

Features

- Low on resistance
- Low gate charge and Fast Switching
- Low reverse transfer capacitances
- 100% avalanche tested
- Rohs compliant



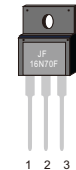
Product Summary			
V _{DS}	R _{DS(on)} (Ω)Typ	I _D (A)	Q _g (Typ)
700V	0.55 @ 10V,8A	16	47nc

Mechanical Data

- Case: ITO-220 Package

ITO-220

16N70F



1 2 3

Application

- Used in various power switching circuit for system miniaturization and higher efficiency
- Power switch circuit of electron ballast and adaptor

Block Diagram

Pin Definition:

- 1.Gate
- 2.Drain
- 3.Source

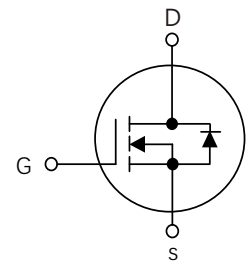


Table1 Absolute Maximum Ratings (T_c=25°C, unless otherwise specified)

Parameters	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	700	V
Gate-Source Voltage	V _{GS}	±30	V
Contionous Drain Current	I _D	T _c =25°C	16
		T _c =100°C	10
Pulsed Drain Current (Note 1)	I _{DM}	64	A
Single Pulse Avalanche Energy(Note 2)	EAS	500	mJ
Power Dissipation	P _D	T _c =25°C	42
		T _A =25°C	0.34
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	$^{\circ}\text{C}/\text{W}$
Thermal resistance Junction to Case	$R_{\theta JC}$	3.0	$^{\circ}\text{C}/\text{W}$

Table 3. Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu\text{A}$	700			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=700V, V_{GS}=0V$			10	μA
Gate- Source Leakage Current	Forward	I_{GSS}			100	nA
	Reverse				-100	nA
On Characteristics(Note 3)						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	2.0		4.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=8A$		0.55	0.60	Ω
Dynamic Characteristics(Note 4)						
Input Capacitance	C_{ISS}	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$		2730		pF
Output Capacitance	C_{OSS}			175		pF
Reverse Transfer Capacitance	C_{RSS}			5.5		pF
Switching Characteristics (Note 4)						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=350V, I_D=16A,$ $V_{GS}=10V, R_G=10\Omega$		30		ns
Turn-On Rise Time	t_r			48		ns
Turn-Off Delay Time	$t_{d(off)}$			53		ns
Turn-Off Fall Time	t_f			42		ns
Total Gate Charge	Q_G	$V_{DD}=560V, I_D=16A,$ $V_{GS}=10V$		47		nC
Gate-Source Charge	Q_{GS}			13.5		nC
Gate-Drain Charge	Q_{GD}			15.8		nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=16A$			1.5	V
Maximum Continuous Drain-Source Diode Forward Current(Note 3)	I_S				16	A
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_F=16A$ $di/dt=100A/\mu\text{s}$ (Note 3)		675		ns
Reverse Recovery Charge	Q_{RR}			7485		nC
Reverse Recovery Current	I_{RRM}			22		A

Notes: 1 Repetitive Rating:Pulse width limited by maximum junction temperature

2 $L=10\text{mH}, I_D=10A$. Starting $T_J=25^{\circ}\text{C}$ 3 Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

4 Guaranteed by design, not subject to production

Typical Characteristics Diagrams

Figure 1. Output Characteristics

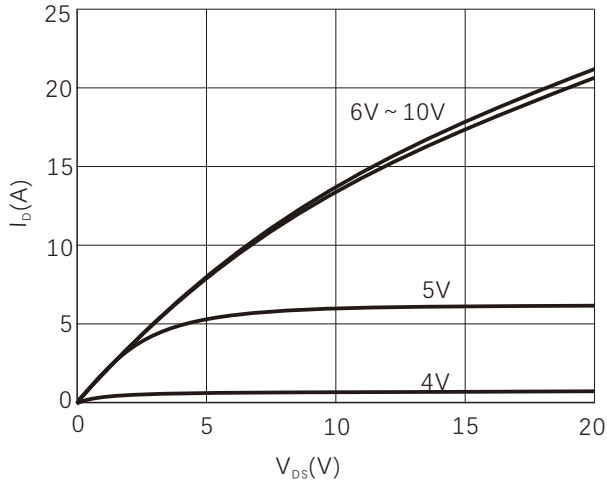


Figure 2. $R_{DS(on)}$ vs Junction Temperature

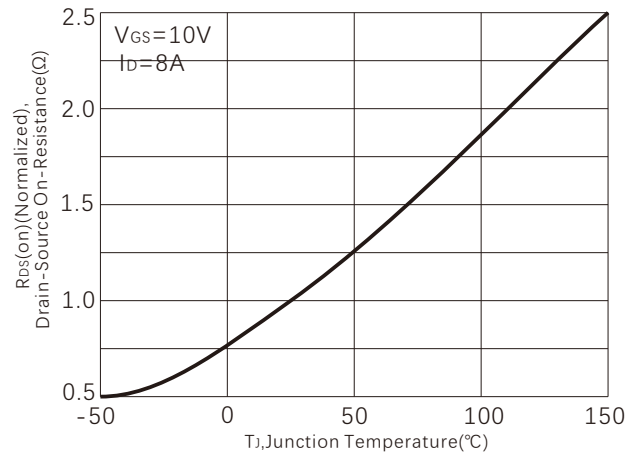


Figure 3. On-Resistance vs. Drain Current

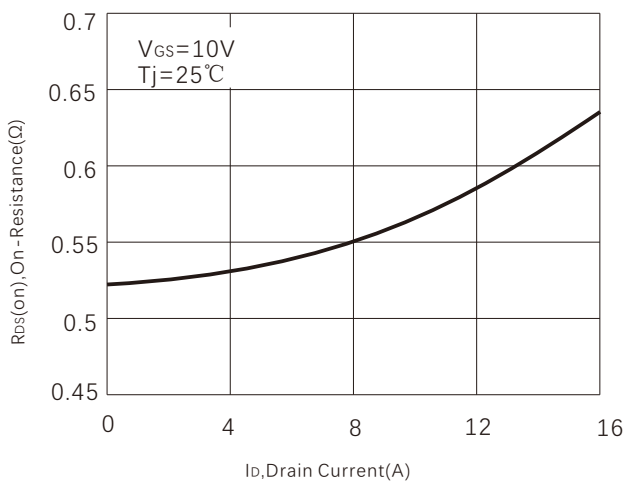


Figure 4. Capacitance

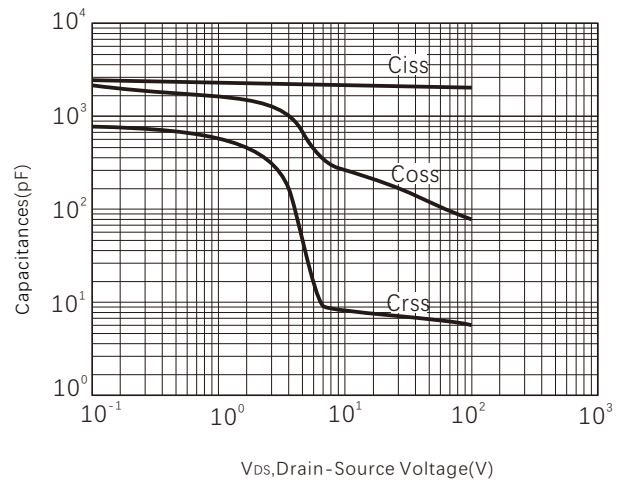


Figure 5. Gate charge

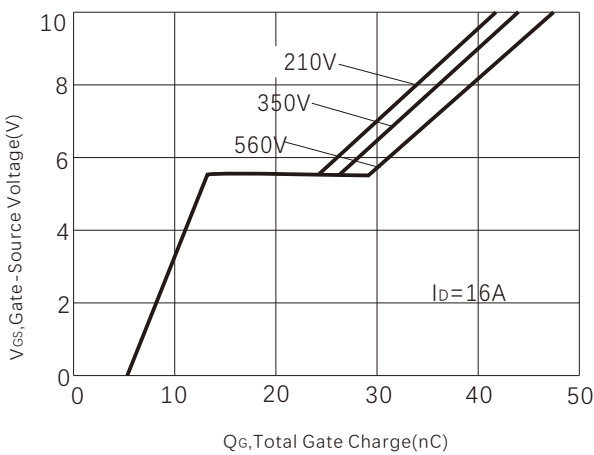


Figure 6. Forward Voltage Drop of Intrinsic Diode

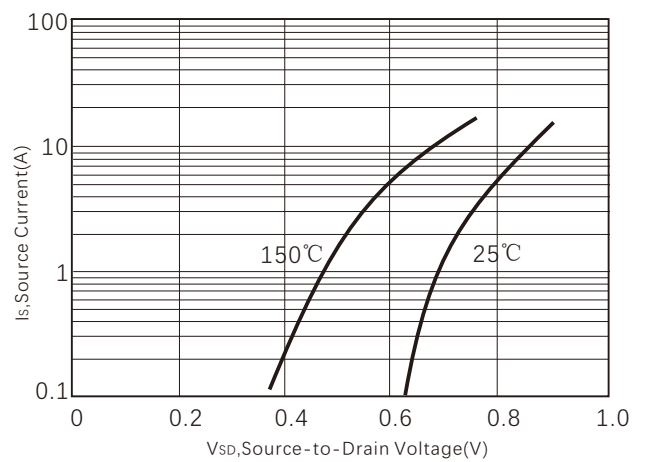


Figure 7. BV_{DSS} vs Junction Temperature

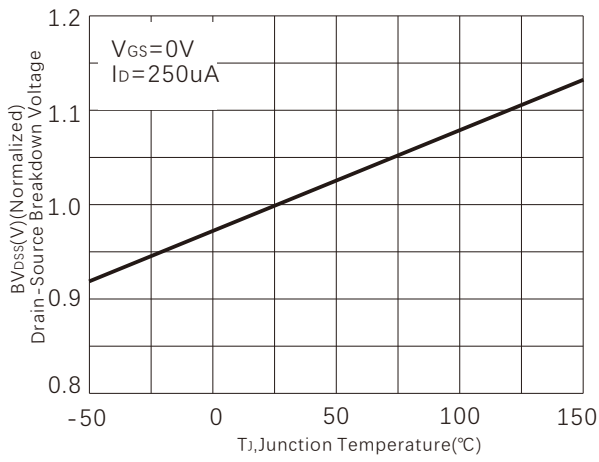


Figure 8. Power dissipation

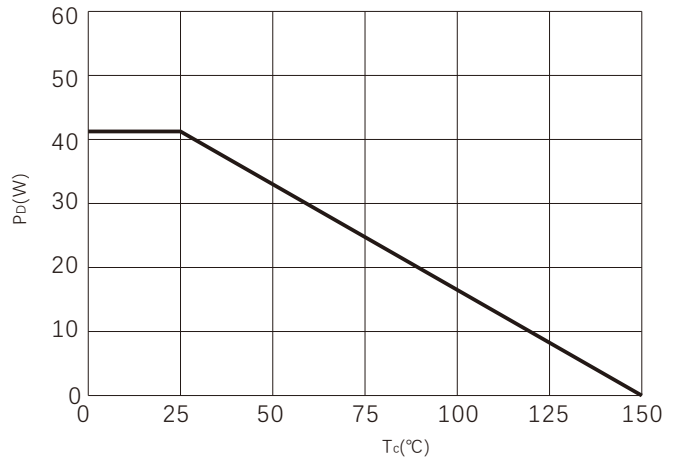


Figure 9. Safe operating area

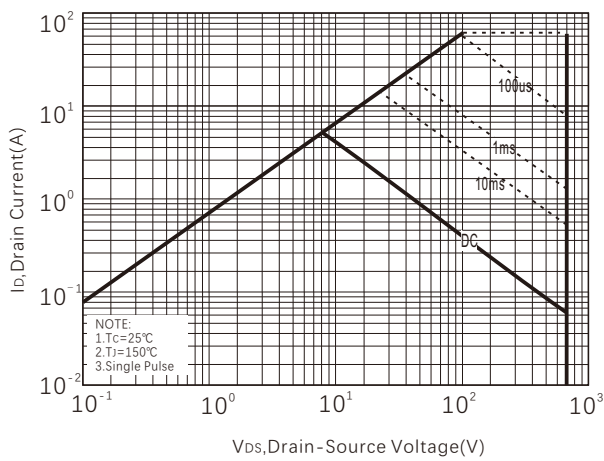


Figure 10. I_D Current De-rating

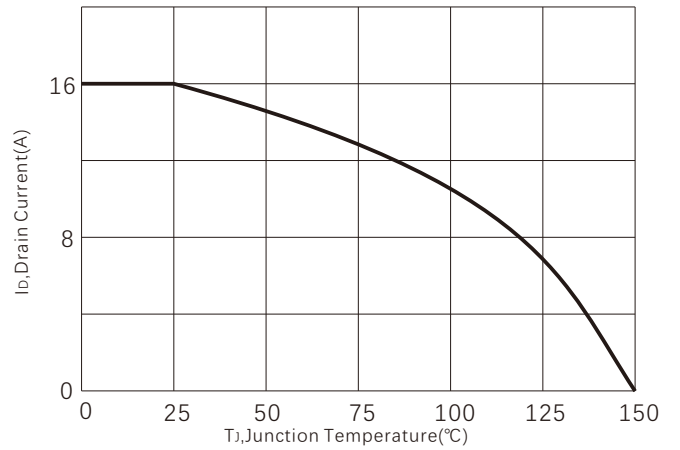
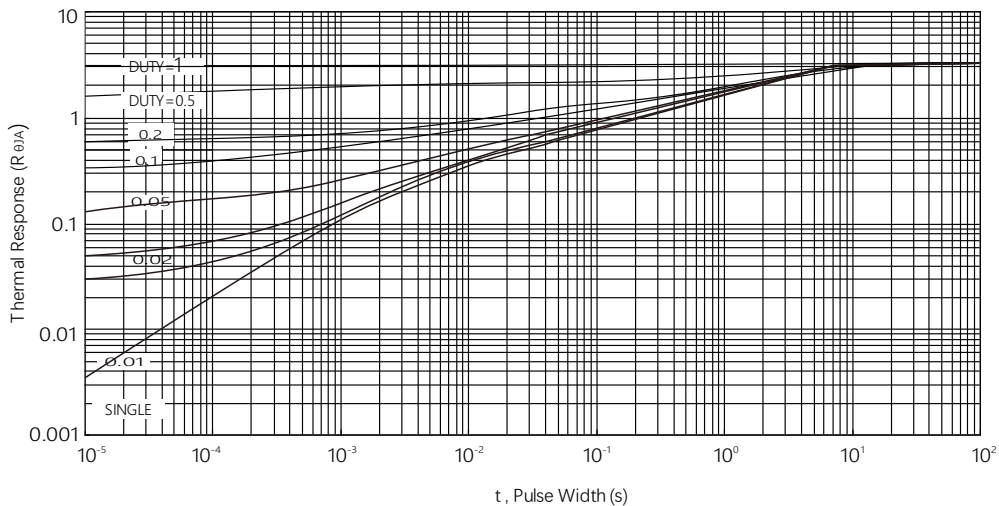
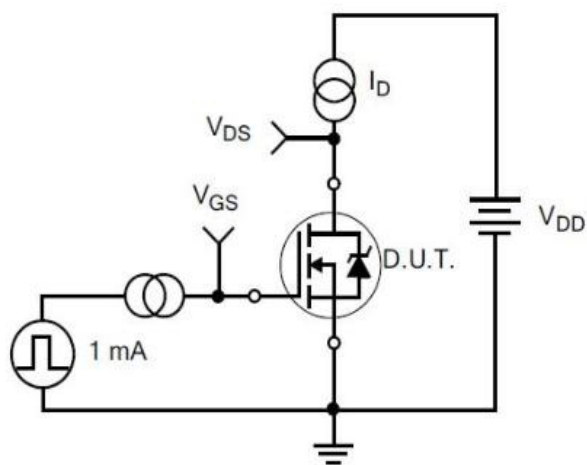


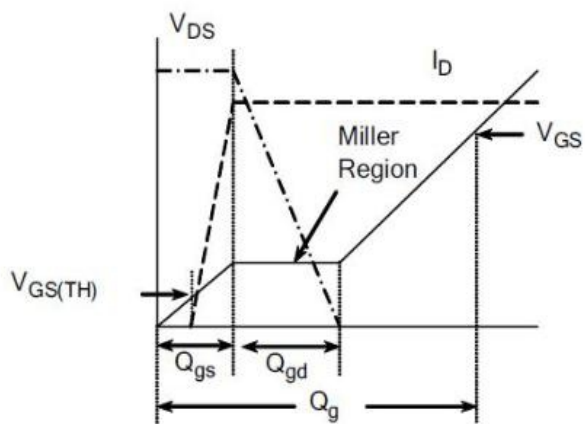
Figure 11. Maximum Transient Thermal Impedance



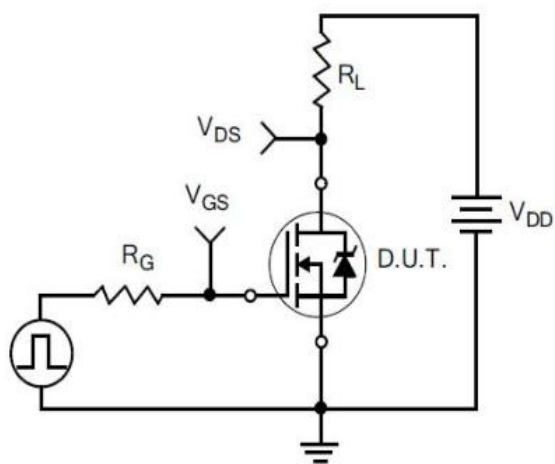
Typical Test Circuit



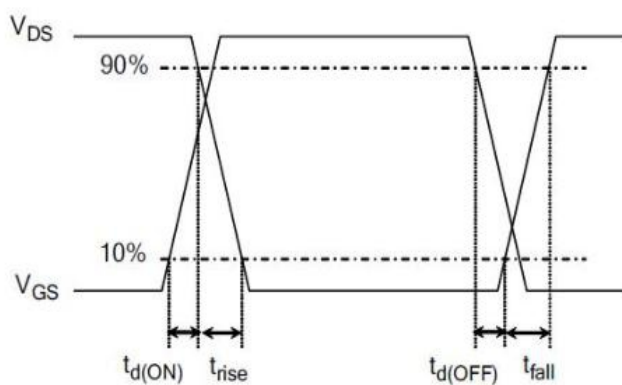
1) Gate Charge Test Circuit



2) Gate Charge Waveform

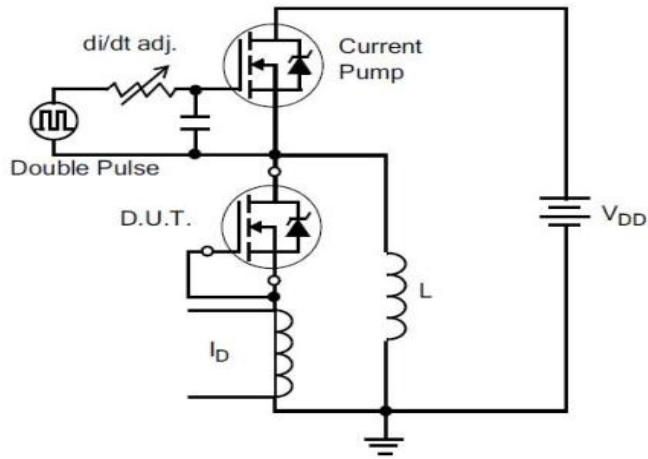


3) Resistive Switching Test Circuit

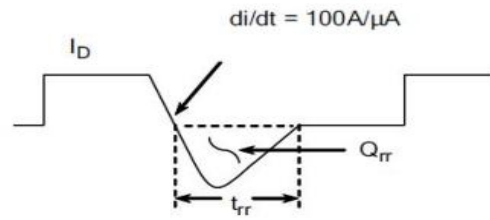


4) Resistive Switching Waveforms

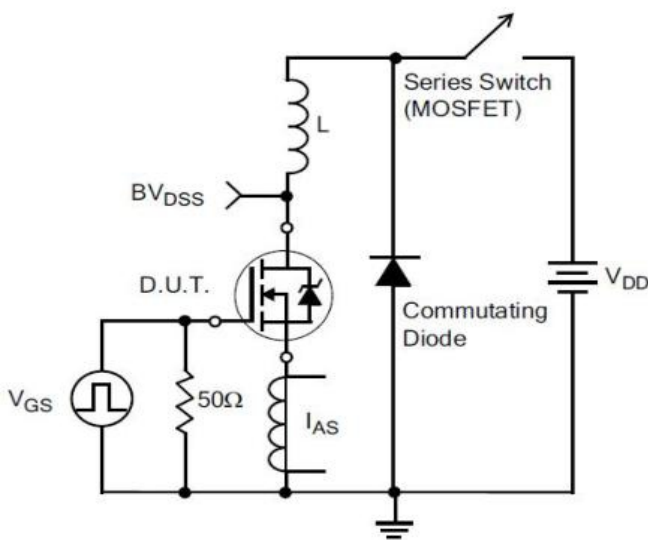
Typical Test Circuit



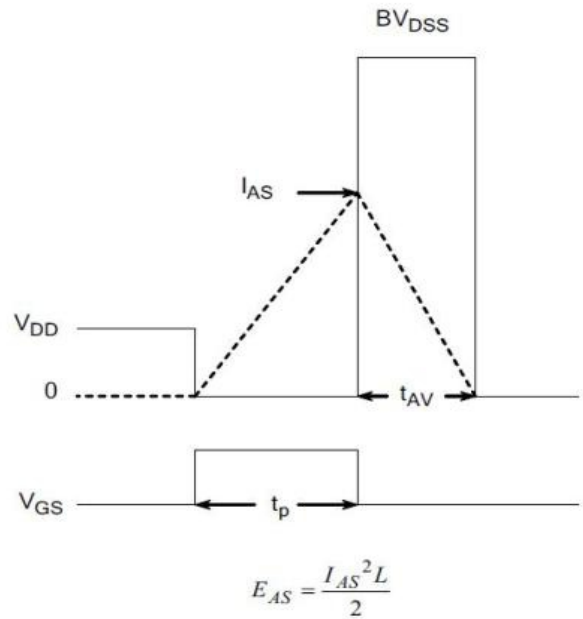
5) Diode Reverse Recovery Test Circuit



6) Diode Reverse Recovery Waveform

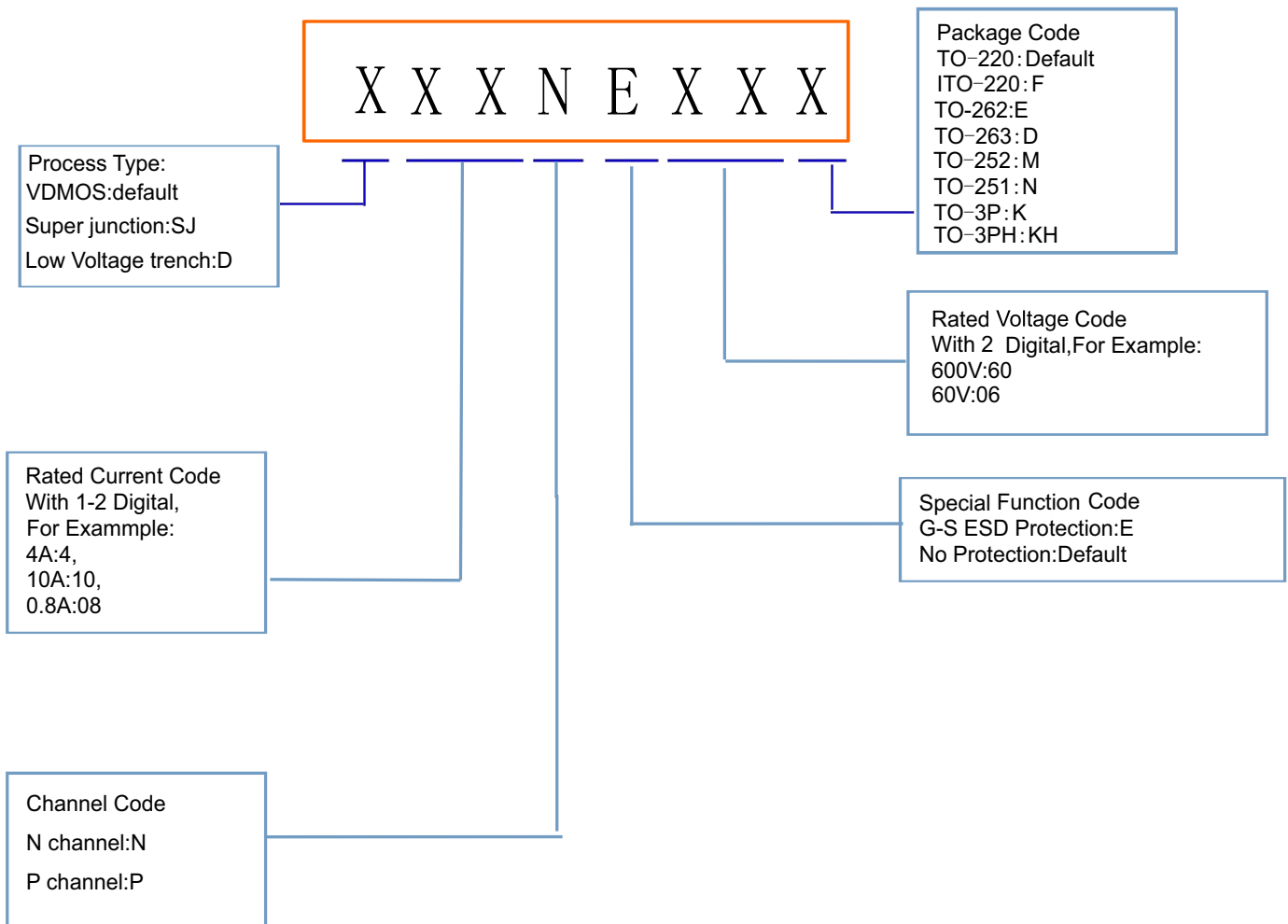


7) . Unclamped Inductive Switching Test Circuit



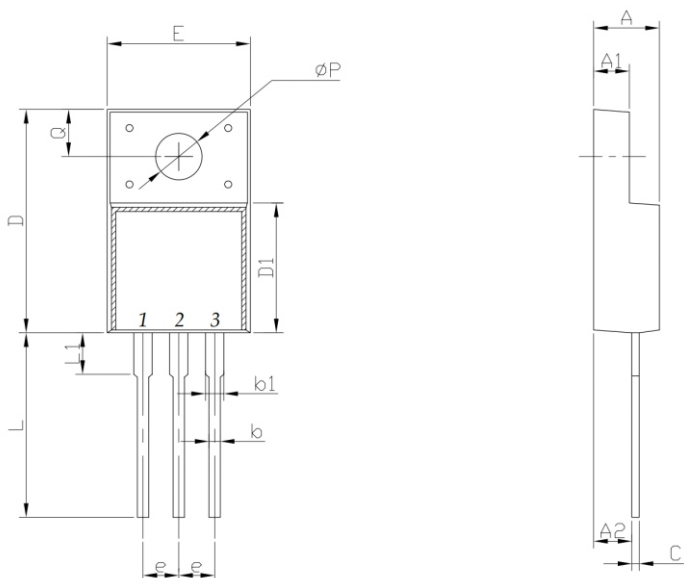
8) Unclamped Inductive Switching Waveforms

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

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