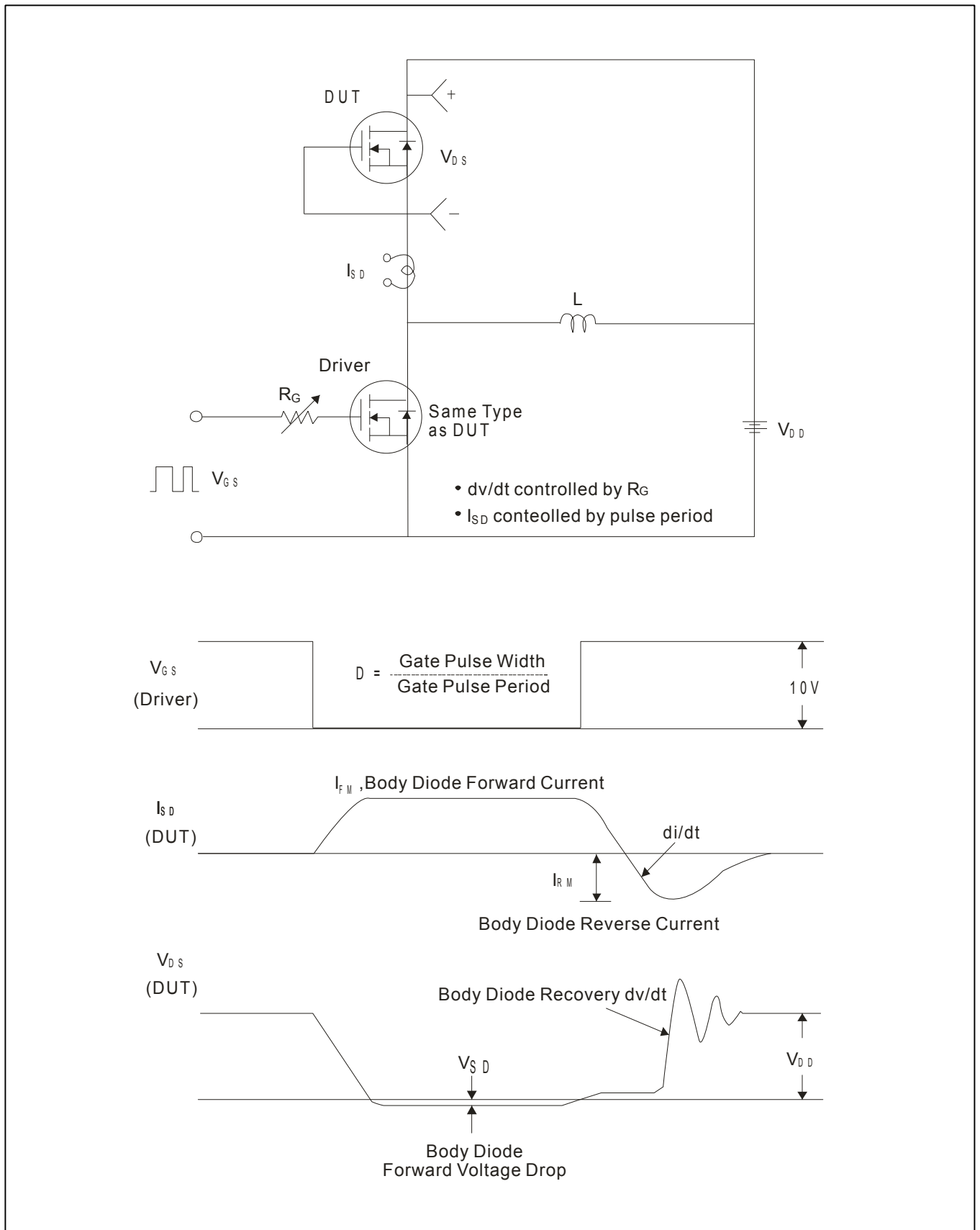
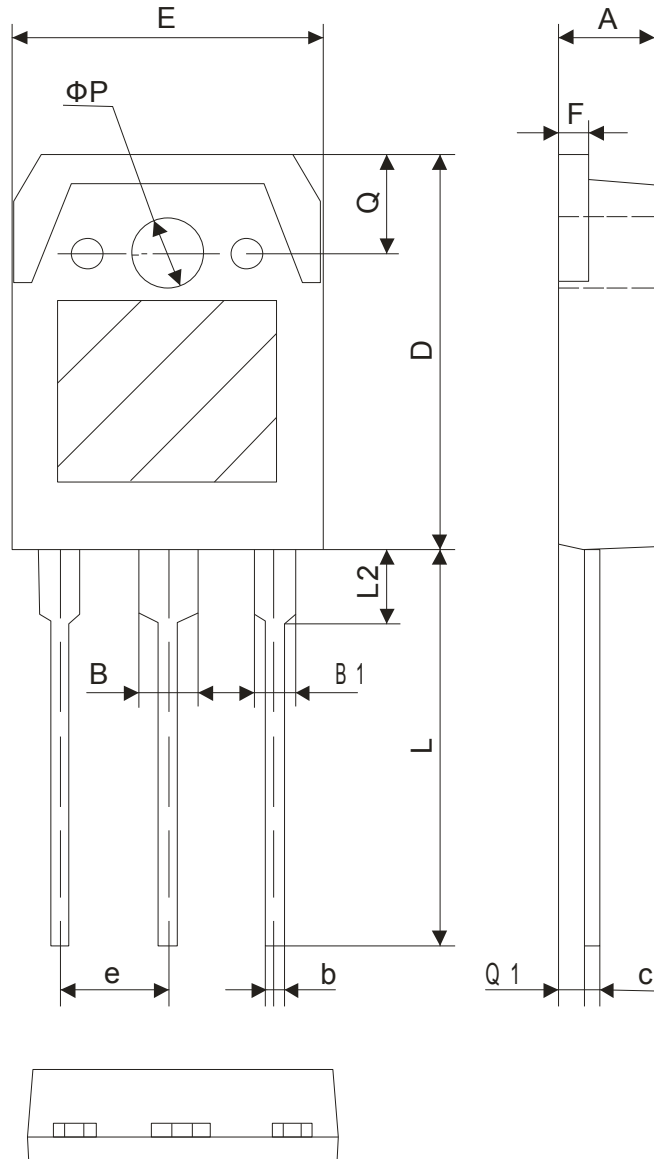


Fig.15 Peak Diode Recovery  $dv/dt$  Test Circuit & Waveform

TO-3PB Package Dimension

Unit:mm



符号 symbol	Min	Max
A	4.60	5.00
B	2.90	3.20
B 1	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
L 2	3.30	3.70
Q	4.90	5.10
Q 1	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.

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