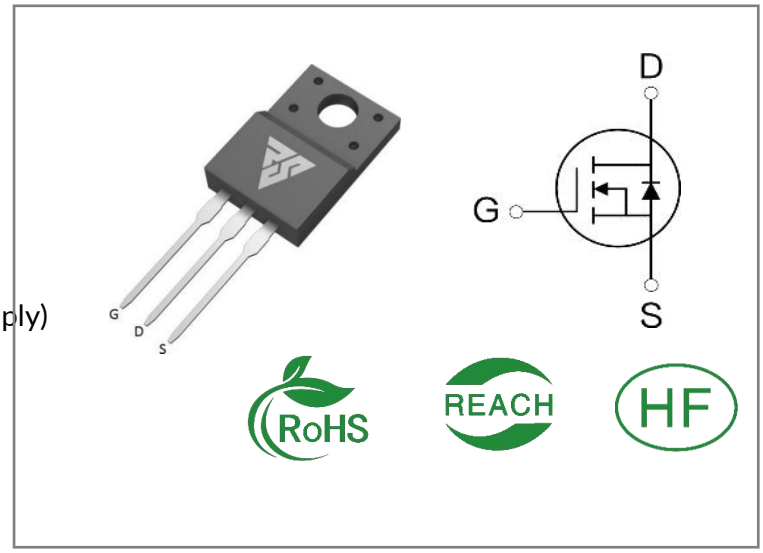
ID	R_{DS}(ON)(Typ)	VDSS
40A	80mΩ	550V



Applications:

- TV and PC Power
- Adopter and Lighting
- Telecom and UPS(Uninterruptible Power Supply)

Features:

- Fast switching speed
- 100% avalanche tested
- Improved dv/dt capability
- VDS @ Tj max 700V

Ordering Information

Part Number	Package	Marking	Packing	Qty.
RS55R090F	T0-220F	RS55R090F	Tube	50 PCS

Absolute Maximun Ratings Tc= 2 5℃ unless otherwise specified

Symbol	Parameter	RS55R090F	Units
VDSS	Drain-to-Source Voltage	550	V
ID	Continuous Drain Current TC=25℃	40	A
ID	Continuous Drain Current TC=100℃	24	
IDM	Pulsed Drain Current	63	
PD	Power Dissipation	126.3	W
VGS	Gate- to- Source Voltage	±30	V
EAS	Single Pulse Avalanche Engergy L=10mH,VDS= 50V, RG=25Ω,TJ=25℃	720	mJ
dv/dt	MOSFET dv/dt ruggedness VDS = 0...400V	50	V/ns
dv/dt	Reverse diode dv/dt VDS = 0...400V Tj = 25℃, ISD≤ID	15	
TL TPKG	Maximum Temperature for Soldering	300	℃
	Leads at 0.063in(1.6mm)from Case for 10 seconds Package Body for 10 seconds	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.

Thermal Resistance

Symbol	Parameter	RS55R090F	Units	Test Conditions
RθJC	Junction-to-Case	0.99	℃/ W	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 1 5 0 ℃
RθJA	Junction-to- Ambient	41.04		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	550	--	--	V	VGS=0V ID=250μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=550V 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	--	80	90	mΩ	VGS=10V ID=20A
VGS(TH)	Gate Threshold Voltage	3	4	5	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	--	35	--	nS	VDS=400V ID=24A RG=2.5Ω
trise	Rise Time	--	34	--		
td(OFF)	Turn- OFF Delay Time	--	50	--		
tfall	Fall Time	--	4.8	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	2110	--	pF	VGS=0V VDS=100V f=1.0MHz
Coss	Output Capacitance	--	82	--		
Crss	Reverse Transfer Capacitance	--	0.7	--		
Qg	Total Gate Charge	--	51	--	nC	VDS=480V ID=24A VGS=10V
Qgs	Gate- to- Source Charge	--	11	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	22	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	40	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	120	A	
VSD	Diode Forward Voltage	--	--	1.0	V	IS=40A VGS=0V
trr	Reverse Recovery Time	--	368	--	nS	VR=300V IS=24A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	3.5	--	μC	

Notes:

* 1. Repetitive rating, pulse width limited by maximum junction temperature.

Typical Feature Curve

Figure 1. Typical Output Characteristics

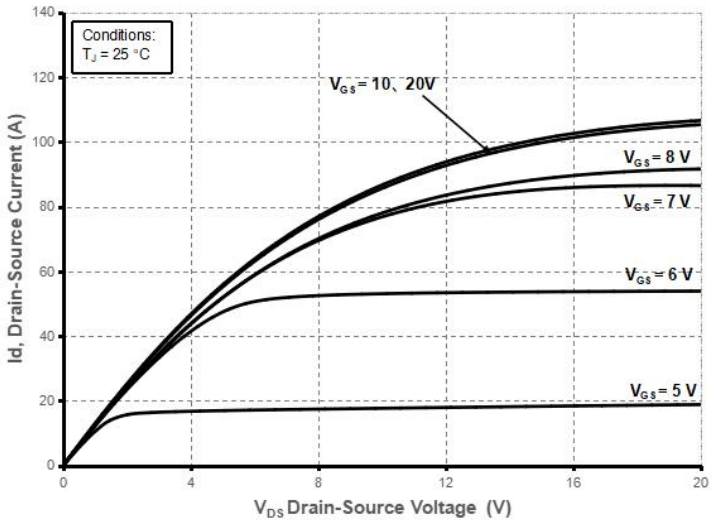


Figure 2. Typical Transfer Characteristics

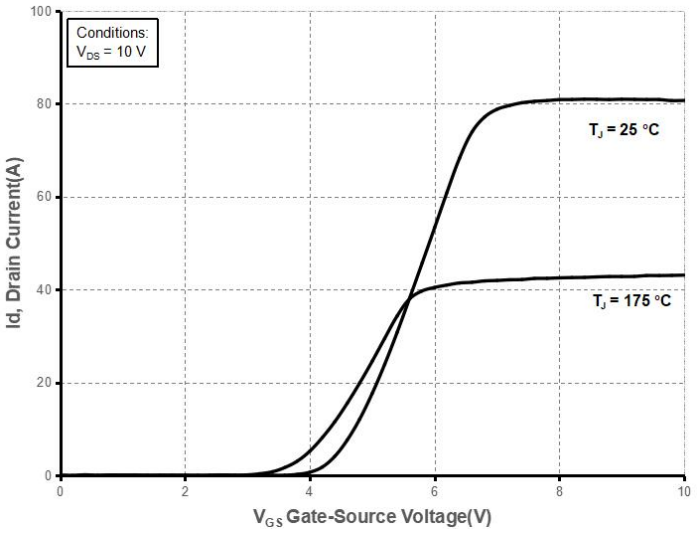


Figure 3. On-Resistance versus Drain Current

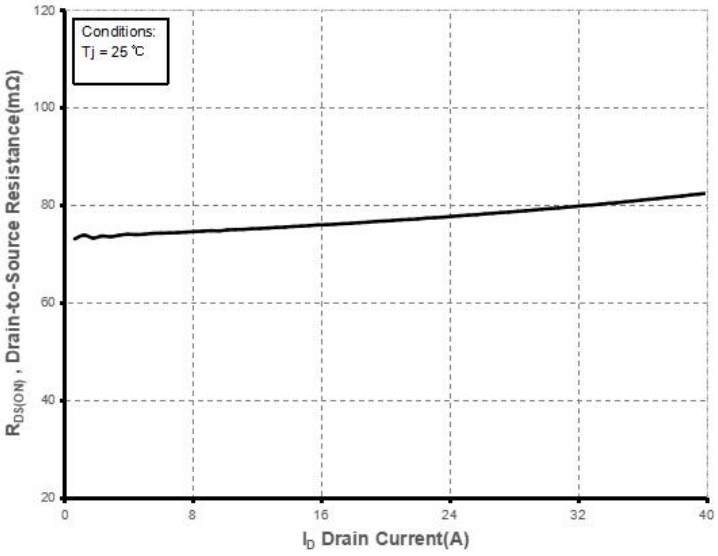


Fig 4. Diode forward voltage versus Current

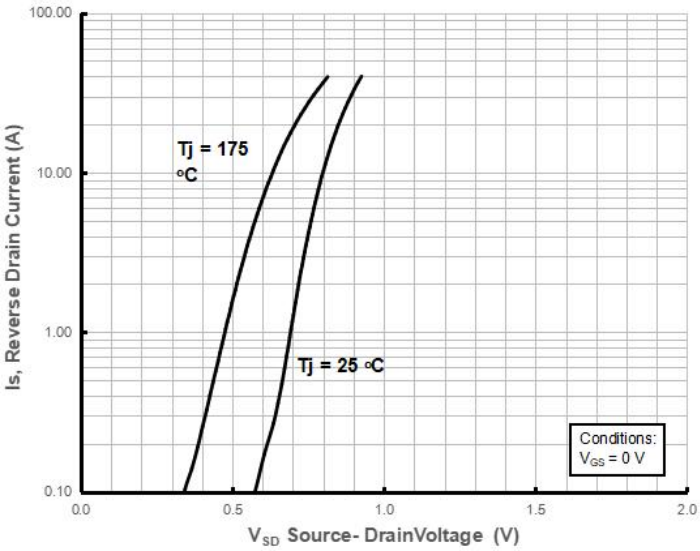


Figure 5. Typical Capacitance versus VDS

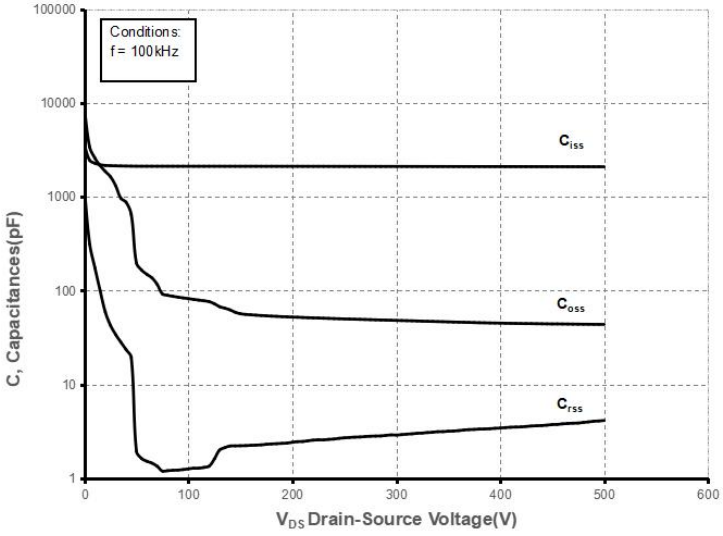


Figure 6. Typical Gate Charge versus VGS

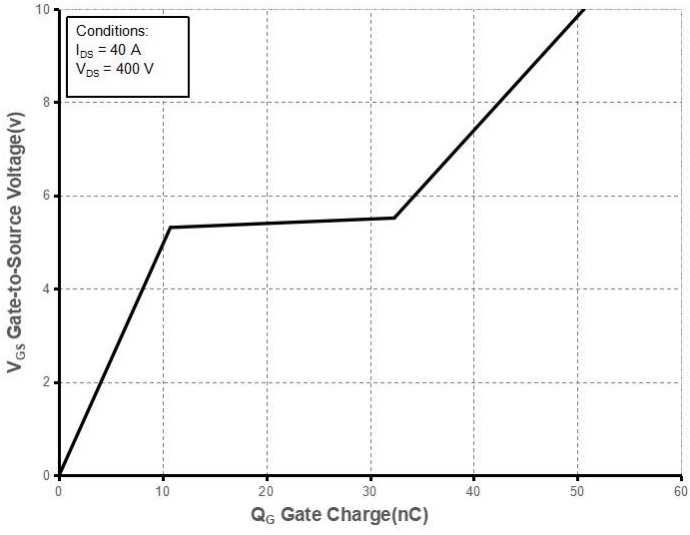


Figure 7. BVDSS Variation with Temperature

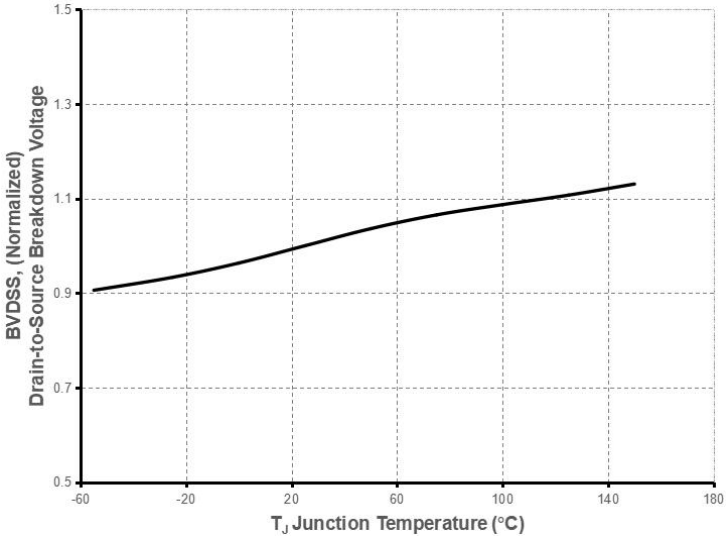


Figure 8. On-Resistance Variation with Temperature

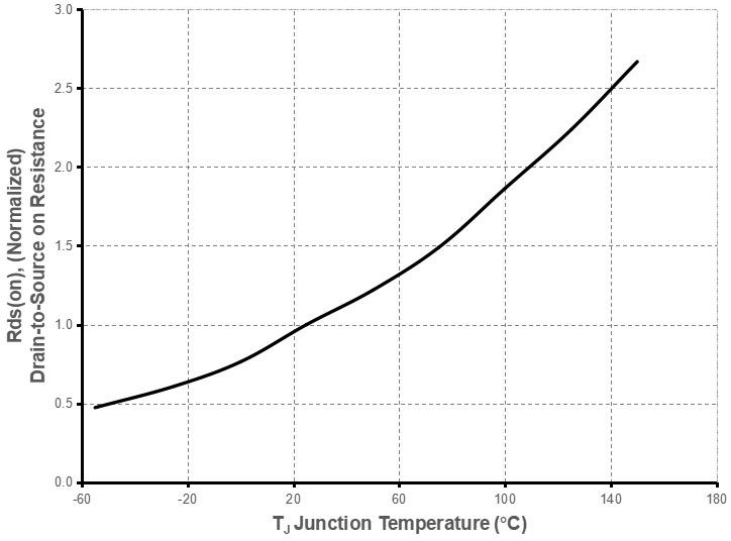


Figure 9. Maximum Safe Operating Area

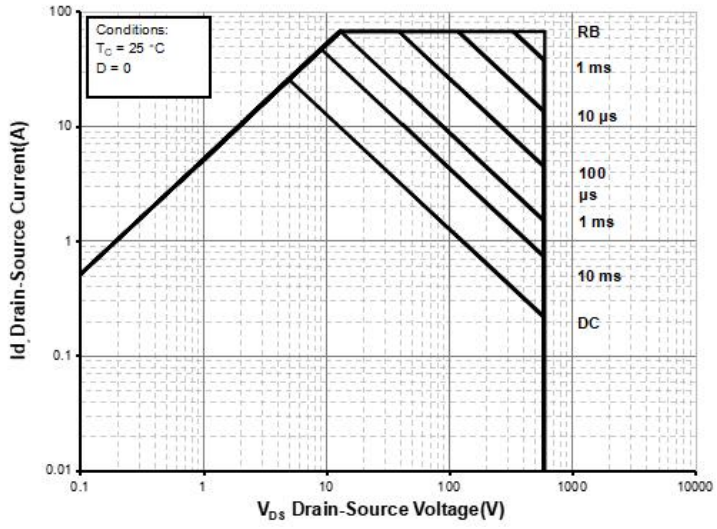
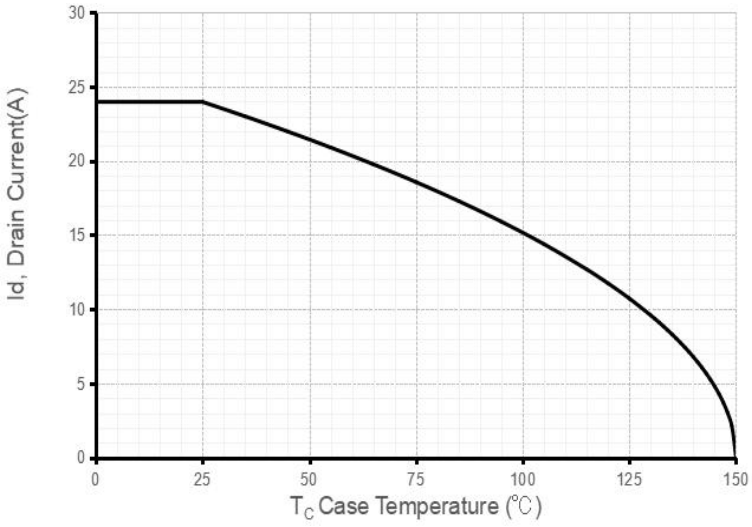


Figure 10. Maximum Continuous Drain versus Case Temperature



Test Circuits and Waveforms

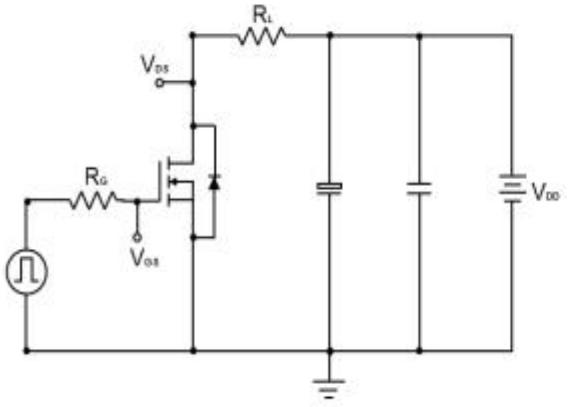


Fig. 12 Test circuit for resistive load switching times

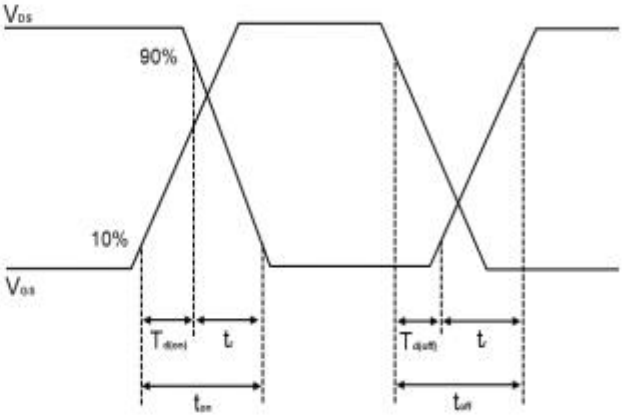


Fig. 13 Switching times waveform

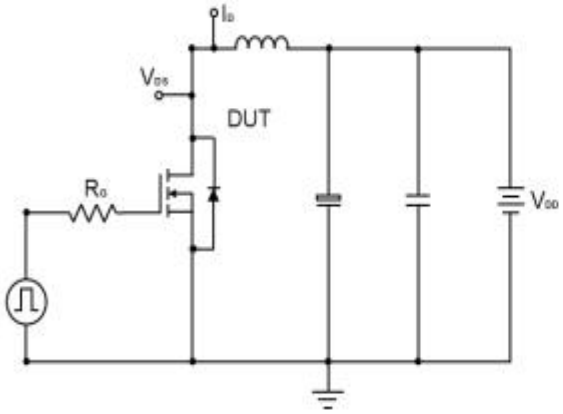


Fig. 14 Test circuit for unclamped inductive load

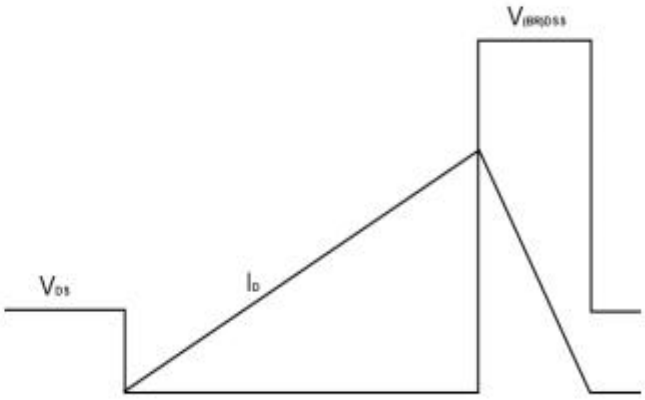


Fig. 15 Unclamped inductive waveform

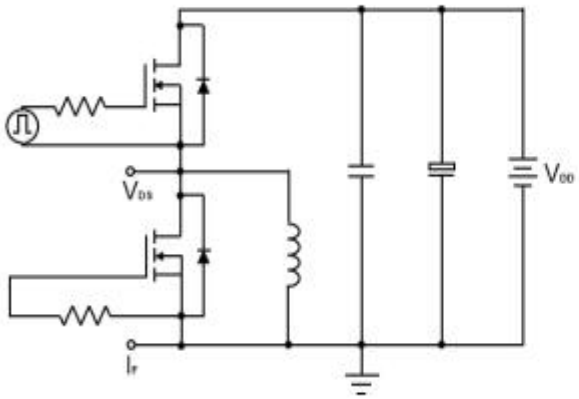


Fig. 16 Test circuit for diode characteristics

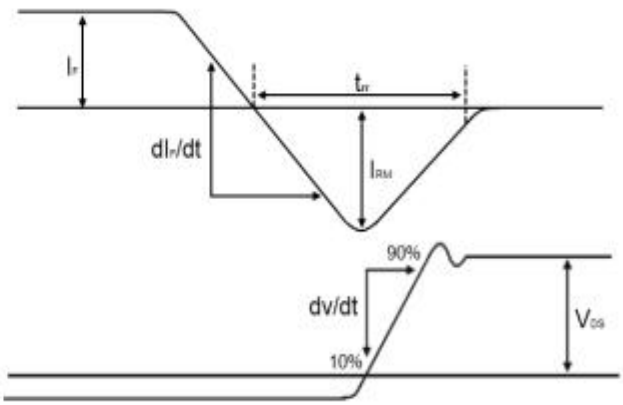
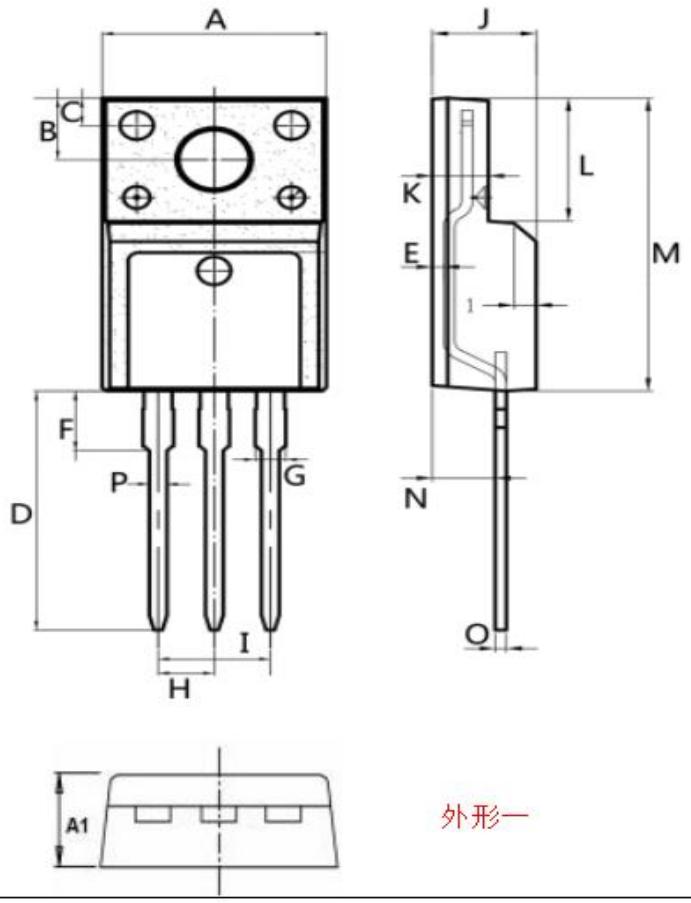


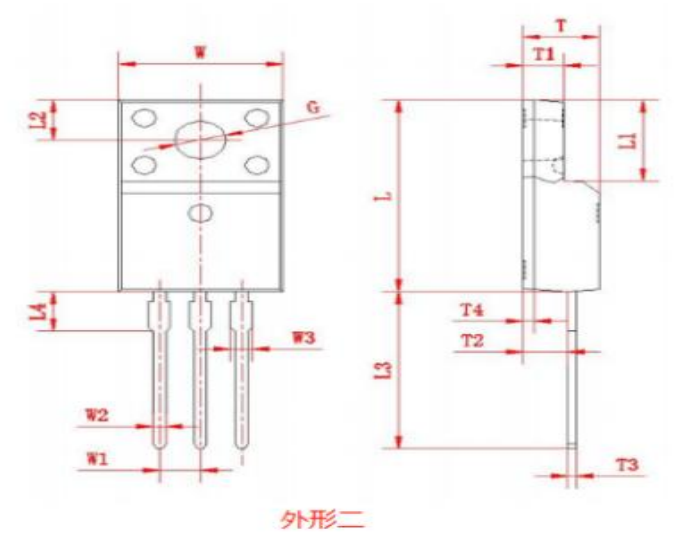
Fig. 17 Diode recovery waveform

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



Dim.	Min.	Max.
W	9.95	10.36
W1	(2.54)	
W2	0.70	0.90
W3	1.25	1.47
L	15.67	16.07
L1	6.48	6.88
L2	3.2	3.4
L3	12.6	13.6
L4	(3.23)	
T	4.50	4.90
T1	2.34	2.74
T2	2.25	2.95
T3	0.45	0.60
T4	(0.70)	
G	3.08	3.28

All Dimensions in millimeter

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