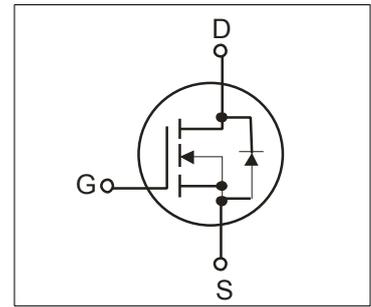


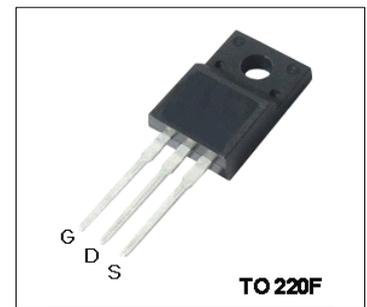
Features

- 10A,650V, $R_{DS(on)}$ (Max1.0 Ω)@ $V_{GS}=10V$
- Ultra-low Gate charge(Typical 32nC)
- Fast Switching Capability
- 100%Avalanche Tested
- Enhanced EMI capability
- Maximum Junction Temperature Range(150 $^{\circ}C$)



General Description

This Power MOSFET is N channel enhanced high voltage power MOS field effect transistor fabrication by F-Cell™ planar high pressure VDMOS process technology. this product have lower resistance,Superior switching performance and high EAS capability. The product can be widely used in AC-DC switching power supply, DC-DC power converter, and high H bridge PWM motor drive.



Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{DSS}	Drain Source Voltage	650	V
I_D	Continuous Drain Current(@ $T_c=25^{\circ}C$)	10	A
	Continuous Drain Current(@ $T_c=100^{\circ}C$)	6.3	A
I_{DM}	Drain Current Pulsed (Note1)	40	A
V_{GS}	Gate to Source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy (Note2)	500	mJ
P_D	Total Power Dissipation(@ $T_c=25^{\circ}C$)	40	W
	Derating Factor above 25 $^{\circ}C$	0.32	W/ $^{\circ}C$
T_J, T_{stg}	Junction and Storage Temperature	-55~150	$^{\circ}C$

Thermal Characteristics

Symbol	Parameter	Value			Units
		Min	Typ	Max	
$R_{\theta JC}$	Thermal Resistance , Junction -to -Case	-	-	3.12	$^{\circ}C/W$
$R_{\theta JA}$	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	
Drain Cut -off current	I _{DSS}	V _{DS} =650V,V _{GS} =0V	-	-	1	μA	
		V _{DS} =520V,Tc=125°C	-	-	100	μA	
Drain -source breakdown voltage	V _{(BR)DSS}	I _D =250 μA,V _{GS} =0V	650	-	-	V	
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250 μA	2	-	4	V	
Drain -source ON resistance	R _{DS(ON)}	V _{GS} =10V,I _D =5A	-	0.86	1.0	Ω	
Forward Transconductance	g _{fs}	V _{DS} =15V,I _D =5A	-	9.5	-	S	
Input capacitance	C _{iSS}	V _{DS} =25V,	-	1643	-	pF	
Reverse transfer capacitance	C _{rSS}	V _{GS} =0V,	-	7.1	-		
Output capacitance	C _{oss}	f=1MHz	-	129	-		
Switching time	Turn-on Rise time	t _r	V _{DD} =325V,	-	21	-	ns
	Turn-on delay time	T _{d(on)}	I _D =10A	-	27	-	
	Turn-off Fall time	t _f	R _G =10Ω	-	25	-	
	Turn-off delay time	T _{d(off)}	(Note3,4)	-	54	-	
Total gate charge(gate-source plus gate-drain)	Q _g	V _{DD} =520V, V _{GS} =10V,	-	32	-	nC	
Gate-source charge	Q _{gs}	I _D =10A	-	8	-		
Gate-drain("miller") Charge	Q _{gd}	(Note3,4)	-	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}	-	-	-	40	A
Forward voltage(diode)	V _{DSF}	I _{DR} =10A,V _{GS} =0V	-	-	1.5	V
Reverse recovery time	t _{rr}	I _{DR} =10A,V _{GS} =0V, dI _{DR} /dt =100 A /μs	-	528	-	ns
Reverse recovery charge	Q _{rr}		-	1.22	-	μC
Reverse recovery current	I _{rrm}		-	12.2	-	A

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

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

3.Pulse Test:Pulse Width≤300us,Duty Cycles≤2%

4. Essentially independent of operating temperature.

This transistor is an electrostatic sensitive device

Please handle with caution

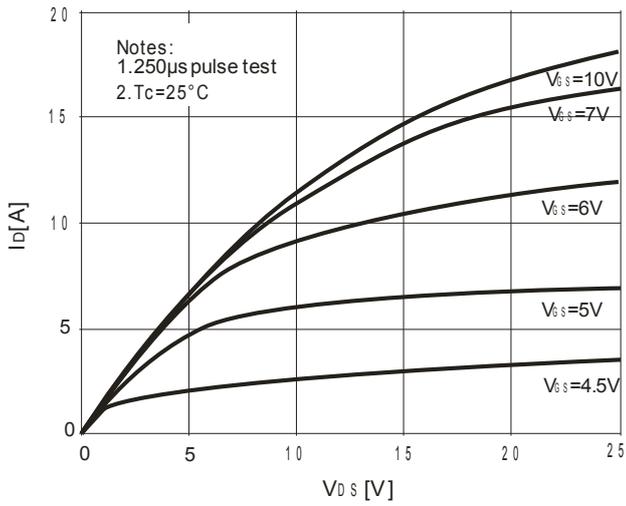


Fig.1 Output Characteristics

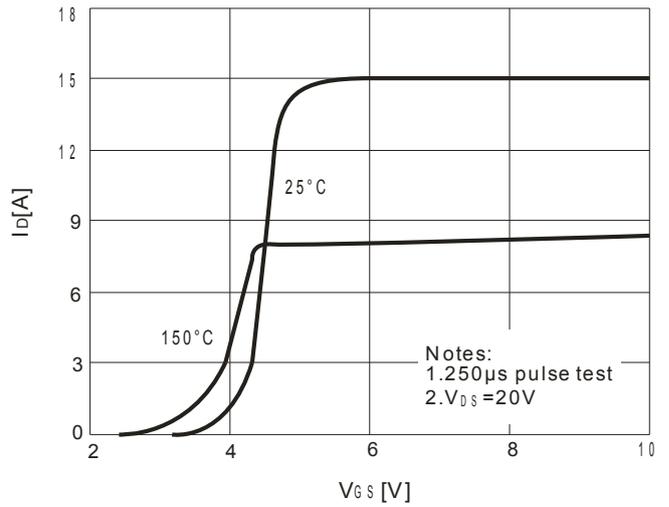


Fig.2 Transfer Characteristics

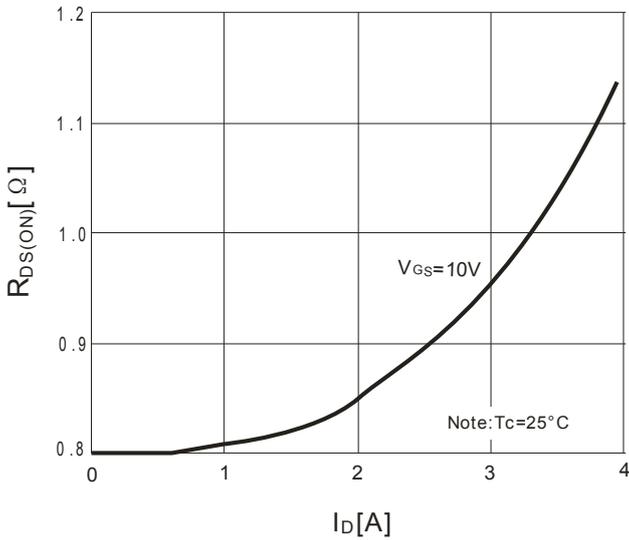


Fig.3 Drain to Source ON Resistance vs Drain Current

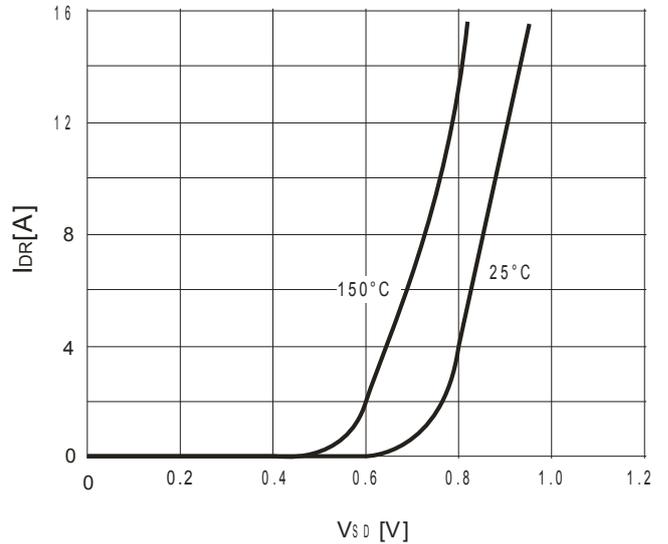


Fig.4 Body Diode Transfer Characteristics

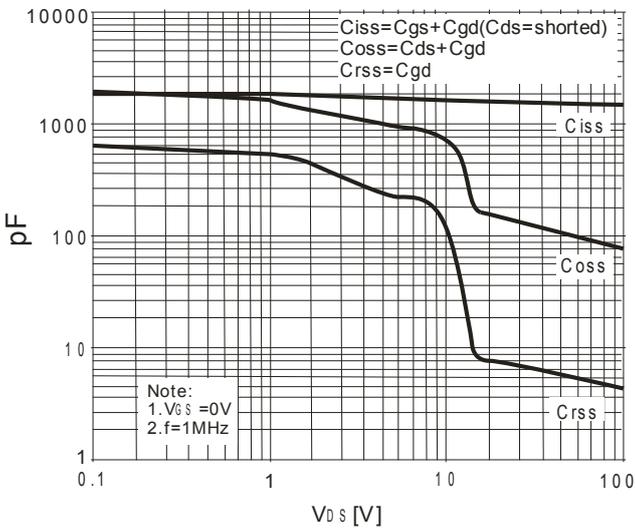


Fig.5 Capacitance vs Drain to source Voltage

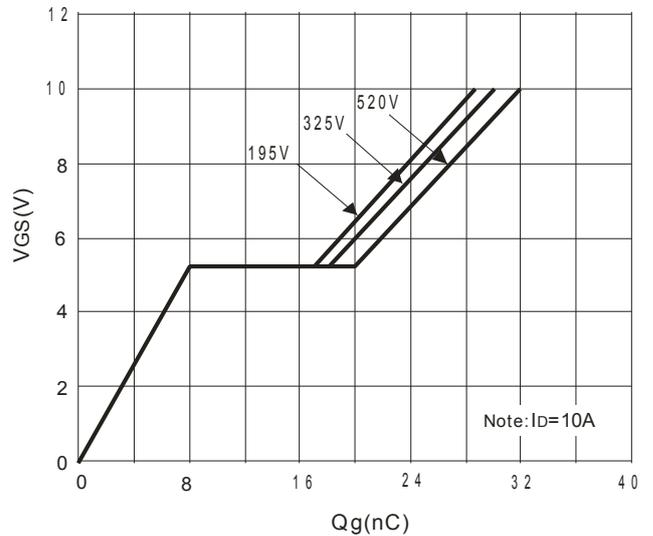


Fig.6 Gate Charge vs Gate to source Voltage

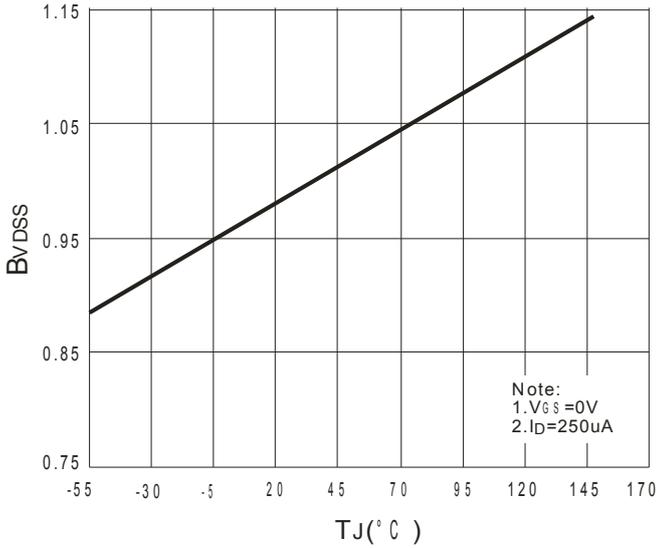


Fig.7 Breakdown Voltage vs Junction Temperature

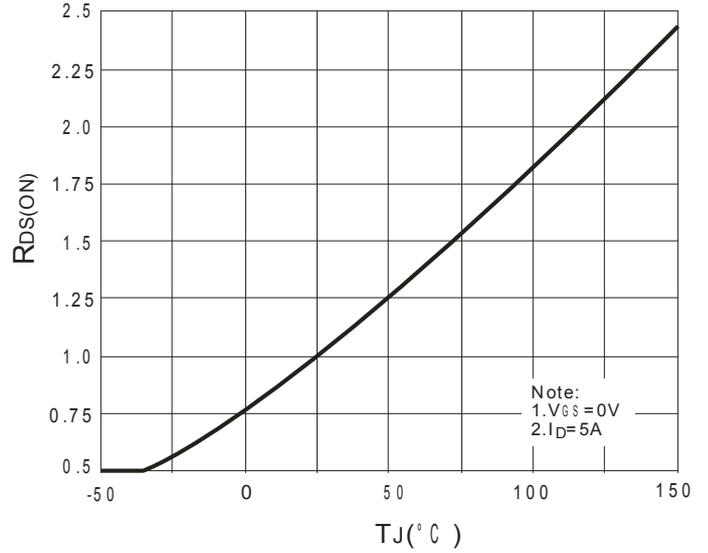


Fig.8 Drain to Source On-Resistance vs Junction Temperature

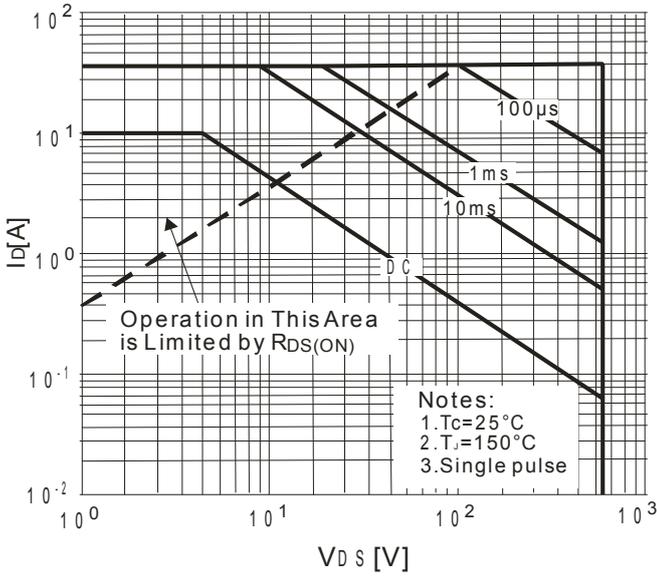


Fig.9 Maximum Forward Bias Safe Operating Area

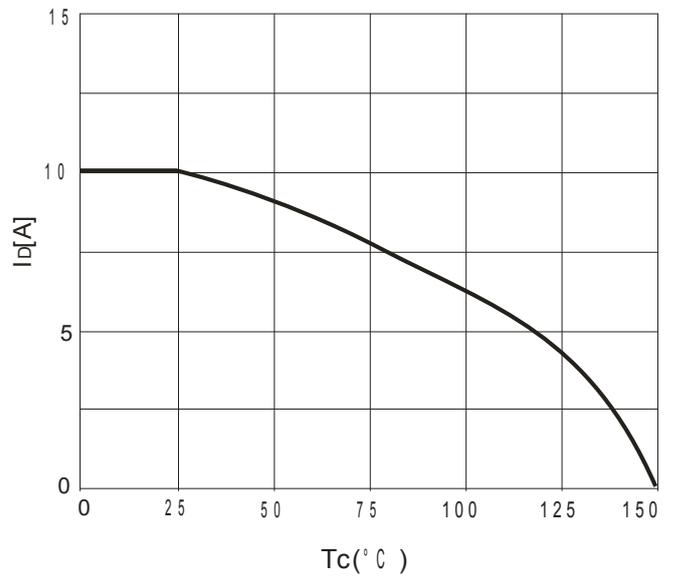


Fig.10 Maximum Continuous Drain Current vs Case temperature

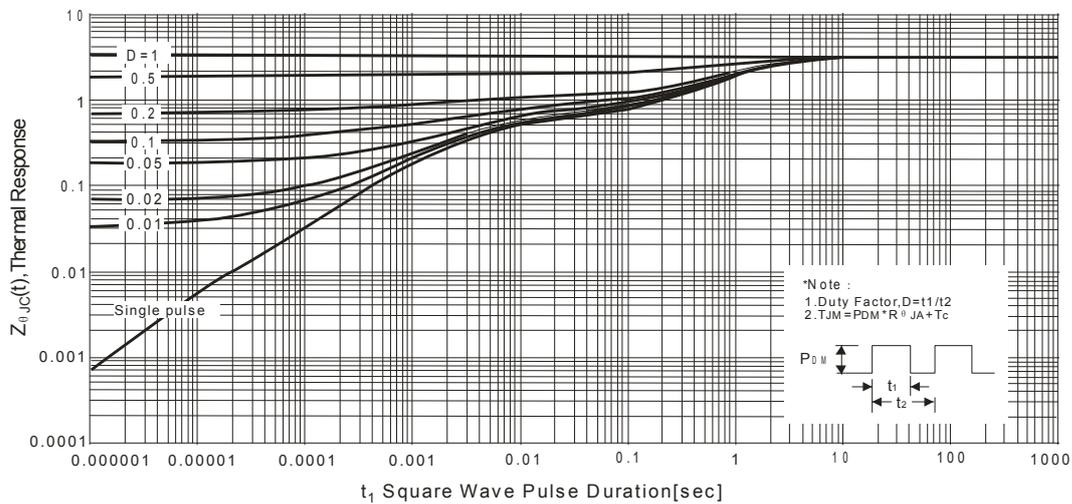


Fig.11 Maximum Effective Thermal Impedance Junction to Case

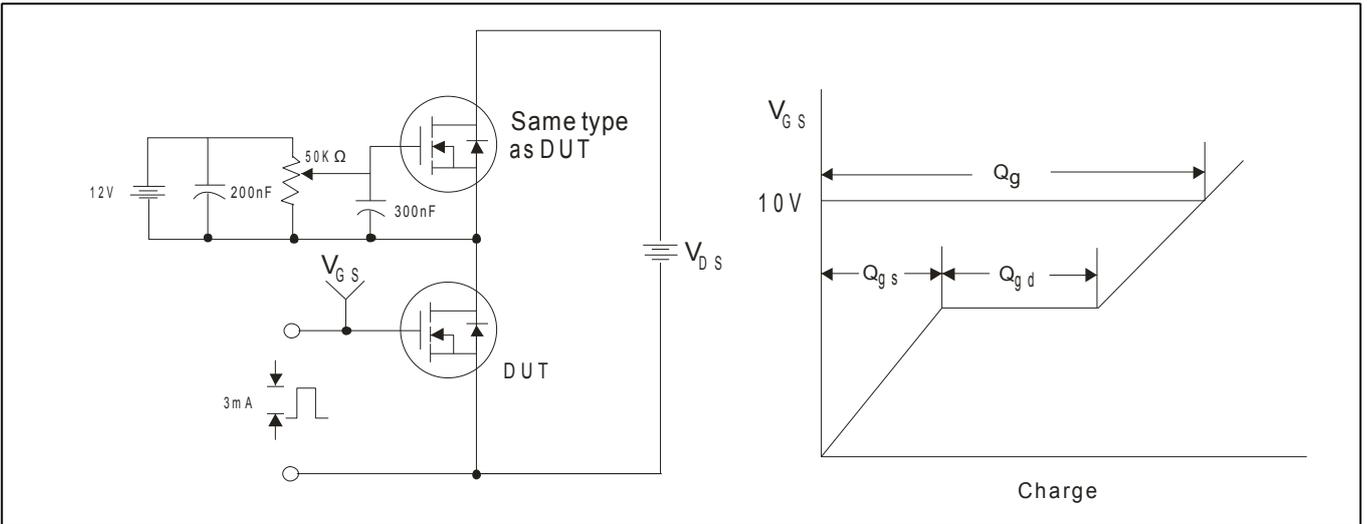


Fig.12 Gate Test circuit & Waveform

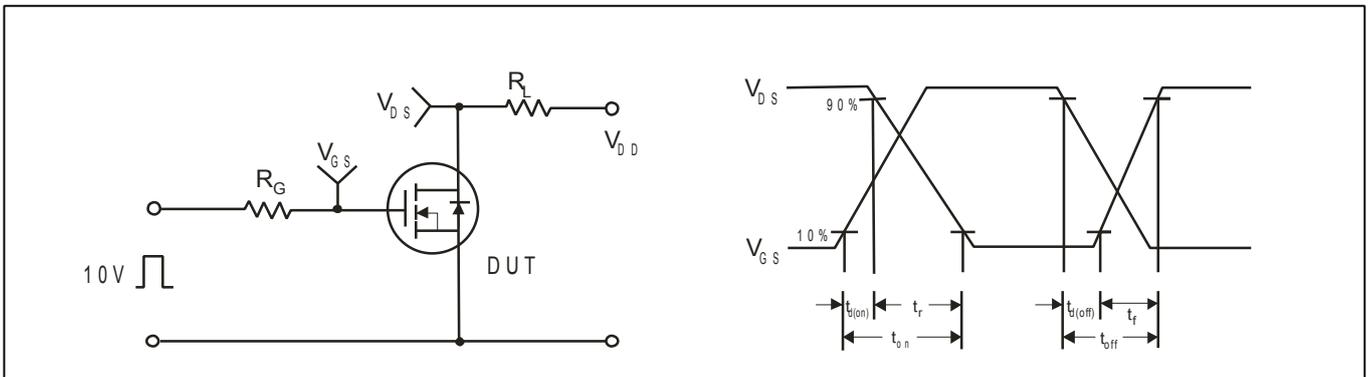


Fig.13 Resistive Switching Test Circuit & Waveform

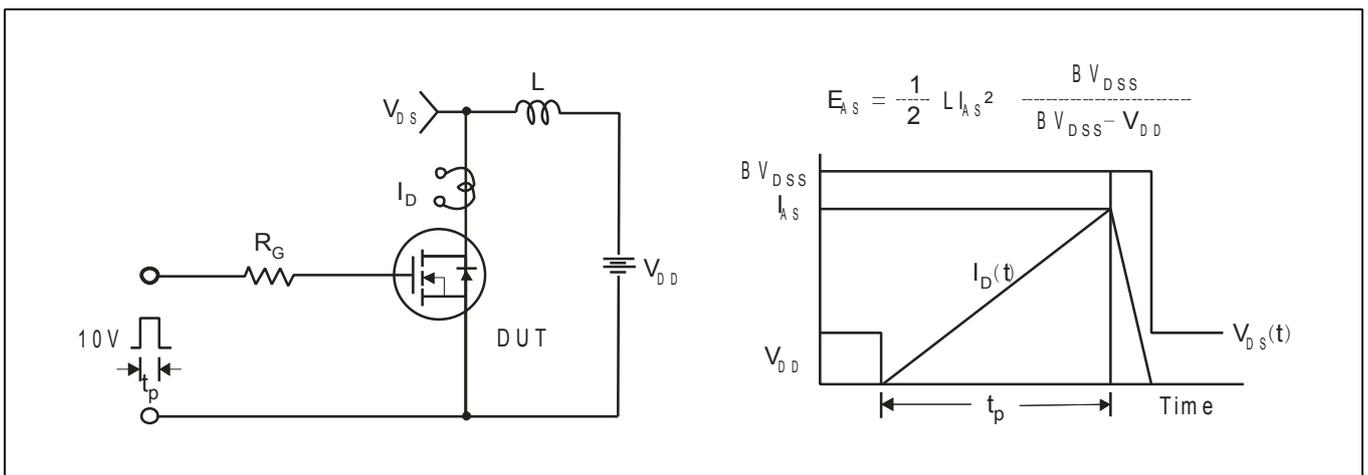


Fig.14 Unclamped Inductive Switching Test Circuit & Waveform

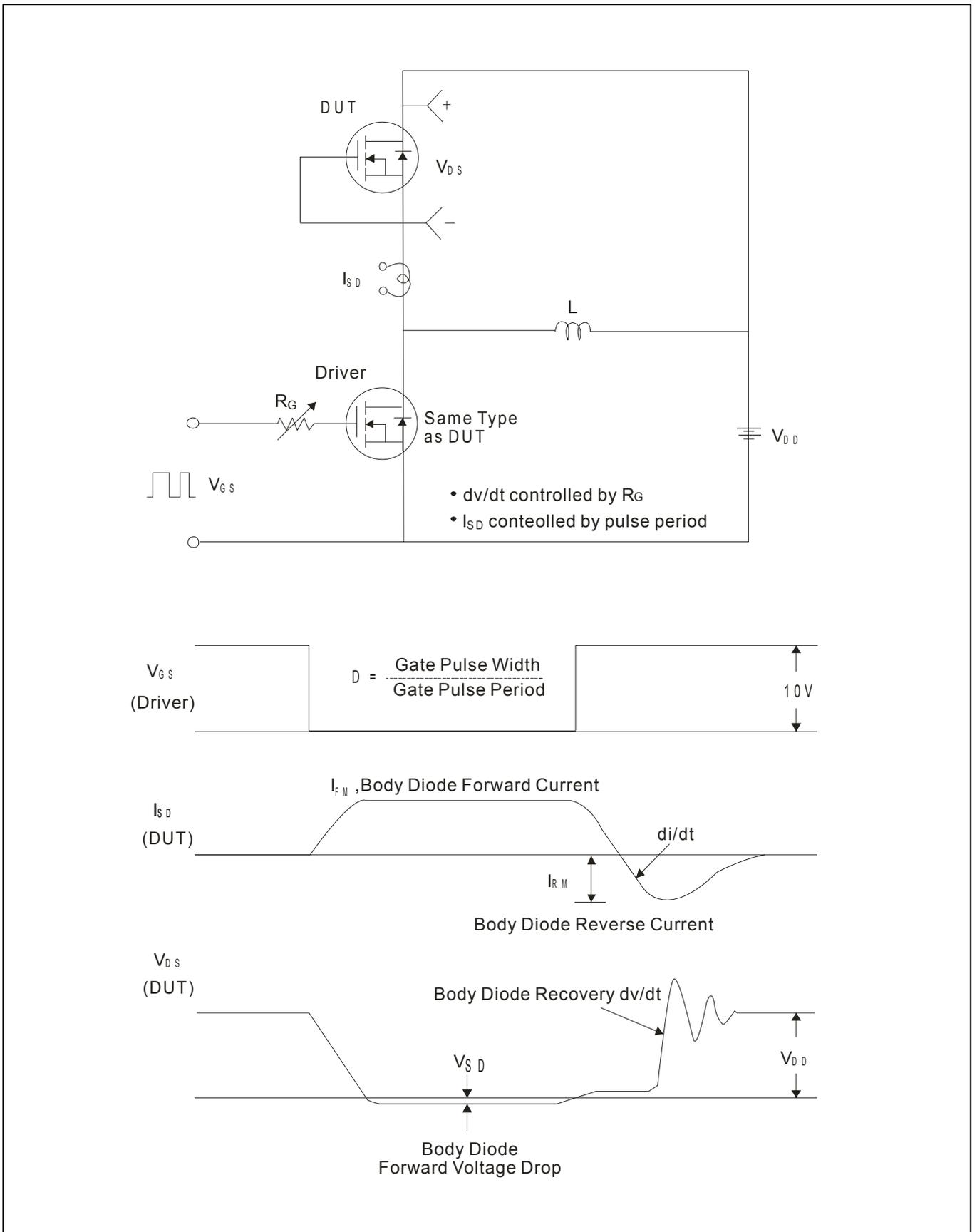
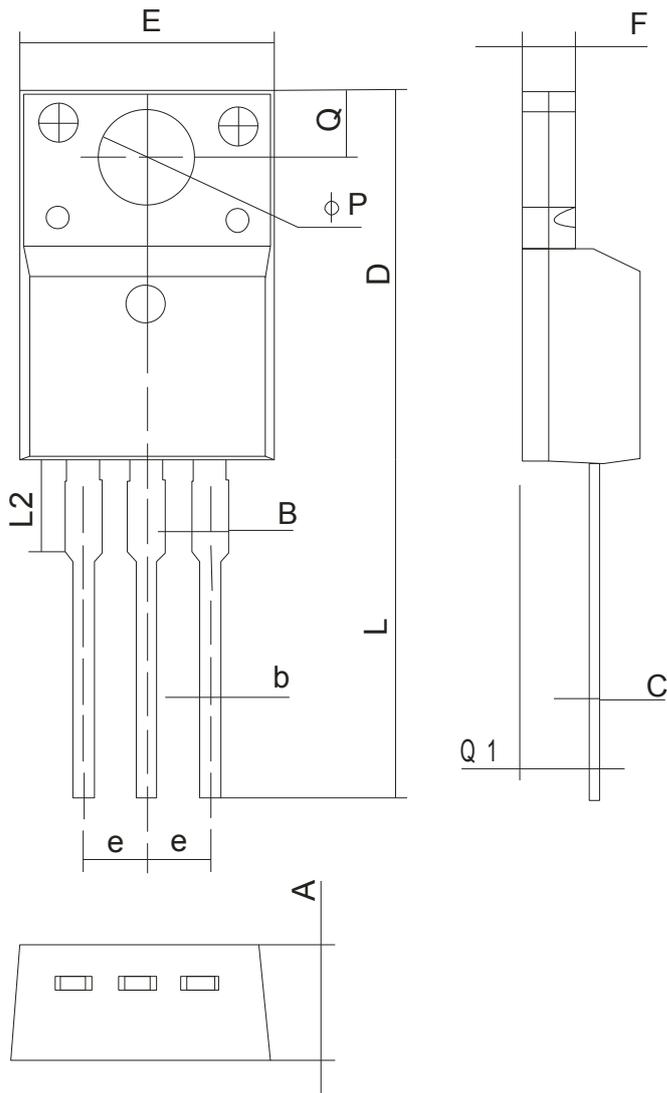


Fig.15 Peak Diode Recovery dv/dt Test Circuit & Waveform

TO-220F Package Dimension

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
ϕP	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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