MY12N60F

600V N-Channel Enhancement Mode MOSFET

MAOYUANWEI semiconductor

General Description

The MY12N60F 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.

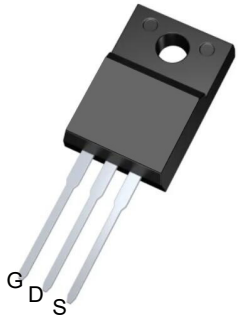
RoHS Compliant

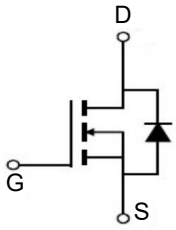
Features

V_{DSS}	600	V
I_D	12	A
P_D(T_C= 2 5℃)	51	W
$R_{DS(ON)}$(atV_{GS} = 10V)	0.6	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)
MY12N60F	TO-220F	MY12N60F	1000

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

Symbol	Parameters	Ratings	Unit
V_{DSS}	Drain-Source Voltage	600	V
V_{GS}	Gate-Source Voltage-Continuous	±30	V
I_D	Drain Current-Continuous（Note 2）	12	A
I_{DM}	Drain Current-Single Plused（Note 1）	48	A
P_D	Power Dissipation （Note 2）	51	W
T_j	Max.Operating junction temperature	150	℃/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）	600	--	--	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	--	0.6	0.85	Ω	V_{GS}=10V， I_D=6A
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}=600V， V_{GS}=0
gfs	Forward Transconductance	--	3.8	--	S	V_{DS}=40V，I_D=6A
Switching Characteristics						
$T_{d\ (on)}$	Turn-On Delay Time	--	30	70	ns	V_{DS}=300V， I_D=6A， R_G=25Ω（Note 2）
T_r	Rise Time	--	115	240	ns	
$T_{d\ (off)}$	Turn-Off Delay Time	--	95	200	ns	
T_f	Fall Time	--	85	180	ns	
Qg	Total Gate Charge	--	45	54	nC	V_{DS}=480，V_{GS}=10A， I_D=12A（Note 2）
Qgs	Gate-Source Charge	--	8.5	--	nC	
Qgd	Gate-Drain Charge	--	21	--	nC	
Dynamic Characteristics						
Ciss	Input Capacitance	--	1480	1900	pF	V_{DS}=25V， V_{GS}=0， f=1MHz
Coss	Output Capacitance	--	200	270	pF	
Crss	Reverse Transfer Capacitance	--	25	35	pF	
Is	Continuous Drain-Source Diode ForwardCurrent （Note 2）	--	--	12	A	
V_{SD}	Diode Forward On-Voltage	--	--	1.3	V	I_S=12A， V_{GS}=0
Rth(j-c)	Thermal Resistance, Junction to Case	--	--	3.65	°C/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

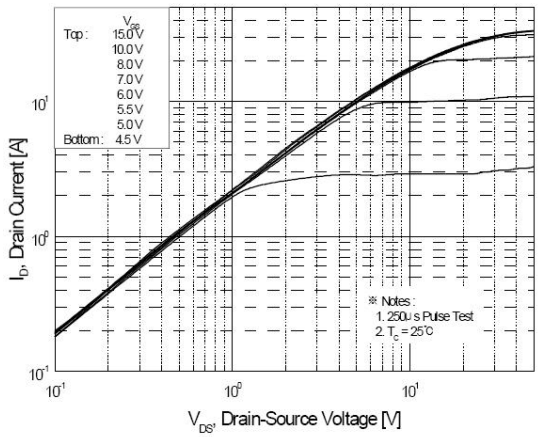


Figure 1. On-Region Characteristics

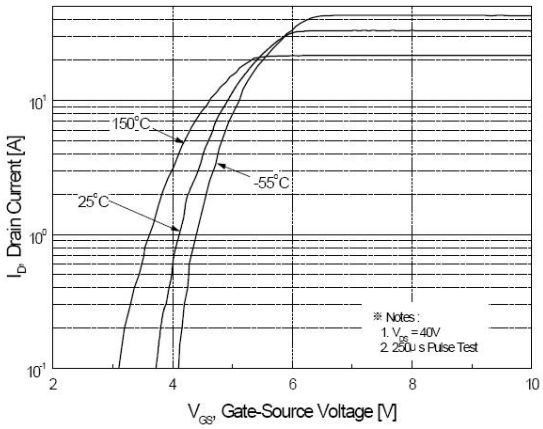


Figure 2. Transfer Characteristics

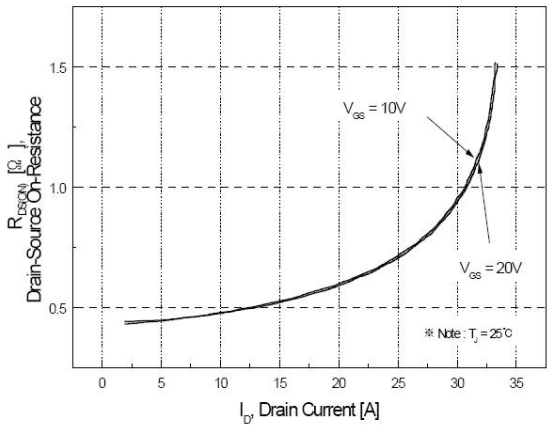


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

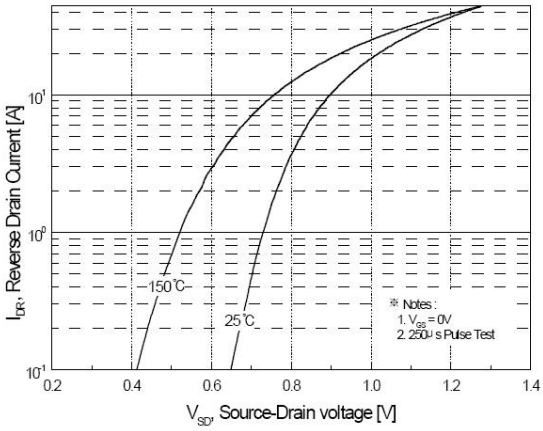


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

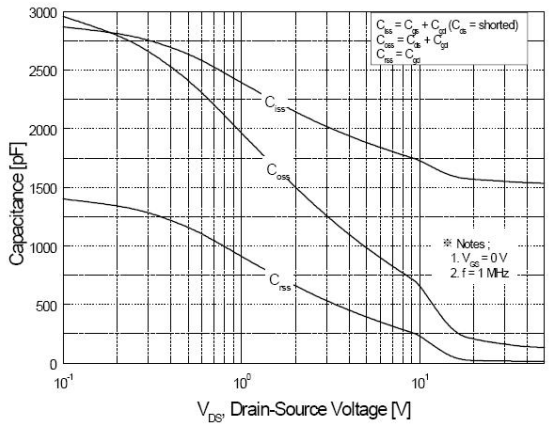


Figure 5. Capacitance Characteristics

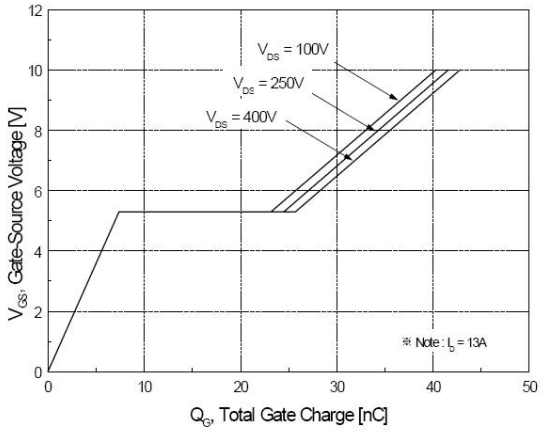


Figure 6. Gate Charge Characteristics

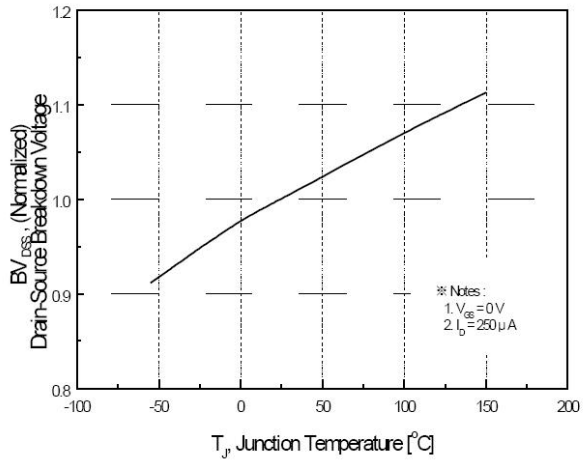


Figure 7. Breakdown Voltage Variation vs Temperature

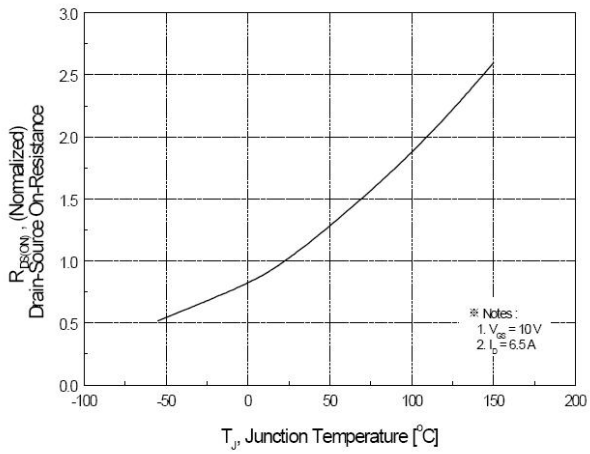


Figure 8. On-Resistance Variation vs Temperature

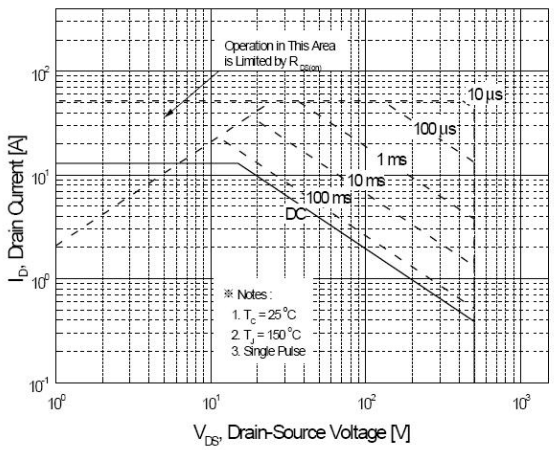


Figure 9. Maximum Safe Operating Area

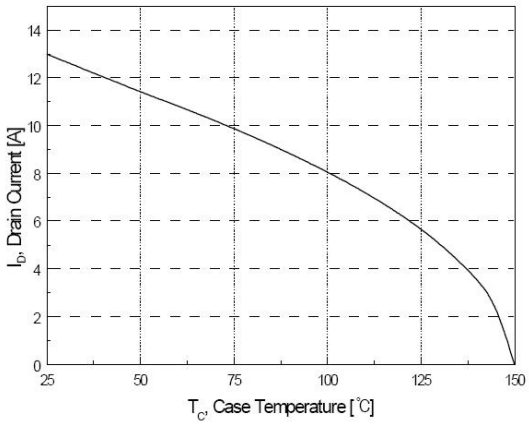


Figure 10. Maximum Drain Current vs Case Temperature

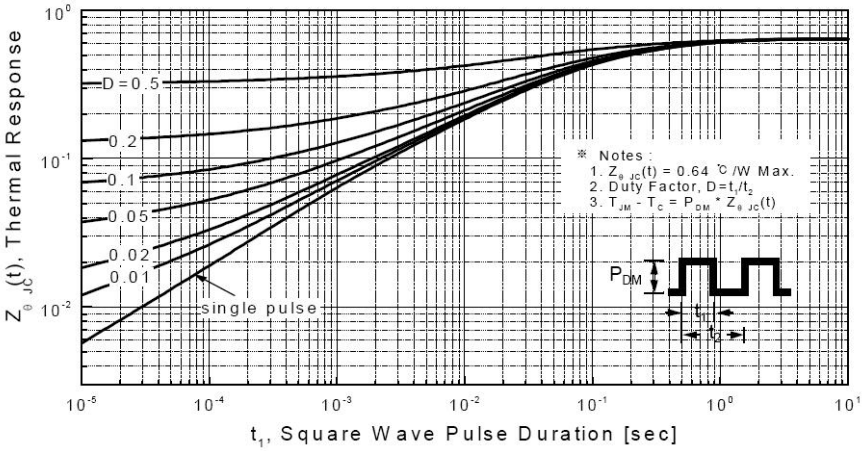


Figure 11. Transient Thermal Response Curve

Fig 12. Gate Charge Test Circuit & Waveform

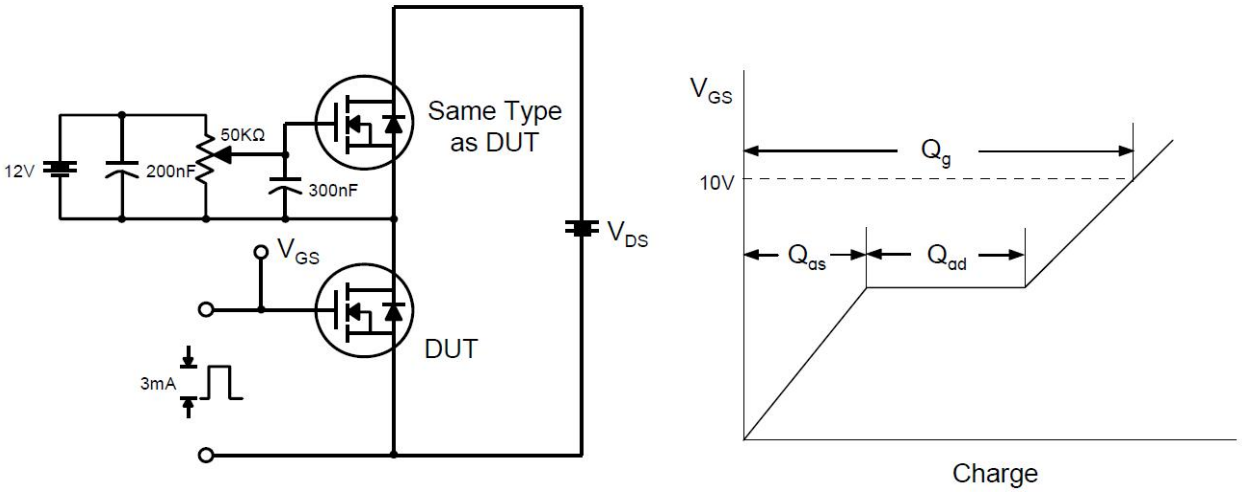


Fig 13. Resistive Switching Test Circuit & Waveforms

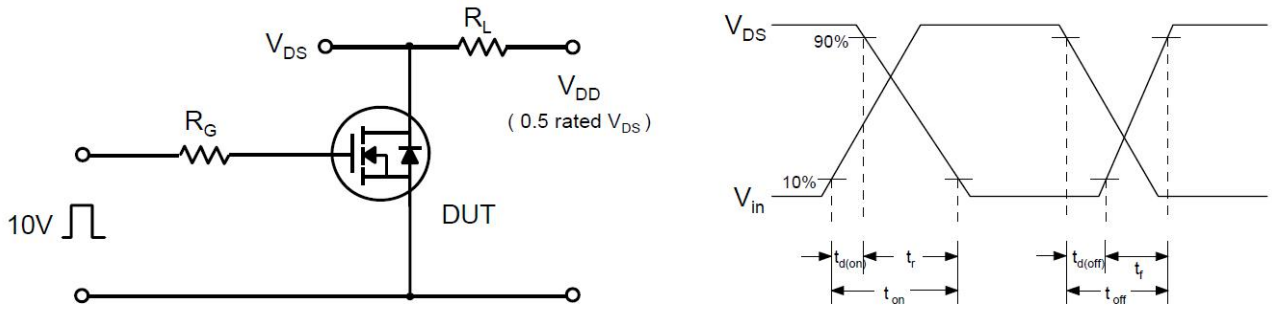


Fig 14. Unclamped Inductive Switching Test Circuit & Waveforms

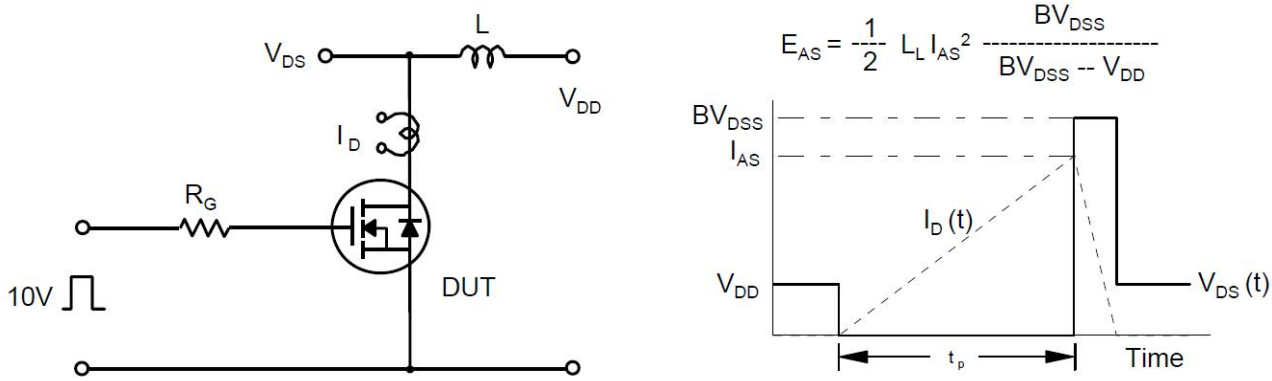
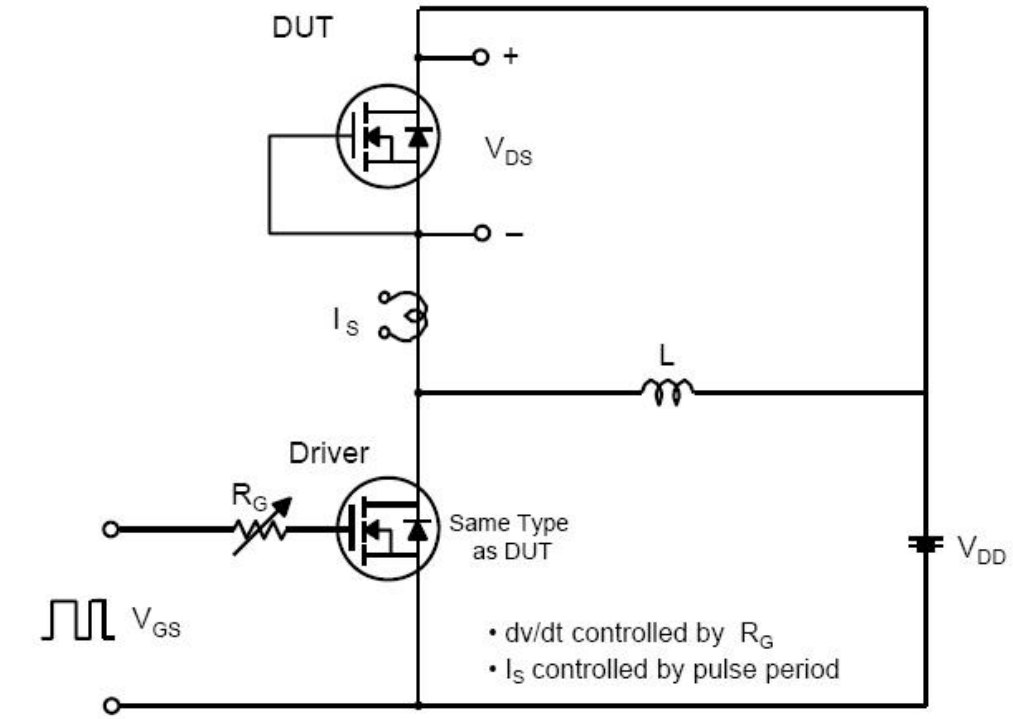
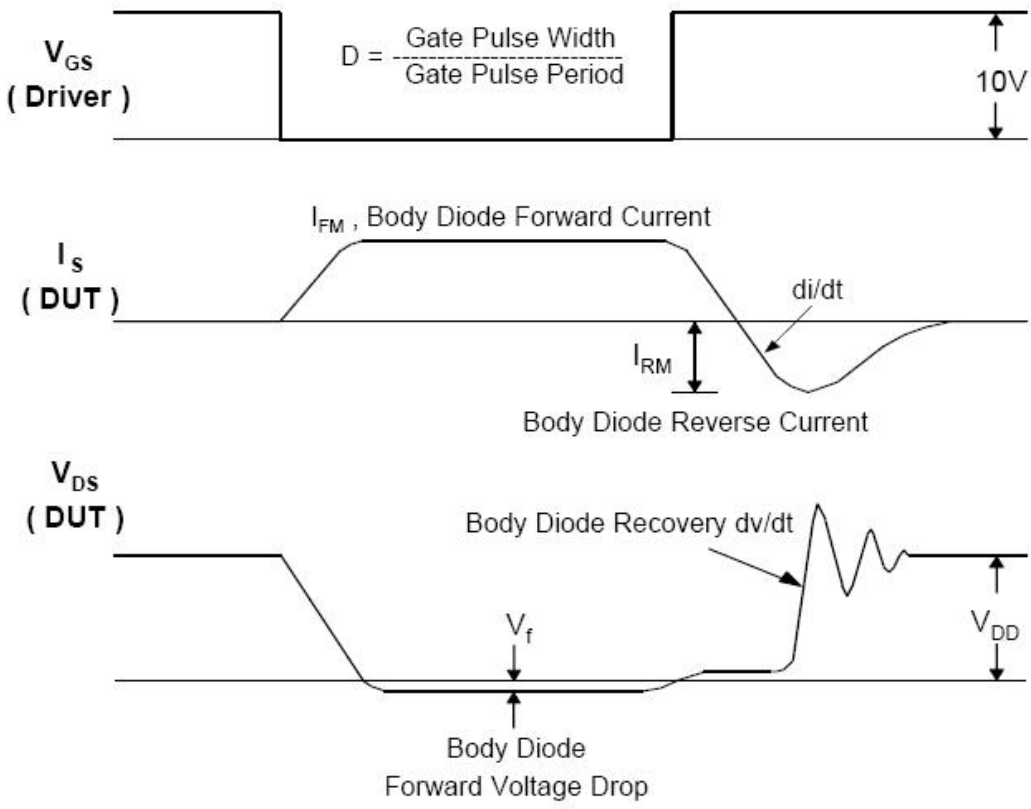
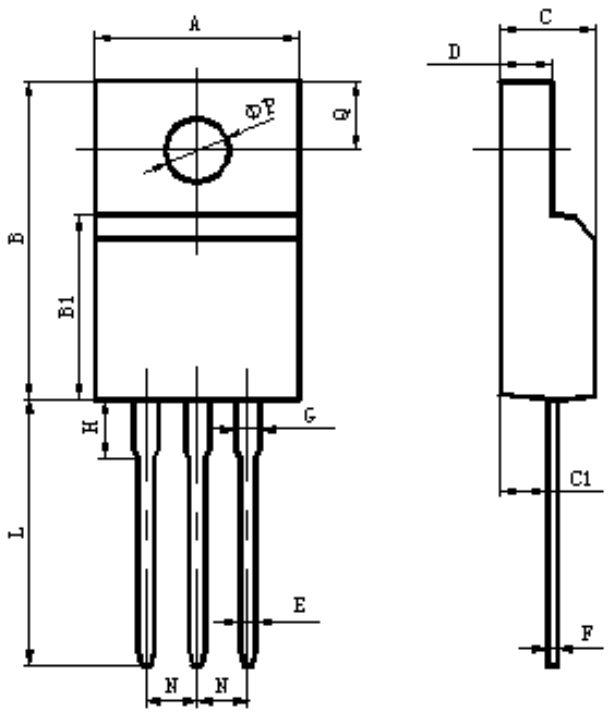


Fig 15. Peak Diode Recovery dv/dt Test Circuit & Waveforms





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