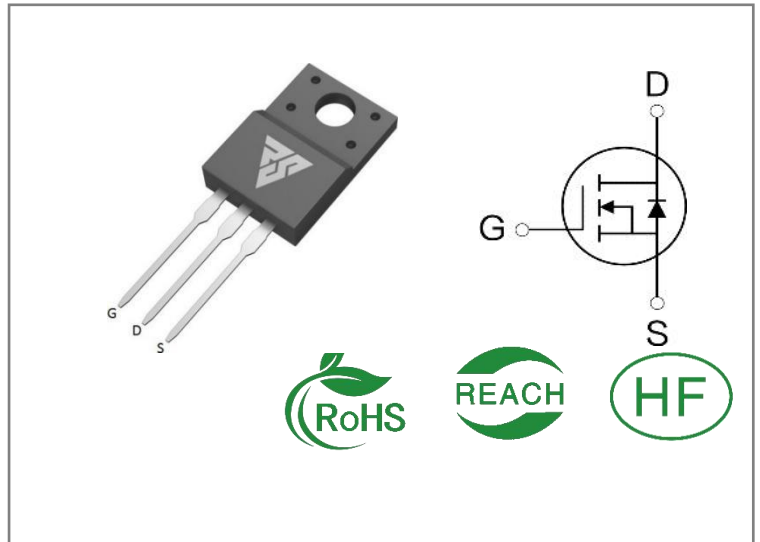


ID	$R_{DS(ON)}$ (Typ)	VDSS
30A	115m Ω	600V


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.
RS60R130F	T0-220F	RS60R130F	Tube	50 PCS

Absolute Maximum Ratings $T_c = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	RS60R130F	Units
VDSS	Drain-to-Source Voltage	650	V
ID	Continuous Drain Current $T_C=25^\circ\text{C}$	30	A
ID	Continuous Drain Current $T_C=100^\circ\text{C}$	19.5	
IDM	Pulsed Drain Current (Note*1)	90	
PD	Power Dissipation	34	W
VGS	Gate- to- Source Voltage	± 30	V
EAS	Single Pulse Avalanche Energy $L=10\text{mH}, V_{DD} = 600\text{V}, R_G = 25 \Omega, T_C=25^\circ\text{C}$	330	mJ
dv/dt	MOSFET dv/ dt ruggedness $V_{DS} = 0\text{...}400\text{V}$	50	V/ns
dv/dt	Reverse diode dv/dt $V_{DS} = 0\text{...}400\text{V}, T_j = 25^\circ\text{C}, I_{SD} \leq I_D$	15	V/ns
TL TPKG	Maximum Temperature for Soldering	300	$^\circ\text{C}$
	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	RS60R130F	Units	Test Conditions
R θ JC	Junction-to-Case	3.7	°C / W	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 1 5 0 °C
R θ JA	Junction-to-Ambient	80		1 cubic foot chamber, free air.

OFF Characteristics TJ= 25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BVDSS	Drain- to- source Breakdown Voltage	600	--	--	V	VGS=0V, ID=250 μ A
IDSS	Drain- to- Source Leakage Current	--	--	1	μ A	VDS=600V, 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°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RDS(on)	Static Drain- to- Source On-Resistance(Note*2)	--	115	130	m Ω	VGS=10V, ID=15A
VGS(TH)	Gate Threshold Voltage	2	--	4	V	VGS=VDS, ID=250 μ A

Resistive Switching Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
td(ON)	Turn- on Delay Time	--	30	--	nS	VDS=300V ID=30A RG=25 Ω
trise	Rise Time	--	45	--		
td(OFF)	Turn- OFF Delay Time	--	145	--		
tfall	Fall Time	--	36	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	1950	--	pF	VGS=0V VDS=50V f=1.0MHz
Coss	Output Capacitance	--	245	--		
Crss	Reverse Transfer Capacitance	--	29	--		
Qg	Total Gate Charge	--	50	--	nC	VDS=480V ID=30A VGS=10V
Qgs	Gate- to- Source Charge	--	10	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	14	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	30	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	90	A	
VSD	Diode Forward Voltage	--	--	1.4	V	IS=30A,VGS=0V
trr	Reverse Recovery Time	--	370	--	nS	VR=100V IS=30A,di/dt=100A /μs
Qrr	Reverse Recovery Charge	--	6.4	--	μC	

Notes:

- * 1. Repetitive rating, pulse width limited by maximum junction temperature.
- * 2. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

Typical Feature Curve

Figure1. Output Characteristics

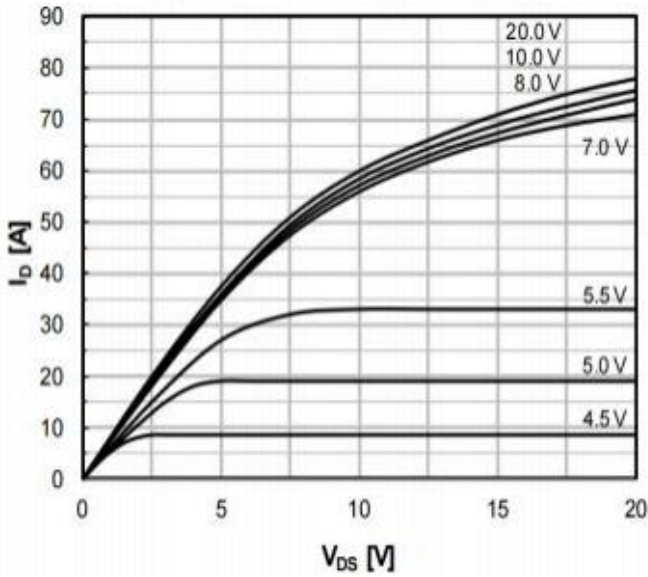


Figure2. Transfer Characteristics

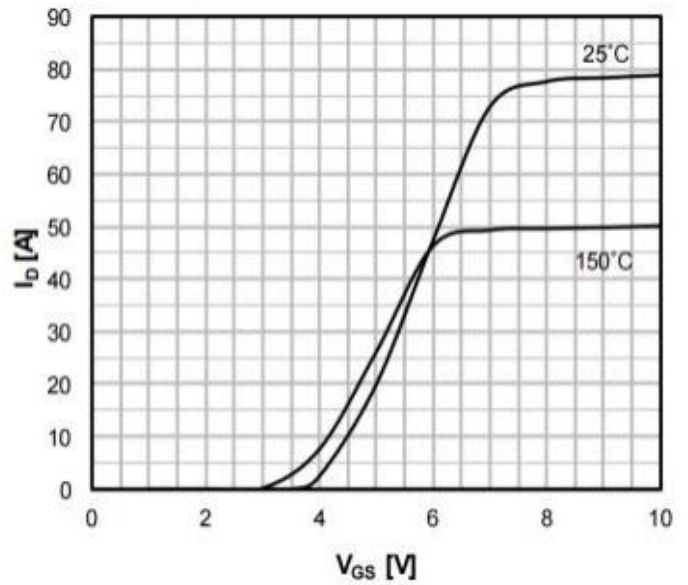


Figure 3. On-Resistance VS.Drain Current

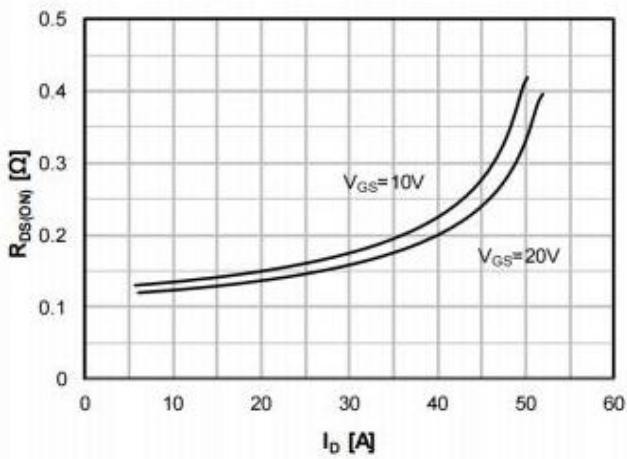


Figure 4. Capacitance

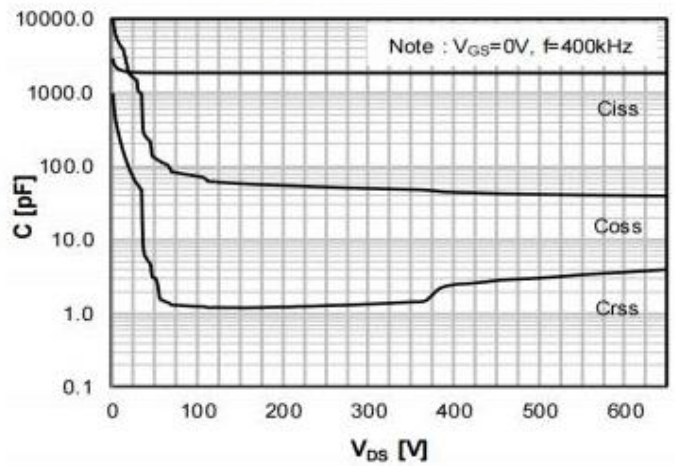


Figure 5. Gate Charge

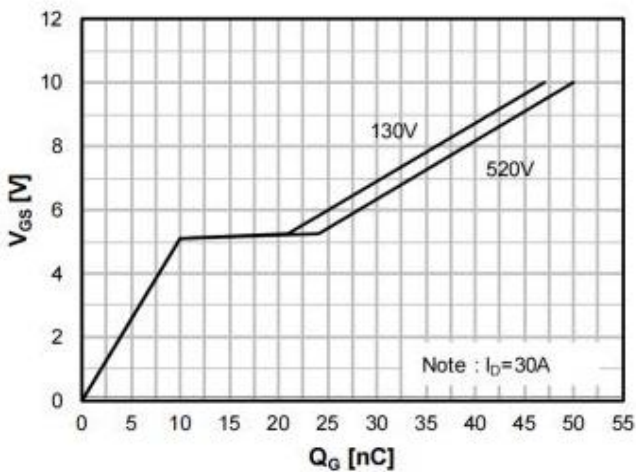


Figure 6. Body Diode Forward Voltage

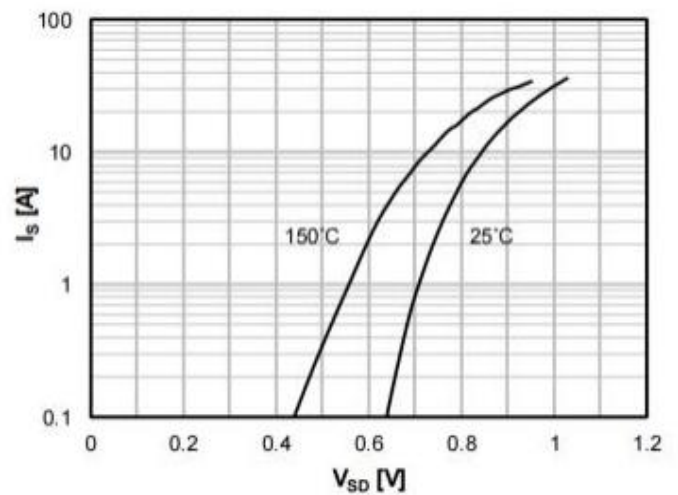


Figure 7. On-Resistance vs. Junction Temperature

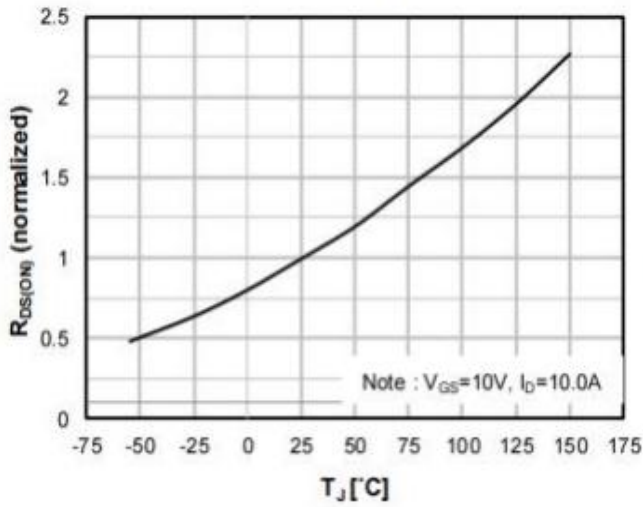


Figure 8. Breakdown Voltage vs. Junction Temperature

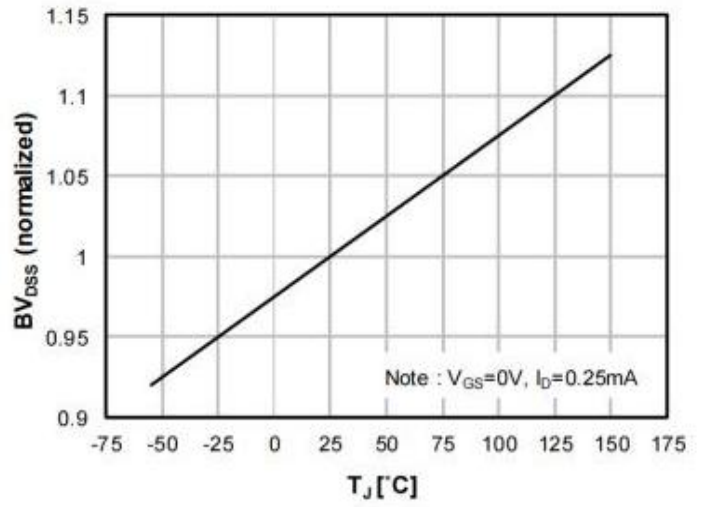


Figure 9. Safe operation area

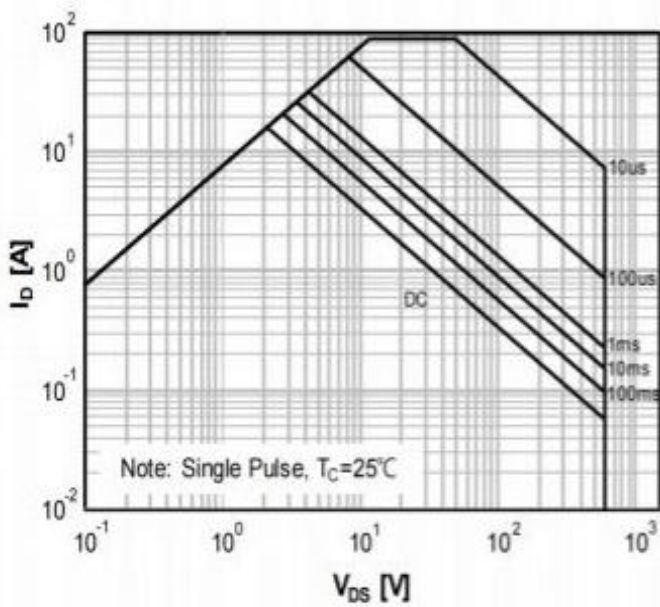
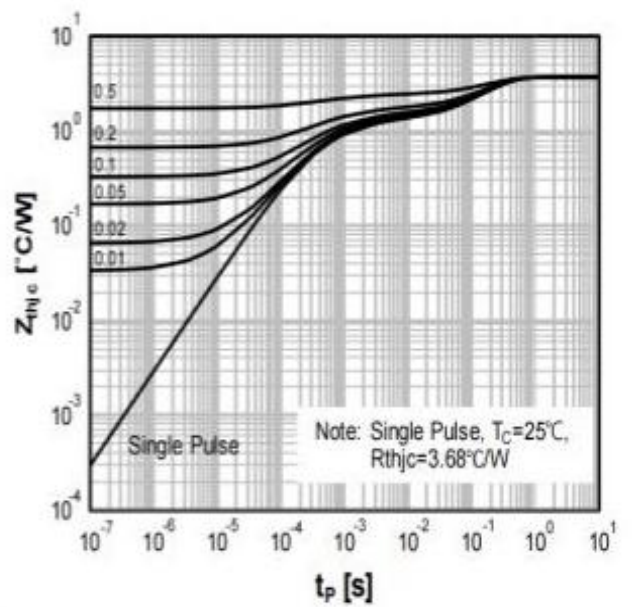


Figure 10. Transient Thermal Impedance



Test Circuits and Waveforms

Figure A: Gate Charge Test Circuit and Waveform

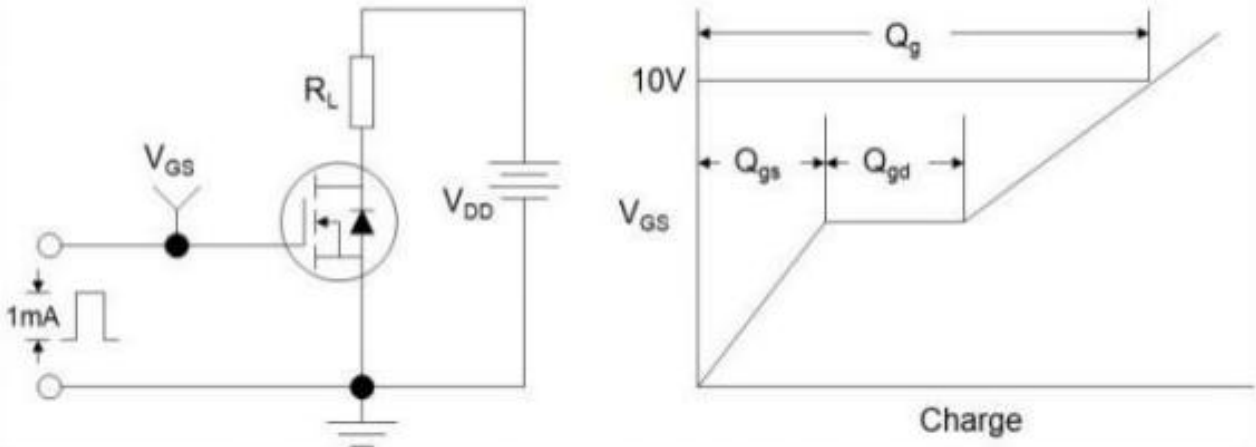


Figure B: Resistive Switching Test Circuit and Waveform

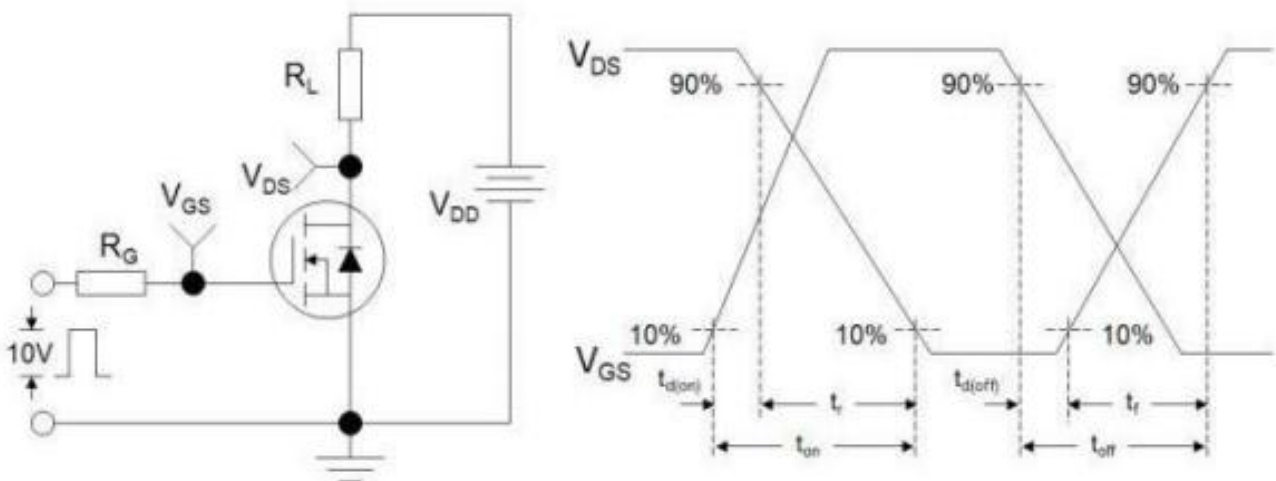
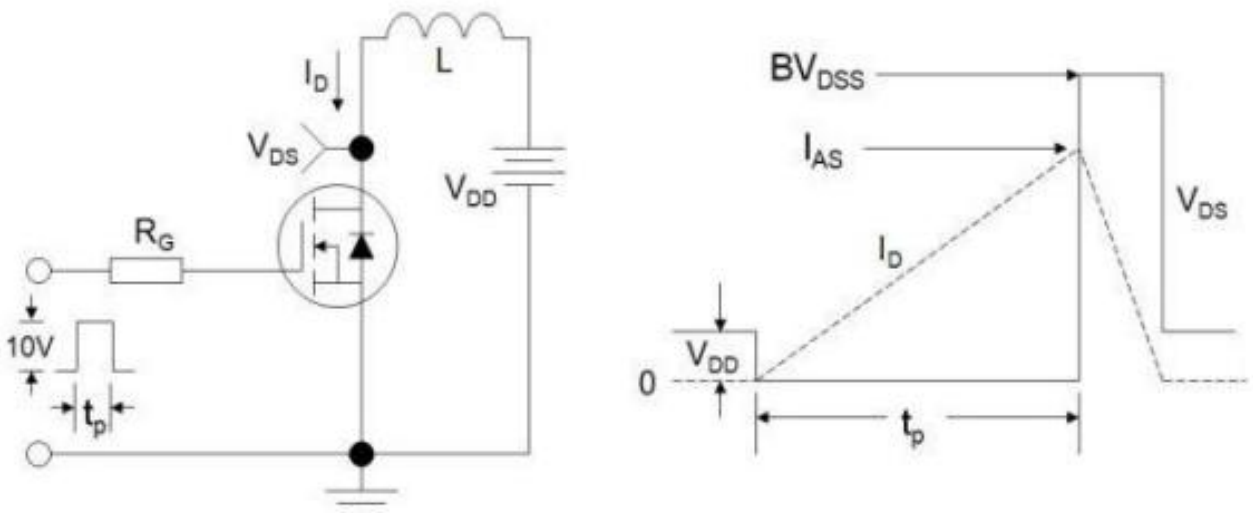
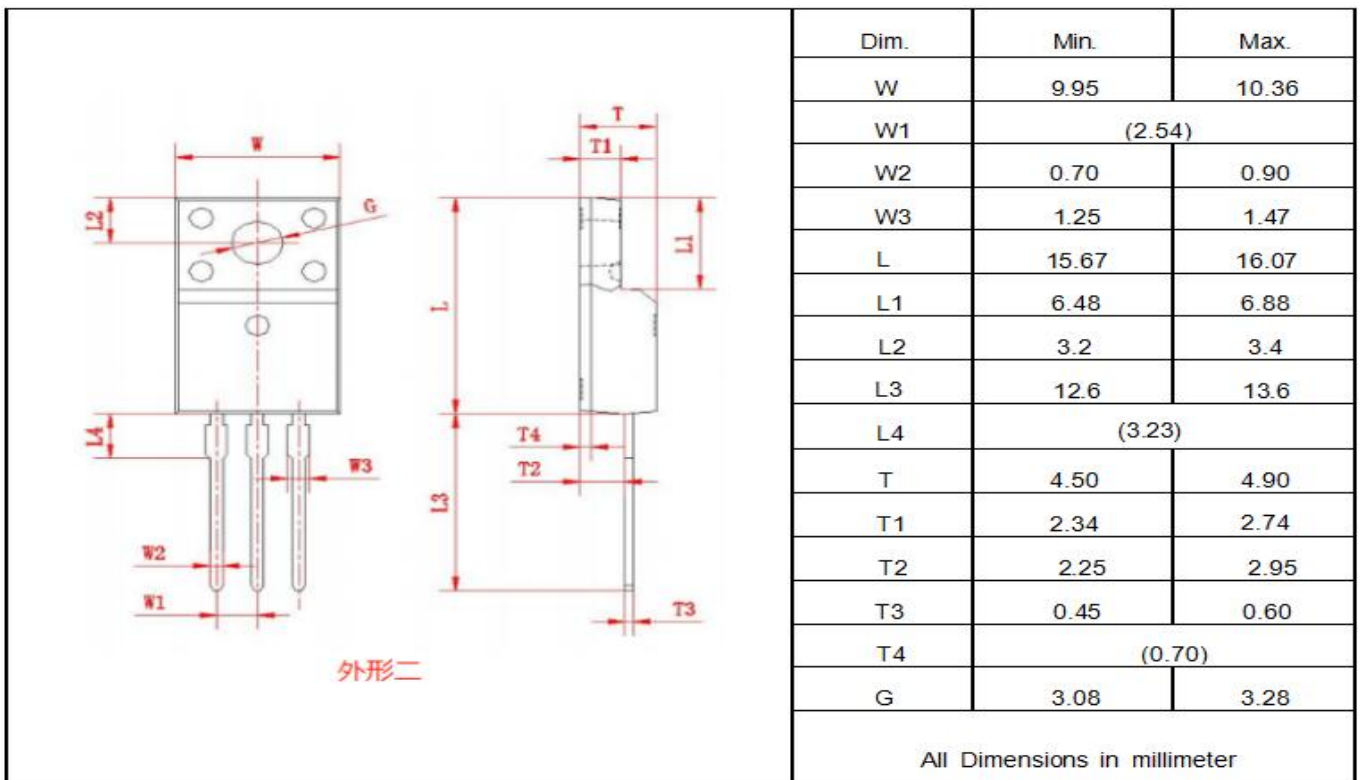
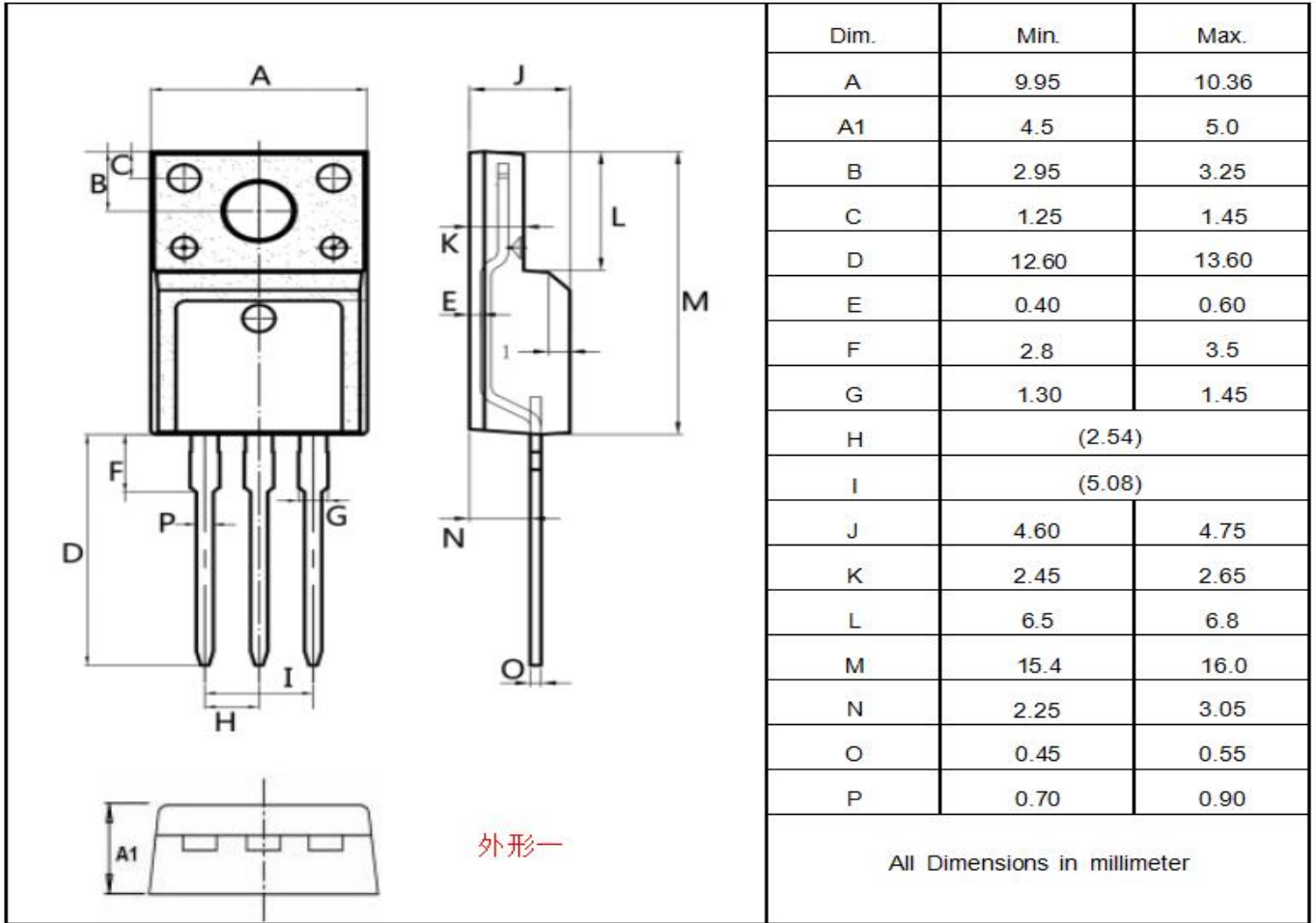


Figure C: Unclamped Inductive Switching Test Circuit and Waveform



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



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