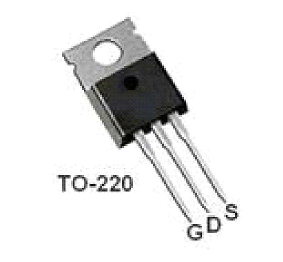
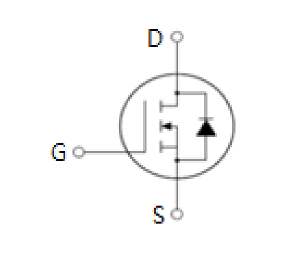
100V N-Channel Trench MOSFET

FEATURES

- Super Low Gate Charge
- 100% EAS Guaranteed
- RoHS compliant
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology





APPLICATIONS

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Hard switched and high frequency circuits

Device Marking and Package Information

Device	Package	Marking
CTP10N066	TO-220	CTP10N066

Absolute Maximum Ratings at T_j= 25ºC unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V_{GS} = 0V)	V_{DSS}	100	V
Continuous Drain Current T_C = 25ºC (note1)	I_D	16	A
Continuous Drain Current T_C = 100ºC (note1)		10	A
Pulsed Drain Current (note2)	I_{DM}	64	A
Gate Source Voltage	V_{GSS}	±20	V
Single Pulse Avalanche Energy (note3)	E_{AS}	48	mJ
Power Dissipation T_C = 25ºC (note4)	P_D	66	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~175	ºC

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case (note1)	$R_{\theta JC}$	2.27	ºC/W
Thermal Resistance, Junction-to-Ambient (note1)	$R_{\theta JA}$	62.5	

Electrical Characteristics T_j= 25ºC unless otherwise specified

Parameter	Symbol	Test Conditions	Value Min.	Value Typ.	Value Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	100	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V, V_{GS} = 0V, T_J = 25ºC	--	--	1	uA
		V_{DS} = 100V, V_{GS} = 0V, T_J = 100ºC	--	--	5	uA
Gate-Source Leakage	I_{GSS}	V_{GS} = ±20V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.2	--	3	V
Drain-Source On-Resistance (note2)	$R_{DS(on)}$	V_{GS} = 10V, I_D = 8A	--	56	66	mΩ
		V_{GS} = 10V, I_D = 5A	--	72	85	mΩ
Dynamic						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 50V, f = 1.0MHz	--	518	--	pF
Output Capacitance	C_{oss}		--	45	--	
Reverse Transfer Capacitance	C_{rss}		--	20	--	
Total Gate Charge	Q_g	V_{DS} = 50V, I_D = 8A, V_{GS} = 10V	--	10	--	nC
Gate-Source Charge	Q_{gs}		--	1.9	--	
Gate-Drain Charge	Q_{gd}		--	2.7	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 50V, I_D = 8A V_{GS} = 10V,R_G = 3Ω	--	33	--	nS
Turn-on Rise Time	t_r		--	5	--	
Turn-off Delay Time	$t_{d(off)}$		--	42	--	
Turn-off Fall Time	t_f		--	5	--	
Body Diode Characteristics						
Continuous Body Diode Current	I_S	T_C = 25ºC	--	--	16	A
Pulsed Diode Forward Current	I_{SM}		--	--	64	
Body Diode Voltage	V_{SD}	T_J = 25ºC, I_{SD} = 8A, V_{GS} = 0V	--	--	1.2	V
Reverse Recovery Time	t_{rr}	I_S = 8A di_F/dt = 100A/μs	--	23	--	nS
Reverse Recovery Charge	Q_{rr}		--	17	--	nC

Notes

1. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width≦300us , duty cycle≦2%
3. The EAS data shows Max. rating . The test condition is VGS =25V,Rg=25Ω,L=0.5mH
4. The power dissipation is limited by 175℃ junction temperature
5. The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics T_J = 25ºC, unless otherwise noted

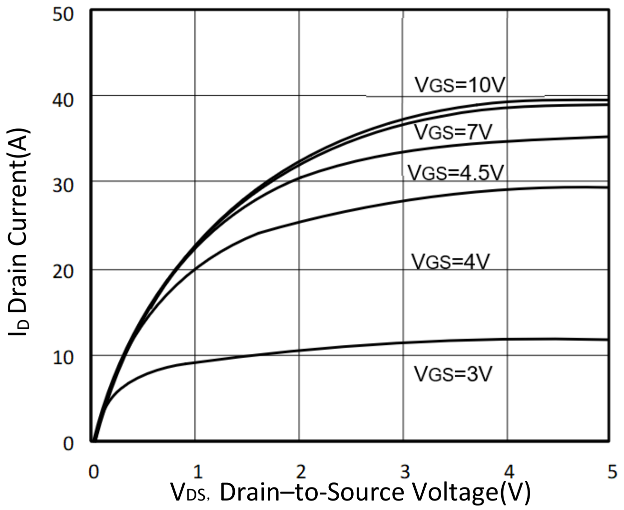


Fig.1 Typical Output Characteristics

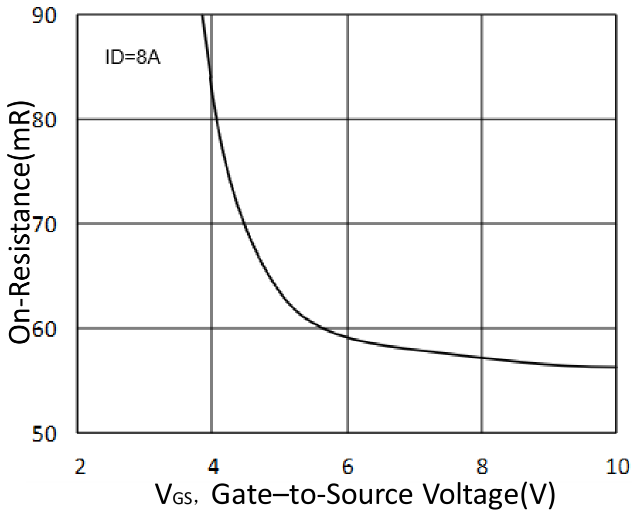


Fig.2 On-Resistance vs. G-S Voltage

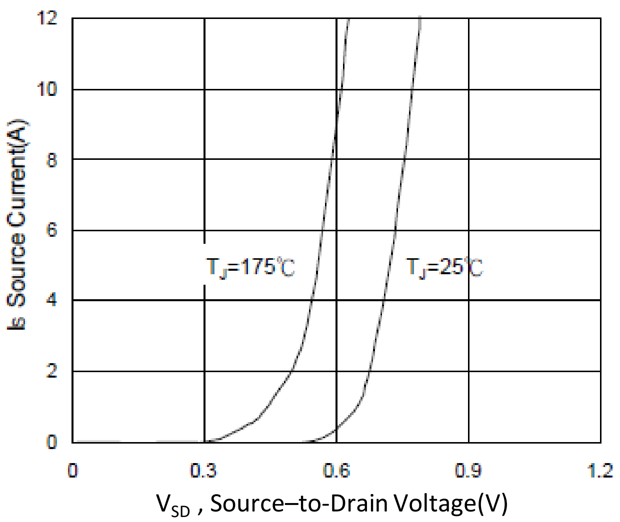


Fig.3 Forward Characteristics of Reverse Diode

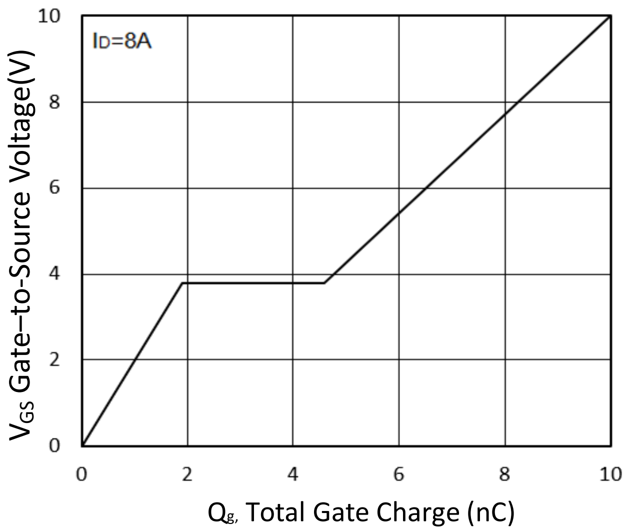


Fig.4 Gate-Charge Characteristics

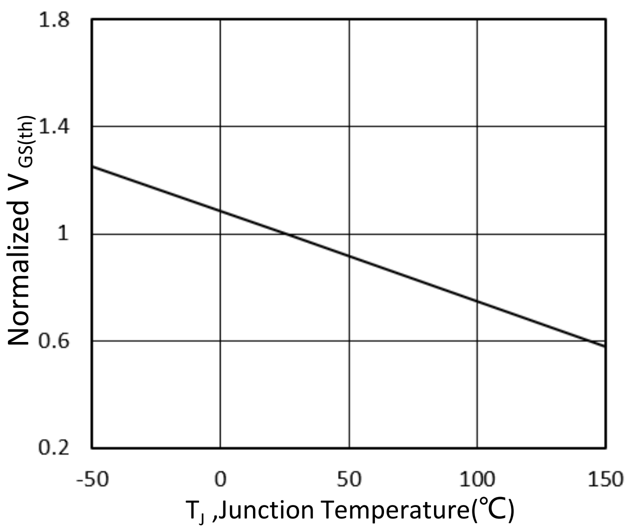


Fig.5 Normalized VGS(th) vs. T J

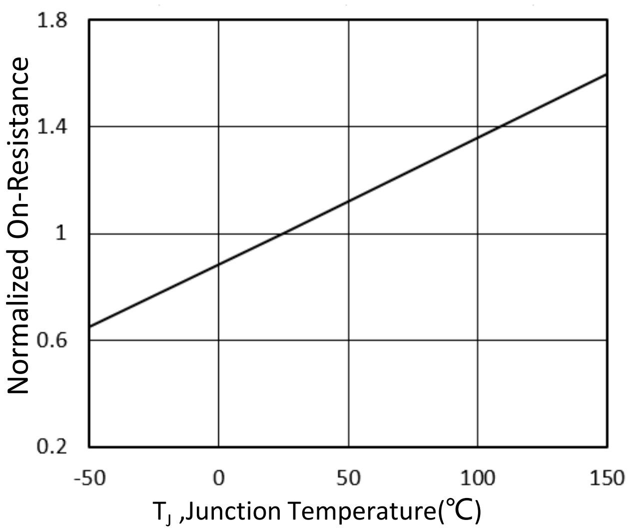


Fig.6 Normalized RDSON vs. T J

Typical Characteristics T_J = 25ºC, unless otherwise noted

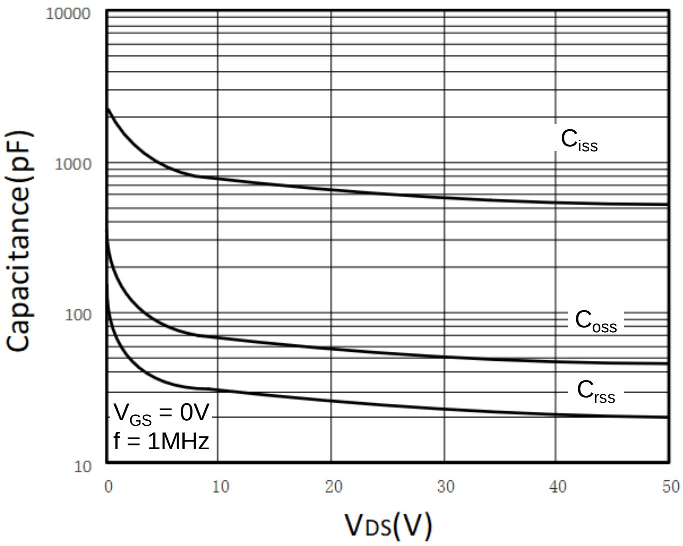


Fig.7 Capacitance

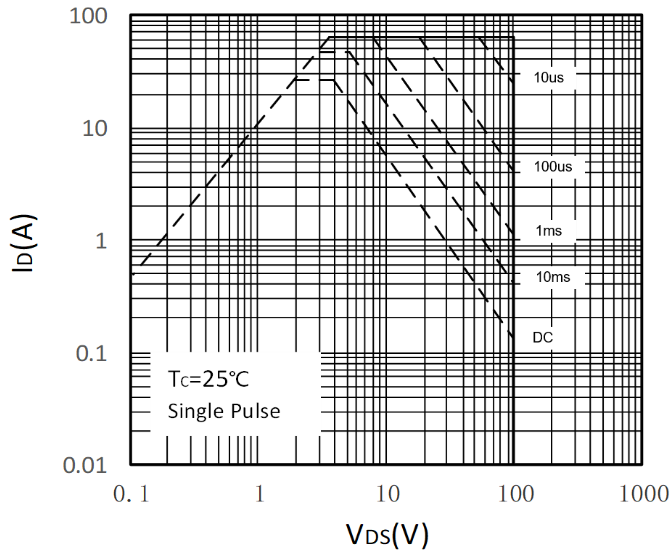


Fig.8 Safe Operating Area

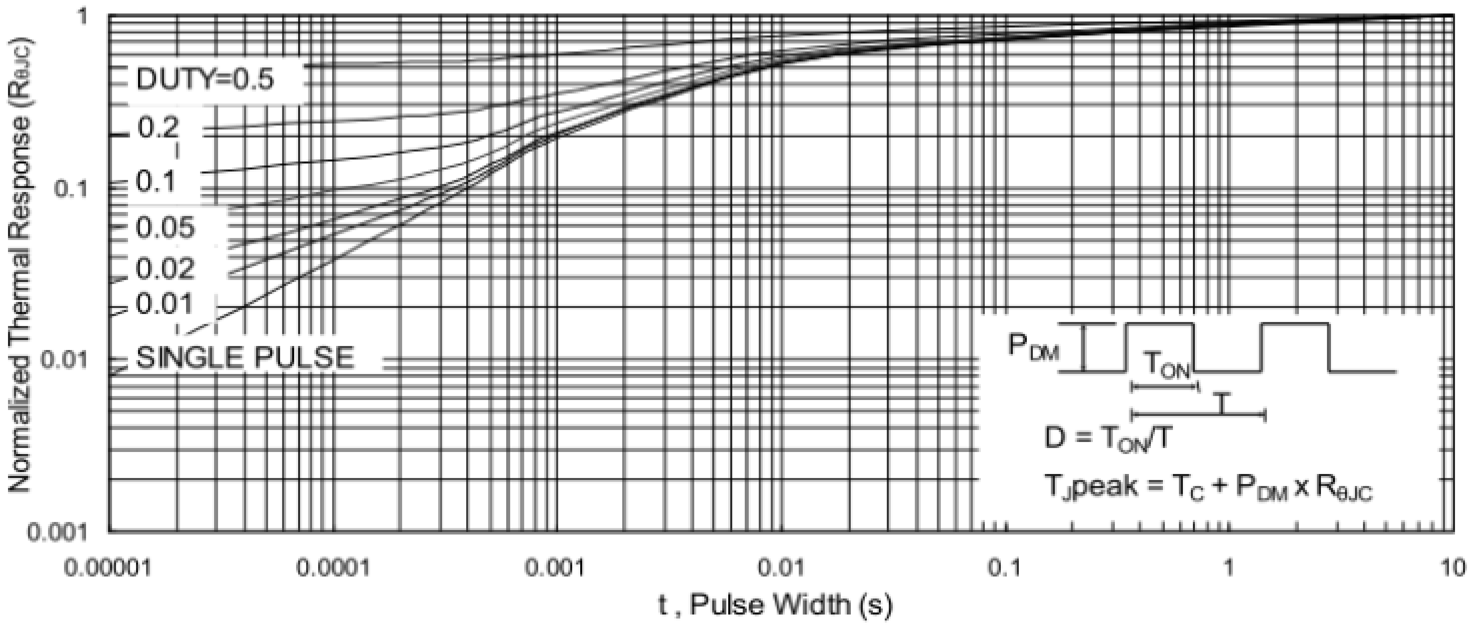


Fig.9 Normalized Maximum Transient Thermal Impedance

Figure A： Gate Charge Test Circuit and Waveform

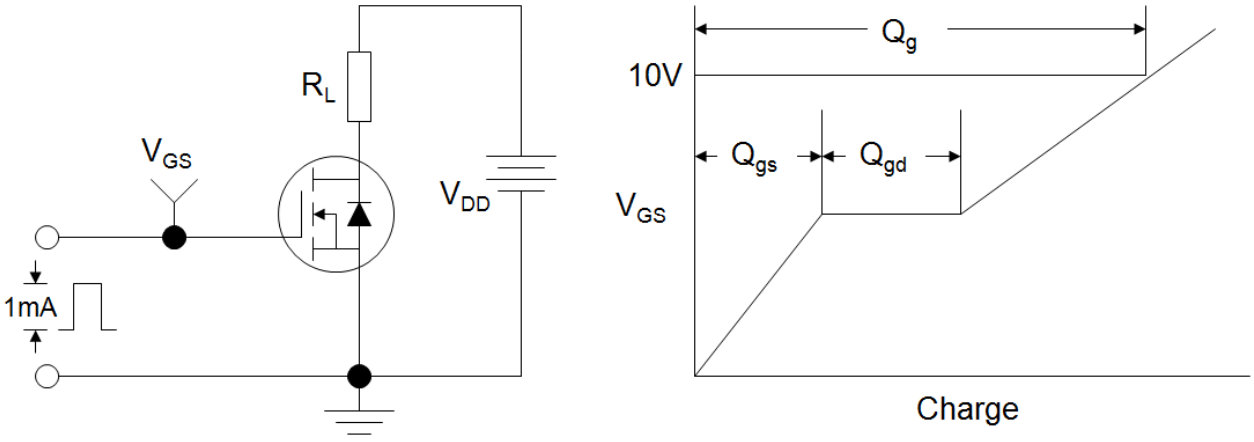


Figure B： Resistive Switching Test Circuit and Waveform

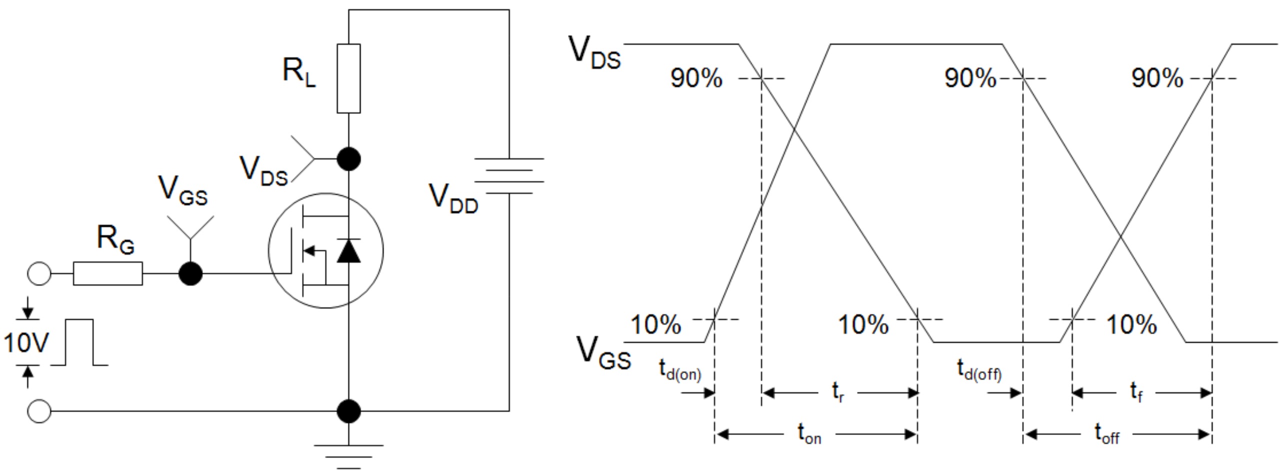
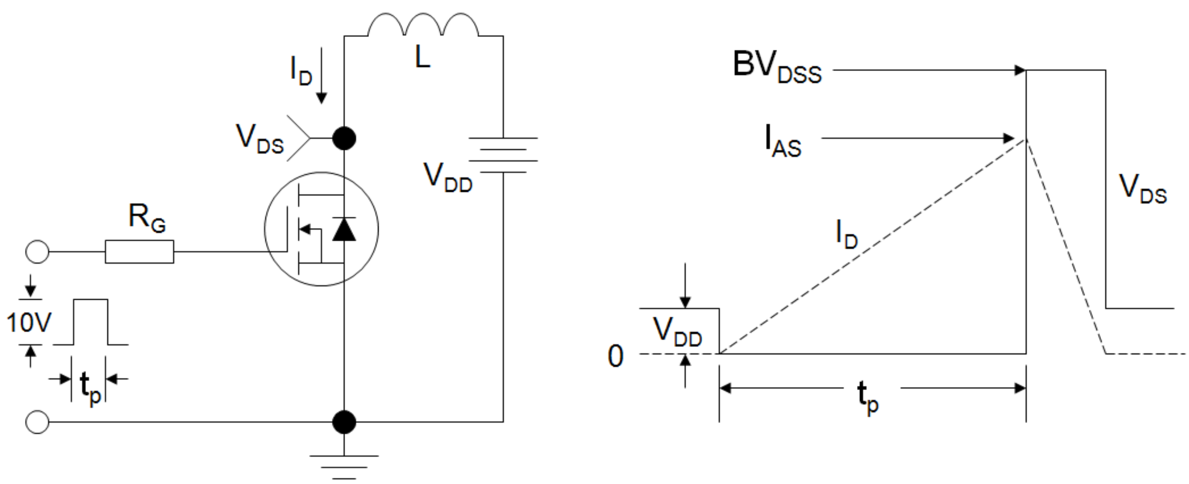
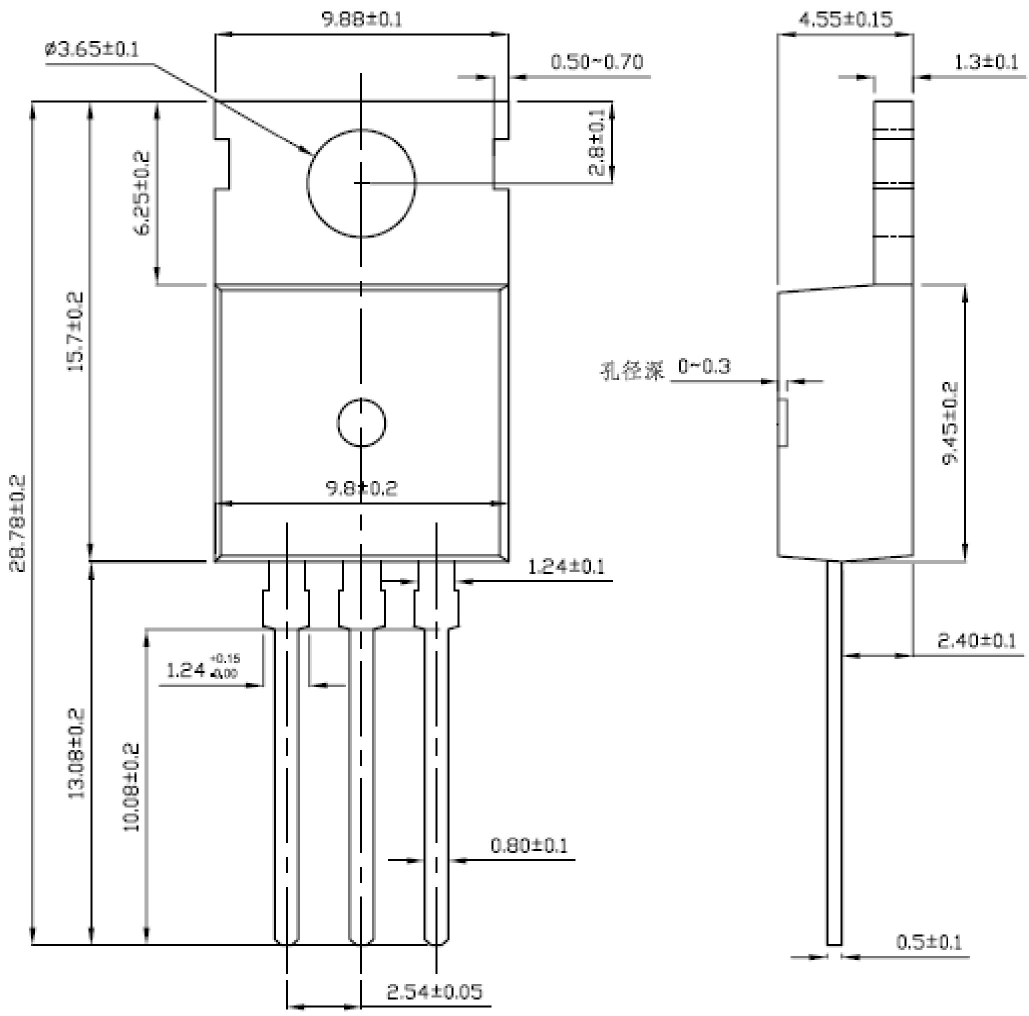


Figure C： Unclamped Inductive Switching Test Circuit and Waveform



TO-220


9.88±0.1
ø3.65±0.1
0.50~0.70
2.8±0.1
6.25±0.2
15.7±0.2
28.78±0.2
9.8±0.2
1.24±0.1
1.24 +0.15
13.08±0.2
10.08±0.2
0.80±0.1
2.54±0.05
4.55±0.15
1.3±0.1
孔径深 0~0.3
9.45±0.2
2.40±0.1
0.5±0.1

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