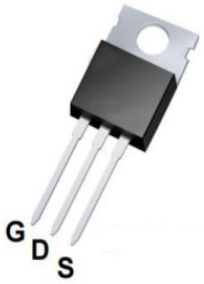
XNT031N04T

40V N-Channel MOSFET

1.Features

- V_{DS} 40V
- I_D(at VGS=10V) 140A
- $R_{DS(on)}$(at VGS=10V) 2.4mΩ(Typ)

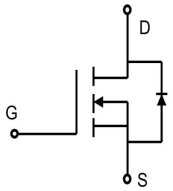
TO-220



1.Gate
2. Drain
3. Source

2.Mechanical Data

- Case:Molded Plastic,TO-220;
- Epoxy:UL 94V-0 rate flame retardant
- Terminals:Plated Leads Solderable per MIL-STD-750,Method-2026.
- Marking: marked on body.
- Mounting Position : Any.



3.Maximum Ratings and Electrical Characteristics

Electrical Characteristics (TJ=25℃ unless otherwise noted)

Characteristics		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuous	T_C=25°C	I_D	140	A
	T_C=100°C		99	
Maximum Power Dissipation		P_D	115	W
Single Pulsed Avalanche energy(1)		E_{AS}	560	mJ
Junction and Storage Temperature Range		T_J,T_{stg}	-55 to +150	°C

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	-	1.3	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	-	62	°C/W

Characteristics	Symbol	Test conditions	Min	TYP	Max	Unit
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V,I_D=250μA	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 40V,V_{GS}= 0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V,V_{DS}= 0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=$V_{DS,}$ I_D=250μA	1	1.7	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V， I_D=20A	-	2.4	3.1	mΩ
		V_{GS}=4.5V， I_D=20A	-	3.5	4.5	
DYNAMIC PARAMETERS						
Input Capacitance	C_{iss}	V_{DS} =20V	-	6460	-	pF
Output Capacitance	C_{oss}	V_{GS}=0V	-	455	-	
Reverse Transfer Capacitance	C_{rss}	f=1.0MHZ	-	276	-	
SWITCHING PARAMETERS						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=20V, V_{GS}=10V R_L=1Ω; R_G=3Ω;	-	18	-	nS
Turn-on Rise Time	t_r		-	4.4	-	
Turn-off Delay Time	$t_{d(off)}$		-	67	-	
Turn-off Fail Time	t_f		-	9.5	-	
Total Gate Charge	Q_g	V_{DS}=20V, I_D=20A V_{GS}=10V	-	112	-	nC
Gate-Source Charge	Q_{gs}		-	16.6	-	
Gate-Drain Charge	Q_{gd}		-	26.5	-	
Diode Forward Voltage	V_{SD}	I_{SD}=1A,V_{GS}=0V	-	-	1.2	V
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V,F=1MHz	-	0.67	-	Ω

4.Ordering Information

Part No.	Package	Marking
XNT031N04T	TO-220	XNT031N04T

Notes:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

5.Rating And Characteristic Curves

Fig.1 Continuous Drain Current vs. T_C

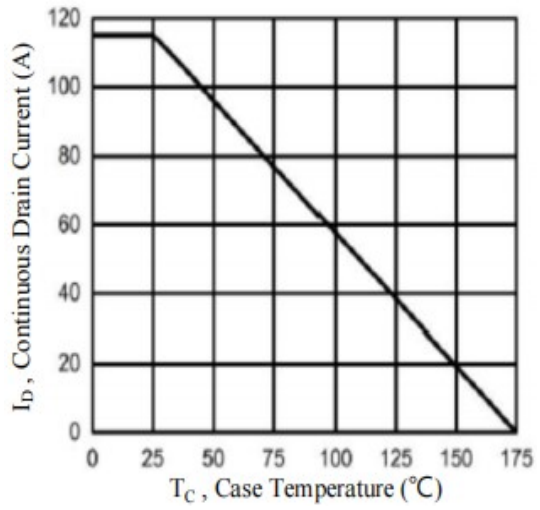


Fig.2 Normalized RDSON vs. T_J

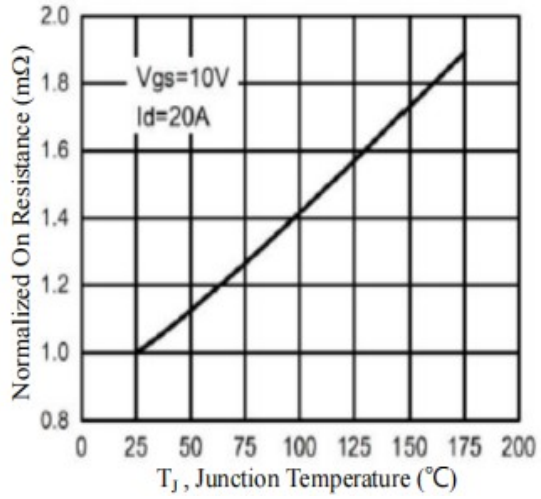


Fig.3 Normalized V_{th} vs. T_J

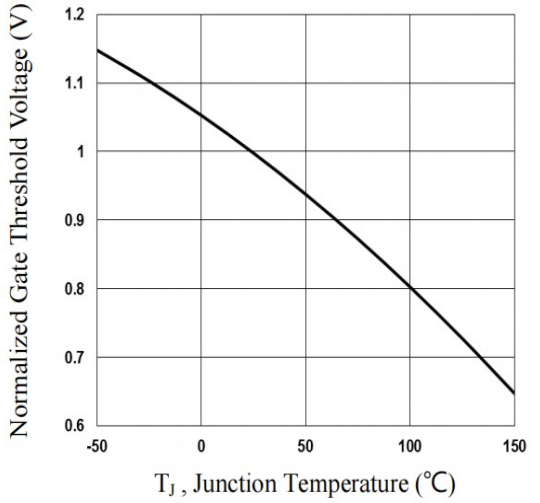


Fig.4 Gate Charge Waveform

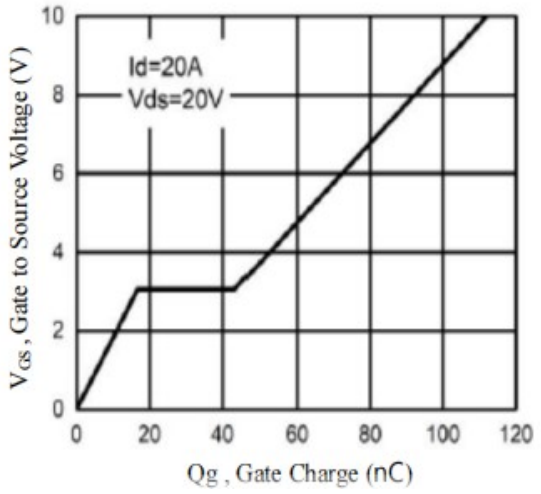


Fig.5 Normalized Transient Impedance

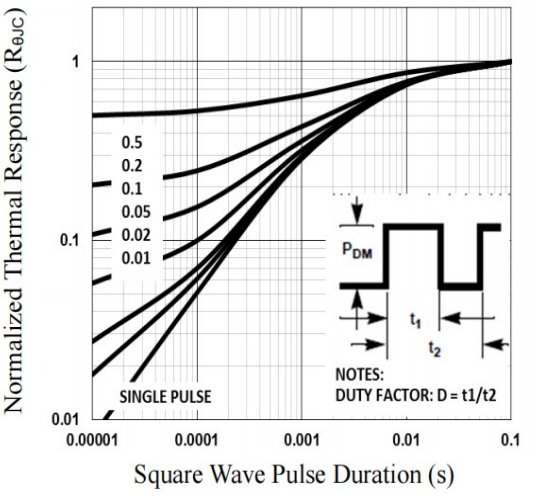
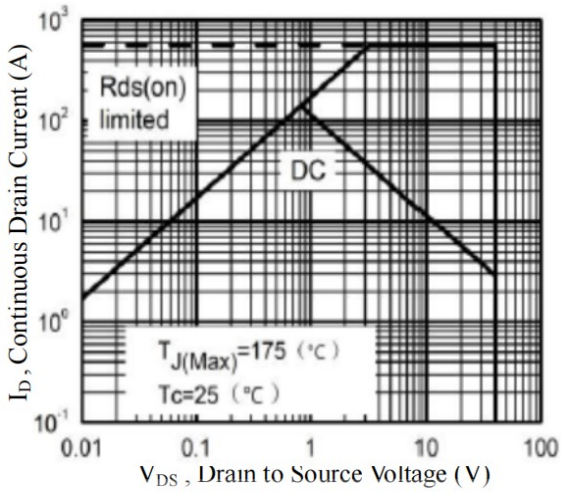
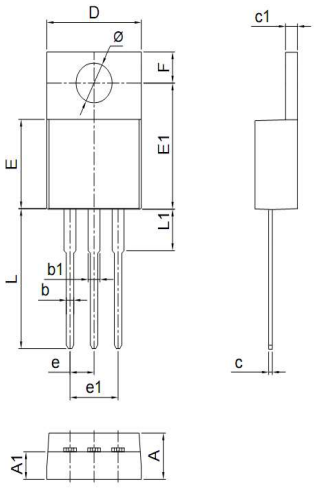


Fig.6 Maximum Safe Operation Area



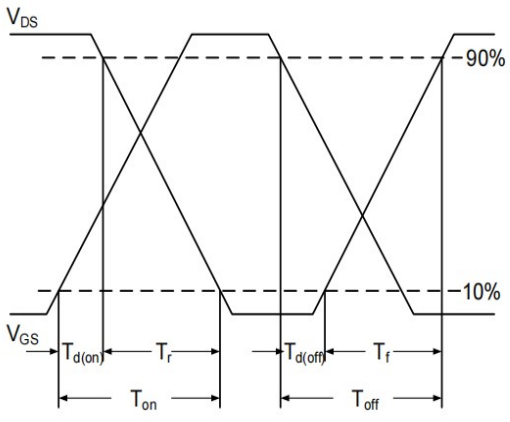
6.Dimensions

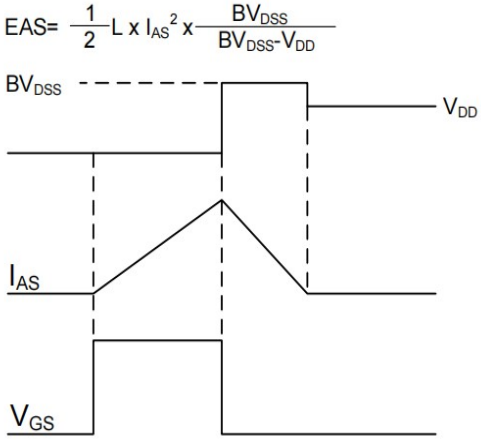
TO-220 Mechanical Drawing



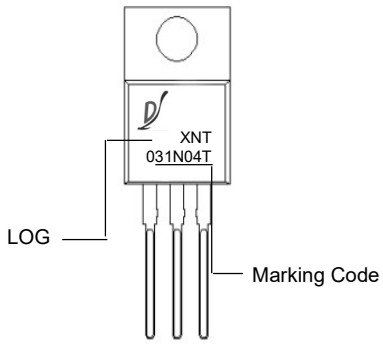
Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.169	0.184	4.28	4.68
A1	0.083	0.106	2.10	2.70
b	0.024	0.039	0.60	1.00
b1	0.043	0.059	1.10	1.50
c	0.012	0.024	0.30	0.60
c1	0.043	0.059	1.10	1.50
D	0.382	0.406	9.70	10.30
E	0.335	0.366	8.50	9.30
e	0.094	0.104	2.40	2.64
L	0.504	0.535	12.80	13.60
Φ	0.134	0.150	3.40	3.80

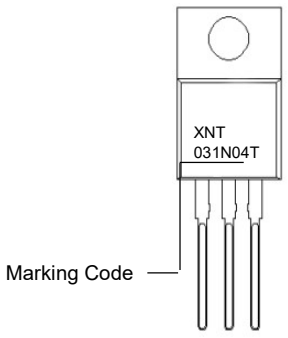
7.Test circuits





8. Part Marking System





9. Package Information

Package	Packing Type	Quantity(pcs)
TO-220	Tube	50

Important Notice and Disclaimer

- Reproducing and modifying information of the document is prohibited without from XINNUO.
- XINNUO reserves the right to make changes to this document and its products and specifications.
- XINNUO disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- XINNUO does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the here in document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications.XINNUO makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown her are not designed and authorized for equipments requiring high level of reliability or relating to human life and for any applications concerning life-saving or life-sustaining, such as medical instruments, transportation equipment, aerospace machinery et cetera. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify XINNUO for any damages resulting from such improper use or sale.
- Since XINNUO uses lot number as the tracking base, please provide the lot number for tracking when complaining.