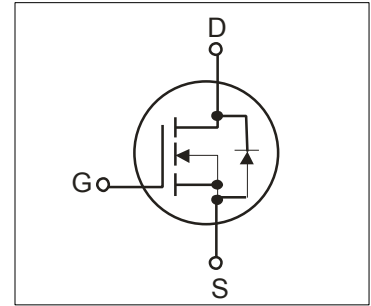


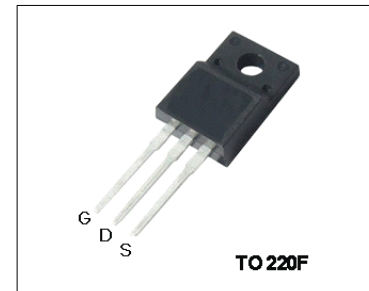
## Features

- 7.5A,600V, $R_{DS(on)}$ (Max1.2 $\Omega$ )@ $V_{GS}=10V$
- Ultra-low Gate charge(Typical 25nC)
- Fast Switching Capability
- 100%Avalanche Tested
- Isolation Voltage ( $V_{ISO}=4000V$  AC)
- Maximum Junction Temperature Range(150 $^{\circ}C$ )



## General Description

This Power MOSFET is produced using Winsemi's advanced planar stripe, VDMOS technology. This latest technology has been especially designed to minimize on-state resistance, have a high rugged avalanche characteristics. This device is specially well suited for half bridge and full bridge resonant topology line a electronic lamp ballast, high efficiency switched mode power supplies, active power factor correction.



## Absolute Maximum Ratings

Symbol	Parameter	Value	Units
$V_{DSS}$	Drain Source Voltage	600	V
$I_D$	Continuous Drain Current(@ $T_c=25^{\circ}C$ )	7.5*	A
	Continuous Drain Current(@ $T_c=100^{\circ}C$ )	4.3*	A
$I_{DM}$	Drain Current Pulsed (Note1)	30*	A
$V_{GS}$	Gate to Source Voltage	$\pm 30$	V
$E_{AS}$	Single Pulsed Avalanche Energy (Note2)	590	mJ
$I_{AR}$	Avalanche Current (Note1)	7	mJ
$E_{AR}$	Repetitive Avalanche Energy (Note1)	14	mJ
dv/dt	Peak Diode Recovery dv /dt (Note3)	4.5	V/ ns
$P_D$	Total Power Dissipation(@ $T_c=25^{\circ}C$ )	48	W
	Derating Factor above 25 $^{\circ}C$	0.38	W/ $^{\circ}C$
$T_J, T_{stg}$	Junction and Storage Temperature	-55~150	$^{\circ}C$
$T_L$	Channel Temperature	300	$^{\circ}C$

\*Drain current limited by junction temperature

## Thermal Characteristics

Symbol	Parameter	Value			Units
		Min	Typ	Max	
$R_{QJC}$	Thermal Resistance , Junction -to -Case	-	-	2.6	$^{\circ}C/W$
$R_{QJA}$	Thermal Resistance , Junction-to -Ambient	-	-	62.5	$^{\circ}C/W$

## 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> =600V,V <sub>GS</sub> =0V	-	-	10	μA	
		V <sub>DS</sub> =480V,Tc=125°C	-	-	100	μA	
Drain -source breakdown voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =250 μA,V <sub>GS</sub> =0V	600	-	-	V	
Breakdown Voltage temperature Coefficient	ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	I <sub>D</sub> =250 μA,Referenced to 25°C	-	0.65	-	V/°C	
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> ,I <sub>D</sub> =250 μA	2	-	4	V	
Drain -source ON resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V,I <sub>D</sub> =3.75A	-	1.0	1.2	Ω	
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =40V,I <sub>D</sub> =3.75A	-	6.2	-	S	
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V,	-	1120	1350	pF	
Reverse transfer capacitance	C <sub>rss</sub>	V <sub>GS</sub> =0V,	-	23	30		
Output capacitance	C <sub>oss</sub>	f=1MHz	-	115	150		
Switching time	Turn-on Rise time	tr	V <sub>DD</sub> =300V,	-	80	170	ns
	Turn-on delay time	td(on)	I <sub>D</sub> =7.5A	-	30	70	
	Turn-off Fall time	tf	R <sub>G</sub> =25Ω	-	60	110	
	Turn-off delay time	td(off)	(Note4,5)	-	125	260	
Total gate charge(gate-source plus gate-drain)	Q <sub>g</sub>	V <sub>DD</sub> =480V, V <sub>GS</sub> =10V,	-	25	35	nC	
Gate-source charge	Q <sub>gs</sub>	I <sub>D</sub> =7.5A	-	6	-		
Gate-drain("miller") Charge	Q <sub>gd</sub>	(Note4,5)	-	10	-		

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

Characteristics	Symbol	Test Condition	Min	Type	Max	Unit
Continuous drain reverse current	I <sub>DR</sub>	-	-	-	7.5	A
Pulse drain reverse current	I <sub>DRP</sub>	-	-	-	30	A
Forward voltage(diode)	V <sub>DSF</sub>	I <sub>DR</sub> =7.5A,V <sub>GS</sub> =0V	-	-	1.4	V
Reverse recovery time	trr	I <sub>DR</sub> =7.5A,V <sub>GS</sub> =0V,	-	315	-	ns
Reverse recovery charge	Q <sub>rr</sub>	di <sub>DR</sub> / dt =100 A / μs	-	2.6	-	μC

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

2.L=19.5mH I<sub>AS</sub>=7.5A,V<sub>DD</sub>=50V,R<sub>G</sub>=25Ω,Starting T<sub>J</sub>=25°C

3.I<sub>SD</sub>≤7.5A,di/dt≤300A/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

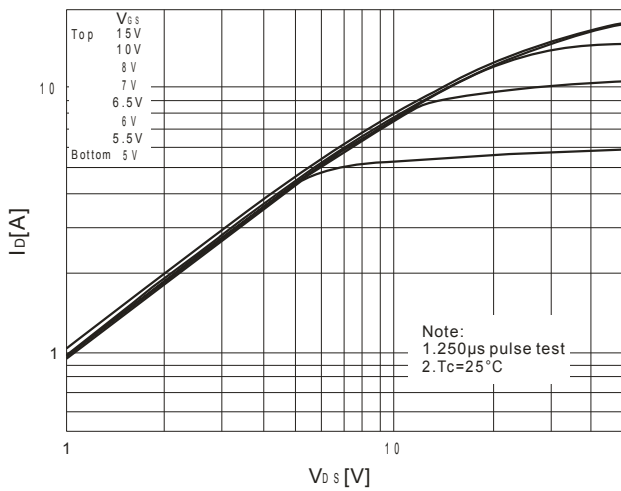


Fig.1 On Region Characteristics

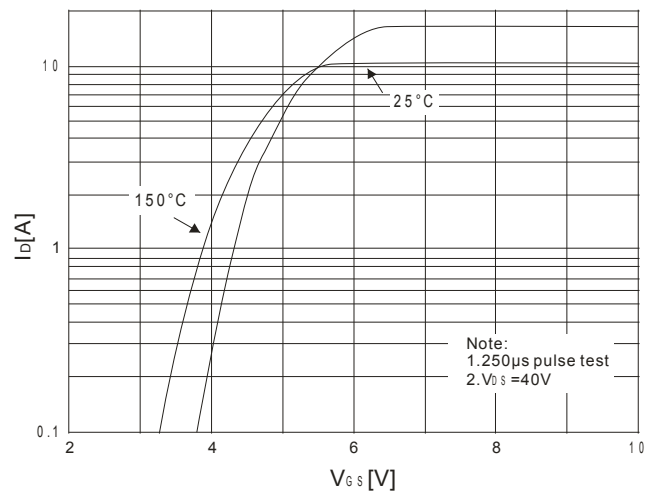


Fig.2 Transfer Characteristics

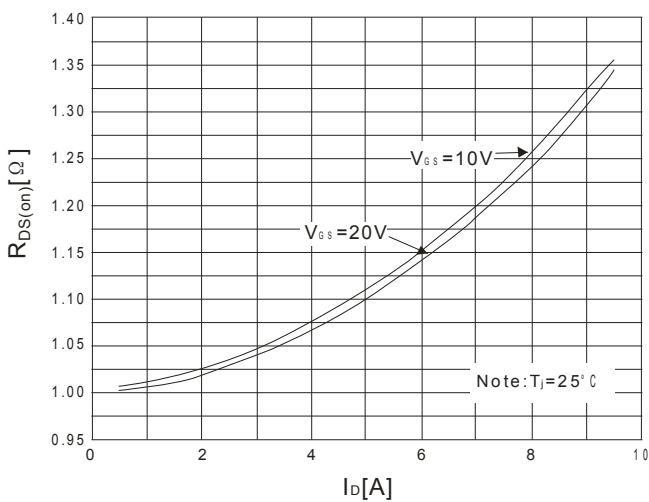


Fig.3 On-Resistance Variation vs Drain Current and Gate Voltage

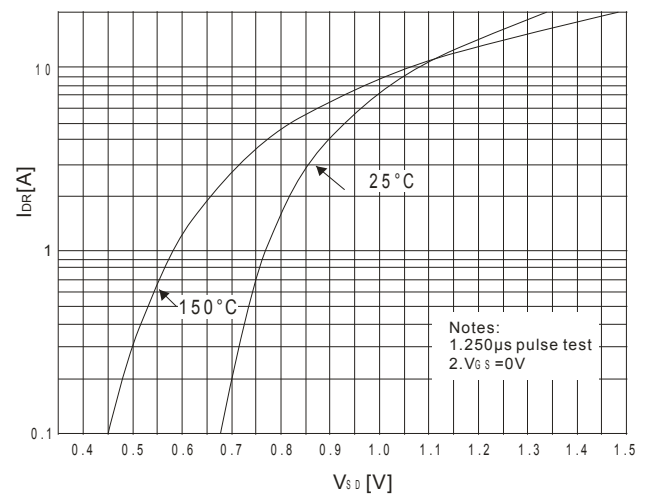


Fig.4 Body Diode Forward Voltage Variation with Source Current and Temperature

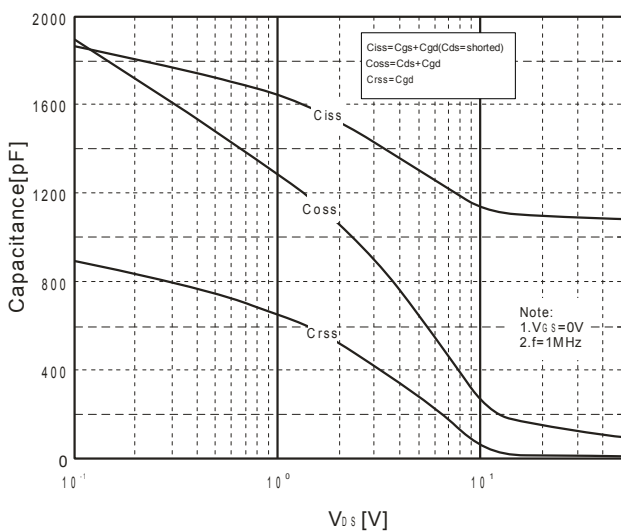


Fig.5 Capacitance Characteristics

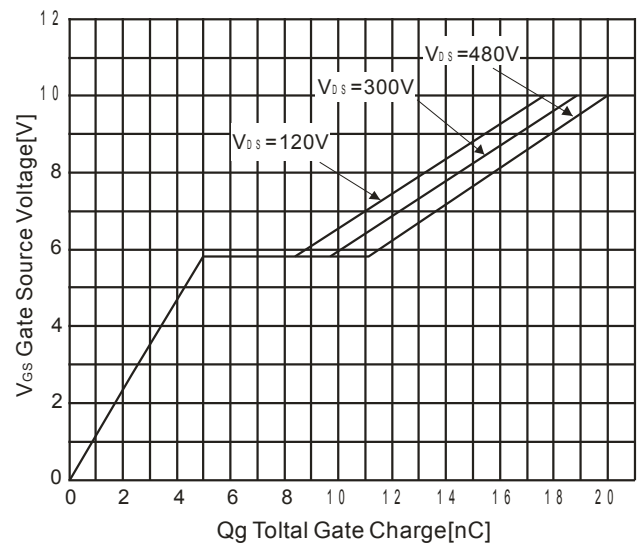


Fig.6 Gate Charge Characteristics

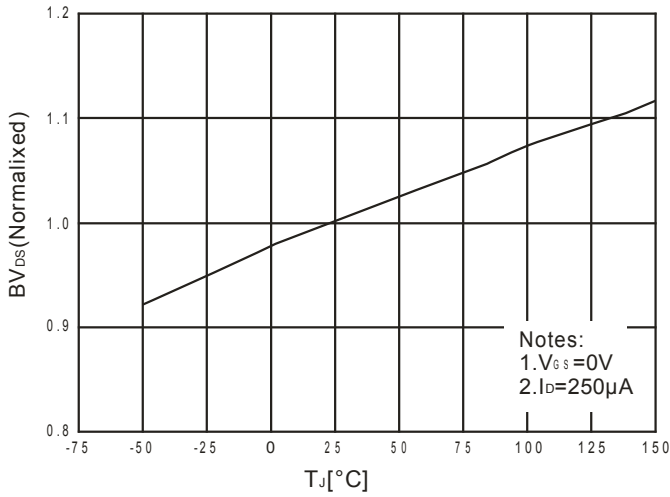


Fig.7 Breakdown Voltage Variation vs. Temperature

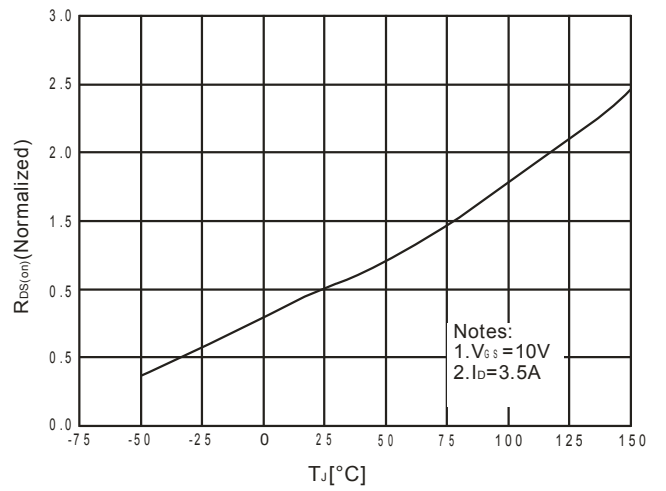


Fig.8 On-Resistance Variation vs. Temperature

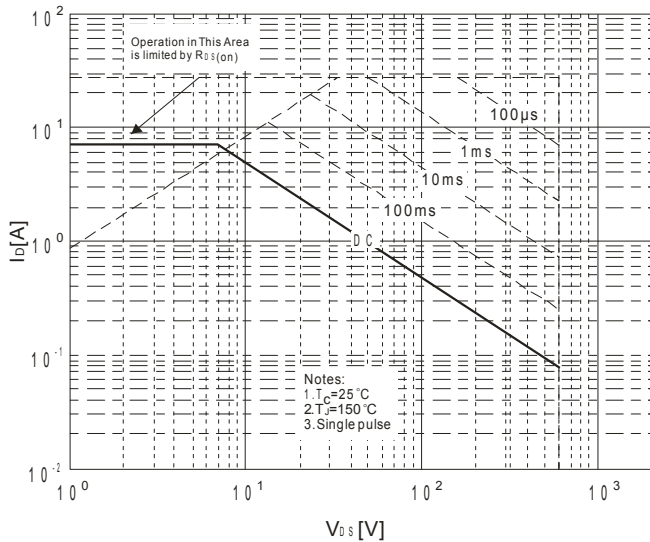


Fig.9 Maximum Safe Operation Area

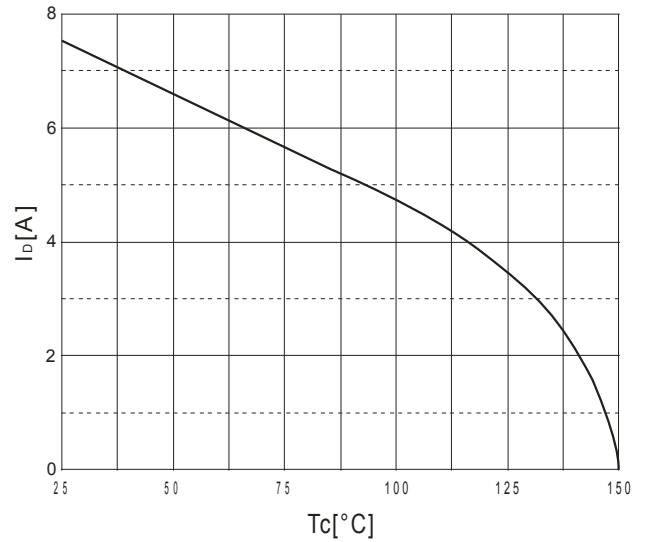


Fig.10 Maximum Drain Current vs Case Temperature

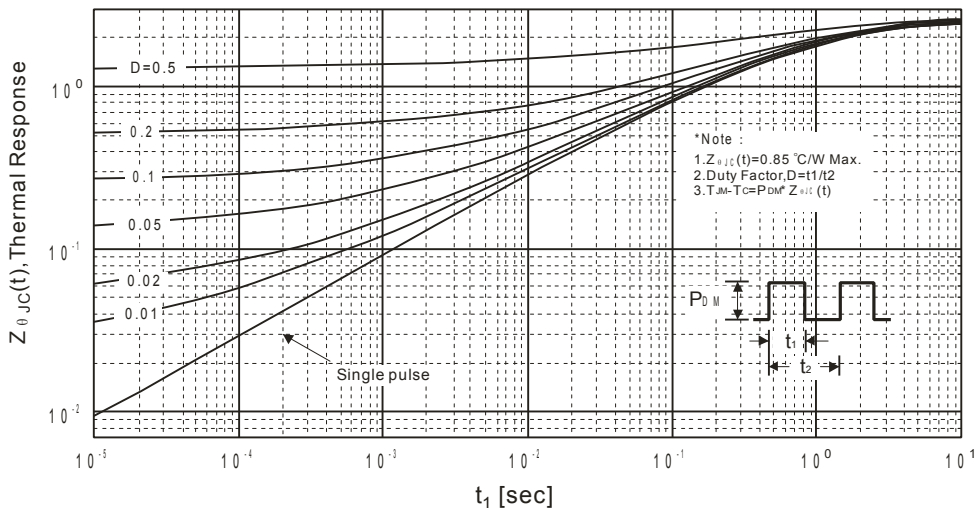


Fig.11 Transient Thermal Response Curve

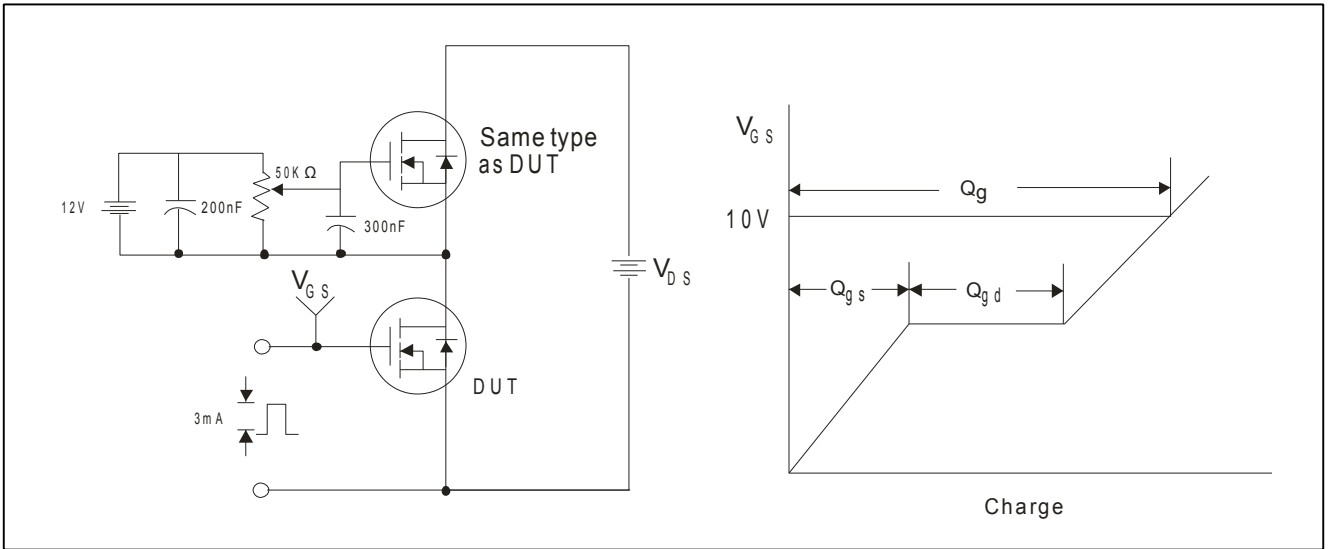


Fig.12 Gate Test Circuit & Waveform

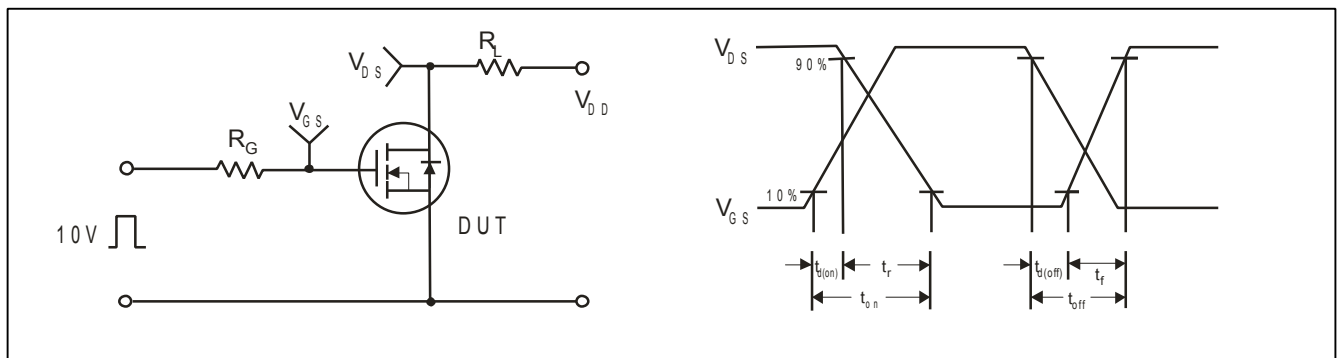


Fig.13 Resistive Switching Test Circuit & Waveform

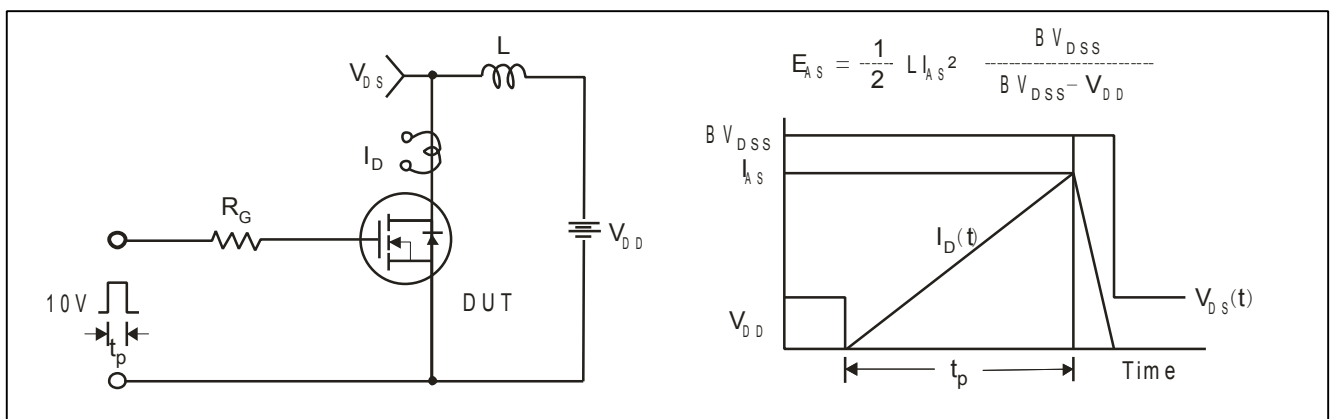


Fig.14 Unclamped Inductive Switching Test Circuit & Waveform

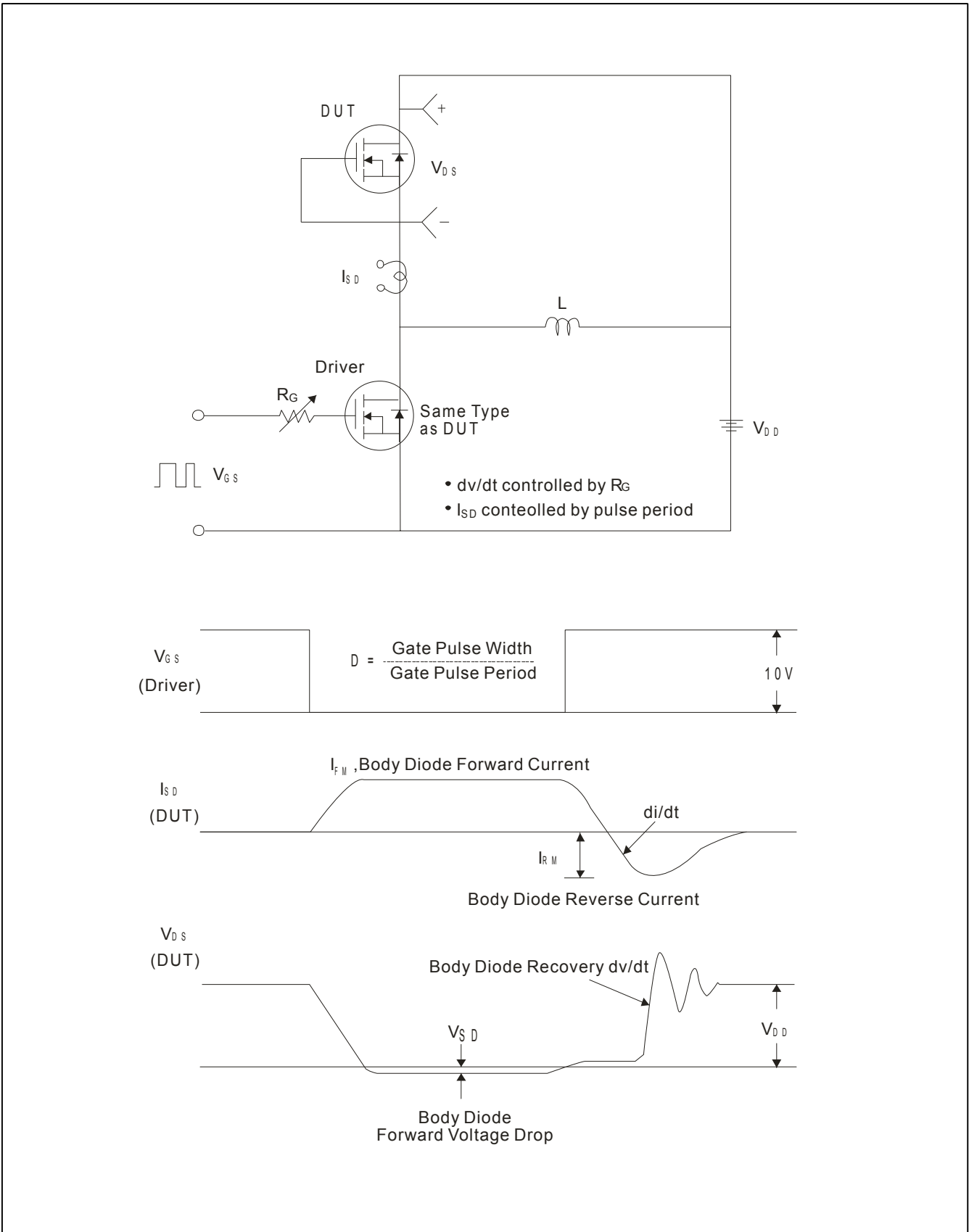
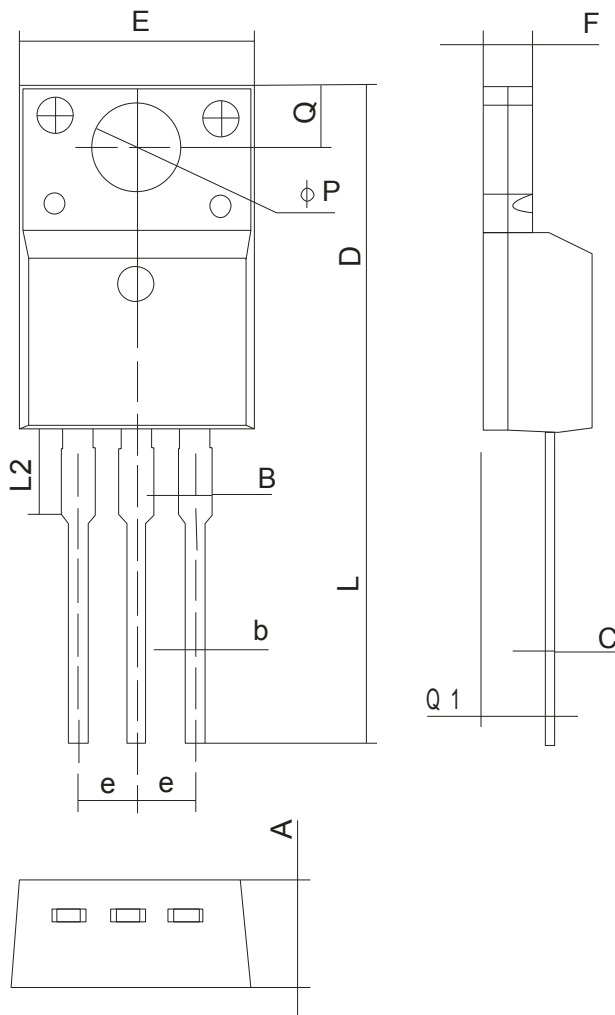


Fig.15 Peak Diode Recovery dv/dt Test Circuit & Waveform

Unit:mm



符号 Symbol	MIN	MAX
A	4.5	4.9
B	-	1.47
b	0.7	0.9
c	0.45	0.6
D	15.67	16.07
E	9.96	10.36
e	2.54TYPE	
F	2.34	2.74
L	12.58	13.38
L2	3.13	3.33
$\Phi P$	3.08	3.28
Q	3.2	3.4
Q1	2.56	2.96

**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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