General Description

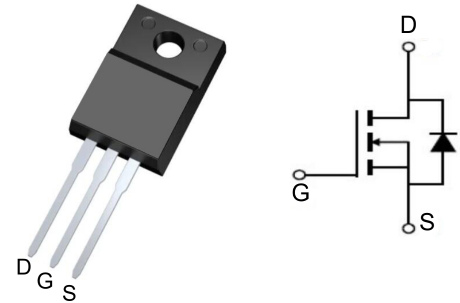
The MY10N65F is silicon N-channel Enhanced VDMOSFETs, obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy.

Features

V_{DSS}	650	V
I_D	10	A
P_D(T_C= 2 5℃)	50	W
$R_{DS(ON)}$(atV_{GS} = 10V)	0.8	Ω

Application

- High efficiency switch mode power supplies
- Power factor correction
- Electronic lamp ballast



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY10N65F	TO-220F	MY10N65F	1000

Absolute Maximum Ratings (T_C=25 ℃unless otherwise noted)

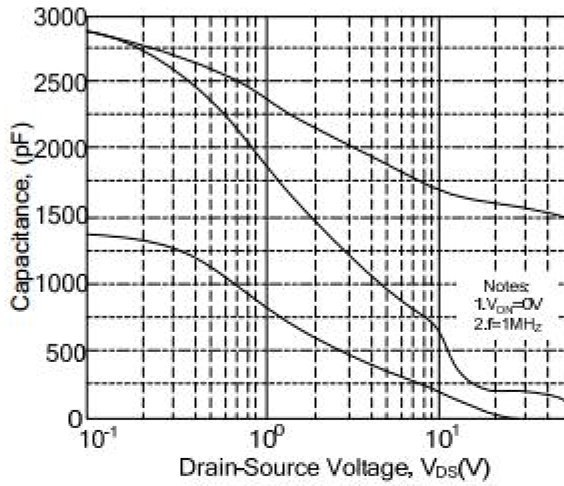
Symbol	Parameters	Ratings	Unit
V_{DSS}	Drain-Source Voltage	650	V
V_{GS}	Gate-Source Voltage-Continuous	±30	V
I_D	Drain Current-Continuous （Note 2）	10	A
I_{DM}	Drain Current-Single Plused（Note 1）	38	A
P_D	Power Dissipation （Note 2）	50	W
T_j	Max.Operating junction temperature	150	°C/W

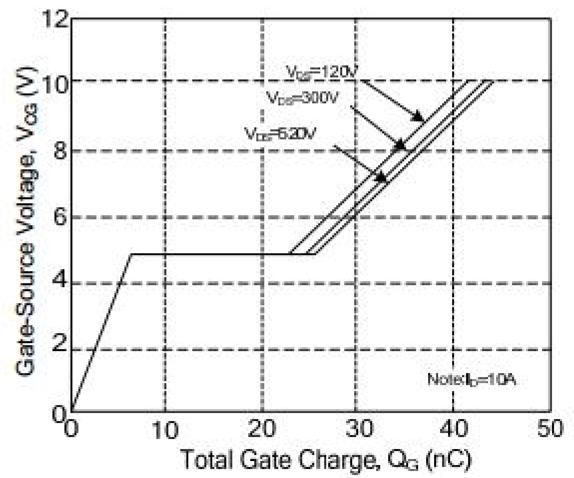
Electrical Characteristics (T_C=25 ℃, unless otherwise noted)

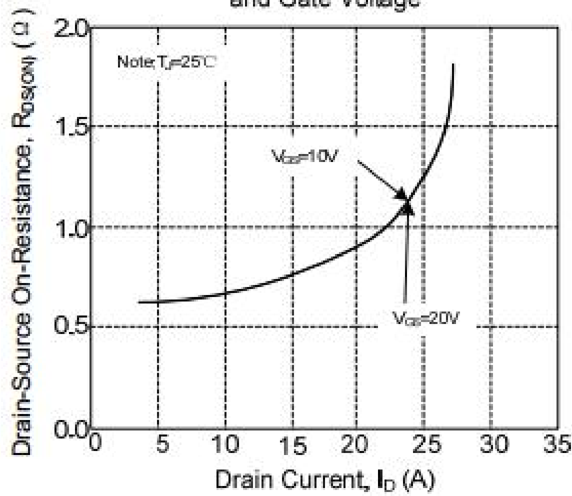
Symbol	Parameters	Min	Typ	Max	Units	Conditions
Static Characteristics						
B_{VDSS}	Drain-Source Breakdown VoltageCurrent (Note 1)	650	--	--	mA	I_D=250μA V_{GS}=0V， T_J=25°C
$V_{GS(th)}$	Gate Threshold Voltage	2.0	--	4.0	V	V_{DS}=V_{GS}， I_D=250μA
$R_{DS(on)}$	Drain-Source On-Resistance	--	0.8	0.9	Ω	V_{GS}=10V， I_D=5A
I_{GSS}	Gate-Body Leakage Current	--	--	±100	nA	V_{GS}=±30V， V_{DS}=0
I_{DSS}	Zero Gate Voltage Drain Current	--	--	1	μA	V_{DS}=650V， V_{GS}=0
Switching Characteristics						
$T_{d(on)}$	Turn-On Delay Time	--	23	55	ns	V_{DS}=325V， I_D=10A， R_G=25Ω (Note 2)
T_r	Rise Time	--	69	150	ns	
$T_{d(off)}$	Turn-Off Delay Time	--	144	300	ns	
T_f	Fall Time	--	77	165	ns	
Q_g	Total Gate Charge	--	44	57	nC	V_{DS}=520 , V_{GS}=10V, I_D=10A (Note 2)
Q_{gs}	Gate-Source Charge	--	6.7	--	nC	
Q_{gd}	Gate-Drain Charge	--	18.5	--	nC	
Dynamic Characteristics						
C_{iss}	Input Capacitance	--	1570	2040	pF	V_{DS}=25V， V_{GS}=0, f=1MHz
C_{oss}	Output Capacitance	--	166	215	pF	
C_{rss}	Reverse Transfer Capacitance	--	18	24	pF	
I_S	Continuous Drain-Source Diode ForwardCurrent (Note 2)	--	--	10	A	
V_{SD}	Diode Forward On-Voltage	--	--	1.4	V	I_S=10A， V_{GS}=0
$R_{th(j-c)}$	Thermal Resistance, Junction to Case	--	--	0.85	℃/W	

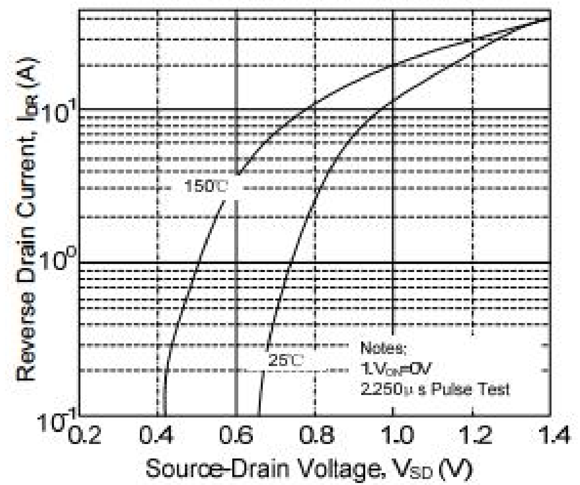
Note 1: Repetitive Rating : Pulse width limited by maximum junction temperature
Note 2: Pulse test: PW <= 300us , duty cycle <= 2%.

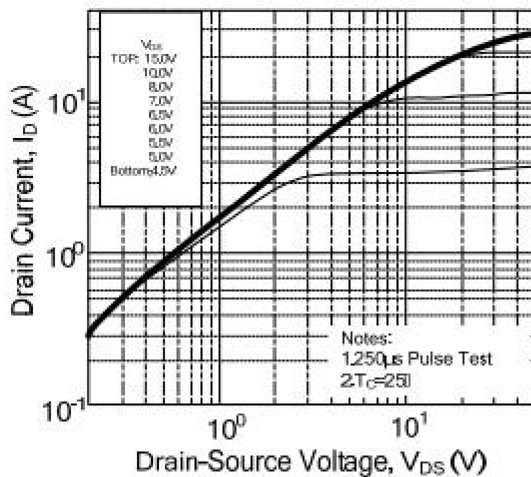
Ratings and Characteristic curves

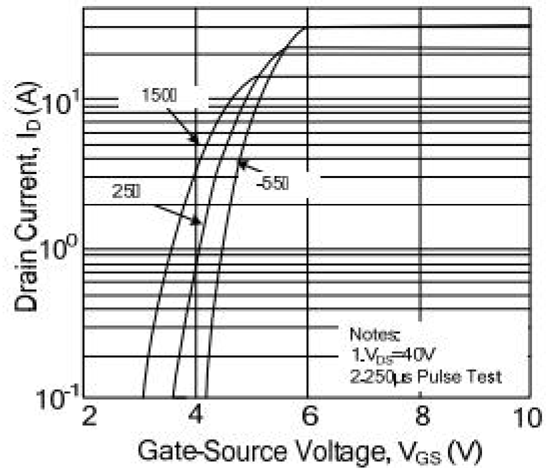


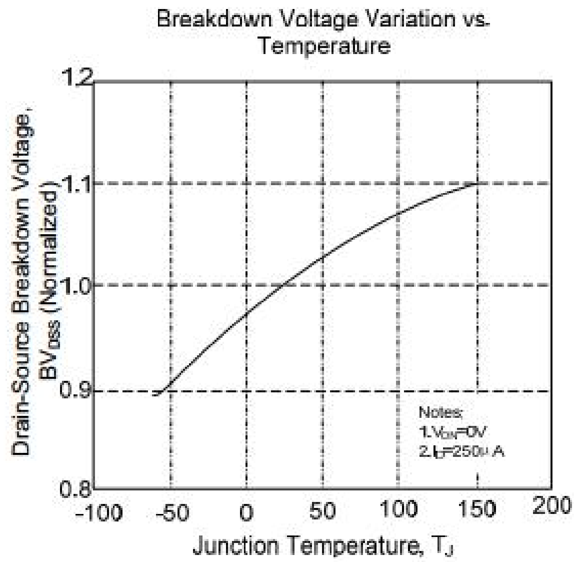


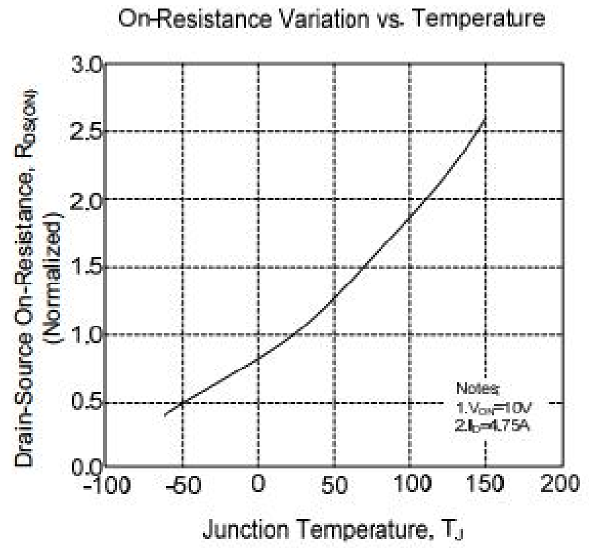


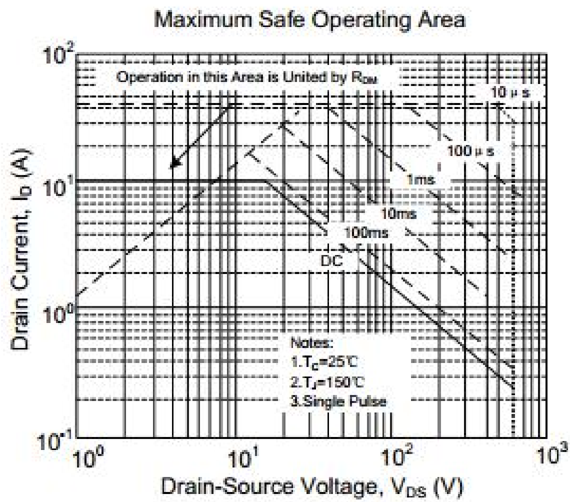


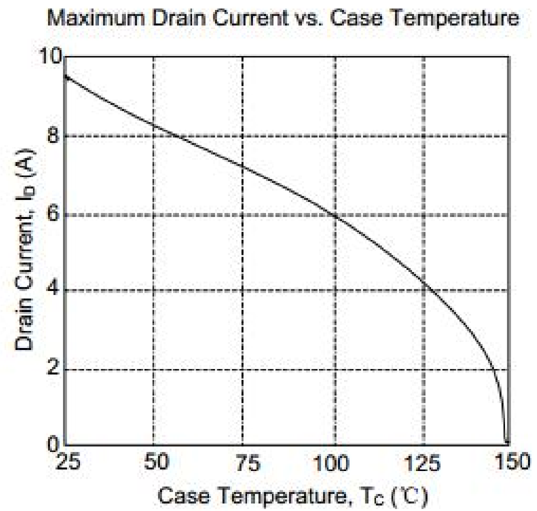





Breakdown Voltage Variation vs. Temperature
Drain-Source Breakdown Voltage, BVDSS (Normalized)
Junction Temperature, TJ
Notes:
1.VGS=0V
2.ID=250μA


On-Resistance Variation vs. Temperature
Drain-Source On-Resistance, RDS(ON) (Normalized)
Junction Temperature, TJ
Notes:
1.VGS=10V
2.ID=4.75A


Maximum Safe Operating Area
Operation in this Area is Limited by RDS
10 μs
100 μs
1ms
10ms
100ms
DC
Drain Current, ID (A)
Drain-Source Voltage, VDS (V)
Notes:
1.TC=25℃
2.TJ=150℃
3.Single Pulse


Maximum Drain Current vs. Case Temperature
Drain Current, ID (A)
Case Temperature, TC (℃)

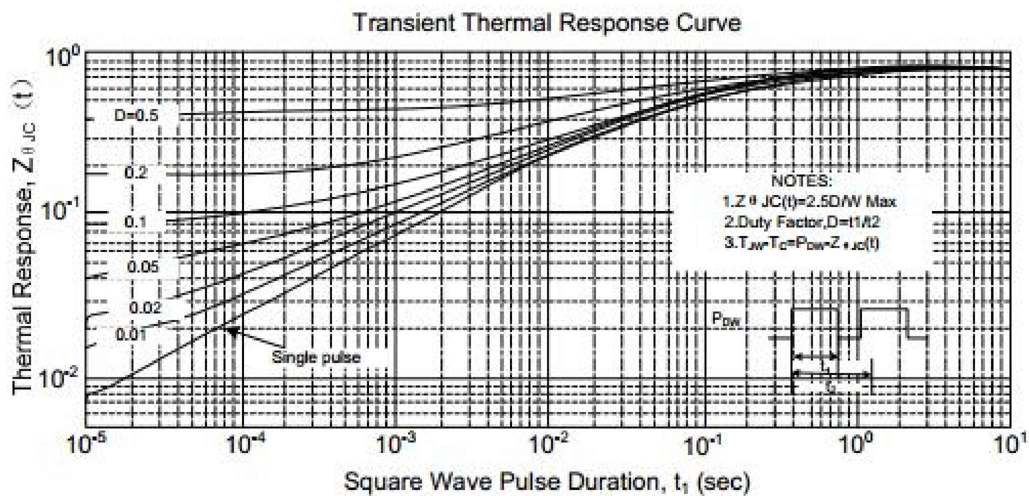

Transient Thermal Response Curve
Thermal Response, ZθJC (t)
D=0.5
0.2
0.1
0.05
0.02
0.01
Single pulse
NOTES:
1.ZθJC(t)=2.5℃/W Max
2.Duty Factor,D=t1/t2
3.TJM-TC=PDM·ZθJC(t)
PDM
t1
t2
Square Wave Pulse Duration, t1 (sec)

Fig 12. Gate Charge Test Circuit & Waveform

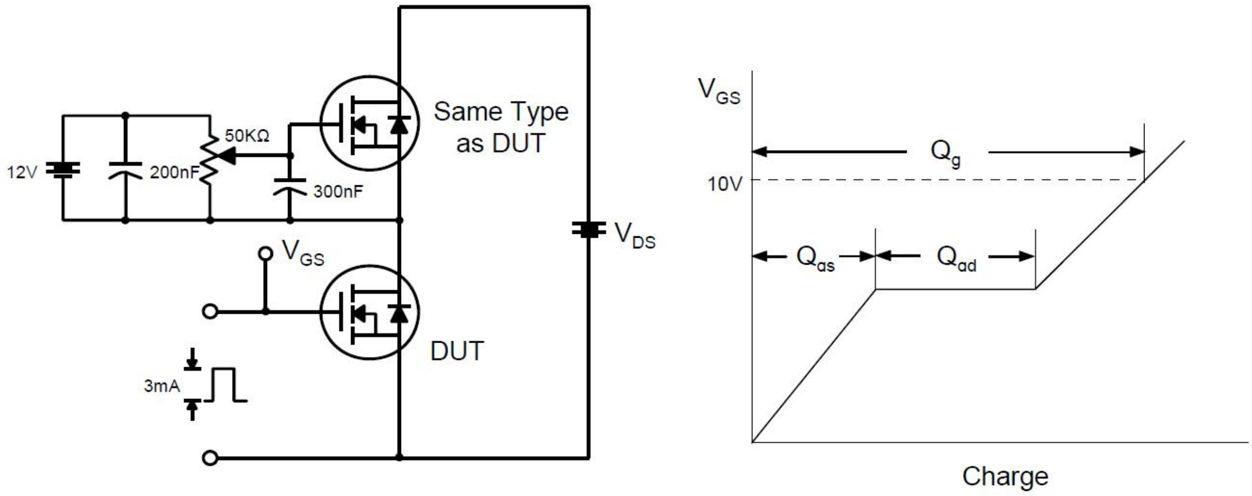


Fig 13. Resistive Switching Test Circuit & Waveforms

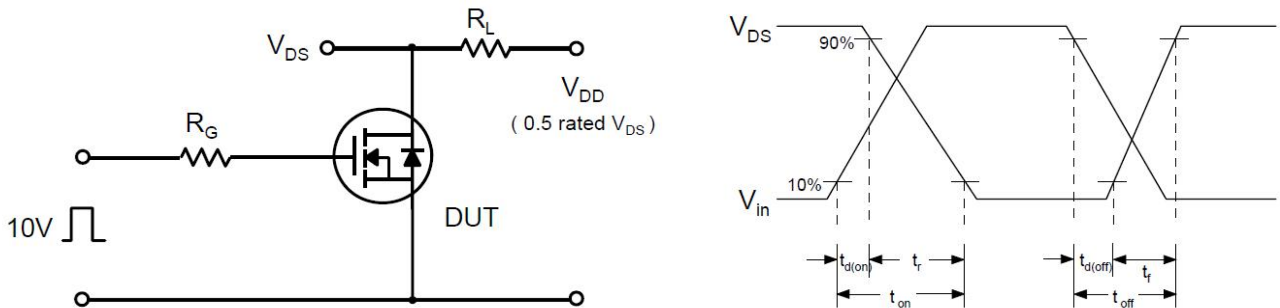


Fig 14. Unclamped Inductive Switching Test Circuit & Waveforms

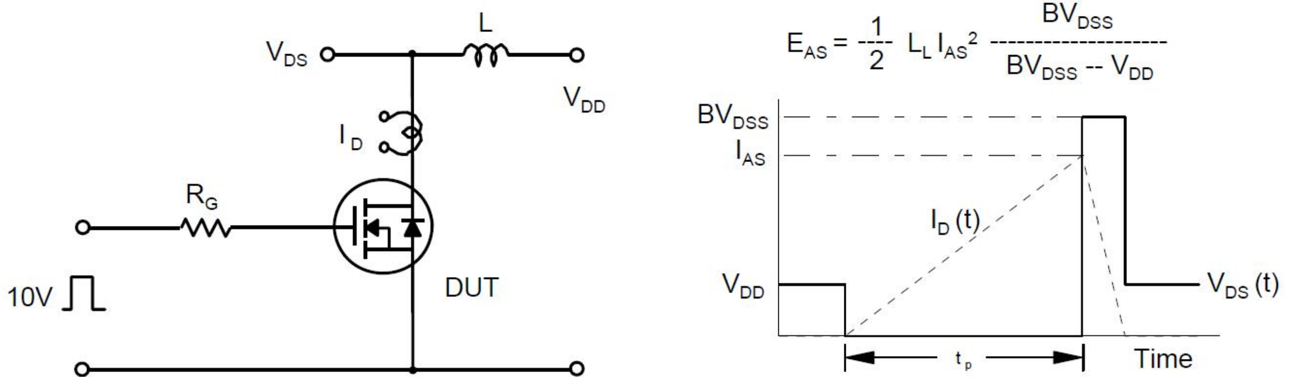
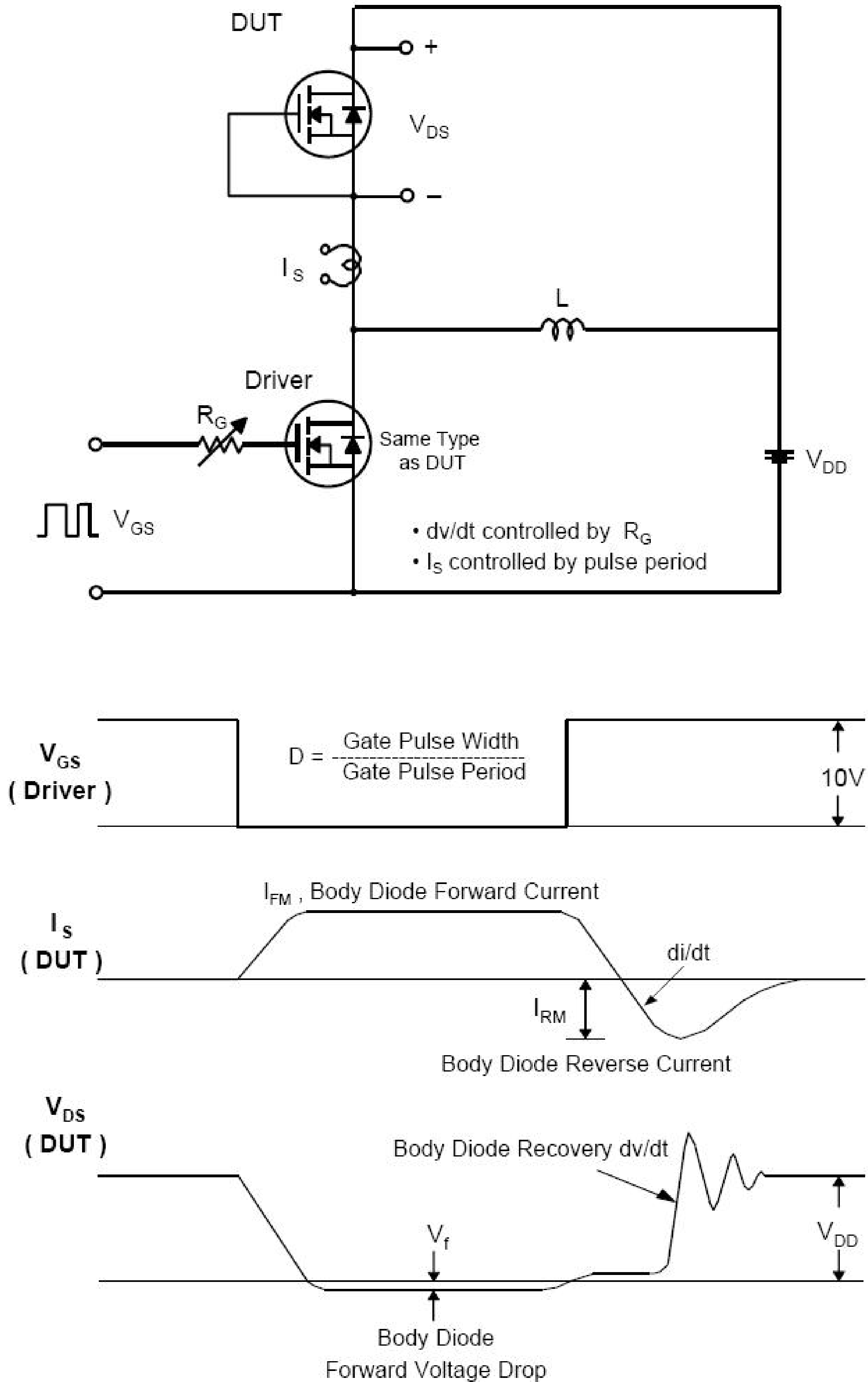
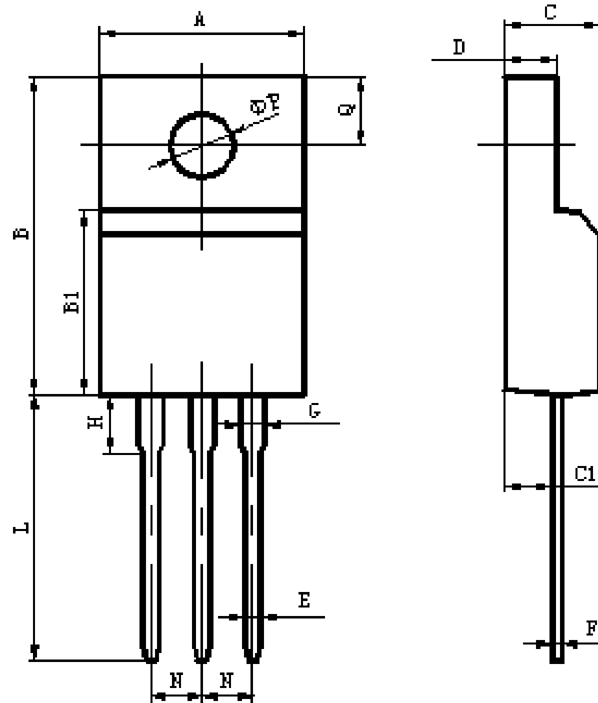


Fig 15. Peak Diode Recovery dv/dt Test Circuit & Waveforms



Package Mechanical Data-TO-220F Single



Items	Values(mm)	
	MIN	MAX
A	9.60	10.4
B	15.4	16.2
B1	8.90	9.50
C	4.30	4.90
C1	2.10	3.00
D	2.40	3.00
E	0.60	1.00
F	0.30	0.60
G	1.12	1.42
H	3.40	3.80
	2.40	2.90
L*	12.0	14.0
N	2.34	2.74
Q	3.15	3.55
Φ P	2.90	3.30