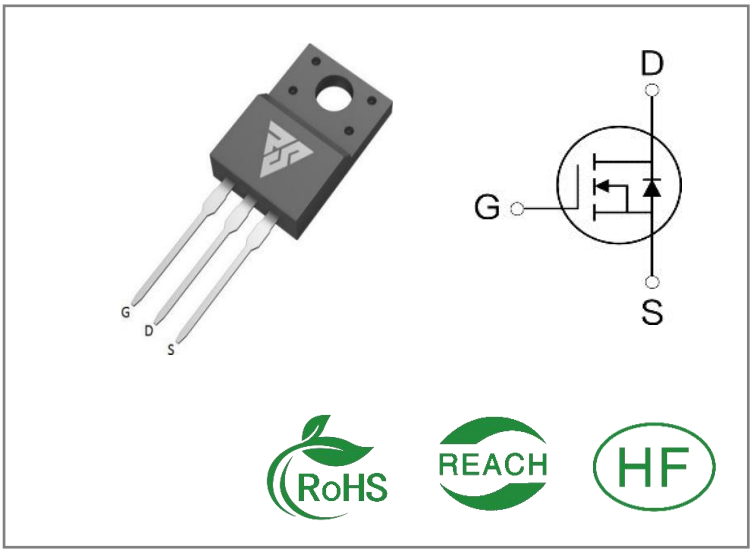
ID	R_{DS}(ON)(Typ)	VDSS
5A	750mΩ	650V



Applications:
- Switch Mode Power Supply(SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)
- AC-DC Switching Power Supply

Features:
- Fast switching speed
- 100% avalanche tested
- Improved dv/dt capability

Ordering Information

Part Number	Package	Marking	Packing	Qty.
RSU5N65F	T0-220F	RSU5N65F	Tube	50 PCS

Absolute Maximun Ratings Tc= 2 5℃ unless otherwise specified

Symbol	Parameter	RSU5N65F	Units
VDSS	Drain-to-Source Voltage	650	V
ID	Continuous Drain Current TC=25℃	5	A
ID	Continuous Drain Current TC=100℃	3	
IDM	Pulsed Drain Current (Note*1)	20	
PD	Power Dissipation	29	W
VGS	Gate- to- Source Voltage	±30	V
EAS	Single Pulse Avalanche Engergy L=10mH,VDS= 50V, RG = 25 Ω，TC=25℃	52	mJ
dv/dt	MOSFET dv/ dt ruggednessVDS = 0...400V	50	V/ns
dv/dt	Reverse diode dv/dt VDS = 0...400V, Tj = 25℃, ISD≤ID	15	V/ns
TL TPKG	Maximum Temperature for Soldering Leads at 0.063in(1.6mm)from Case for 10 seconds Package Body for 10 seconds	300 260	℃
TJ and TSTG	Operating Junction and Storage Temperature Range	-55 to 150	

* Drain Current Limited by Maximum Junction Temperature

Caution: Stresses greater than those listed in the“ Absolute Maximum Ratings” Table may cause permanent damage to the device.

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Thermal Resistance

Symbol	Parameter	RSU5N65F	Units	Test Conditions
RθJC	Junction-to-Case	4.3	℃/ W	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 1 5 0 ℃
RθJA	Junction-to-Ambient	80		1 cubic foot chamber,free air.

OFF Characteristics TJ= 25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BVDSS	Drain- to- source Breakdown Voltage	650	--	--	V	VGS=0V,ID=250μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=650V,VGS=0V
IGSS	Gate- to- Source Forward Leakage	--	--	100	nA	VGS=30V ,VDS=0V
	Gate- to- Source Reverse Leakage	--	--	-100		VGS=-30V ,VDS=0V

ON Characteristics TJ=25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RDS(on)	Static Drain- to- Source On-Resistance(Note*2)	--	750	900	mΩ	VGS=10V,ID=2.5A
VGS(TH)	Gate Threshold Voltage	2.5	--	4	V	VGS=VDS,ID=250μA

Resistive Switching Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
td(ON)	Turn- on Delay Time	--	7	--	nS	VDS=400V ID=2.5A RG=5Ω
trise	Rise Time	--	3	--		
td(OFF)	Turn- OFF Delay Time	--	52	--		
tfall	Fall Time	--	10	--		

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Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	370	--	pF	VGS=0V VDS=50V f=1MHz
Coss	Output Capacitance	--	25	--		
Crss	Reverse Transfer Capacitance	--	0.5	--		
Qg	Total Gate Charge	--	10.5	--	nC	VDS=480V ID=5A VGS=10V
Qgs	Gate- to- Source Charge	--	2.6	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	5.3	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	5	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	20	A	
VSD	Diode Forward Voltage	--	0.9	1.2	V	IS=2A,VGS=0V
trr	Reverse Recovery Time	--	210	--	nS	VR=50V IS=2.5A,di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	0.66	--	μC	

Notes:

* 1. Repetitive rating, pulse width limited by maximum junction temperature.
* 2. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

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Typical Feature Curve

Figure1. Safe operating area for TO-220，TO-263

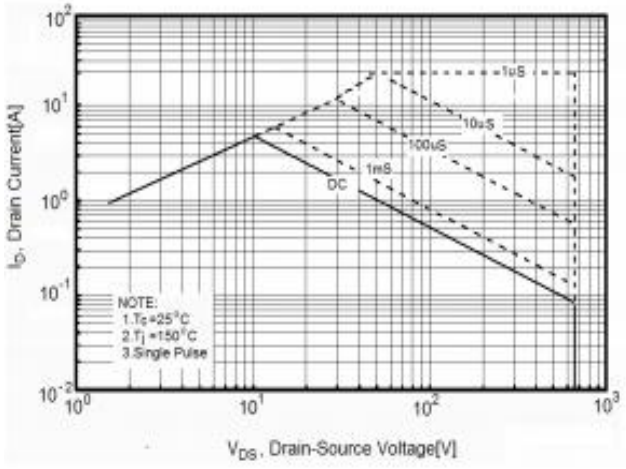

Figure2. Safe operating area for TO-220F

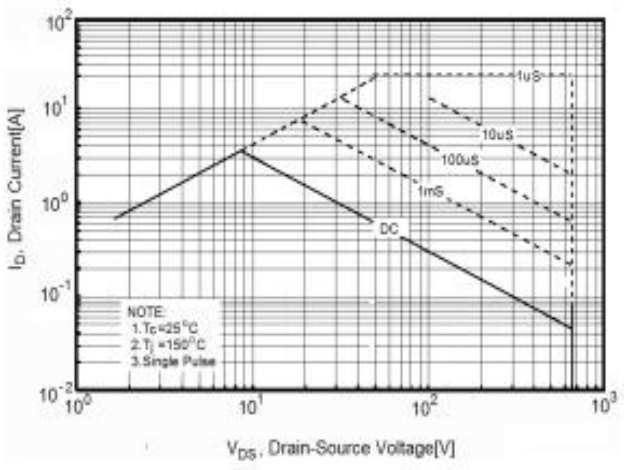

Figure3. Source-Drain Diode Forward Voltage

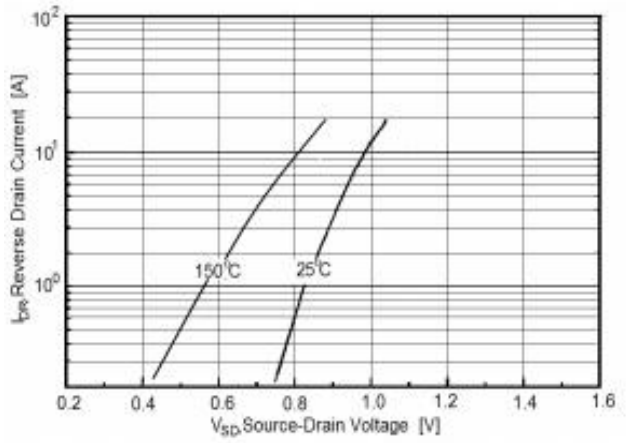

Figure4. Output characteristics

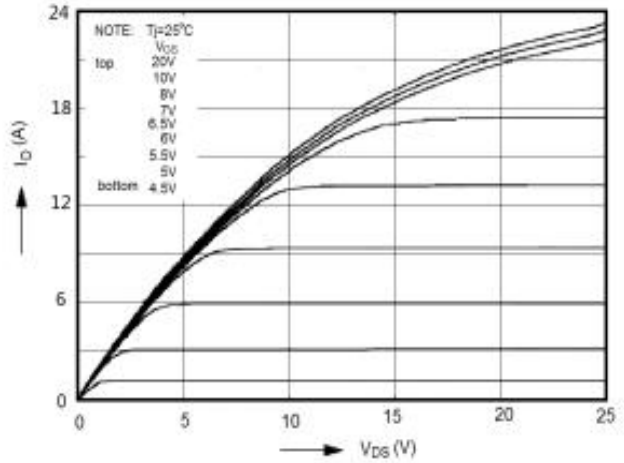

Figure5. Transfer characteristics

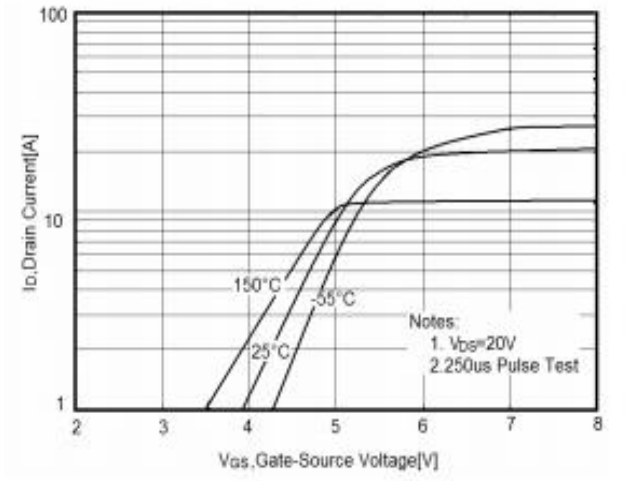

Figure6. Static drain-source on resistance

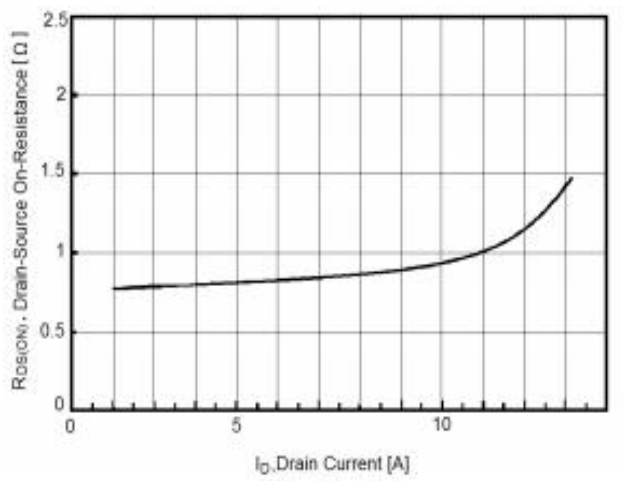

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Figure7. $R_{DS(ON)}$ vs Junction Temperature

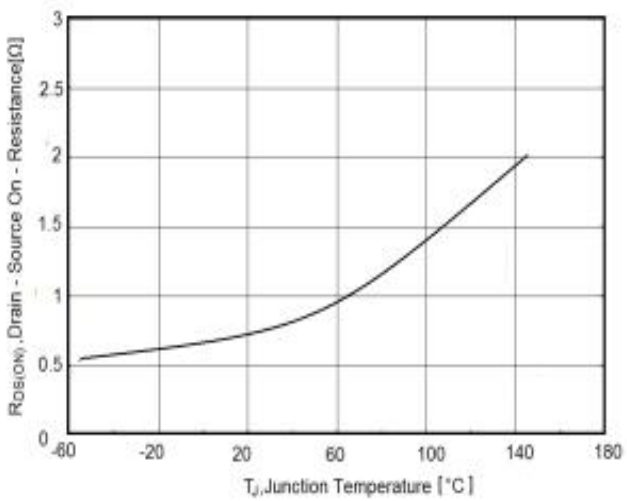


Figure8. BV_{DSS} vs Junction Temperature

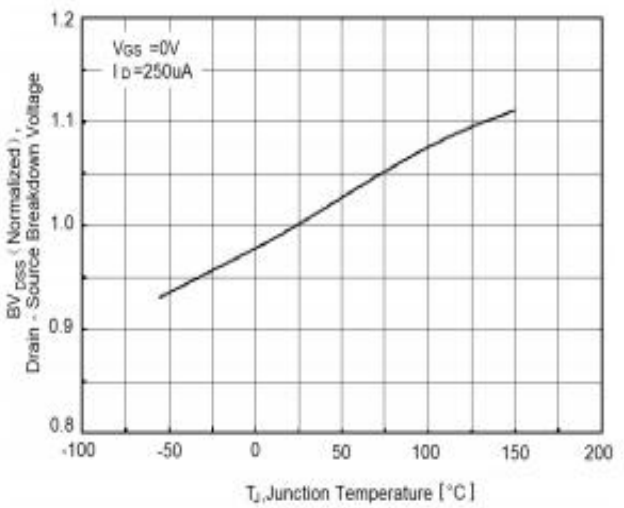


Figure9. Maximum I_D vs Junction Temperature

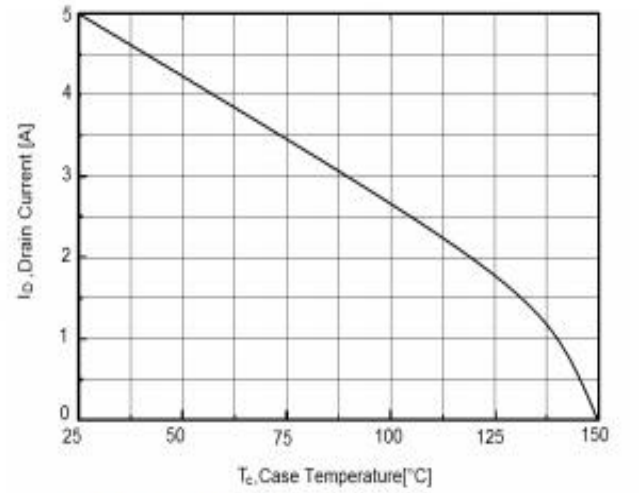


Figure10. Gate charge waveforms

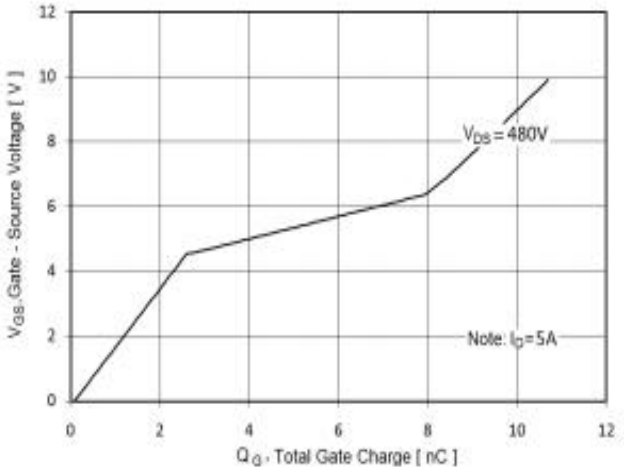


Figure11. Capacitance

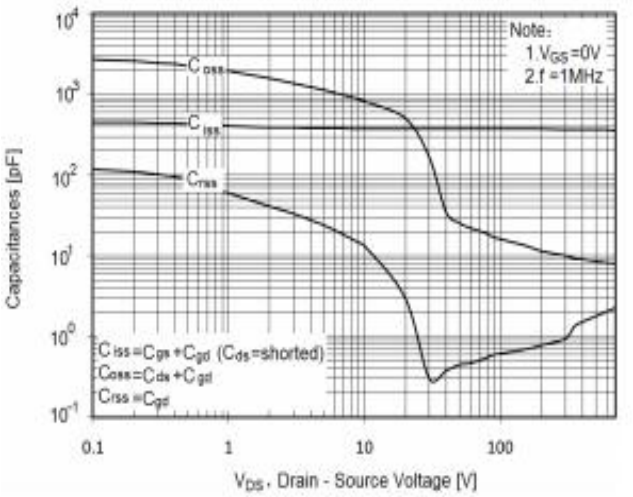
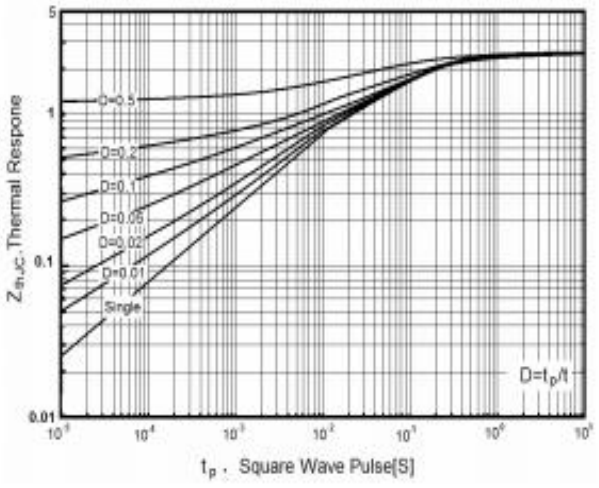


Figure12. Transient Thermal Impedance



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Test Circuits and Waveforms

Figure A: Gate Charge Test Circuit and Waveform

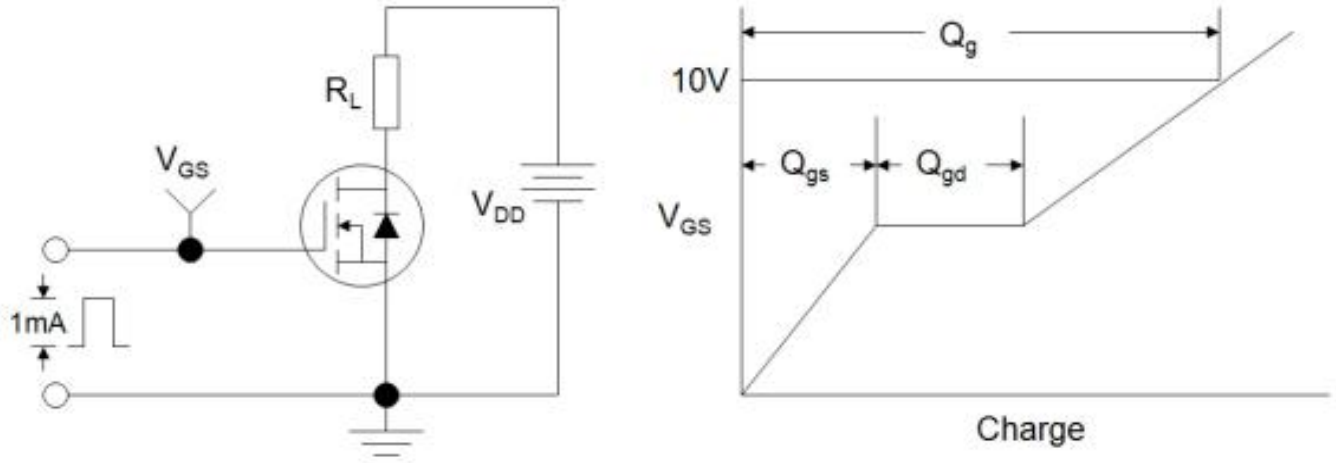


Figure B: Resistive Switching Test Circuit and Waveform

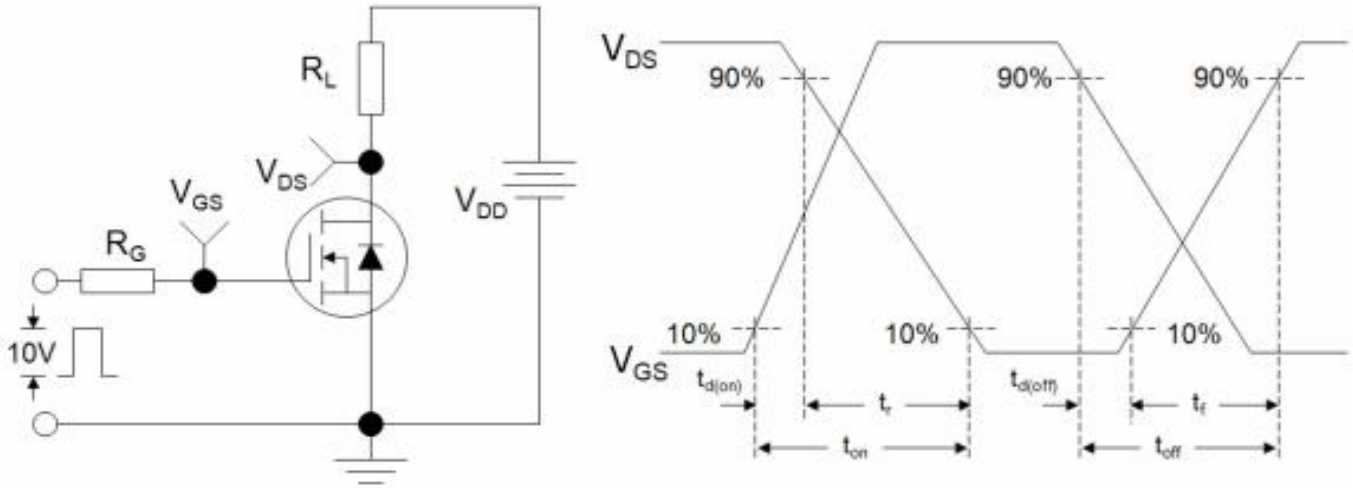
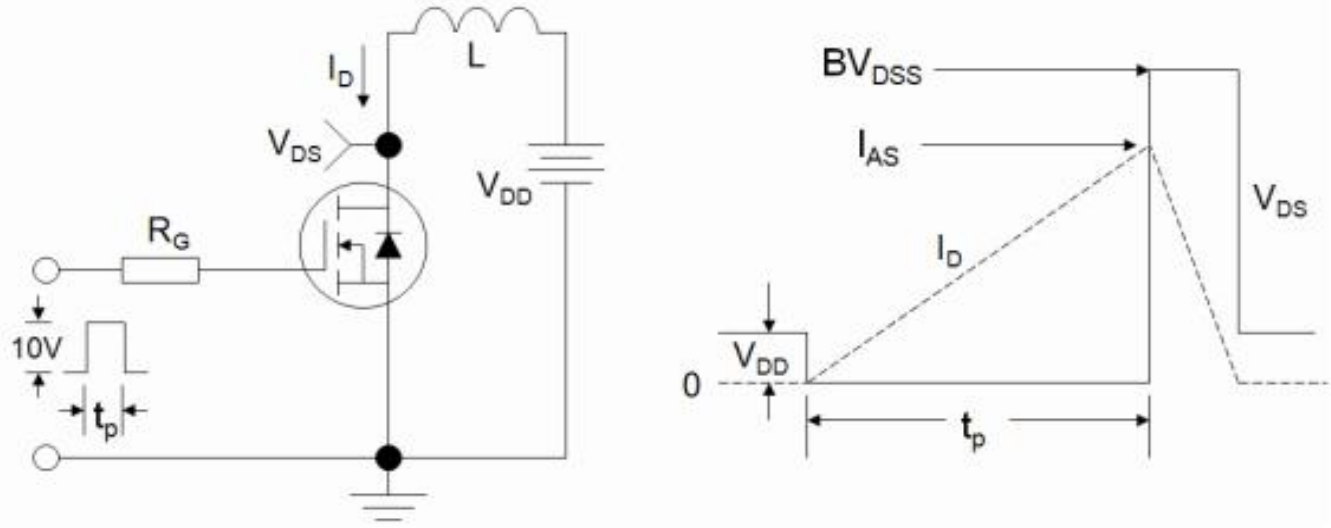


Figure C: Unclamped Inductive Switching Test Circuit and Waveform



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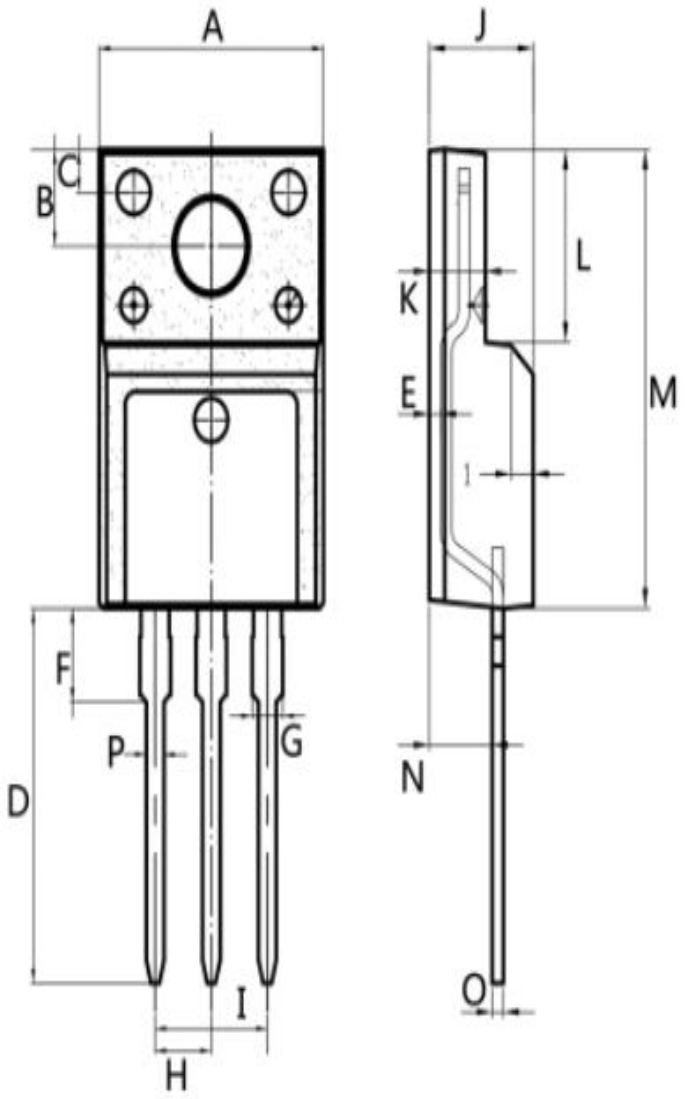
Package outline drawing(TO-220F Unit: mm)



Dim.	Min.	Max.
A	9.95	10.36
A1	4.5	5.0
B	2.95	3.25
C	1.25	1.45
D	12.60	13.60
E	0.40	0.60
F	2.8	3.5
G	1.30	1.45
H	(2.54)	
I	(5.08)	
J	4.60	4.75
K	2.45	2.65
L	6.5	6.8
M	15.4	16.0
N	2.25	3.05
O	0.45	0.55
P	0.70	0.90
All Dimensions in millimeter		

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