SEMICONDUCTOR

7N80F

7A 800V N-Channel Power MOSFET

Genaral Description

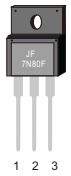
These N-channel enhanced vdmosfets, is obtained by the self-aligned planar technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy.
Which accords with the RoHS standard.

Product Summary			
V_{DS}	$R_{DS(on)}$ (Ω) Typ	I_D (A)	Qg (Typ)
800V	1.5 @ 10V，3.5A	7	34nc

Features

- Low on-resistance
- Low reverse transfer capacitance
- 100% avalanche tested

ITO-220



Mechanical Data

- Case:ITO-220 Package

Application

- LED power switch circuit
- Electronic ballast
- Switch mode power supply
- Electronic transformer

Ordering Information

Part No.	Marking.	Package Type	Package	Quality(box)
7N80F	7N80F	ITO-220	Tube	1000

Pin Definition:

1. Gate
2. Drain
3. Source

Block Diagram

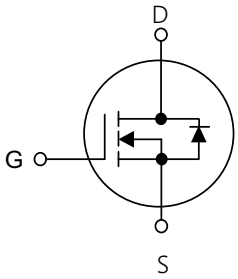


Table1 Absolute Maximum Ratings (Tc=25°C, unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	800	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current	Tc=25°C	I_D	7	A
	Tc=100°C		4.2	
Pulsed Drain Current (Note 1)		I_{DM}	28	A
Single Pulse Avalanche Energy(Note 2)		E_{AS}	466	mJ
Power Dissipation Tc=25°C		P_D	33	W
Operating Junction and Storage Temperature		T_J/T_{STG}	-55~+150	°C

Table 2.Thermal Characteristics

Parameters	Symbol	Value	Unit
Thermal resistance Junction to Ambient	$R_{\theta JA}$	62.5	℃/W
Thermal resistance Junction to Case	$R_{\theta JC}$	3.8	℃/W

Table 3. Electrical Characteristics (T_J=25°C, unless otherwise specified)

Parameter		Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V,I_D=250μA	800	-	-	V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=800V,V_{GS}=0V	-	-	25	μA
Gate- Source Leakage Current	Forward	I_{GSS}	V_{GS}=30V,V_{DS}=0V	-	-	100	nA
	Reverse		V_{GS}=-30V,V_{DS}=0V	-	-	-100	nA
On Characteristics(Note 3)							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250μA	2.0	-	4.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V,I_D=3.5A	-	1.5	1.8	Ω
Dynamic Characteristics(Note 4)							
Input Capacitance		C_{iss}	V_{DS}=25V,V_{GS}=0V,f=1MHz	-	1443	-	pF
Output Capacitance		C_{oss}		-	118	-	pF
Reverse Transfer Capacitance		C_{rss}		-	11.2	-	pF
Switching Characteristics (Note 4)							
Turn-On Delay Time		td(on)	V_{DD}=400V,I_D=7A R_G=10Ω,V_{GS}=10V	-	21	-	ns
Turn-On Rise Time		t_R		-	17	-	ns
Turn-Off Delay Time		td(off)		-	50	-	ns
Turn-Off Fall Time		tf		-	21	-	ns
Total Gate Charge		Q_G	V_{DS}=640V,I_D=7A, V_{GS}=10V	-	34	-	nC
Gate-Source Charge		Q_{GS}		-	6.7	-	nC
Gate-Drain Charge		Q_{GD}		-	16	-	nC
Drain-Source Diode Characteristics and Maximum Ratings							
Drain-Source Diode Forward Voltage		V_{SD}	V_{GS}=0V, I_S=7A	-	-	1.5	V
Maximum Continuous Drain-Source Diode Forward Current		I_S		-	-	7	A
Reverse Recovery Time		trr	V_{GS}=0V, I_F=7A dI_F/dt=100A/μs (Note 1)	-	626	-	ns
Reverse Recovery Charge		Q_{RR}		-	4990	-	nC

Notes : 1 Repetitive Rating:Pulse width limited by maximum junction temperature
2 L=10mH,I_D=9.7A,V_{DD}=50V,Starting T_J=25°C
3 Pulse Test: Pulse width ≤300μS, Duty cycle≤2%
4 Guaranteed by design,not subject to production

Typical Characteristics Diagrams

Figure 1.Output Characteristics

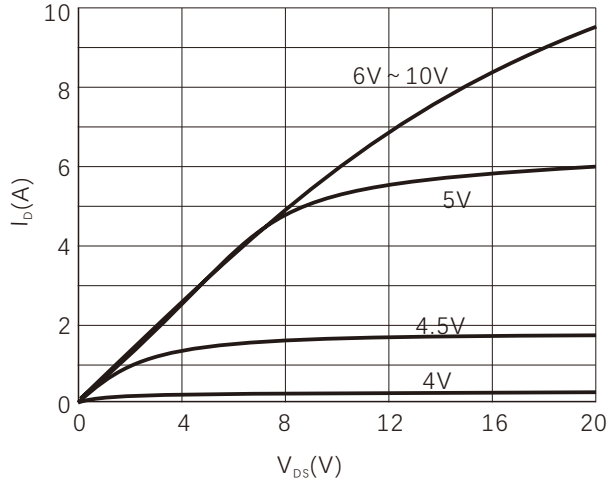


Figure 2.$R_{DS(ON)}$ vs Junction Temperature

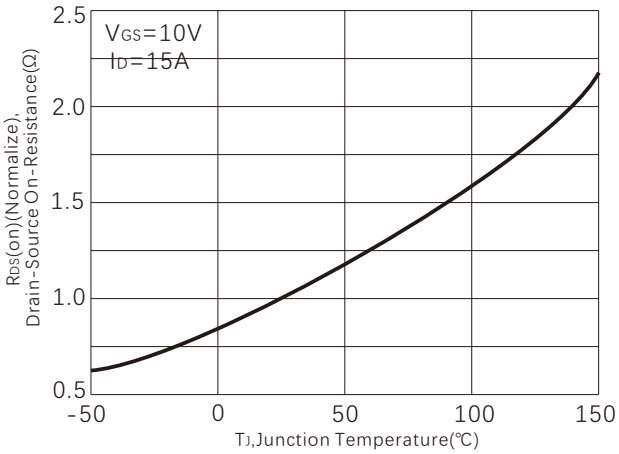


Figure 3.On-Resistance vs.Drain Current

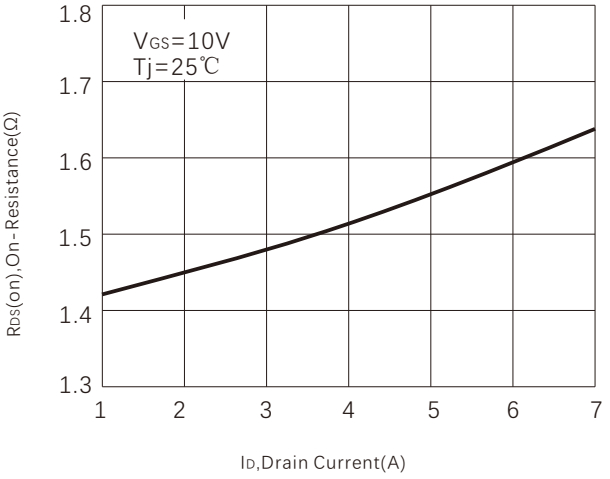


Figure 4. Capacitance

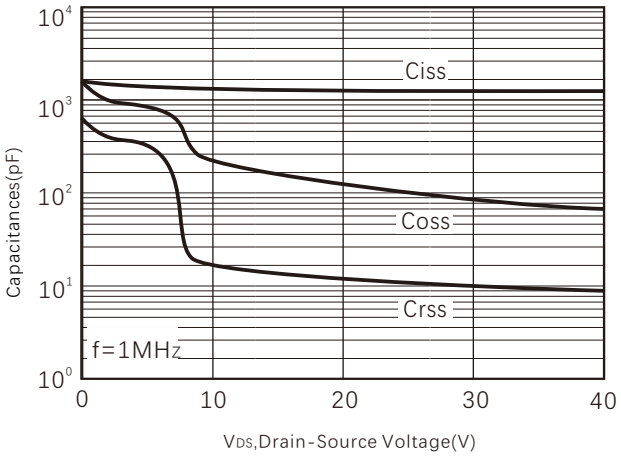


Figure 5.Gate charge

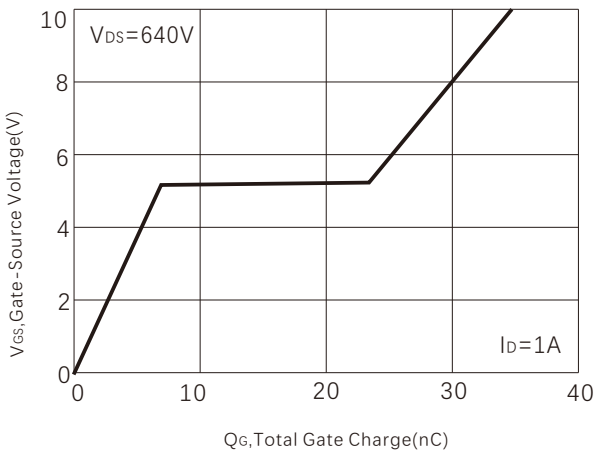


Figure 6.Source-Drain Diode Forward Voltage

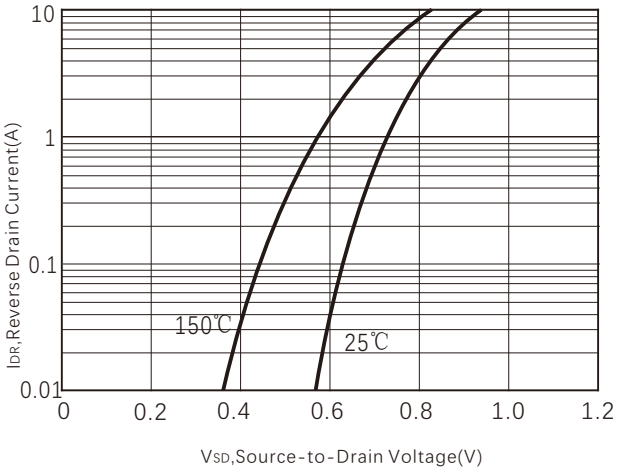


Figure7.Maximum Drain Current vs Temperature

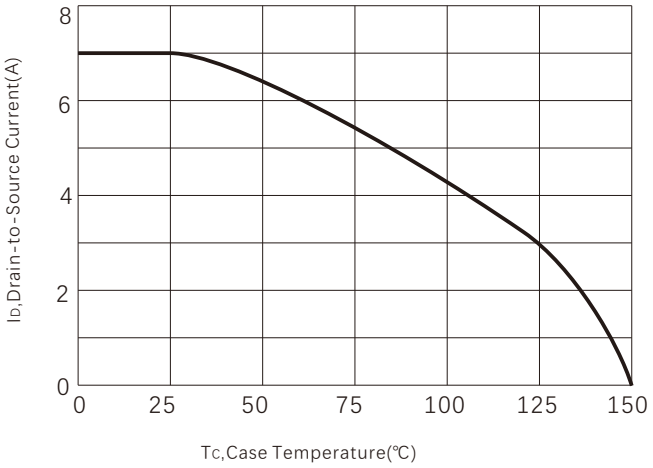


Figure 8. Power dissipation

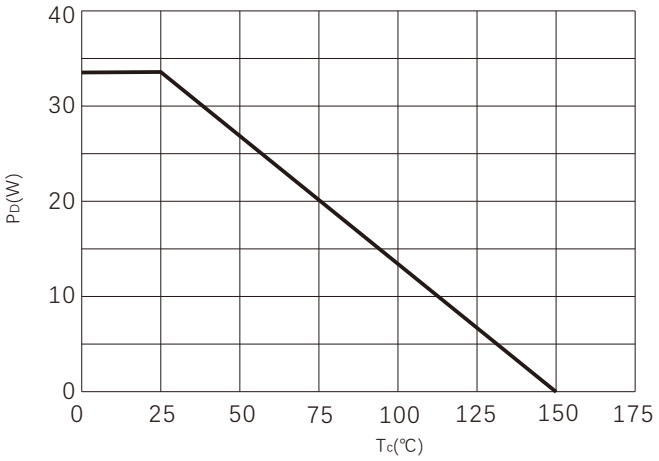


Figure 9.

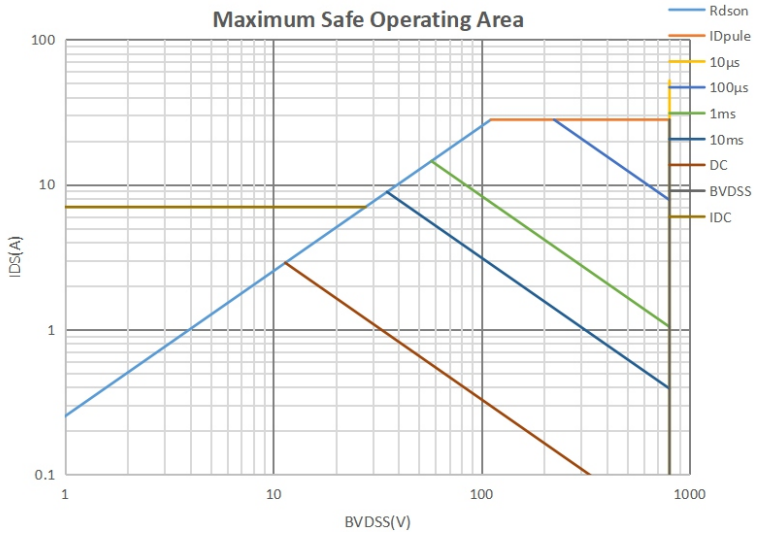
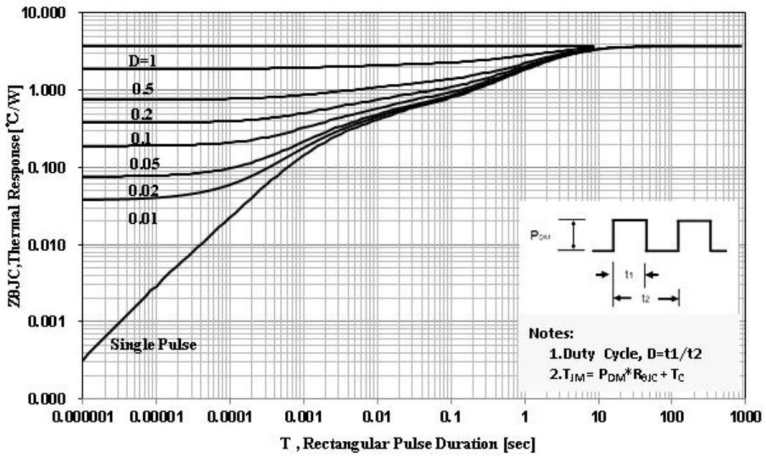
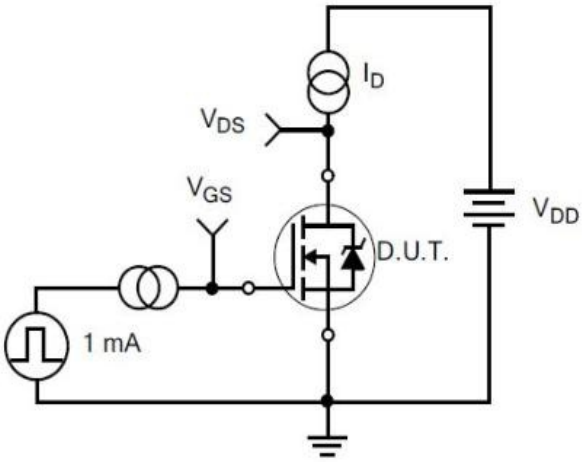


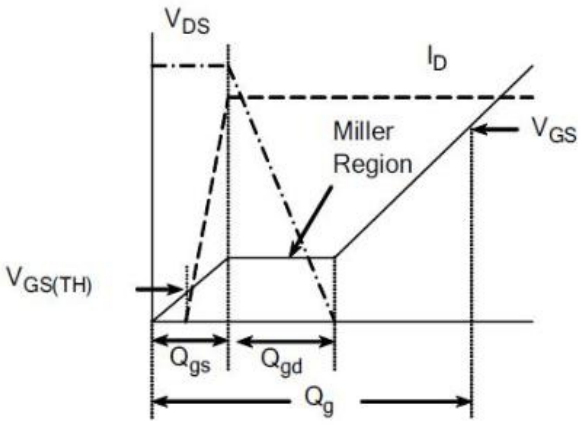
Figure 10. Maximum Transient Thermal Impedance



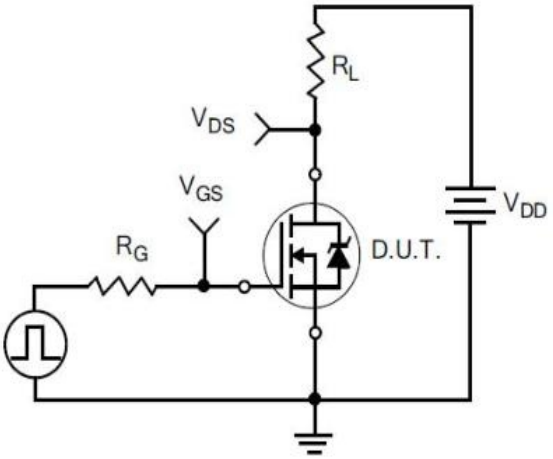
Typical Test Circuit



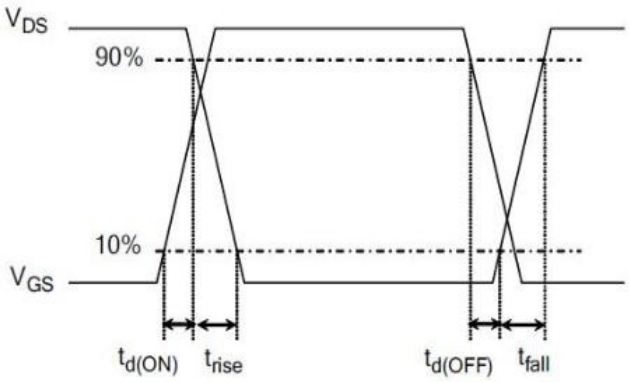
1) Gate Charge Test Circuit



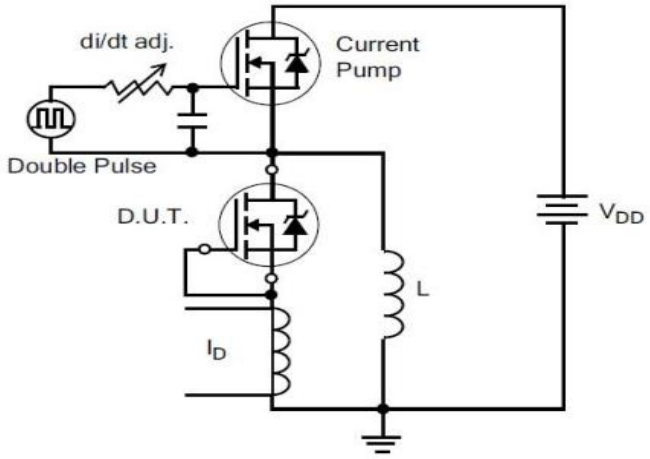
2) . Gate Charge Waveform



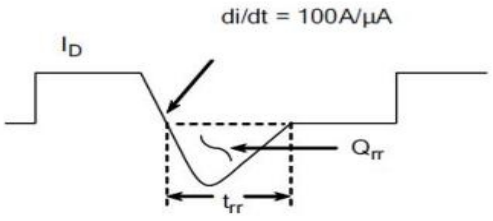
3) Resistive Switching Test Circuit



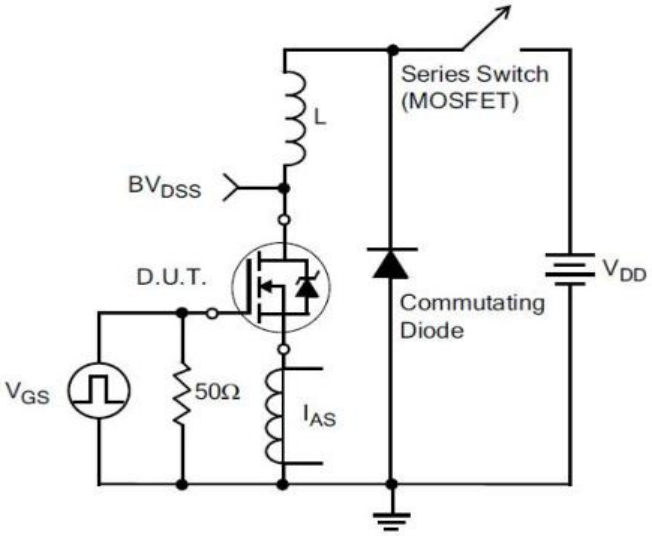
4) Resistive Switching Waveforms



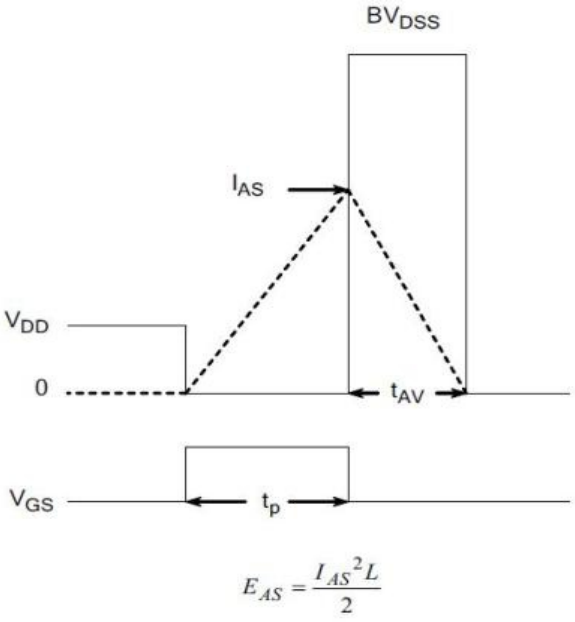
5) Diode Reverse Recovery Test Circuit



6) Diode Reverse Recovery Waveform



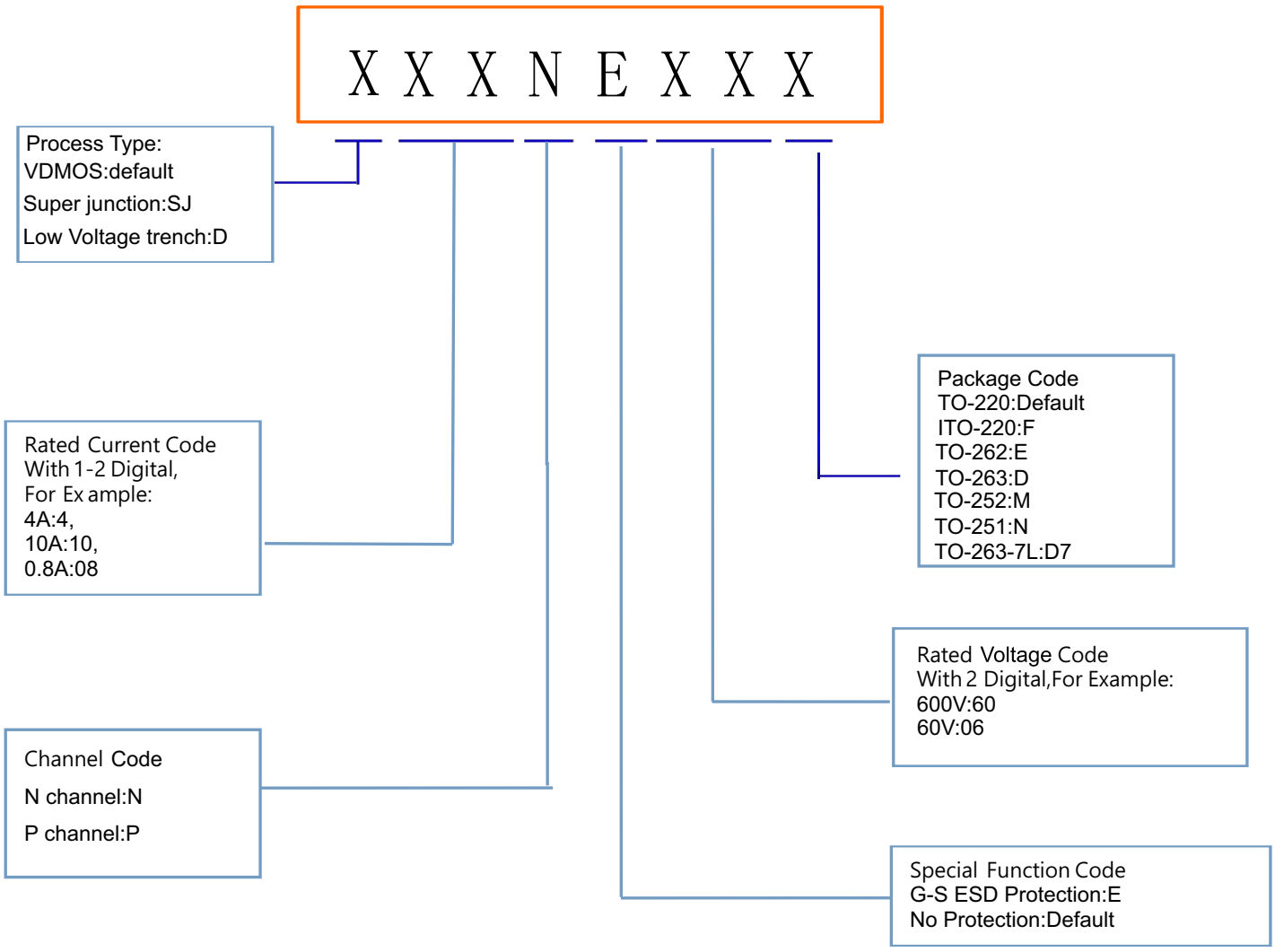
7) . Unclamped Inductive Switching Test Circuit



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

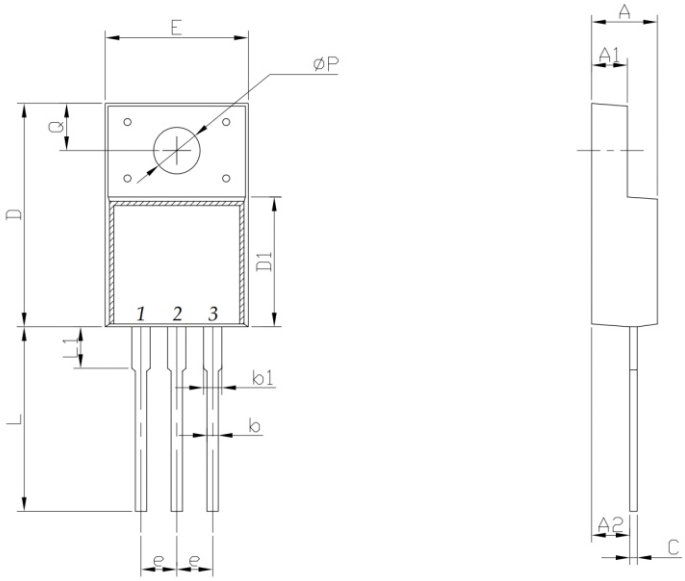
8) Unclamped Inductive Switching Waveforms

Product Names Rules



Dimensions

ITO-220 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	4.24	4.9	0.167	0.193
A1	2.3	2.92	0.091	0.115
A2	2.61	2.81	0.103	0.111
b	0.3	1	0.012	0.039
b1	0.9	1.55	0.035	0.061
C	0.3	0.7	0.012	0.028
D	14.5	16.36	0.571	0.644
D1	8.8	9.41	0.346	0.370
E	9.5	10.5	0.374	0.413
e	2.3	2.75	0.091	0.108
L	12.6	14	0.496	0.551
L1	2.45	4.3	0.096	0.169
P	2.9	3.8	0.114	0.150
Q	2.5	3.55	0.098	0.140

Friendship Reminder

■ JiNan JingHeng（hereinafter referred to as JH） reserves the right to make changes to this document and its products and specifications at anytime without notice.

■ Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.

■ JH makes no warranty, representation or guarantee regarding the suitability ofi ts products for any particular purpose, nor does JH assume any liability for application assistance or customer product design.

■ JH does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application.

■ No license is granted by implication or otherwise under any intellectual property rights of JH.

■ JH's products are not authorized for use as critical components in life support devices or systems without express written approval of JH.