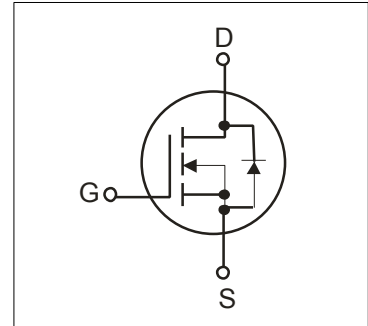


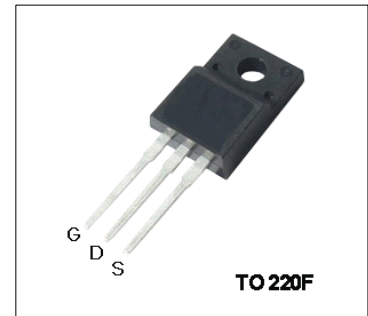
Features

- 10A,600V, $R_{DS(on)}$ (Max 0.75 Ω)@ $V_{GS}=10V$
- Ultra-low Gate Charge(Typical 34nC)
- Fast Switching Capability
- 100%Avalanche Tested
- Isolation Voltage($V_{ISO}=4000V$ AC)
- Improved dv/dt capability



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 devices is specially well suited for high efficiency switch mode power supplies , power factor correction, UPS and a electronic lamp ballast base on half bridge.



Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{DSS}	Drain Source Voltage	600	V
I_D	Continuous Drain Current(@ $T_c=25^{\circ}C$)	10*	A
	Continuous Drain Current(@ $T_c=100^{\circ}C$)	6.0*	A
I_{DM}	Drain Current Pulsed (Note1)	40*	A
V_{GS}	Gate to Source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy (Note2)	713	mJ
E_{AR}	Repetitive Avalanche Energy (Note1)	18	mJ
dv/dt	Peak Diode Recovery dv /dt (Note3)	4.5	V/ ns
P_D	Total Power Dissipation(@ $T_c=25^{\circ}C$)	50	W
	Derating Factor above 25 $^{\circ}C$	0.4	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 maximum junction temperature

Thermal Characteristics

Symbol	Parameter	Value			Units
		Min	Typ	Max	
R_{QJC}	Thermal Resistance , Junction -to -Case	-	-	2.5	$^{\circ}C/W$
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 _{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
Breakdown voltage Temperature Coefficient		ΔBV _{DSS} /ΔT _J	I _D =250μA, Referenced to 25 °C	-	0.68	-	V/°C
Drain cut -off current		I _{DSS}	V _{DS} =600V, V _{GS} =0V	-	-	1	μA
			V _{DS} =480V, T _C =125 °C			10	
Drain -source breakdown voltage		V _{(BR)DSS}	I _D =250 μA, V _{GS} =0V	600	-	-	V
Gate threshold voltage		V _{GS(th)}	V _{DS} = V _{GS} , I _D =250 μA	3	-	4.5	V
Drain -source ON resistance		R _{DS(ON)}	V _{GS} =10V, I _D =5A	-	0.66	0.75	Ω
Forward Transconductance		g _{fs}	V _{DS} =50V, I _D =5A	-	8.2	-	S
Input capacitance		C _{iss}	V _{DS} =25V,	-	1610	2065	pF
Reverse transfer capacitance		C _{rss}	V _{GS} =0V,	-	19	25	
Output capacitance		C _{oss}	f=1MHz	-	156	210	
Switching time	Turn-On rise time	t _r	V _{DD} =300V,	-	109	150	ns
	Turn-On delay time	t _{d(on)}	I _D =10A,	-	68	91	
	Turn-Off Fall time	t _f	R _G =25Ω,	-	85	165	
	Turn-Off delay time	t _{d(off)}	(Note4,5)	-	214	300	
Total gate charge(gate-source plus gate-drain)		Q _g	V _{DD} =480V, V _{GS} =10V,	-	34	45	nC
Gate-source charge		Q _{gs}	I _D =10A	-	6.9	-	
Gate-drain("miller") Charge		Q _{gd}	(Note4,5)	-	12	-	

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

Characteristics	Symbol	Test Condition	Min	Type	Max	Unit
Continuous drain reverse current	I _{DR}	-	-	-	10	A
Pulse drain reverse current	I _{DRP}	-	-	-	38	A
Forward voltage(diode)	V _{DSF}	I _{DR} =10A, V _{GS} =0V	-	1.05	1.4	V
Reverse recovery time	t _{rr}	I _{DR} =10A, V _{GS} =0V,	-	425	-	ns
Reverse recovery charge	Q _{rr}	dI _{DR} / dt =100 A / μs	-	4.31	-	μC

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

2.L=14.5mH I_{AS}=10A, V_{DD}=50V, R_G=25Ω ,Starting T_J=25 °C

3.I_{SD}≤10A, di/dt≤300A/us, V_{DD}<BV_{DSS}, STARTING T_J=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

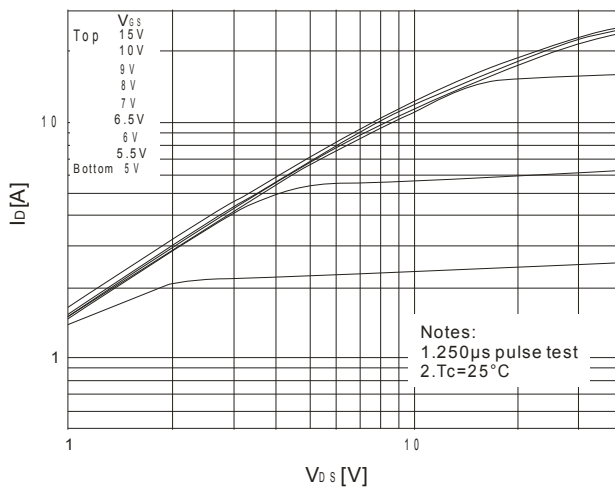


Fig.1 On-Region Characteristics

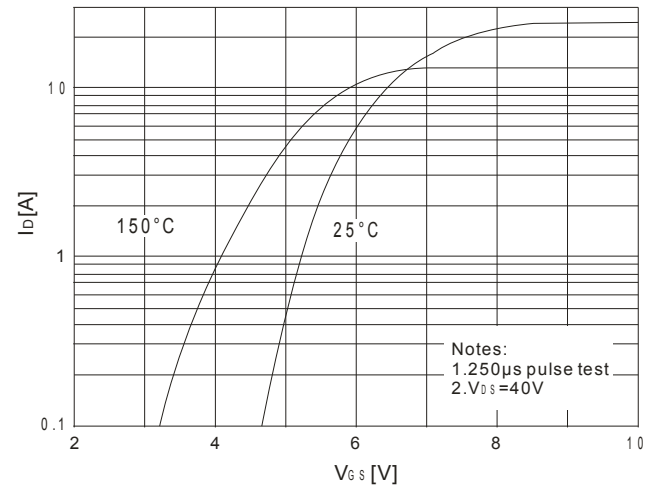


Fig.2 Transfer characteristics

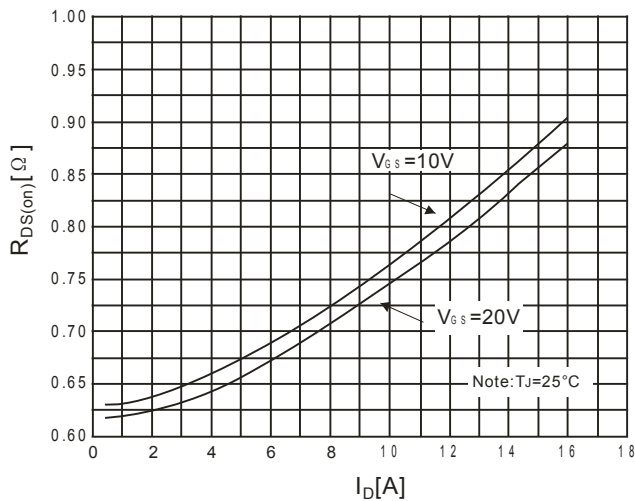


Fig.3 On-Resistance variation vs Drain Current and Gate Voltage

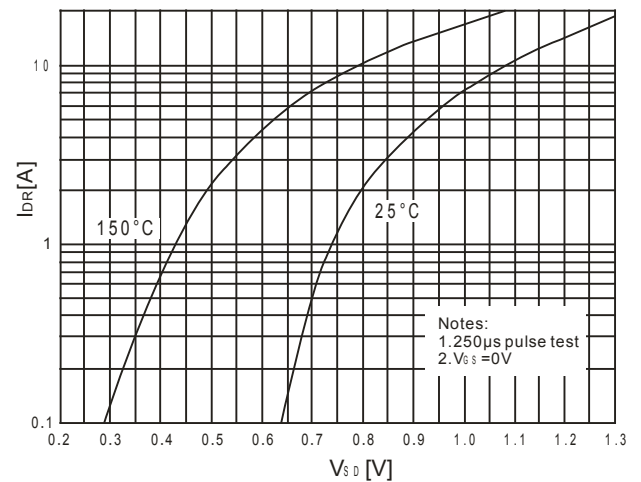


Fig.4 Body Diode Forward Voltage Variation with Source Current and Temperature

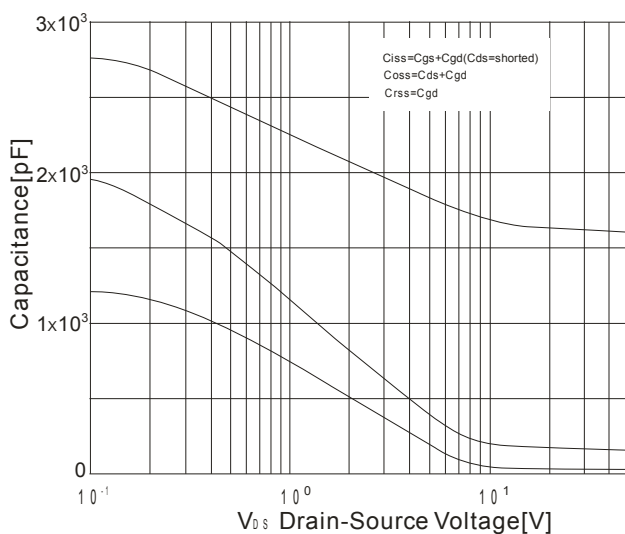


Fig.5 Capacitance Characteristics

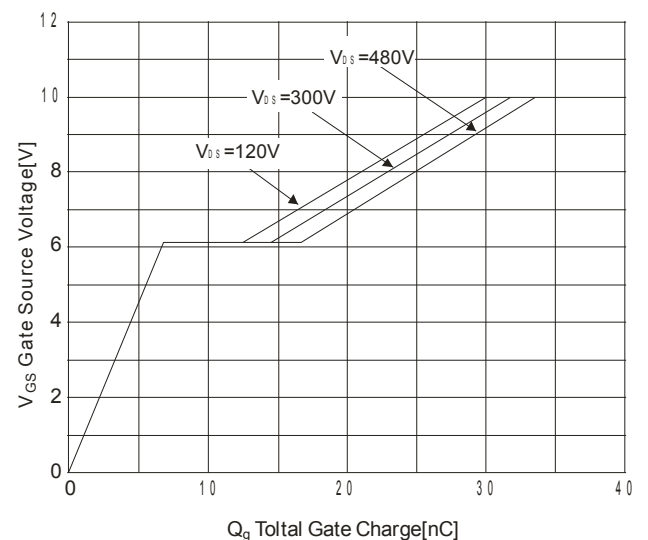


Fig.6 Gate Charge Characteristics

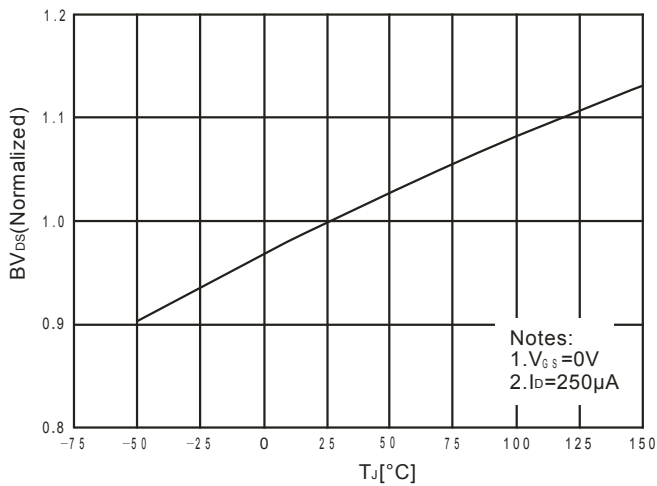


Fig.7 Breakdown Voltage Variation vs. Temperature

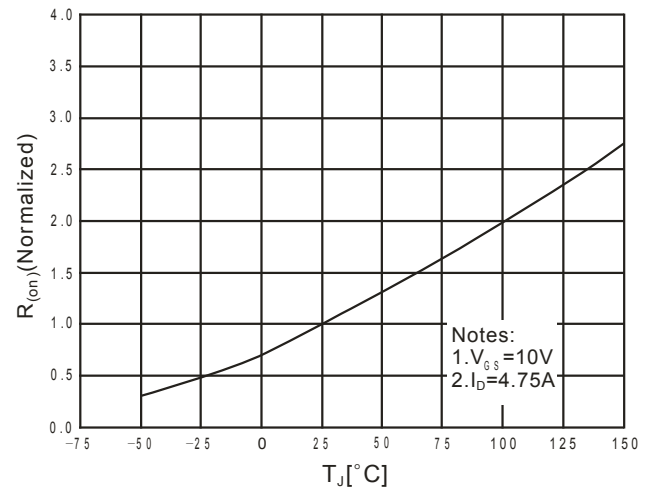


Fig.8 On-Resistance Variation vs. Temperature

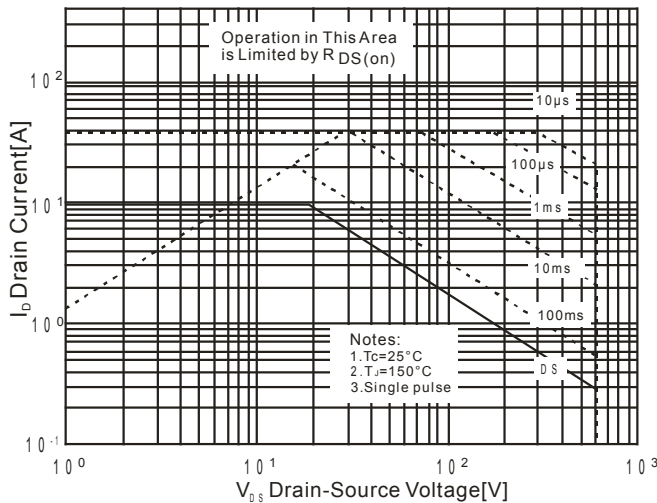


Fig.9 Maximum Safe Operation Area

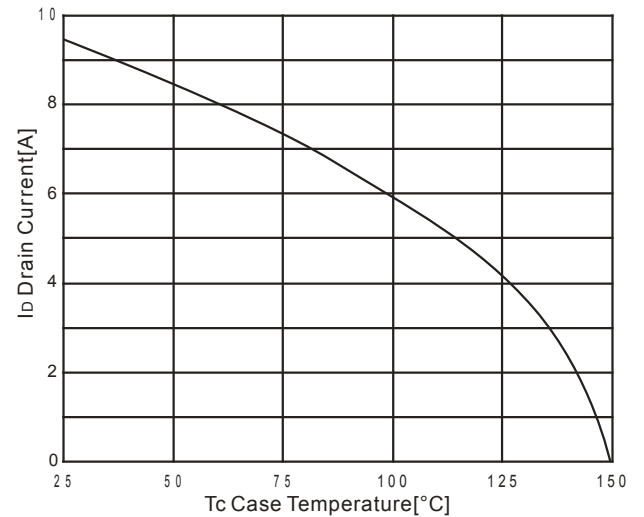


Fig.10 Maximum Drain Current vs Case Temperature

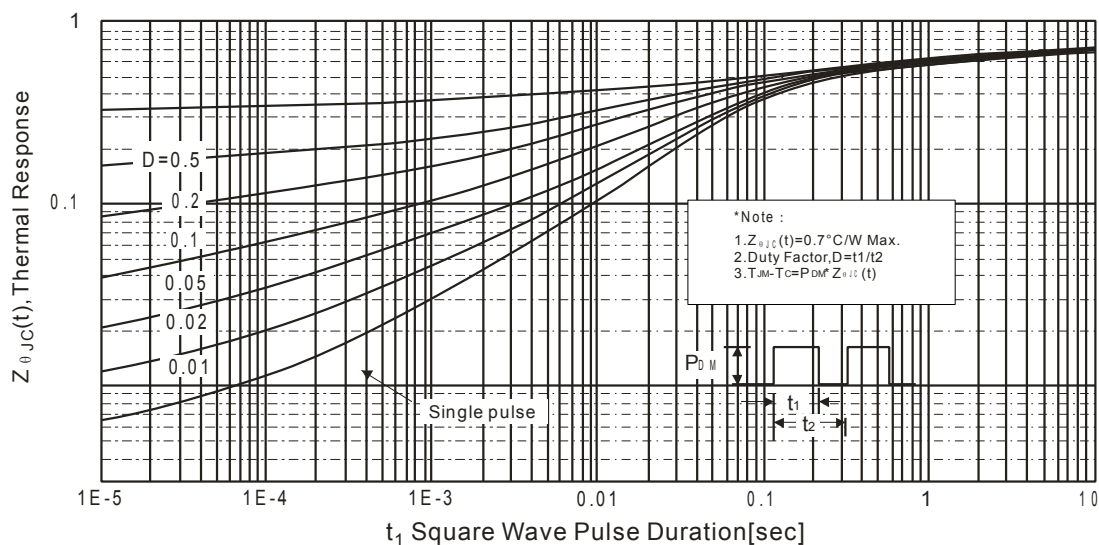


Fig.11 Transient Thermal Response curve

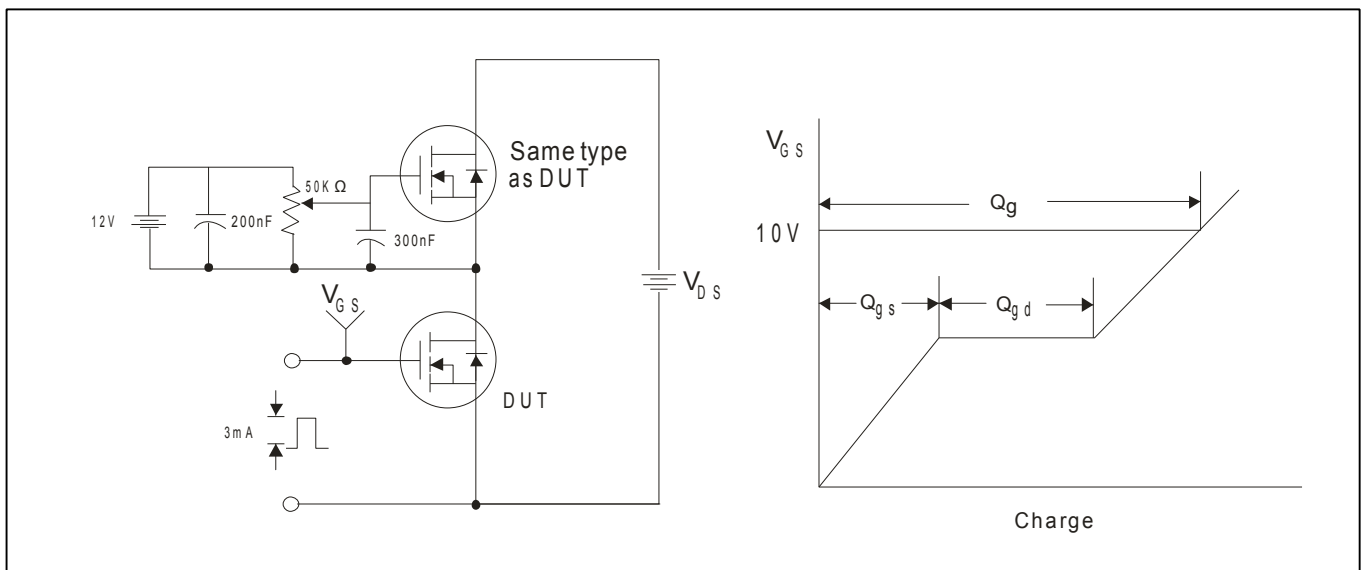


Fig.12 Gate Test circuit & Waveform

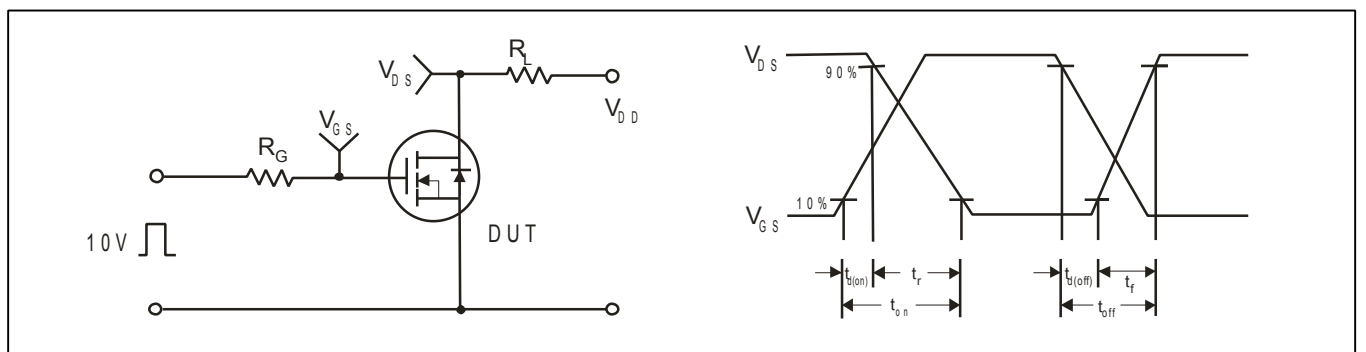


Fig.13 Resistive Switching Test Circuit & Waveform

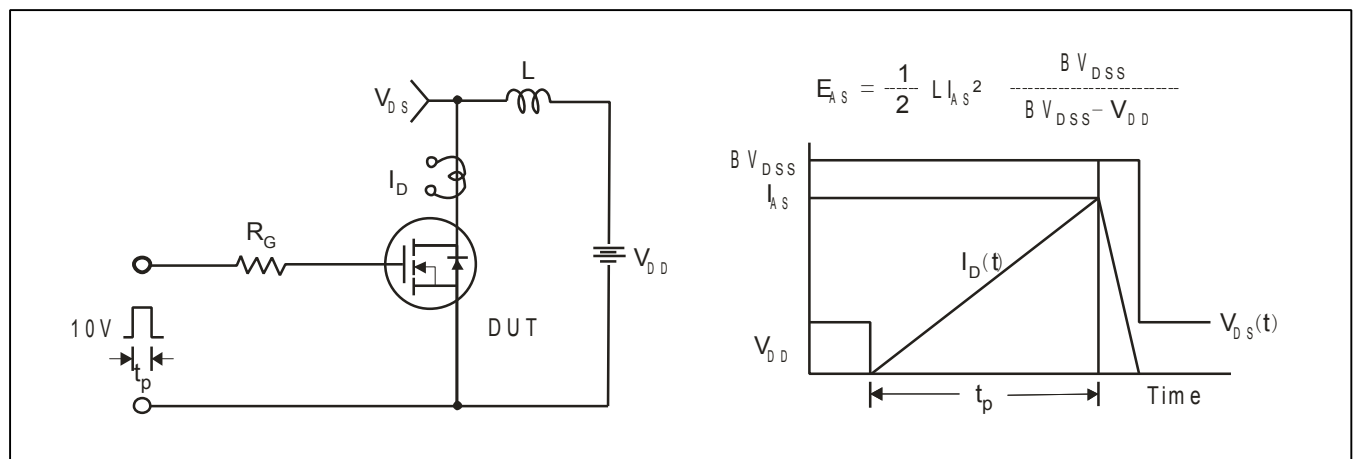
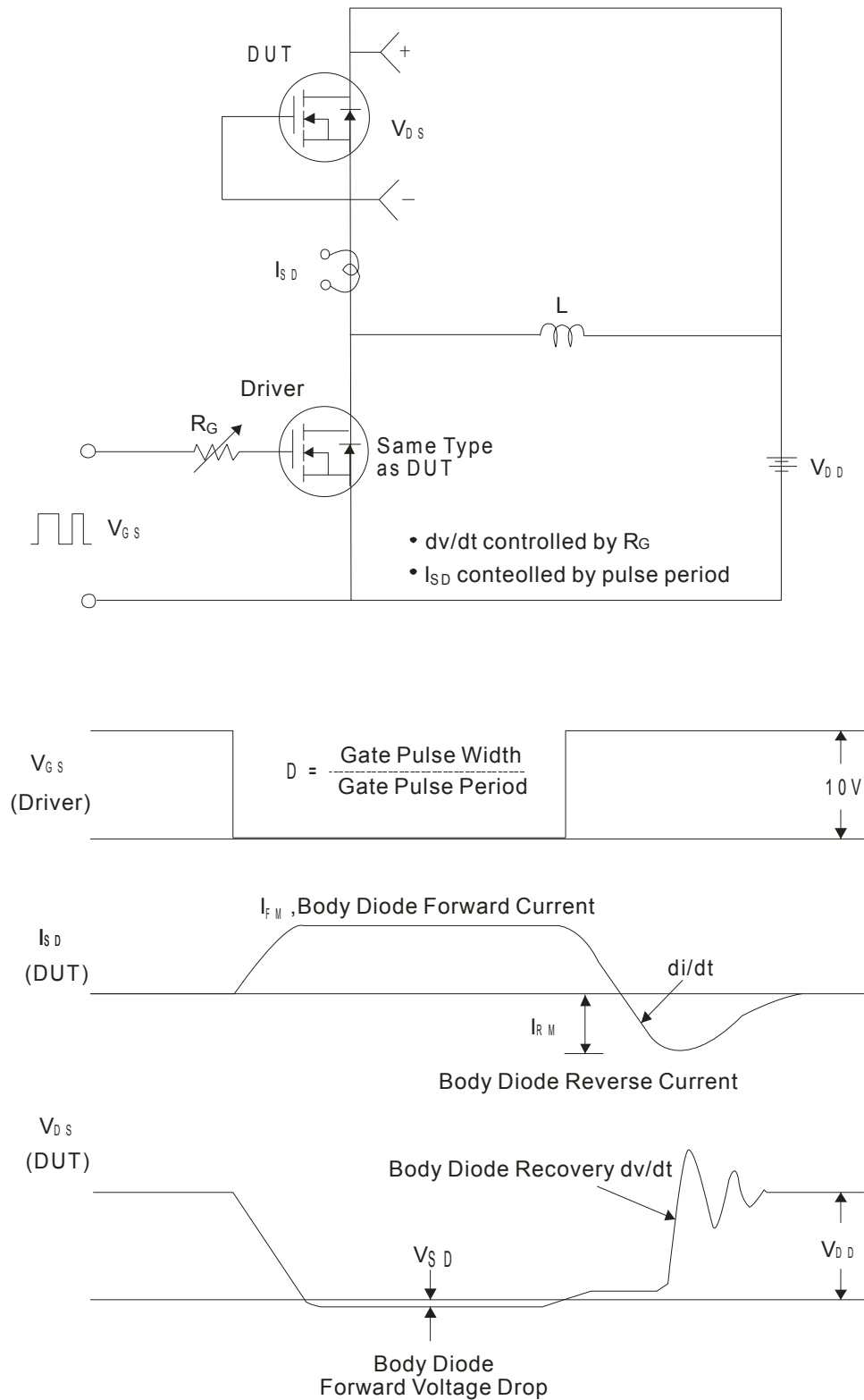
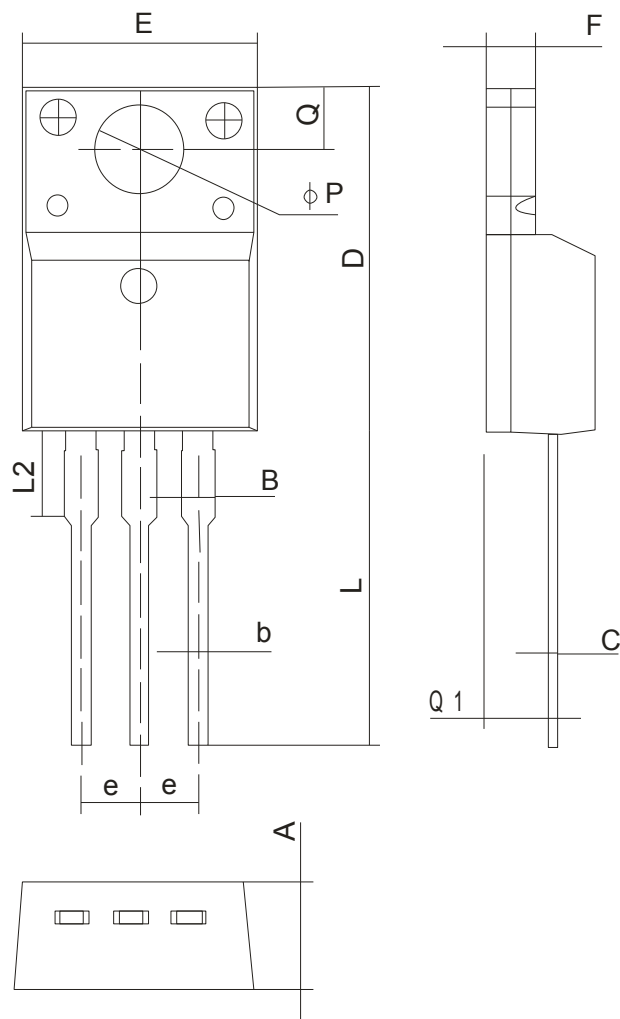


Fig.14 Uncamped Inductive Switching Test Circuit & Waveform

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

TO-220F Package Dimension

Unit:mm



符 号 Symbol	M I N	M A X
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
L 2	3.13	3.33
ΦP	3.08	3.28
Q	3.2	3.4
Q 1	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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