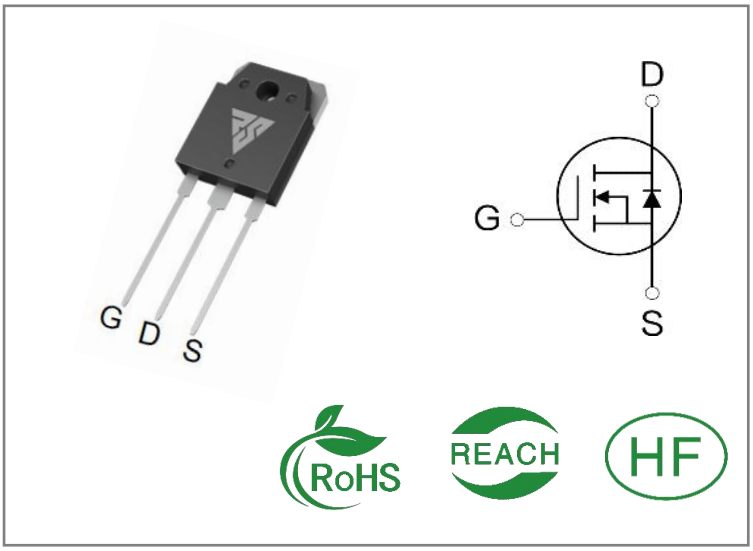
ID	R_{DS}(ON)(Typ)	VDSS
13A	0.6Ω	900V



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

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

Ordering Information

Part Number	Package	Marking	Packing	Qty.
RS13N90P	T0-3P	RS13N90P	Tube	30 PCS

Absolute Maximun Ratings Tc= 2 5℃ unless otherwise specified

Symbol	Parameter	RS13N90P	Units
VDSS	Drain-to-Source Voltage	900	V
ID	Continuous Drain Current TC=25℃	13	A
IDM	Pulsed Drain Current (Note*1)	52	
PD	Power Dissipation	278	W
VGS	Gate- to- Source Voltage	±30	V
EAS	Single Pulse Avalanche Engergy L = 10mH, VDD = 50V, RG = 25 Ω	460	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.

Thermal Resistance

Symbol	Parameter	RS13N90P	Units	Test Conditions
RθJC	Junction-to-Case	0.45	℃/ W	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 1 5 0 ℃
RθJA	Junction-to-Ambient	40		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	900	--	--	V	VGS=0V,ID=250μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=900V,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)	--	0.6	0.7	Ω	VGS=10V,ID=6.5A
VGS(TH)	Gate Threshold Voltage	3	--	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	--	82	--	nS	VDS=450V ID=13A RG=25Ω
trise	Rise Time	--	42	--		
td(OFF)	Turn- OFF Delay Time	--	330	--		
tfall	Fall Time	--	85	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	4125	--	pF	VGS=0V VDS=25V f=270kHz
Coss	Output Capacitance	--	277	--		
Crss	Reverse Transfer Capacitance	--	1.7	--		
Qg	Total Gate Charge	--	61	--	nC	VDS=720V ID=13A VGS=10V
Qgs	Gate- to- Source Charge	--	16	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	12	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	13	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	52	A	
VSD	Diode Forward Voltage	--	--	1.4	V	IS=6.5A,VGS=0V
trr	Reverse Recovery Time	--	610	--	nS	VGS=0V IS=13A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	11.3	--	μC	

Notes:

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

Typical Feature Curve

Figure 1. Output Characteristics (T_J = 25℃)

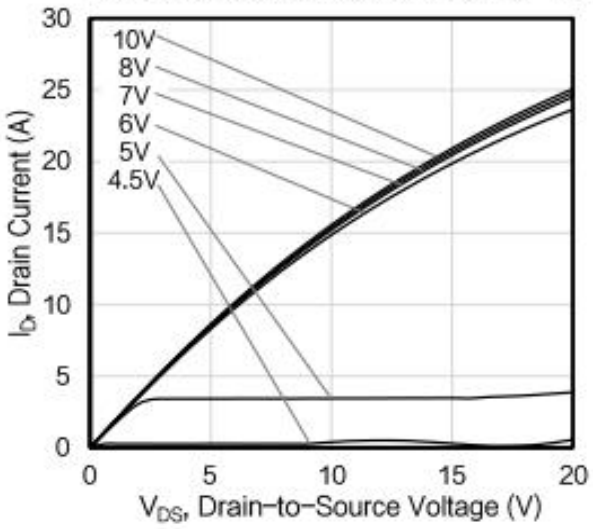


Figure 2. Body Diode Forward Voltage

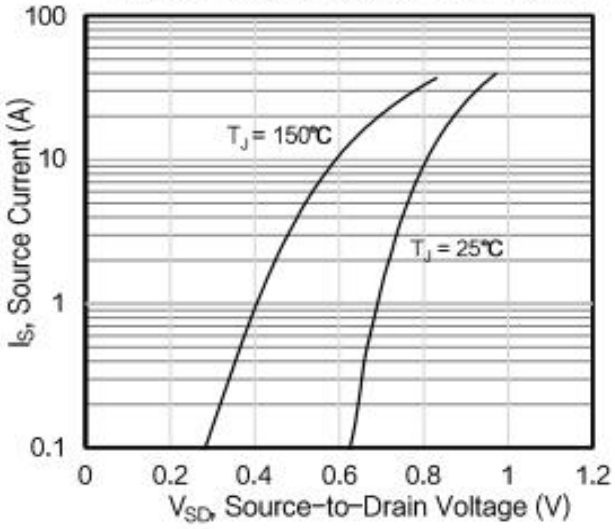


Figure 3. Drain Current vs. Temperature

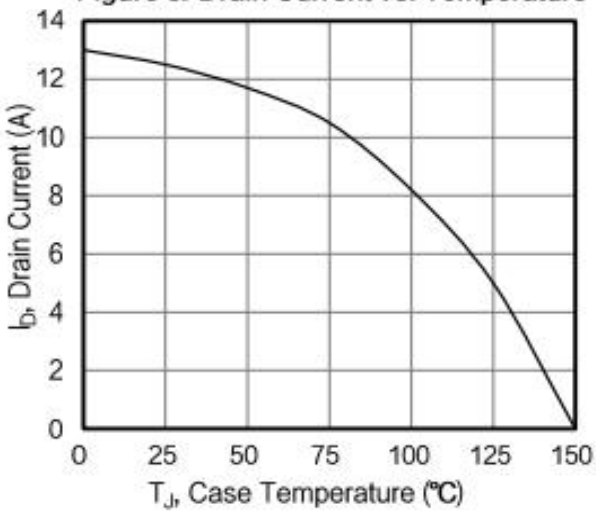


Figure 4. BV_{DSS} Variation vs. Temperature

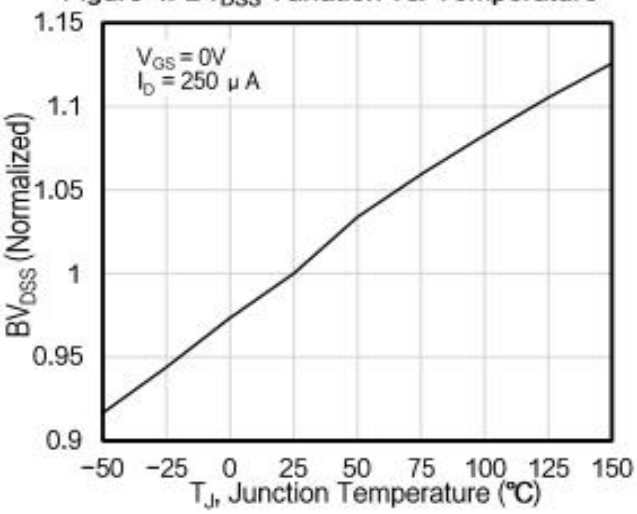


Figure 5. Transfer Characteristics

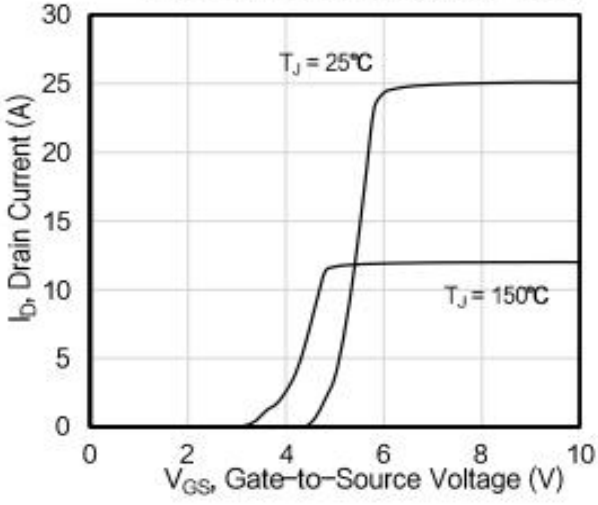


Figure 6. On-Resistance vs. Temperature

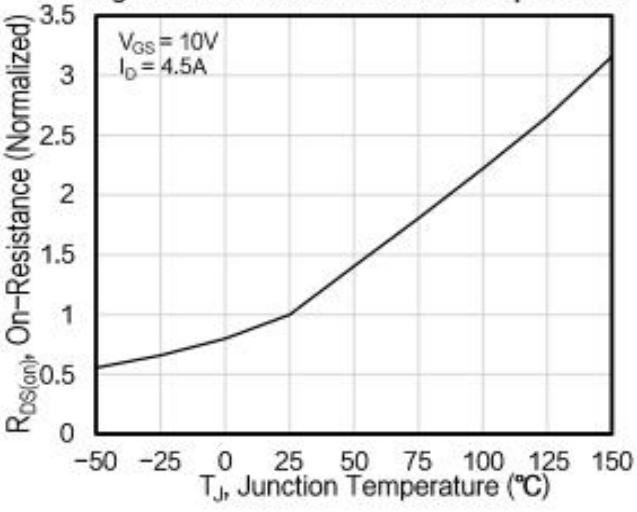


Figure 7. Capacitance

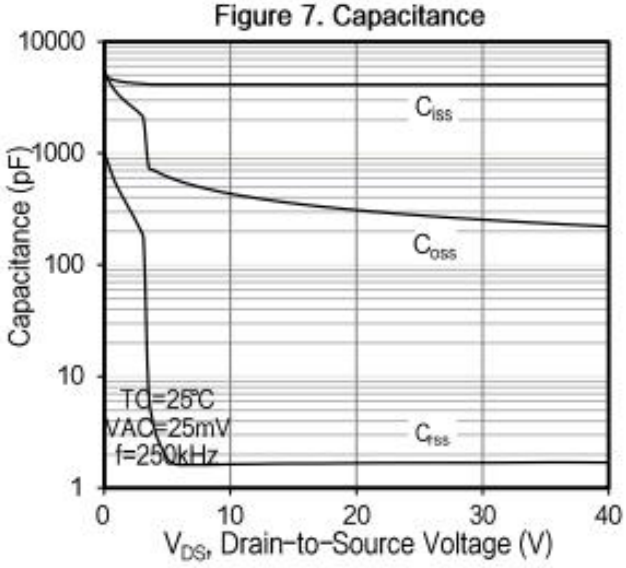


Figure 8. Gate Charge

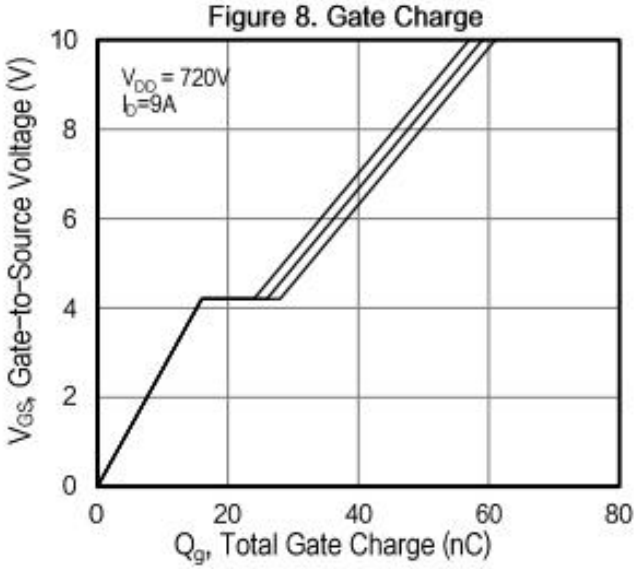


Figure 9. Transient Thermal Impedance

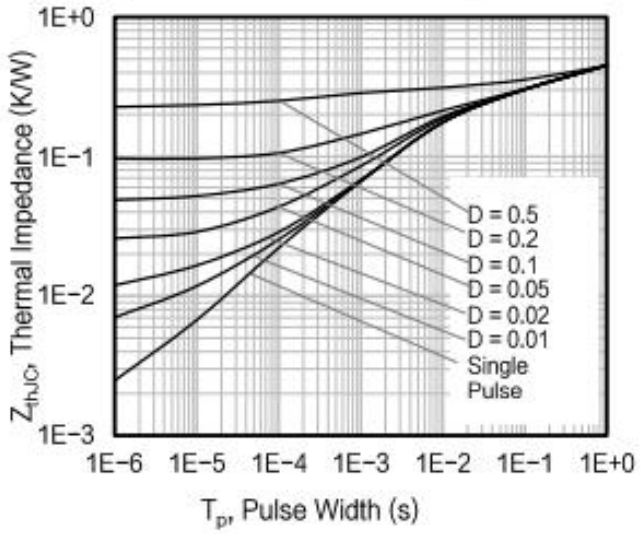
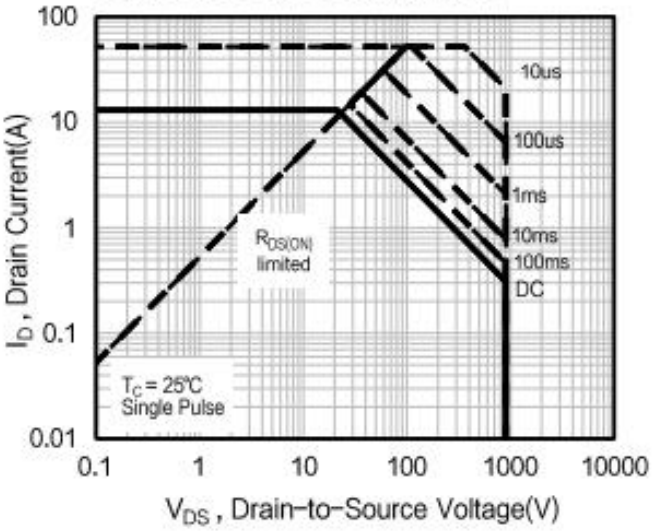


Figure 10. Safe Operating Area



Test Circuits and Waveforms

Figure A: Gate Charge Test Circuit and Waveform

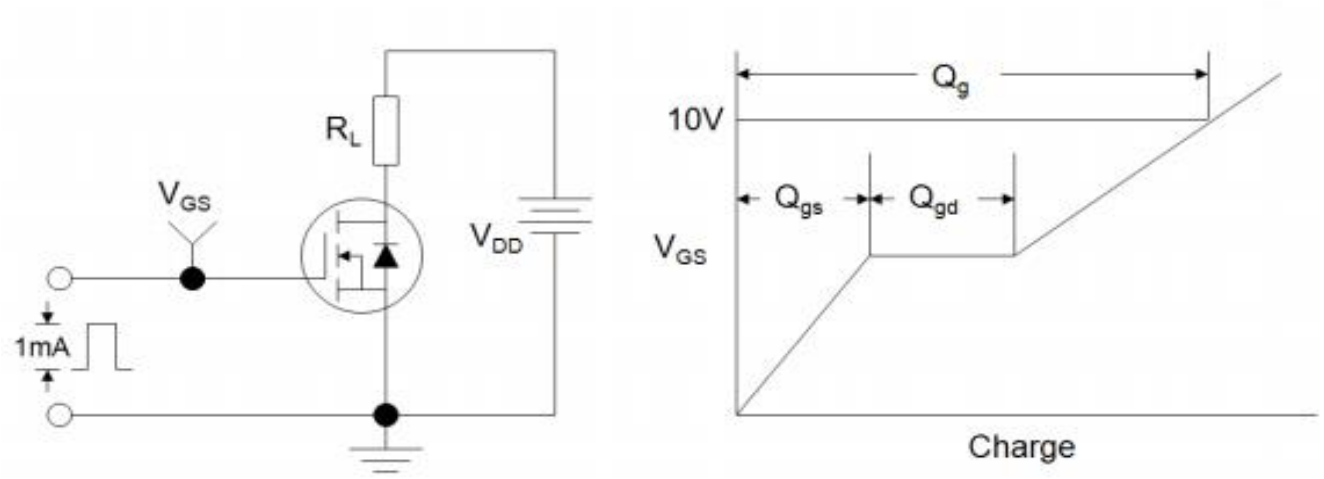


Figure B: Resistive Switching Test Circuit and Waveform

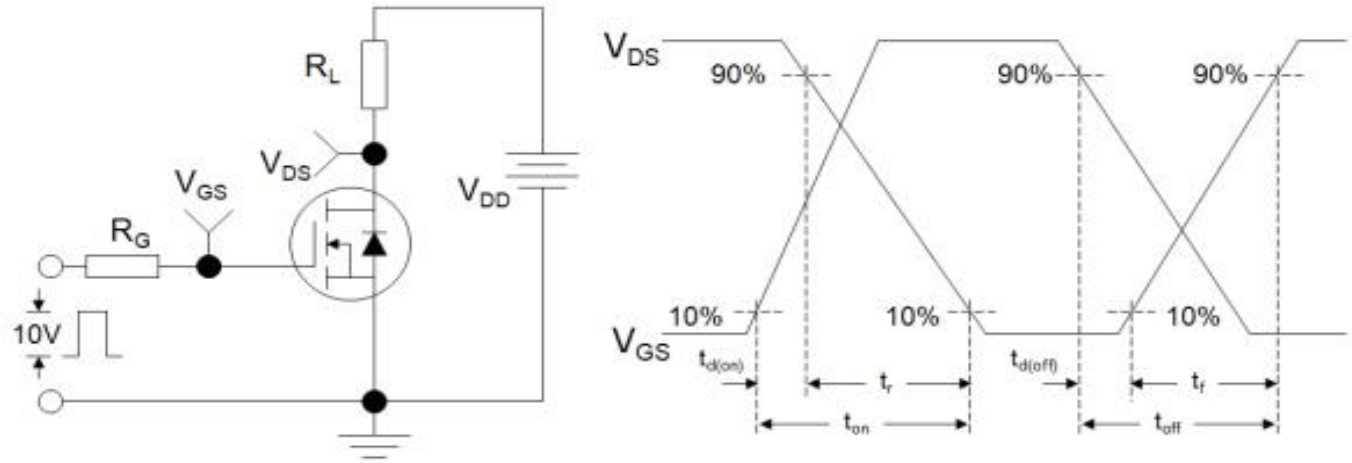
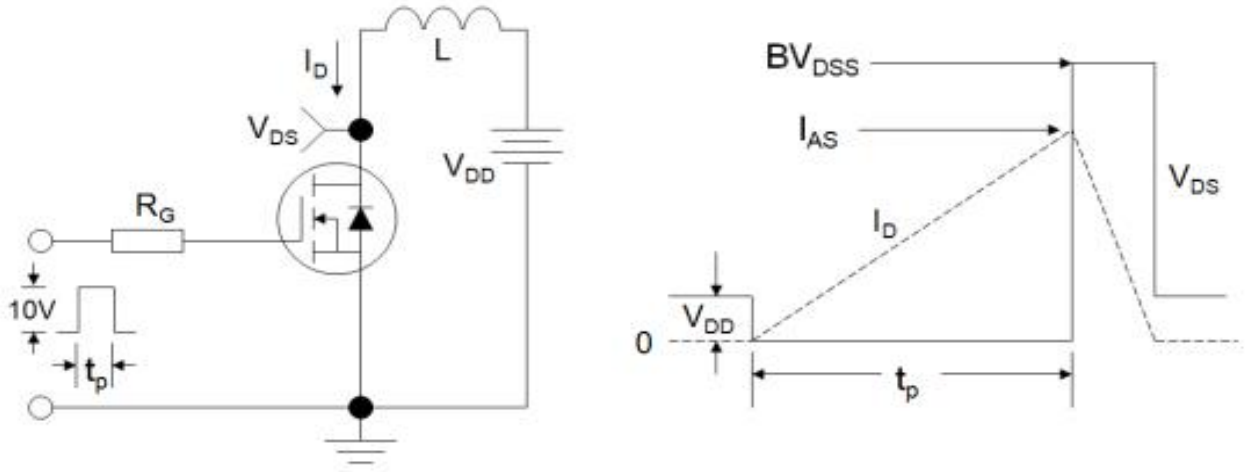
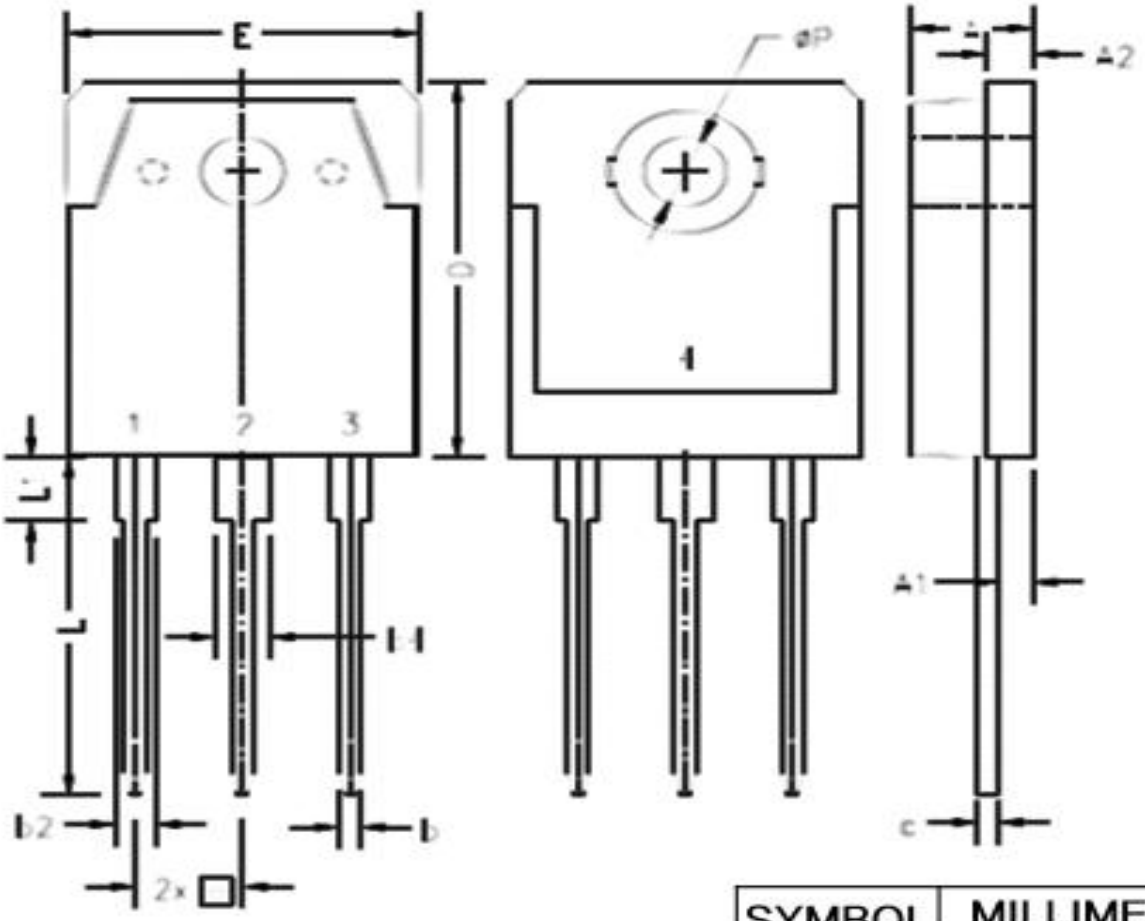


Figure C: Unclamped Inductive Switching Test Circuit and Waveform



Package outline drawing(TO-3P Unit: mm)



SYMBOLS	MILLIMETERS	
	MIN	MAX
A	4.60	5.00
A1	1.20	1.60
A2	1.40	1.65
b	0.80	1.20
b2	1.80	2.20
b4	2.80	3.20
c	0.50	0.75
D	19.50	20.50
E	15.10	15.90
e	5.45BCS	
L	19.50	20.90
L1	3.00	3.70
ΦP	3.00	3.60

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