

Features

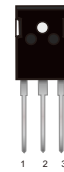
- Low on-resistance
- Low gate charge and input capacitance
- 100% avalanche tested
- Rohs compliant

Product Summary			
V _{DS}	R _{DS(on)} (mΩ)Typ	I _D (A)	Q _g (Typ)
650V	36 @ 10V,30A	72	132nc

Mechanical Data

- Case:TO-247 Package

TO-247
SJ72N65PR



Application

- Switch Mode Power Supply(SMPS)
- Uninterruptible Power Supply(UPS)
- Power Factor Correction(PFC)

Ordering Information

Part No.	Package Type	Package	Quality(box)
SJ72N65PR	TO-247	Tube	360

Pin Definition:

1. Gate
2. Drain
3. Source

Block Diagram

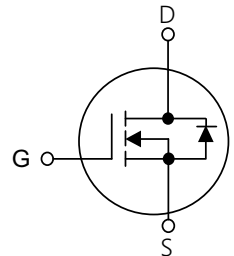


Table1 Absolute Maximum Ratings (T_c=25°C,unless otherwise specified)

Parameters	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	650	V
Gate-Source Voltage	V _{GS}	±30	V
Contionous Drain Current	I _D	T _C = 25°C	A
		T _C = 100°C	
Pulsed Drain Current (Note 1)	I _{DM}	215	A
Single Pulse Avalanche Energy(Note 2)	E _{AS}	1470	mJ
Power Dissipation T _c =25°C	P _D	521	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	$^{\circ}\text{C}/\text{W}$
Thermal resistance Junction to Case	$R_{\theta JC}$	0.24	$^{\circ}\text{C}/\text{W}$

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 =250μA	650			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =650V,V _{GS} =0V			1	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	3.0		5.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V,I _D =30A		36	39	mΩ
Dynamic Characteristics(Note 4)							
Input Capacitance		C _{ISS}	V _{DS} =25V,V _{GS} =0V,f=1MHz		6070		pF
Output Capacitance		C _{OSS}			200		pF
Reverse Transfer Capacitance		C _{RSS}			5.5		pF
Switching Characteristics (Note 4)							
Turn-On Delay Time		t _{d(on)}	V _{DS} =400V,I _D =36A, V _{GS} =10V,R _G =2.5Ω		26		ns
Turn-On Rise Time		t _r			6.5		ns
Turn-Off Delay Time		t _{d(off)}			52		ns
Turn-Off Fall Time		t _f			4.5		ns
Total Gate Charge		Q _G	V _{DS} =400V,I _D =36A, V _{GS} =10V		132		nC
Gate-Source Charge		Q _{GS}			48		nC
Gate-Drain Charge		Q _{GD}			46		nC
Drain-Source Diode Characteristics and Maximum Ratings							
Drain-Source Diode Forward Voltage		V _{SD}	V _{GS} =0V,I _S =72A			1.2	V
Continuous Source Current (Body Diode)		I _{SD}				72	A
Maximum Pulsed Current (Body Diode)		I _{SM}				216	A
Reverse Recovery Time		t _{rr}	V _{DS} =400V,I _S =36A, dI _F /dt=100A/μs(Note 3)		198		ns
Reverse Recovery Charge		Q _{rr}			1.8		μC
Peak Reverse Recovery Charge		I _{rrm}			18		A

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

2 $V_{DD}=100V, V_G=10V, L=10mH, R_G=25\Omega, \text{Starting } T_J=25^{\circ}\text{C}$

3 Pulse Test: Pulse width $\leq 300\mu s, \text{Duty cycle} \leq 2\%$

4 Guaranteed by design,not subject to production

Typical Characteristics Diagrams

Figure 1. Output Characteristics

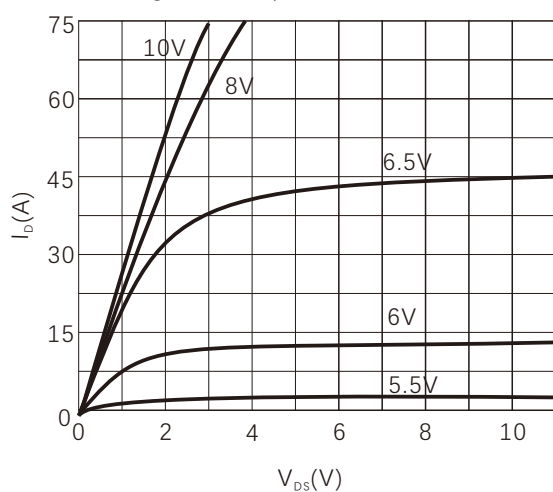


Figure 2. Transfer Characteristics

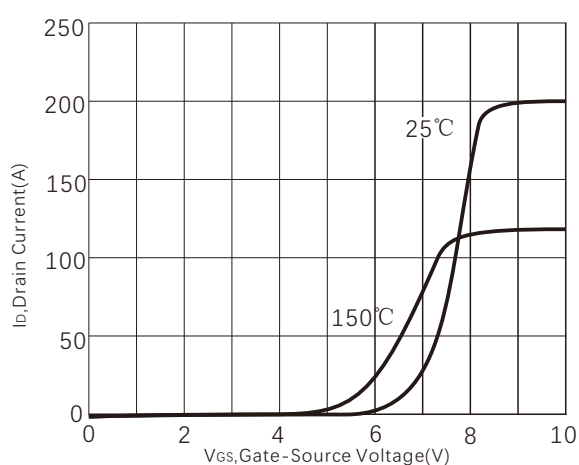


Figure 3. On-Resistance vs. Drain Current

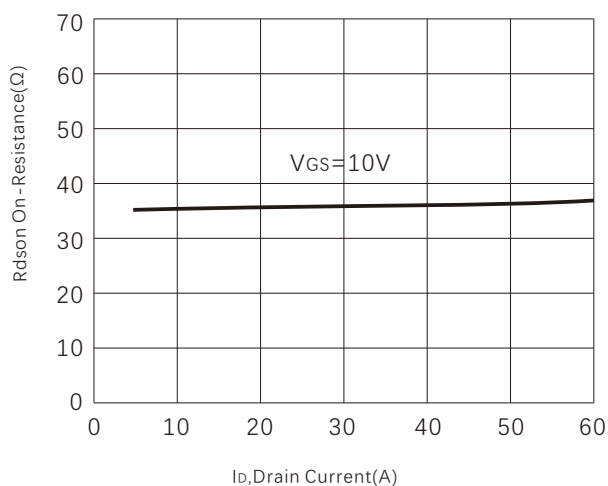


Figure 4. Capacitance

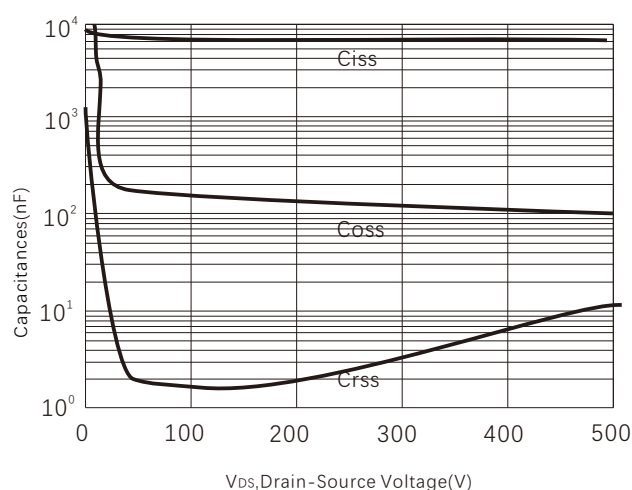


Figure 5. Gate charge

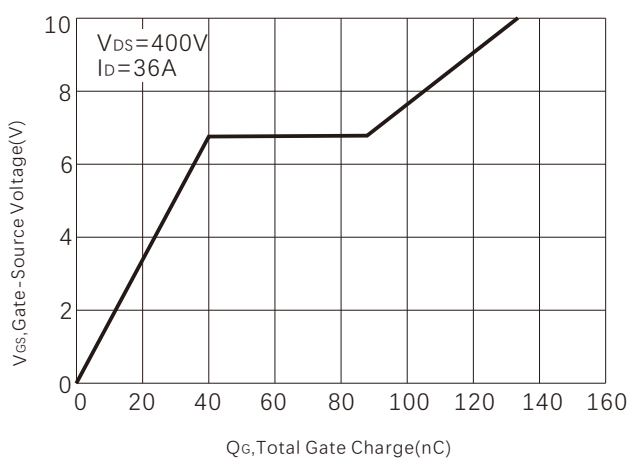


Figure 6. Source-Drain Diode Forward Voltage

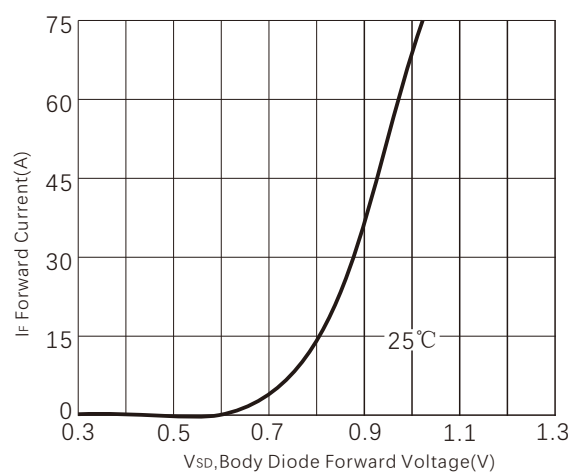


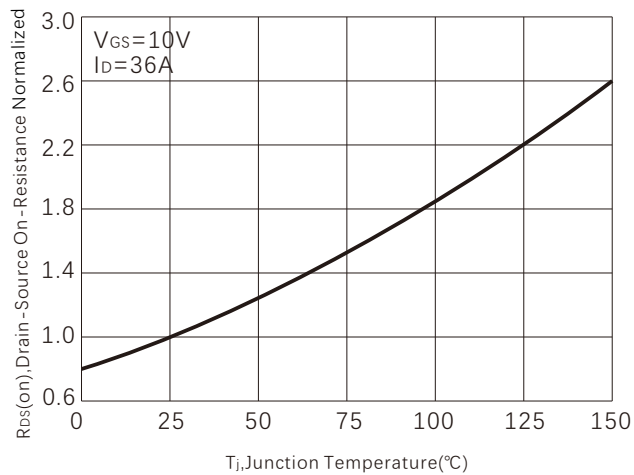
Figure7.Normalized $R_{DS(ON)}$ vs Temperature


Figure8.Maximum Drain Current vs Temperature

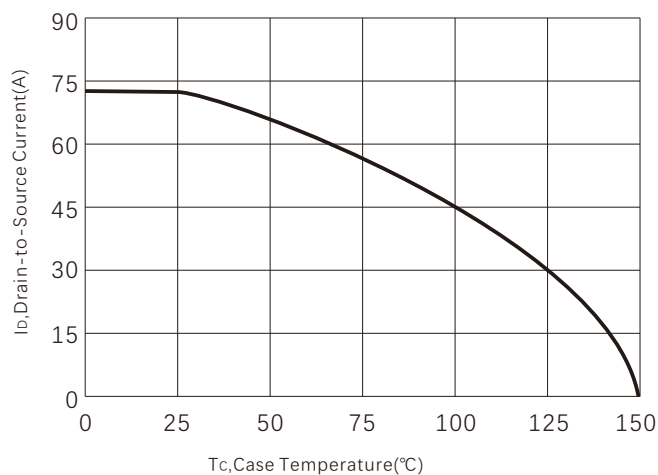
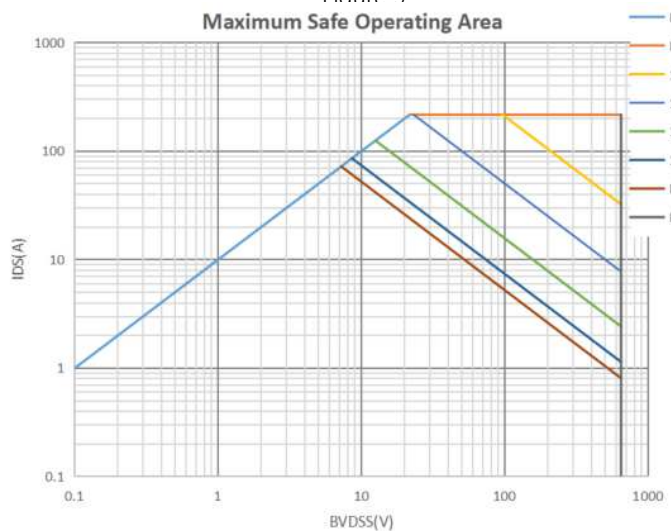

Figure 9
Maximum Safe Operating Area


Figure 10. Power dissipation

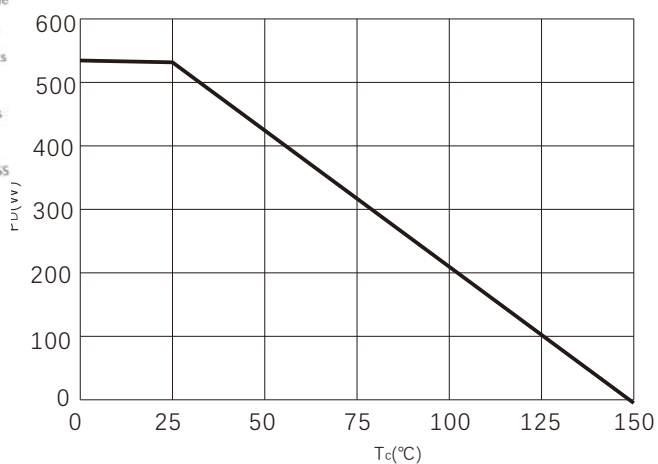
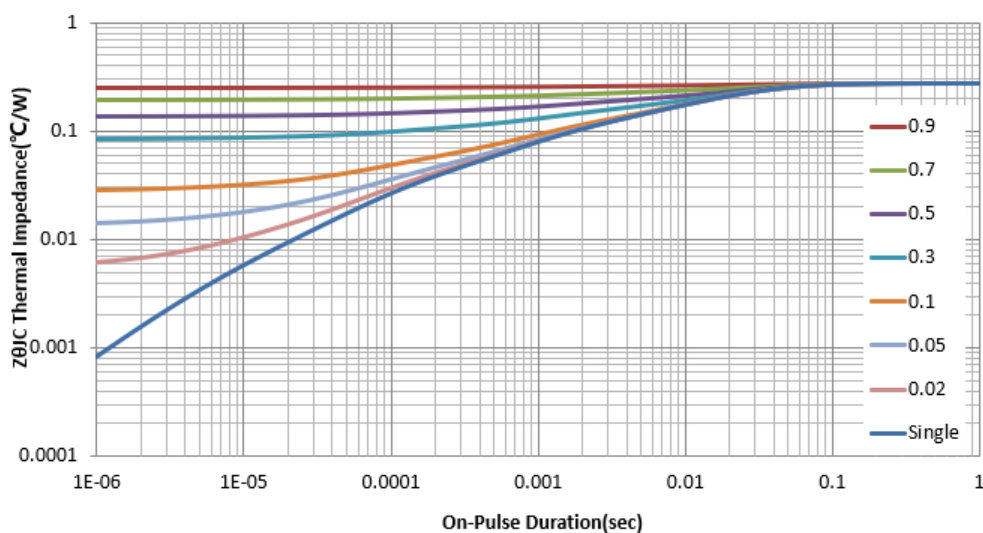
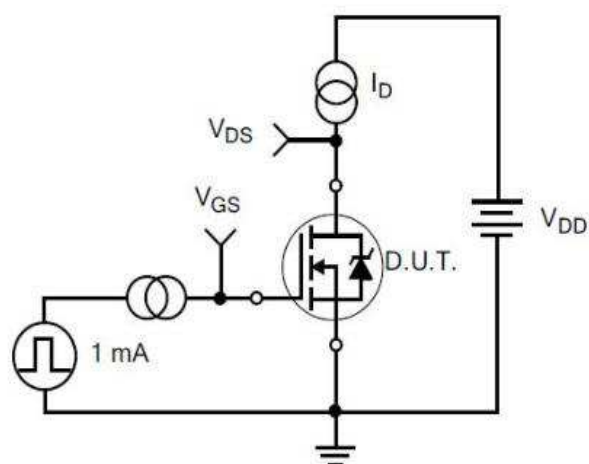


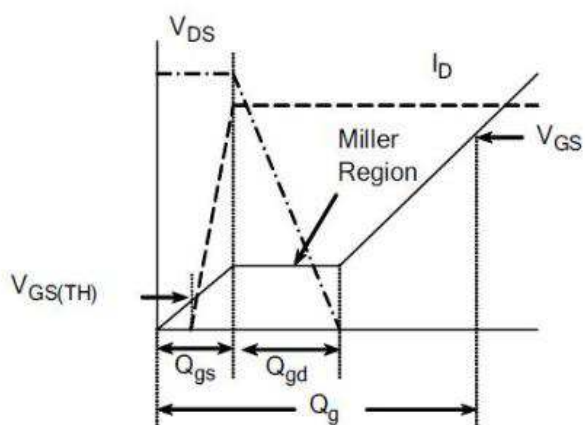
Figure 11. Maximum Transient Thermal Impedance



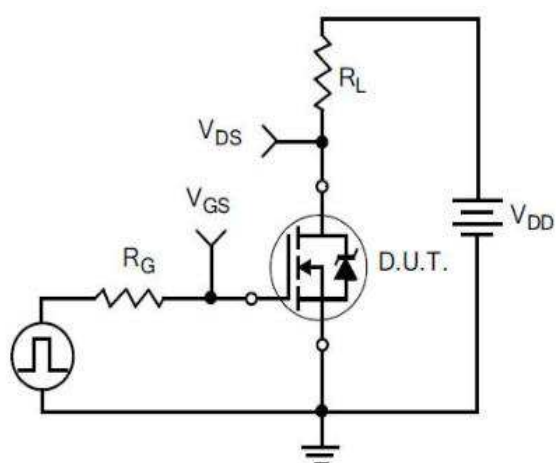
Typical Test Circuit



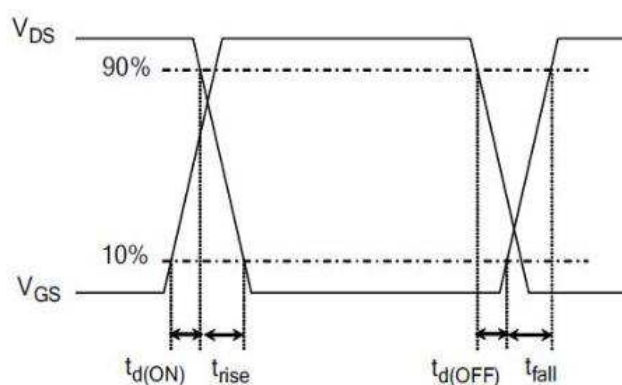
1) Gate Charge Test Circuit



2) Gate Charge Waveform

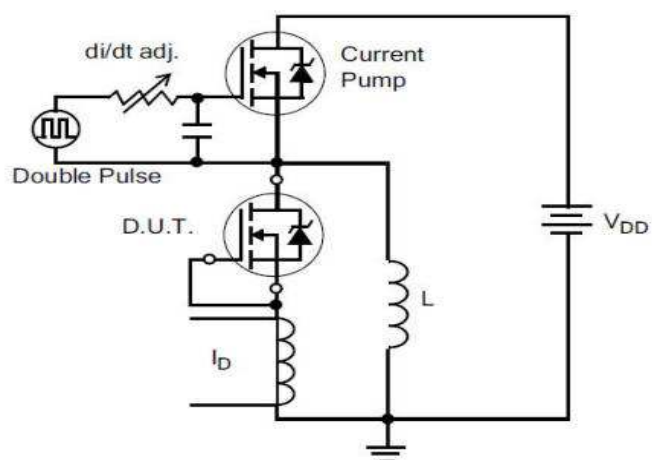


3) Resistive Switching Test Circuit

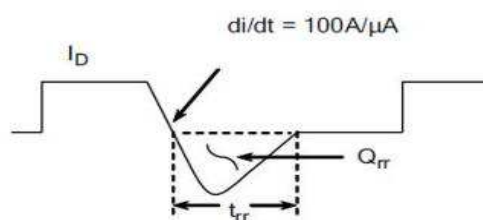


4) Resistive Switching Waveforms

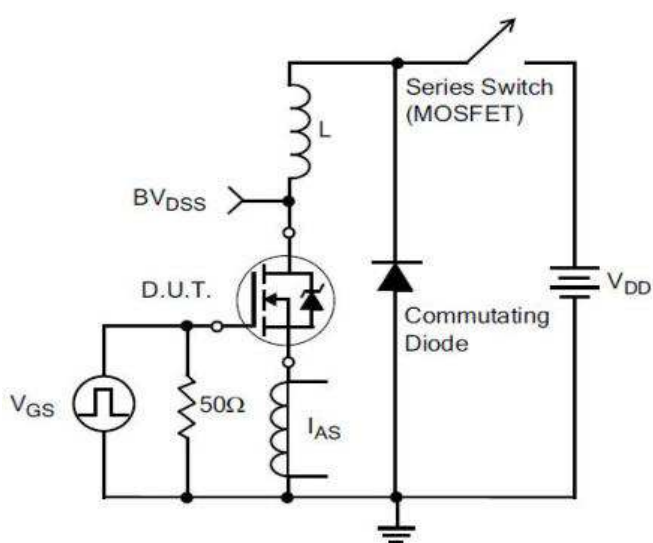
Typical Test Circuit



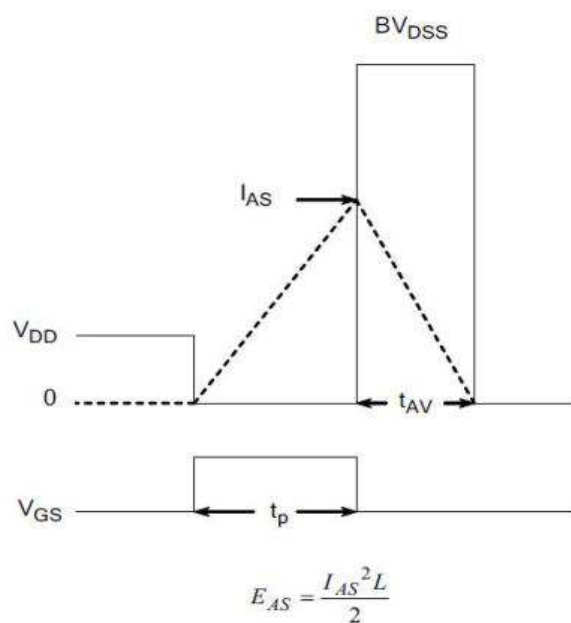
5) Diode Reverse Recovery Test Circuit



6) Diode Reverse Recovery Waveform

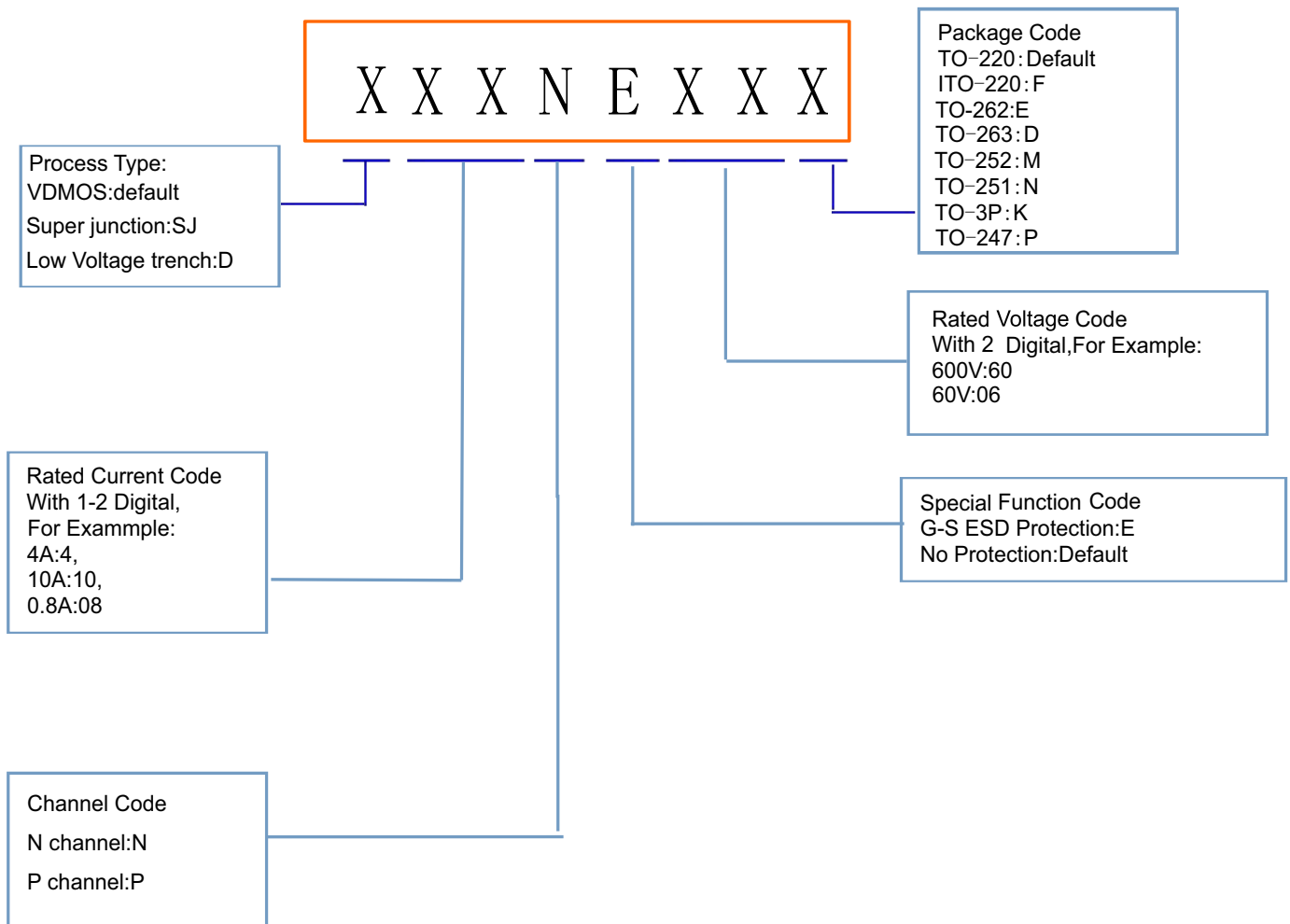


7) . Unclamped Inductive Switching Test Circuit



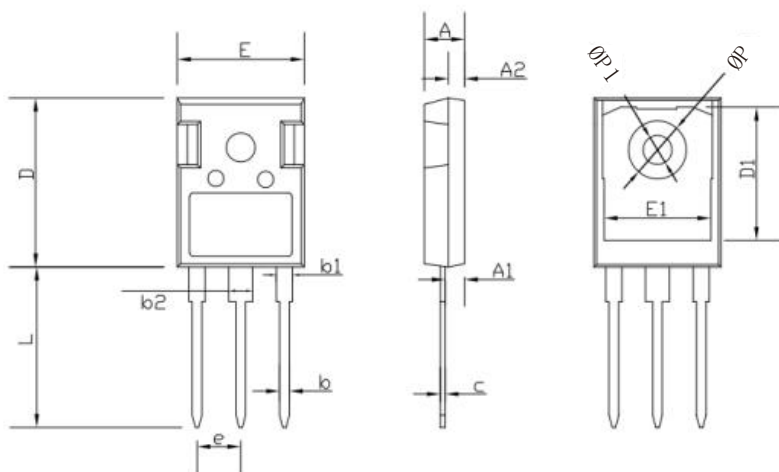
8) Unclamped Inductive Switching Waveforms

Product Names Rules



Dimensions

TO-247 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	min.	max.	min.	max.
A	4.90	5.10	0.193	0.201
A1	2.31	2.51	0.091	0.099
A2	1.90	2.10	0.075	0.083
b	1.16	1.26	0.046	0.050
b1	1.96	2.06	0.0772	0.0812
b2	2.96	3.06	0.117	0.121
c	0.59	0.66	0.0232	0.0260
D	20.90	21.10	0.8235	0.8313
D1	16.25	16.85	0.6403	0.6639
E	15.70	15.90	0.6186	0.6265
E1	13.10	13.50	0.5161	0.5319
e	5.44		0.2143	
L	19.80	20.10	0.7801	0.7919
ΦP	3.50	3.70	0.1379	0.1458
ΦP1	0	7.30	0	0.2876

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