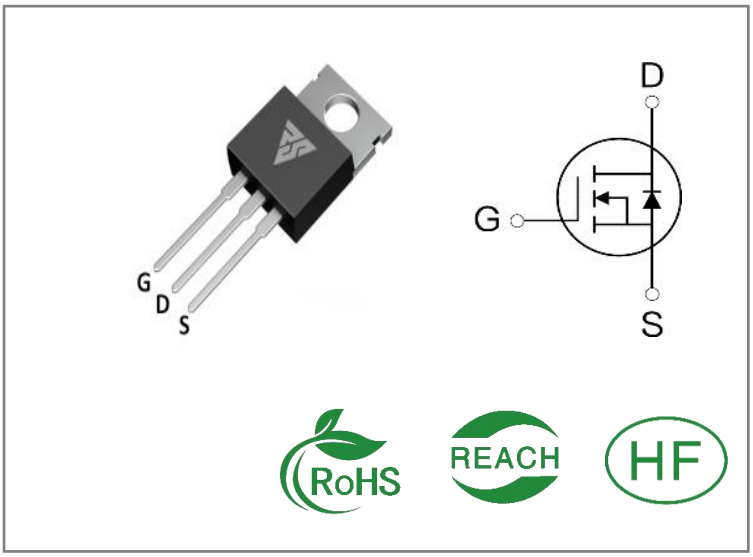
ID	R_{DS}(ON)(Typ)	VDSS
9A	0.25Ω	200V



Applications:
- Load Switch
- PWM Applications
- Power Managment

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

Ordering Information

Part Number	Package	Marking	Packing	Qty.
RS630T	T0-220	RS630T	Tube	50 PCS

Absolute Maximun Ratings Tc= 2 5℃ unless otherwise specified

Symbol	Parameter	RS630T	Units
VDSS	Drain-to-Source Voltage	200	V
ID	Continuous Drain Current TC=25℃	9	A
IDM	Pulsed Drain Current	36	
PD	Power Dissipation	74	W
VGS	Gate- to- Source Voltage	±20	V
EAS	Single Pulse Avalanche Engergy L = 10mH,VDD = 50V, VGS = 10V, Tj = 25℃	115	mJ
TL TPKG	Maximum Temperature for Soldering	300 260	℃
	Leads at 0.063in(1.6mm)from Case for 10 seconds Package Body for 10 seconds		
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	RS630T	Units	Test Conditions
RθJC	Junction-to-Case	1.7	℃/ W	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 1 5 0 ℃
RθJA	Junction-to-Ambient	60		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	200	--	--	V	VGS=0V,ID=250μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=200V,VGS=0V
IGSS	Gate- to- Source Forward Leakage	--	--	100	nA	VGS=20V ,VDS=0V
	Gate- to- Source Reverse Leakage	--	--	-100		VGS=-20V ,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	--	0.25	0.3	Ω	VGS=10V,ID=4.5A
VGS(TH)	Gate Threshold Voltage	2.0	--	4.0	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	VDD=100V ID=9A RG=25Ω
trise	Rise Time	--	7	--		
td(OFF)	Turn- OFF Delay Time	--	98	--		
tfall	Fall Time	--	32	--		

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Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	605	--	pF	VGS= 0V VDS=25V f=1.0MHz
Coss	Output Capacitance	--	87	--		
Crss	Reverse Transfer Capacitance	--	37	--		
Qg	Total Gate Charge	--	19	--	nC	VDS= 160V ID=9A VGS=10V
Qgs	Gate- to- Source Charge	--	3	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	8	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	9	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	36	A	
VSD	Diode Forward Voltage	--	--	1.4	V	IS=4.5A,VGS=0V
trr	Reverse Recovery Time	--	145	--	nS	VGS=0V IS=9A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	820	--	nC	

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

Figure 1. Output Characteristics (T_J= 25ºC)

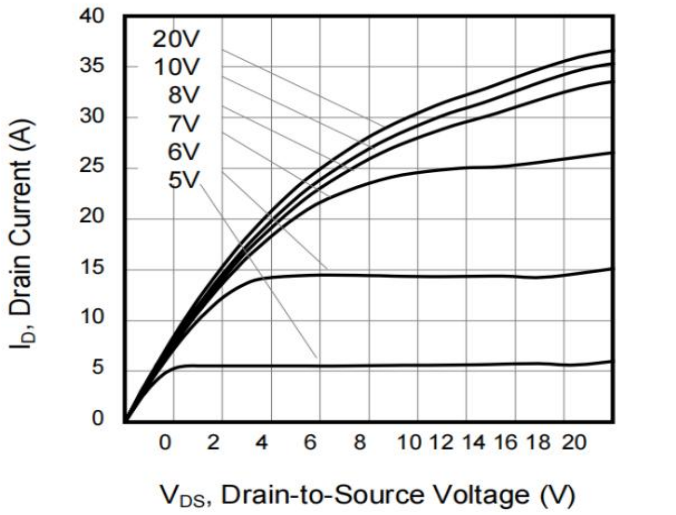

Figure 2. Body Diode Forward Voltage

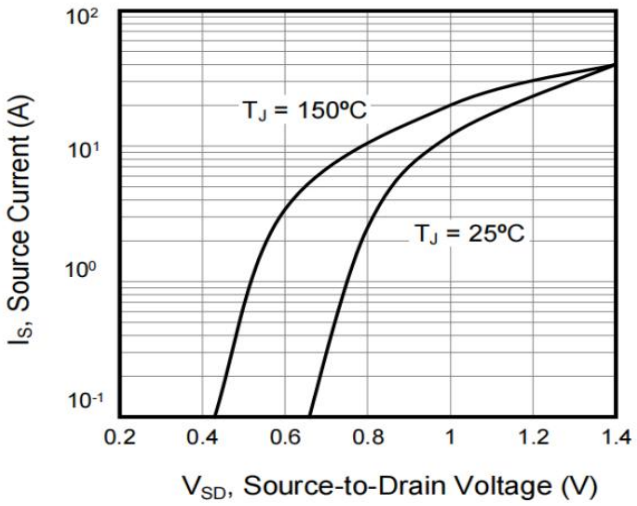

Figure 3. Drain Current vs. Temperature

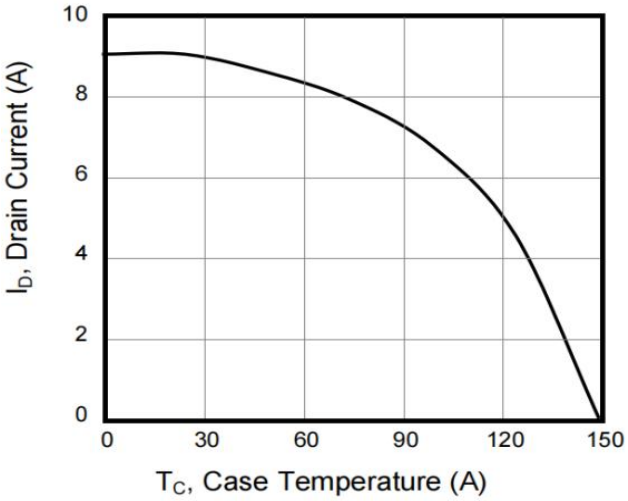

Figure 4. BV_{DSS} Variation vs. Temperature

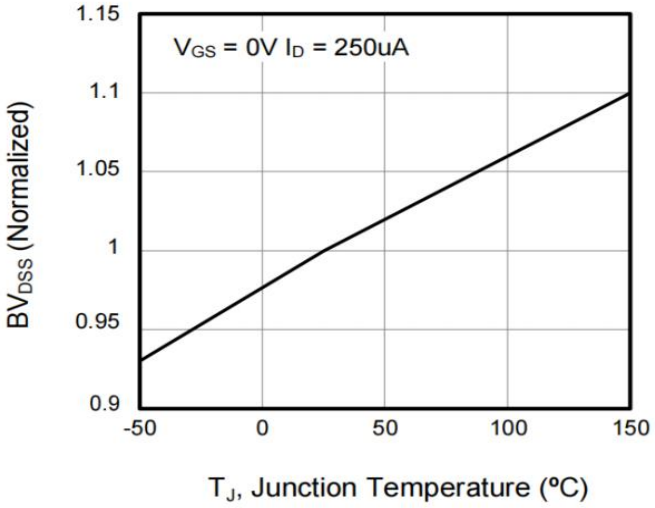

Figure 5. Transfer Characteristics

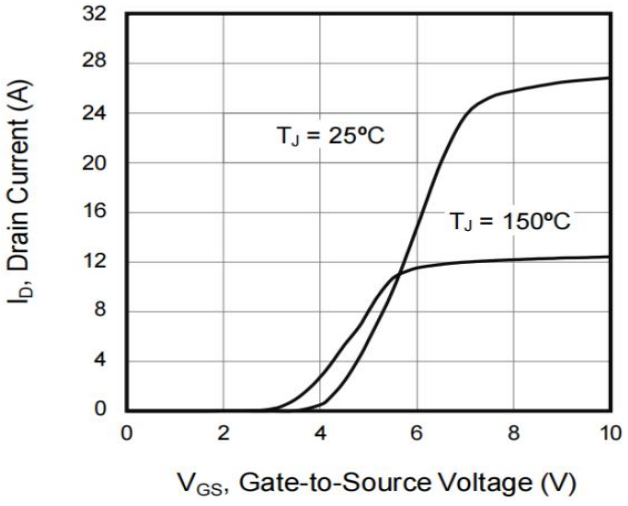

Figure 6. On-Resistance vs. Temperature

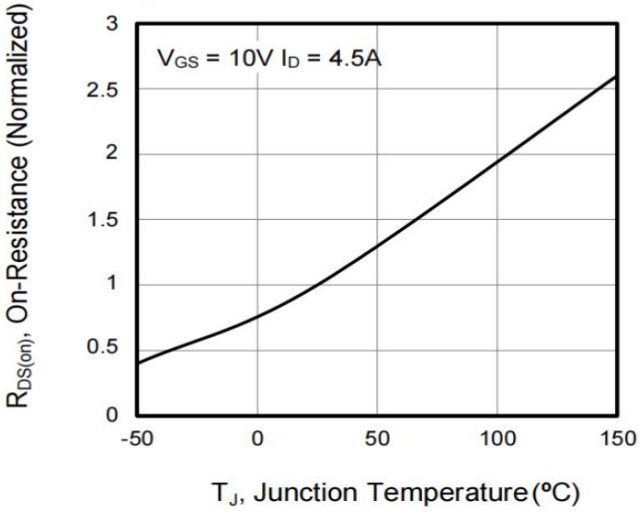

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Figure 7. Capacitance

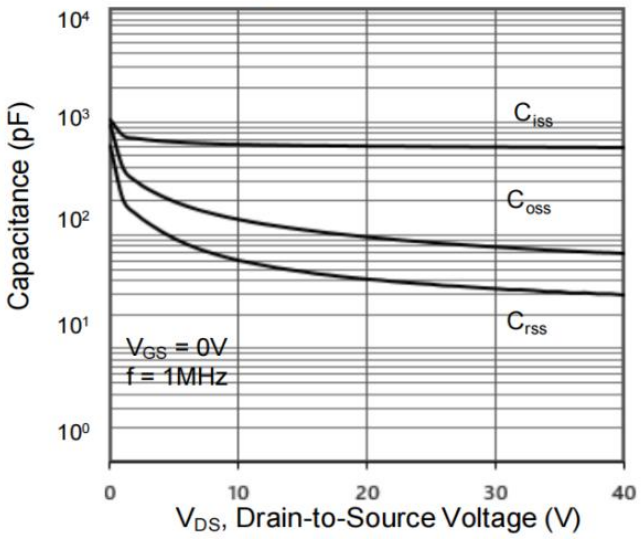


Figure 8. Gate Charge

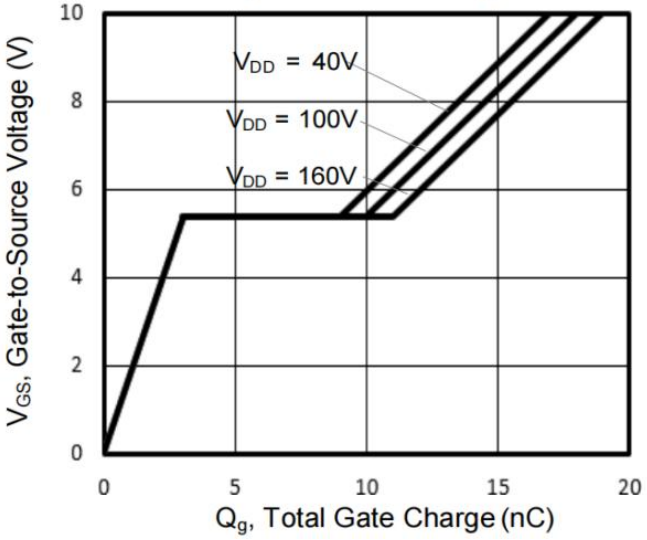
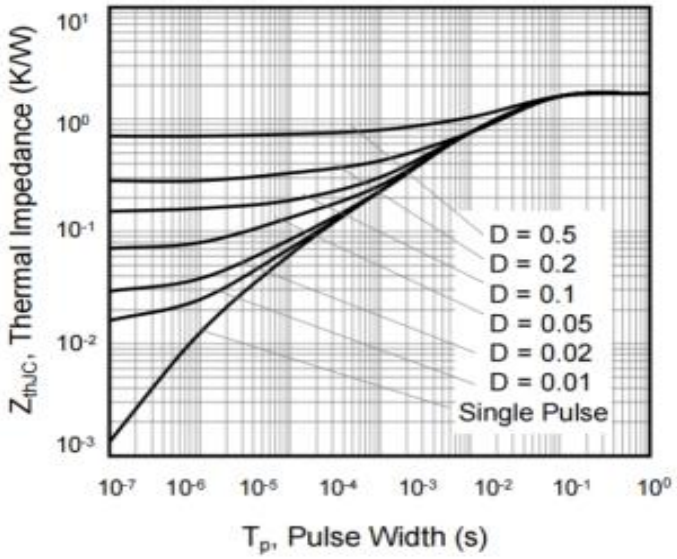


Figure 9. Transient Thermal Impedance



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Test ircuits and Waveforms

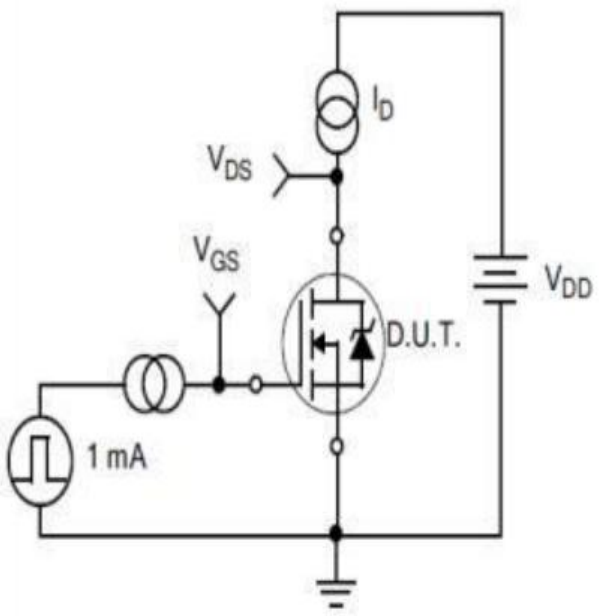

Figure A.
Gate Charge Test Circuit

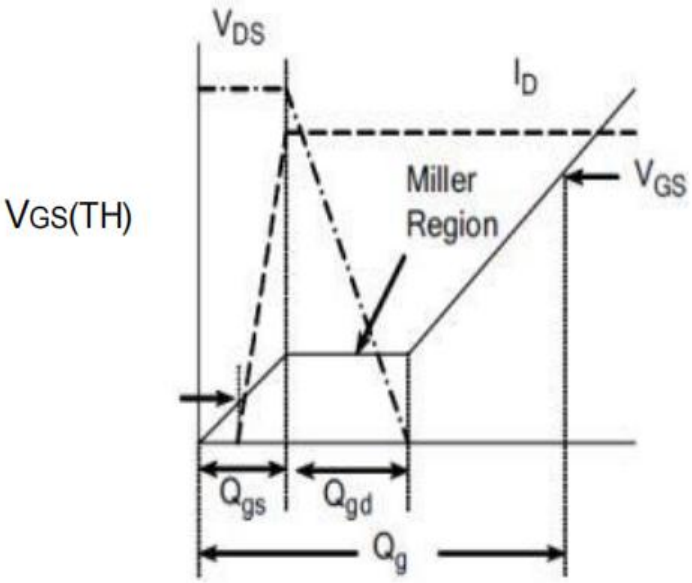

Figure B.
Gate Charge Waveform

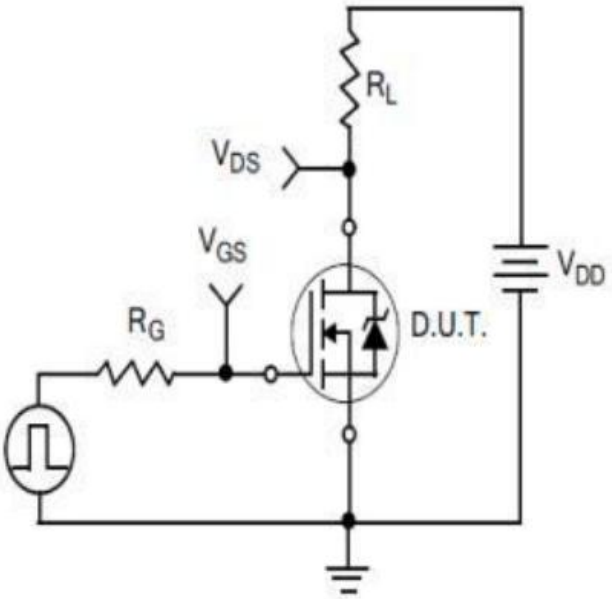

Figure C.
Resistive Switching Test Circuit

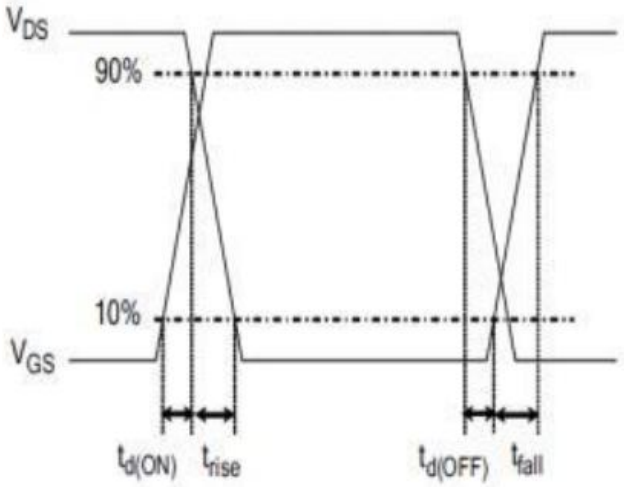

Figure D.
Resistive Switching Waveforms

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Test ircuits and Waveforms

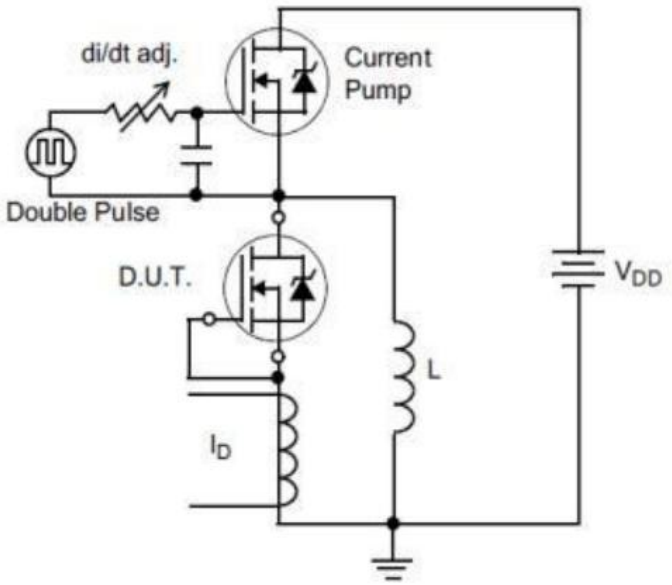


Figure E.Diode Reverse Recovery Test Circuit

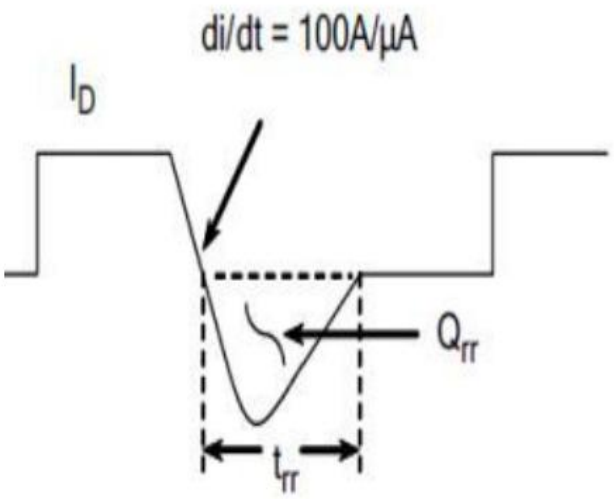


Figure F.Diode Reverse Recovery Waveform

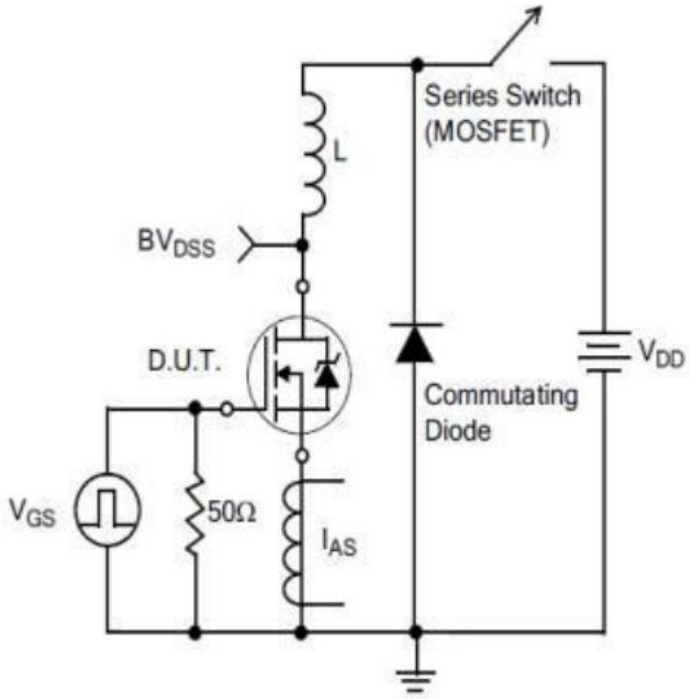
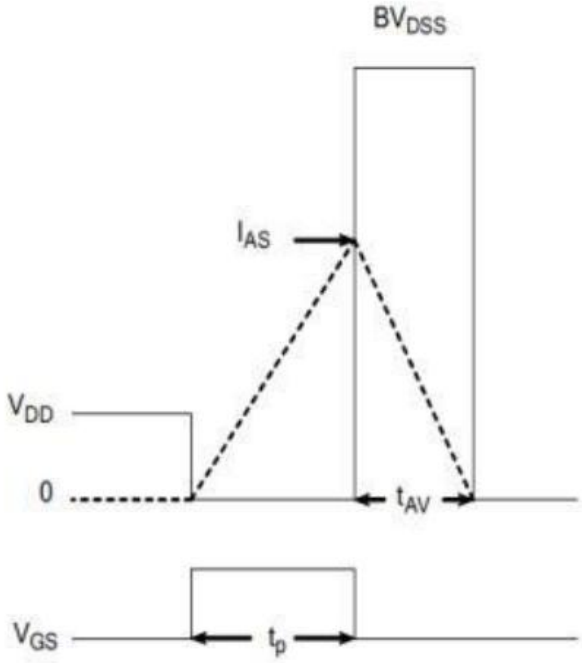


Figure G.Unclamped Inductive Switching Test Circuit



$$E_{AS}=\frac{I_{AS}^2 L}{2}$$

Figure H.Unclamped Inductive Switching Waveforms

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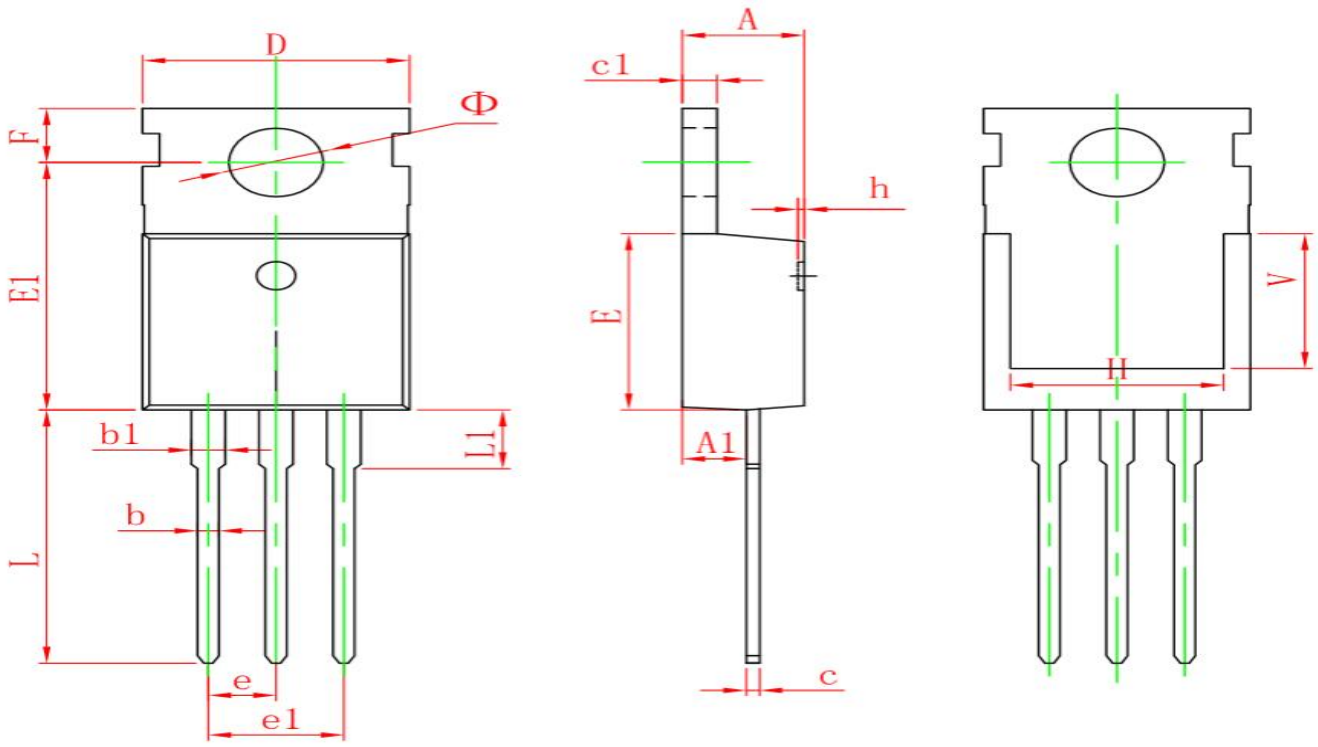
Package outline drawing(TO-220 Unit: mm)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150

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