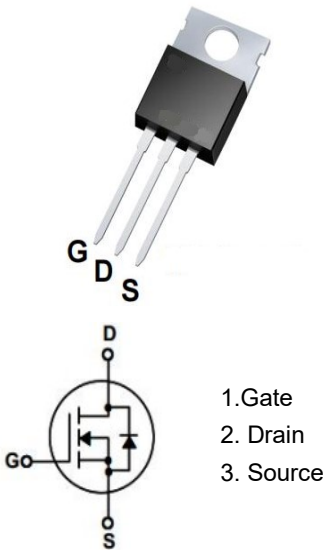




1.Features

- $R_{DS(ON)} \leq 13\Omega$ @ $V_{GS}=10V$
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

TO-220



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

Rating at 25°C Cambient temperature unless otherwise specified

Characteristics		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	100	V
Drain Current Continuous	$T_C=25^{\circ}C$	I_D	60	A
	$T_C=100^{\circ}C$		42	
Drain Current Pulsed		I_{DM}	240	A
Single Pulsed Avalanche Energy (Single Pulse)		E_{AS}	48	mJ
Gate-Source Voltage		V_{GS}	± 20	V
Power Dissipation($T_C=25^{\circ}C$)		P_D	231	W
Maximum Junction Temperature		T_J	150	$^{\circ}C$
Storage Temperature Range		T_{stg}	-55 to +150	$^{\circ}C$
Thermal Resistance, Junction-to-Case		$R_{\theta JC}$	0.54	$^{\circ}C/W$



Characteristics	Symbol	Test conditions	Min	TYP	Max	Unit
Off Characteristics						
Drain -Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V,I _D =250μA	100	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 80V,V _{GS} = 0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} = 20V	-	-	100	nA
Gate-Source Leakage Current		V _{GS} = -20V	-	-	-100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS (th)}	V _{GS} = V _{DS} , I _D =250μA	1.2	1.8	2.6	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	-	10.5	13	mΩ
		V _{GS} =4.5V, I _D =10A	-	14.5	14	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =50V V _{GS} =0V f=1.0MHZ	-	1782	-	pF
Output Capacitance	C _{oss}		-	251	-	
Reverse Transfer Capacitance	C _{rss}		-	23	-	
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =50V, V _{GS} =10V R _G =3Ω; I _D =20A	-	35	-	ns
Turn-on Rise Time	t _r		-	19	-	
Turn-off Delay Time	t _{d(off)}		-	33	-	
Turn-off Fall Time	t _f		-	11	-	
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =10A I _D =20A	-	35	-	nC
Gate-Source Charge	Q _{gs}		-	8	-	
Gate-Drain Charge	Q _{gd}		-	9.5	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	I _S =20A,V _{GS} =0V	-	-	1.4	V
Continuous Source Current	I _S		-	-	60	A
Pulsed Source Current	I _{SM}		-	-	240	A
Reverse Recovery Time	T _{rr}	I _F =20A	-	42	-	ns
Reverse Recovery Charge	Q _{rr}	dI/dt=100A/μS	-	52	-	nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Essentially independent of operating temperature



4. Rating And Characteristic Curves

Fig.1 Typical Output Characteristics

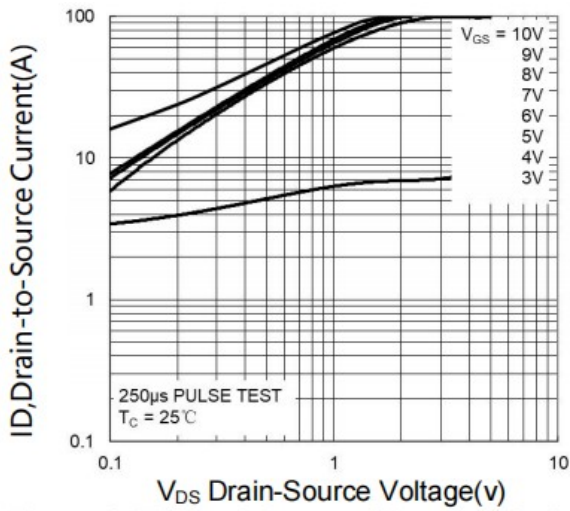


Fig.2 Typical Transfer Characteristics

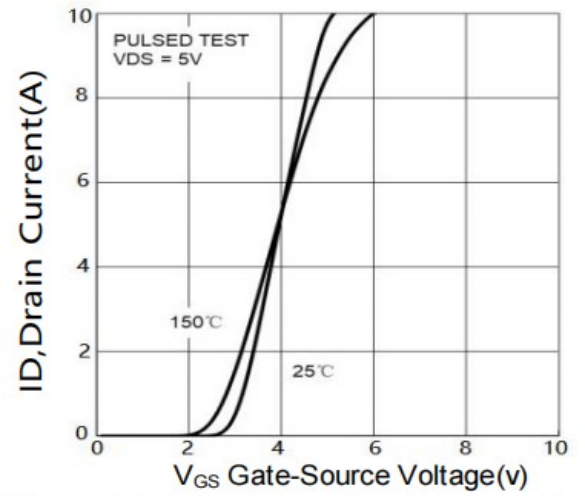


Fig.3 On-Resistance versus Drain Current

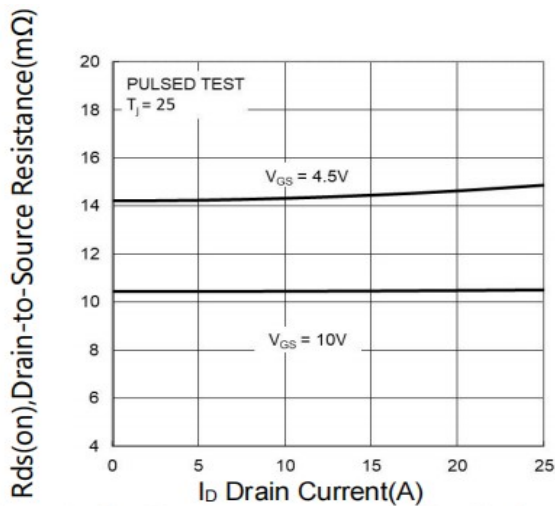


Fig.4 Diode forward voltage versus Current

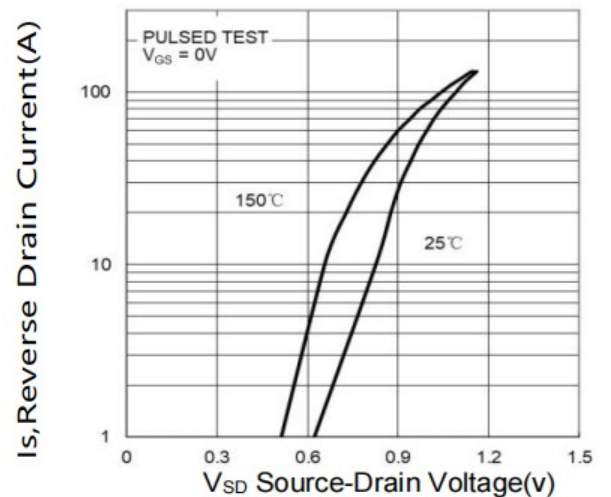


Fig.5 Typical Capacitance versus V_{DS}

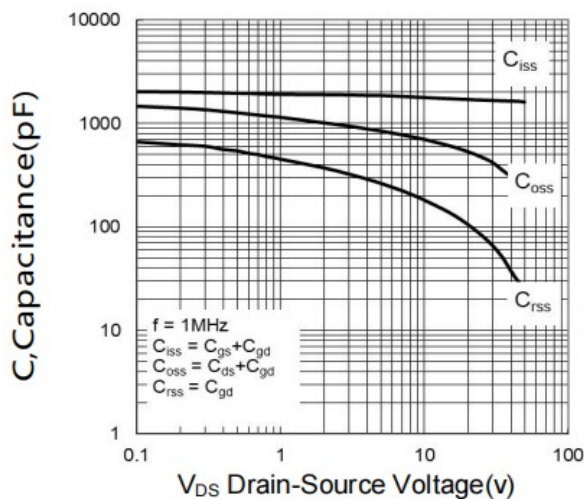


Fig.6 Typical Gate Charge versus V_{GS}

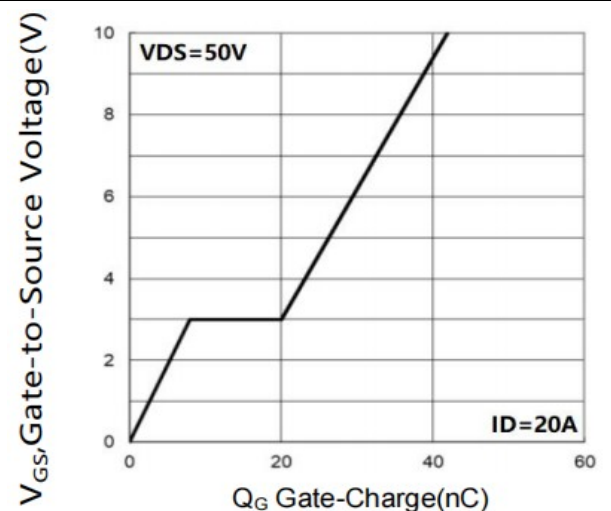




Fig.7 BV_{DSS} Variation with Temperature

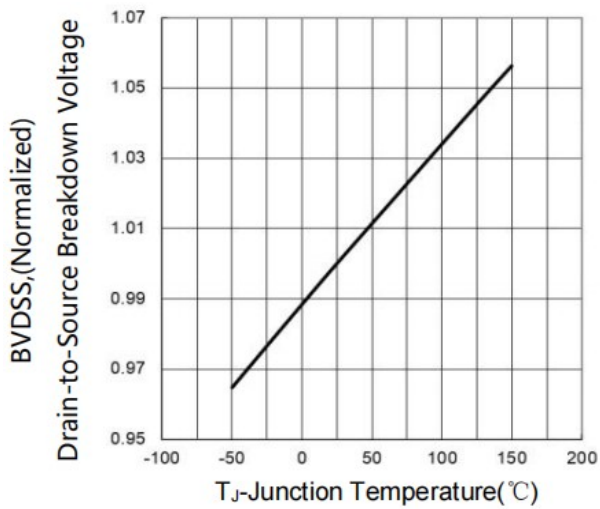


Fig.8 On-Resistance Variation with Temperature

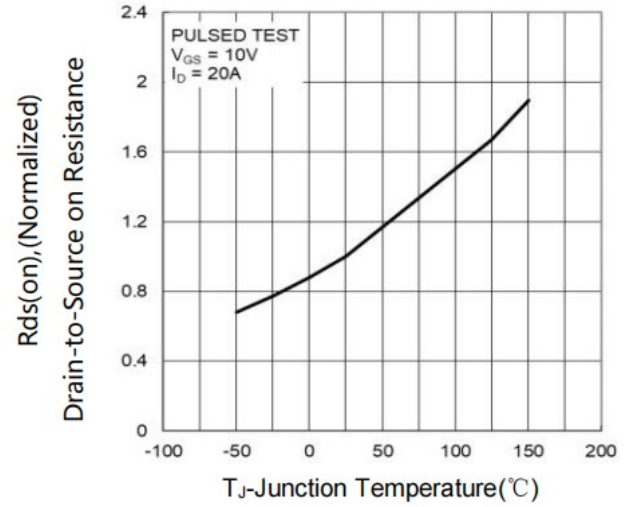


Fig.9 Maximum Safe Operating Area

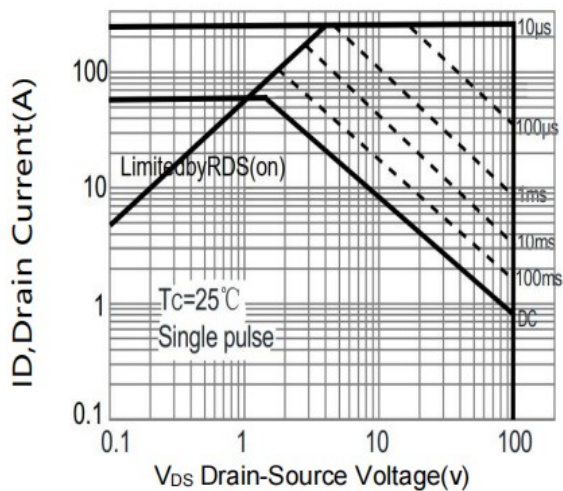
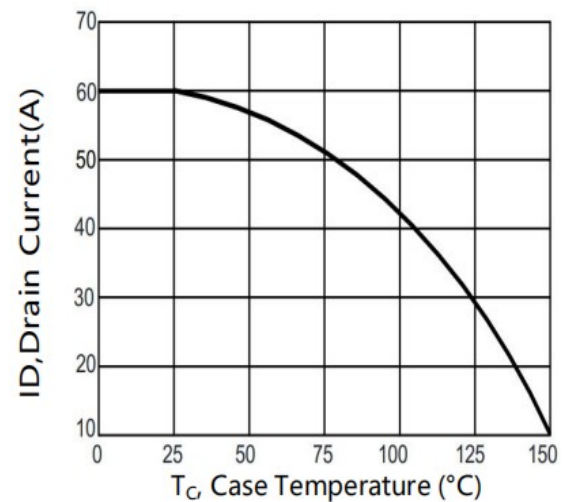


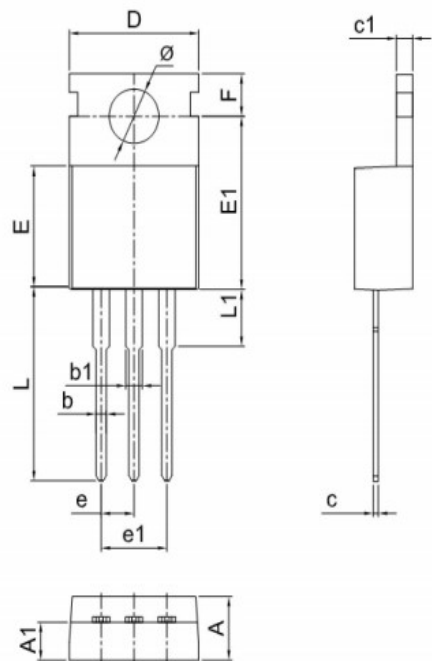
Fig.9 Maximum Drain Current vs Temperature





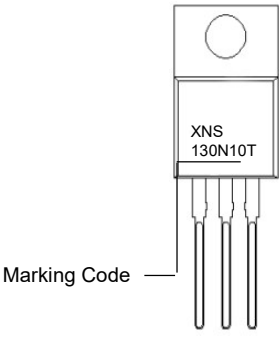
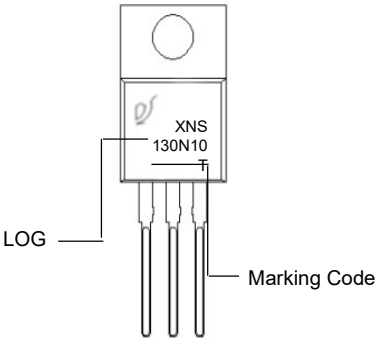
5.Dimensions

TO-220 Mechanical Drawing



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.169	0.181	4.30	4.60
A1	0.098	0.110	2.50	2.80
b	0.028	0.035	0.70	0.90
b1	0.047	0.059	1.20	1.50
c	0.012	0.024	0.30	0.60
c1	0.045	0.055	1.15	1.40
D	0.390	0.402	9.90	10.20
E	0.335	0.354	8.50	9.00
E1	0.472	0.492	12.00	12.50
e	0.094	0.104	2.40	2.65
e1	0.191	0.209	4.85	5.30
F	0.102	0.110	2.60	2.80
L	0.520	0.543	13.20	13.80
L1	0.150	0.165	3.80	4.20
Ø	0.142	0.157	3.60	4.00

6. Part Marking System

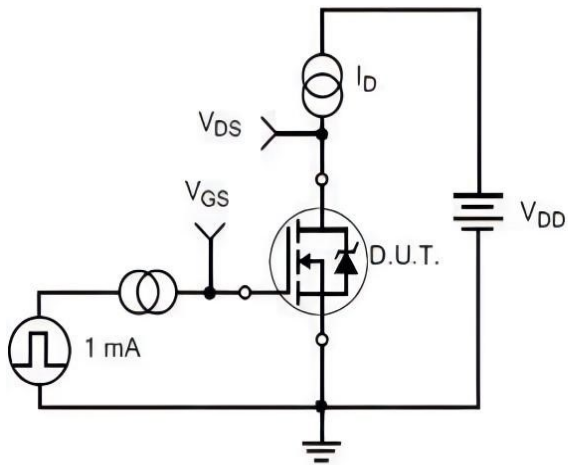


7. Package Information

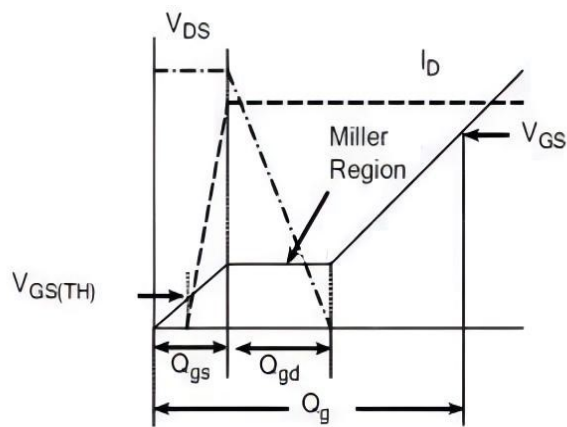
Package	Packing Type	Quantity(pcs)
TO-220	Tube	50



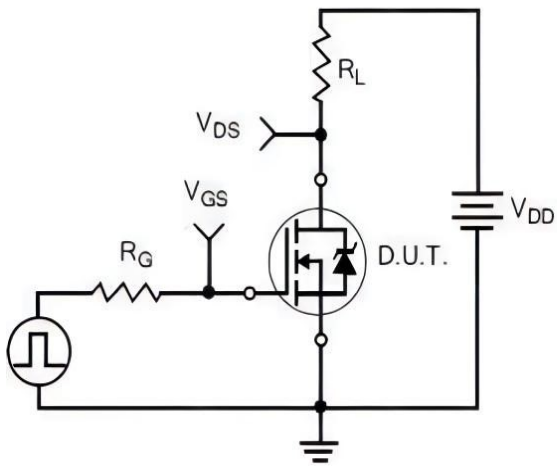
8.Test circuits



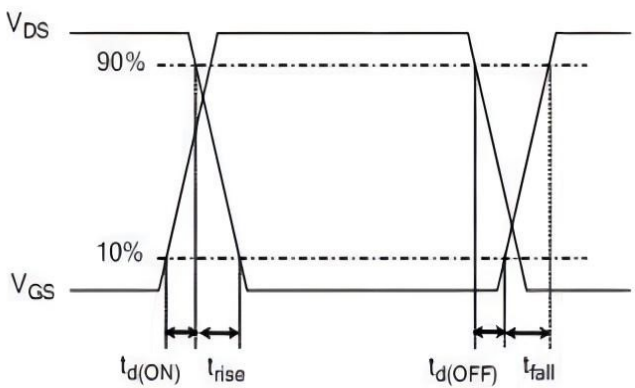
Gate Charge Test Circuit



Gate Charge Waveform



Resistive Switching Test Circuit



Resistive Switching Waveforms



$di/dt = 100 \text{ A}/\mu\text{A}$

I_D

Q_{tr}

t_{tr}

[illegible]

7 of 8



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.