

General Description

These N-channel enhancement mode power mosfets Used advanced splite gate trench technology design,provided excellent Rdson and low gate charge.Which accords with the RoHS standard.

Features

- Fast switching
- Low gate charge and input capacitance
- 100% avalanche tested
- Rohs compliant

Mechanical Data

- Case:TO-220,TO-263Package

Application

- Power switching applications
- DC-DC Converters
- Full bridge control

Ordering Information

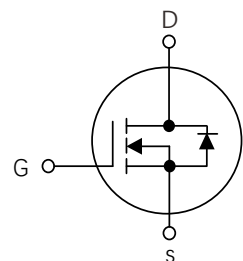
Part No.	Package Type	Package	Quality(box)
D260N04	TO-220	Tube	1000
D260N04D	TO-263	Tape & Reel	800



Product Summary			
V _{DS}	R _{DS(on)} (mΩ)Typ	I _O (A)	Q _g (Typ)
40V	1.60 @ 10V,100A	260	57nc



Block Diagram



Pin Definition:

- 1. Gate
- 2. Drain
- 3/4/5/6/7. Source

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

Parameters	Symbol	D260N04 D260N04D	Unit
Drain-Source Voltage	V _{DS}	40	V
Gate-Source Voltage	V _{GS}	±20	V
Contionous Drain Current	I _D	T _C =25°C	260
		T _C =100°C	190
Pulsed Drain Current (Note 1)	I _{DM}	1050	A
Single Pulse Avalanche Energy(Note 2)	EAS	500	mJ
Avalanche Current	I _{AS}	100	A
Power Dissipation T _C =25°C	P _D	230	W
Operating Junction and Storage Temperature	T _J /T _{STG}	-55 ~ +175	°C

Table 2. Thermal Characteristics

Parameters	Symbol	D260N04 D260N04D	Unit
Thermal resistance Junction to Ambient	$R_{\theta JA}$	62.0	$^{\circ}\text{C}/\text{W}$
Thermal resistance Junction to Case	$R_{\theta JC}$	0.64	$^{\circ}\text{C}/\text{W}$

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	40			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =32V,V _{GS} =0V			1	μA
Gate- Source Leakage Current	Forward	I _{GSS}	V _{GS} =20V,V _{DS} =0V			100	nA
	Reverse		V _{GS} = -20V,V _{DS} =0V			-100	nA
On Characteristics(Note 4)							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} ,I _D =250μA	2.00	2.60	4.00	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V,I _D =100A		1.60	2.00	mΩ
Dynamic Characteristics(Note 5)							
Input Capacitance		C _{ISS}	V _{DS} =25V,V _{GS} =0V,f=1MHz		6760		pF
Output Capacitance		C _{OSS}			1705		pF
Reverse Transfer Capacitance		C _{RSS}			160		pF
Switching Characteristics (Note 5)							
Turn-On Delay Time		t _{d(on)}	V _{DD} =20V,I _D =20A, V _{GS} =10V,R _G =1.5Ω		20		ns
Turn-On Rise Time		t _r			145		ns
Turn-Off Delay Time		t _{d(off)}			55		ns
Turn-Off Fall Time		t _f			18		ns
Total Gate Charge		Q _G	V _{DS} =20V,I _D =100A, V _{GS} =10V		108		nC
Gate-Source Charge		Q _{GS}			31		nC
Gate-Drain Charge		Q _{GD}			22		nC
Drain-Source Diode Characteristics and Maximum Ratings							
Drain-Source Diode Forward Voltage(Note 4)		V _{SD}	V _{GS} =0V,I _S =100A			1.3	V
Maximum Continuous Drain-Source Diode Forward Current(Note 1)		I _S				260	A

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

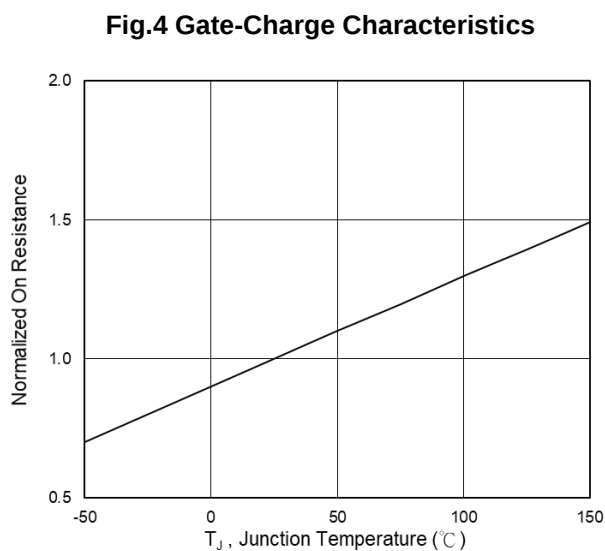
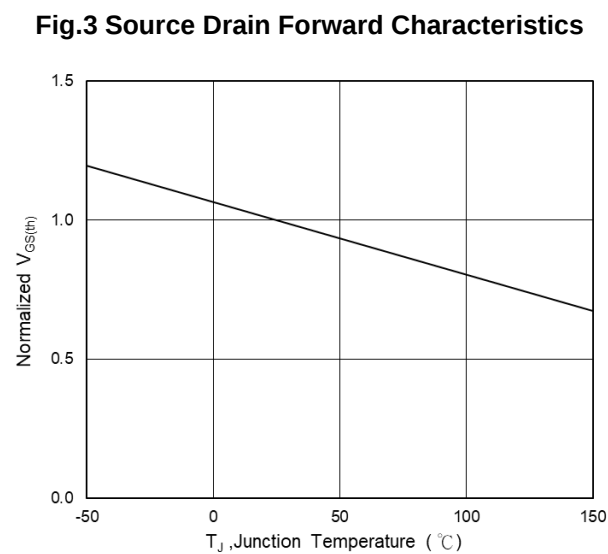
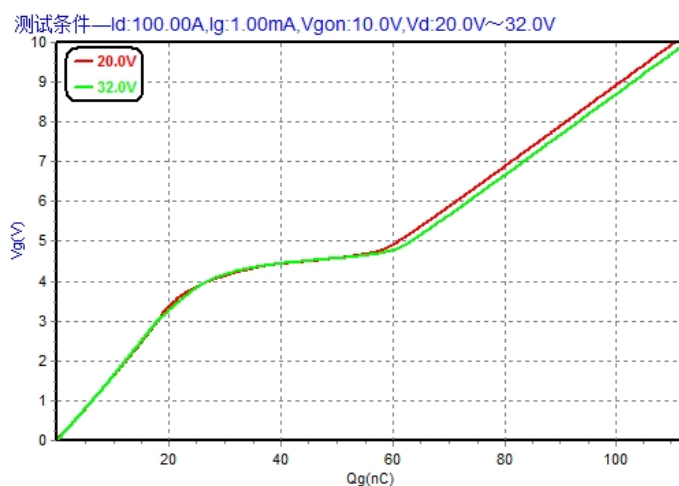
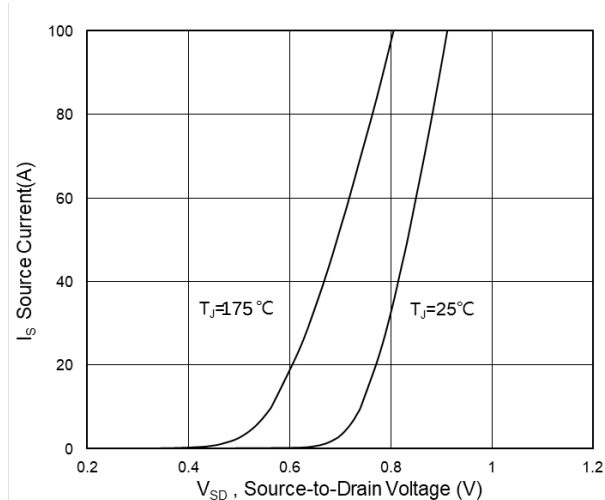
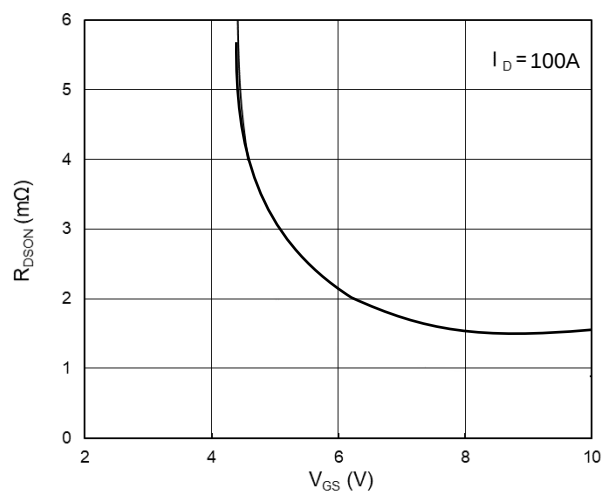
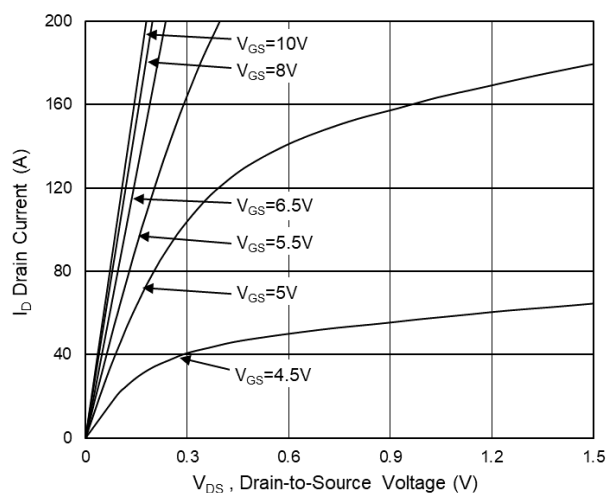
2 $R_G=25\Omega, I_{AS}=100A, L=0.1\text{mH}$, Starting $T_J=25^{\circ}\text{C}$

3 $I_{SD}\leq I_D, di/dt\leq 200A/\mu S, V_{DD}\leq BV_{DSS}$, starting $T_J=25^{\circ}\text{C}$

4 Pulse Test: Pulse width $\leq 300\mu S$, Duty cycle $\leq 2\%$

5 Guaranteed by design, not subject to production

Typical Characteristics Diagrams



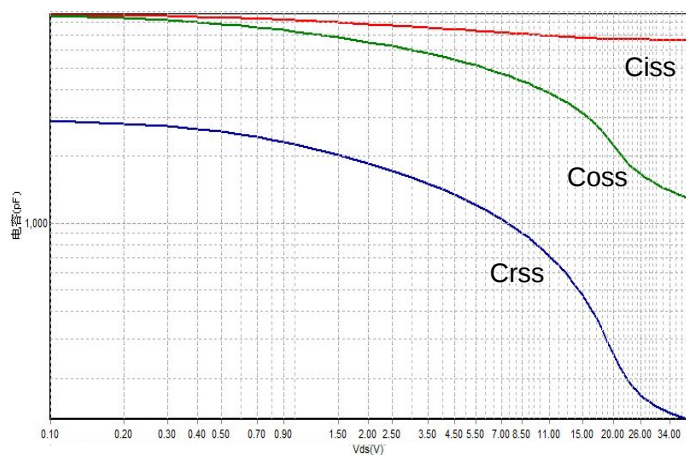


Fig.7 Capacitance

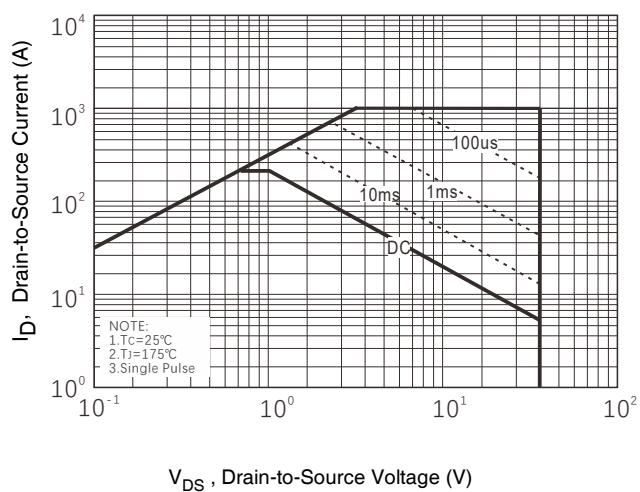

 V_{DS} , Drain-to-Source Voltage (V)

Fig.8 Safe Operating Area

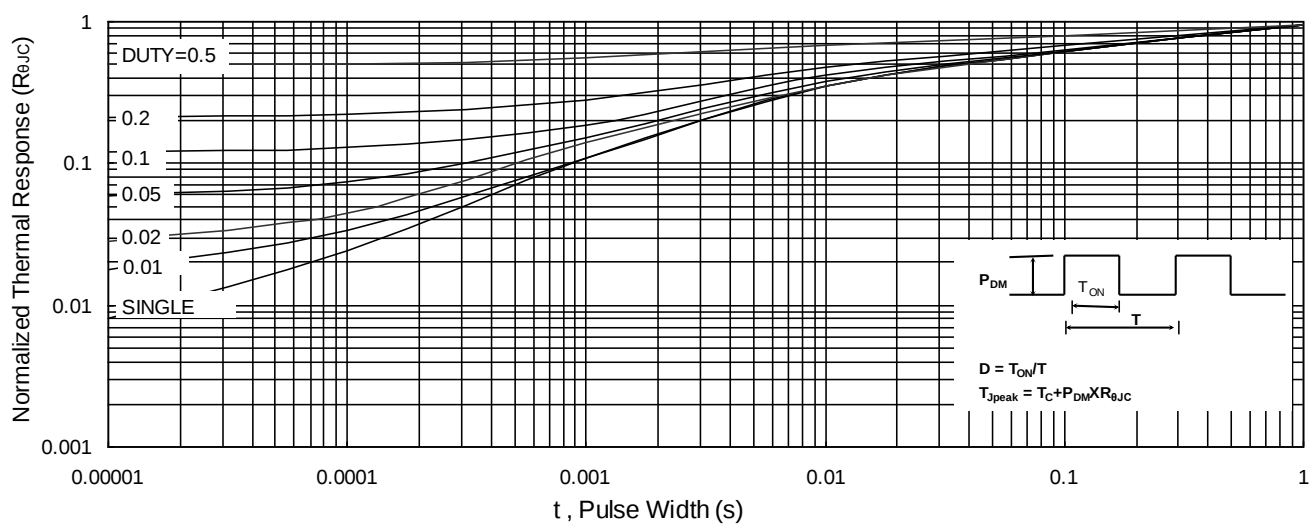
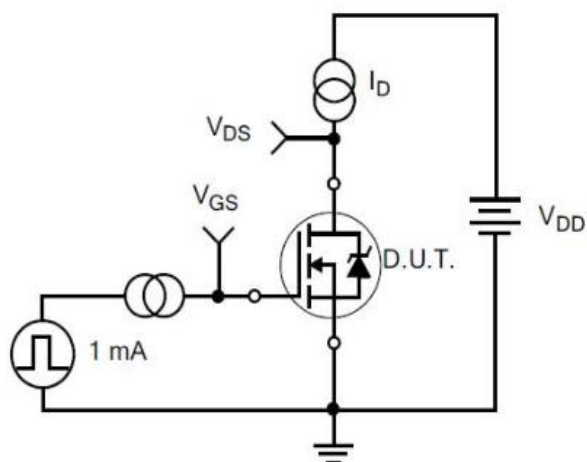


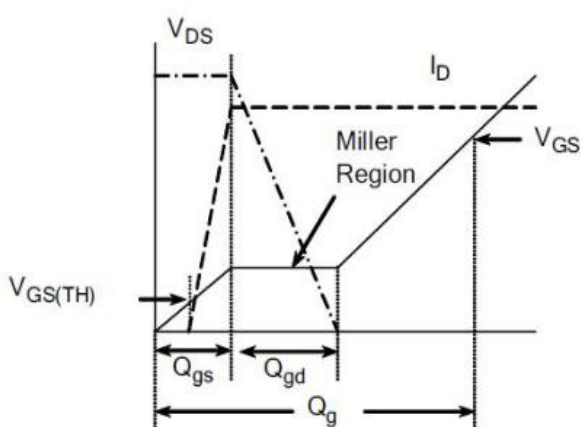
Fig.9 Normalized Maximum Transient Thermal Impedance

 V_{DS} , Drain-Source Voltage(V)

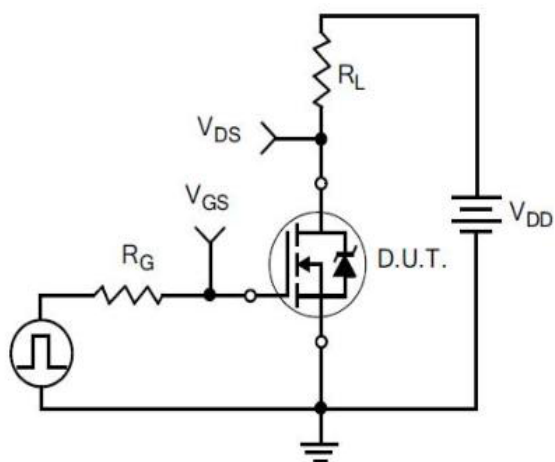
Typical Test Circuit



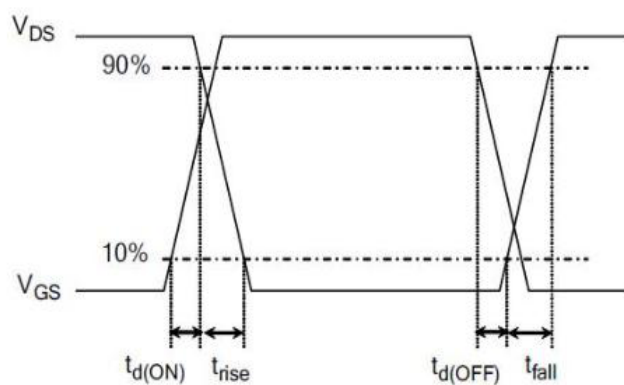
1) Gate Charge Test Circuit



2) . Gate Charge Waveform

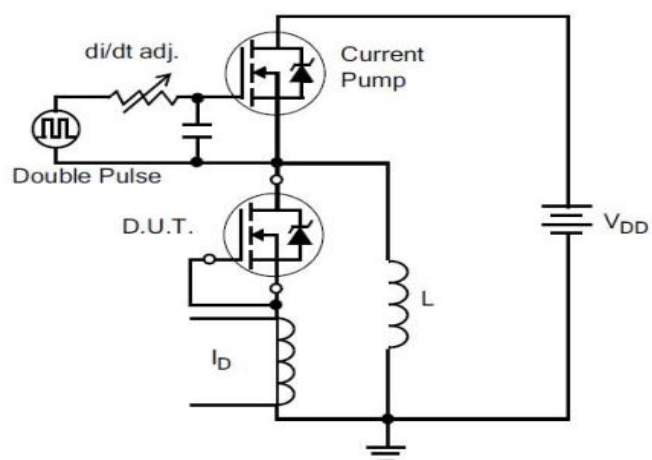


3) Resistive Switching Test Circuit

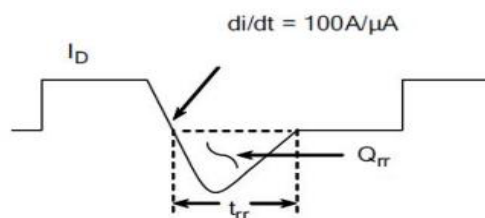


4) Resistive Switching Waveforms

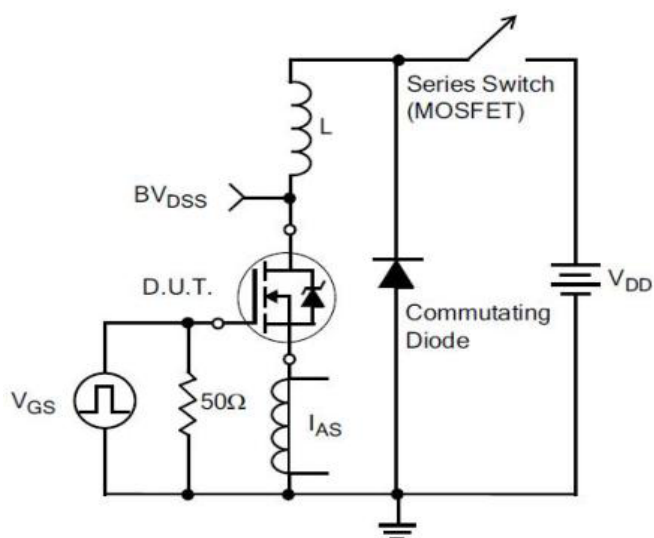
Typical Test Circuit



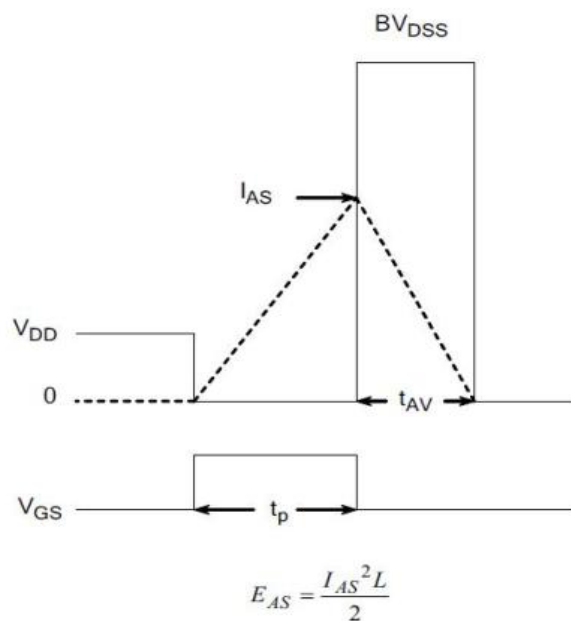
5) Diode Reverse Recovery Test Circuit



6) Diode Reverse Recovery Waveform

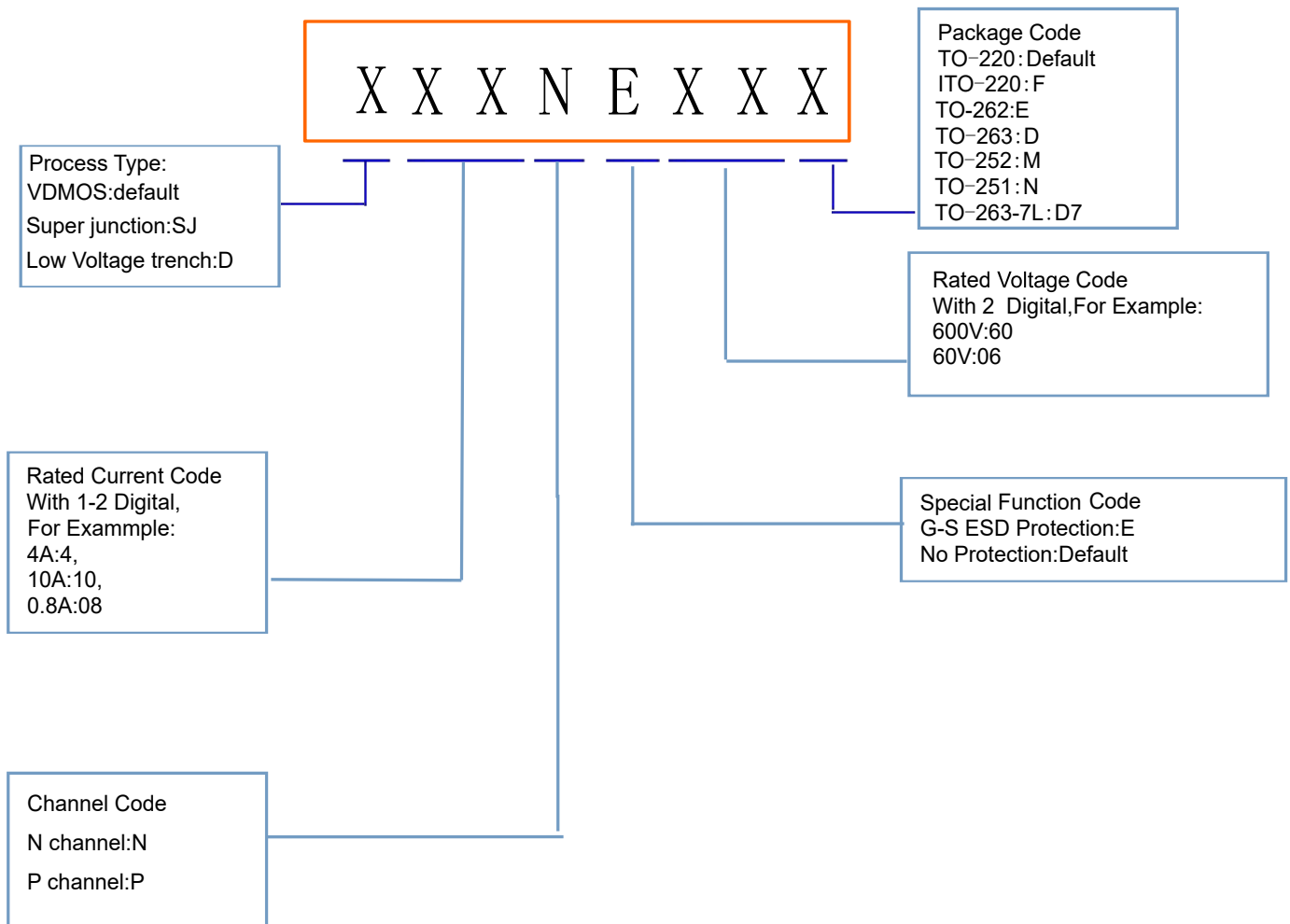


7) . Unclamped Inductive Switching Test Circuit



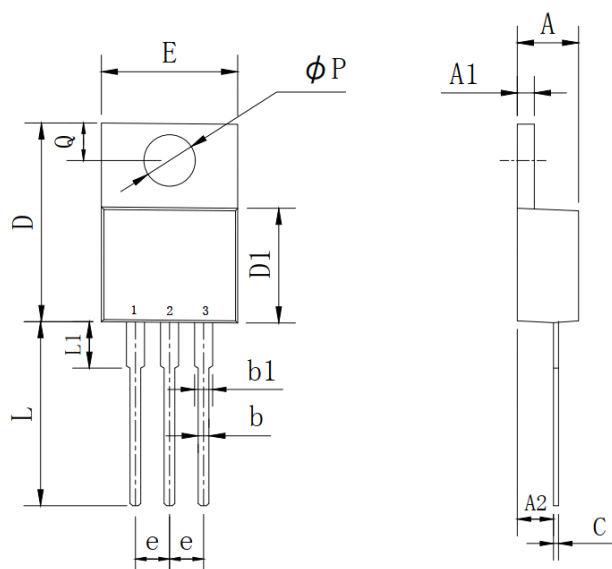
8) Unclamped Inductive Switching Waveforms

Product Names Rules



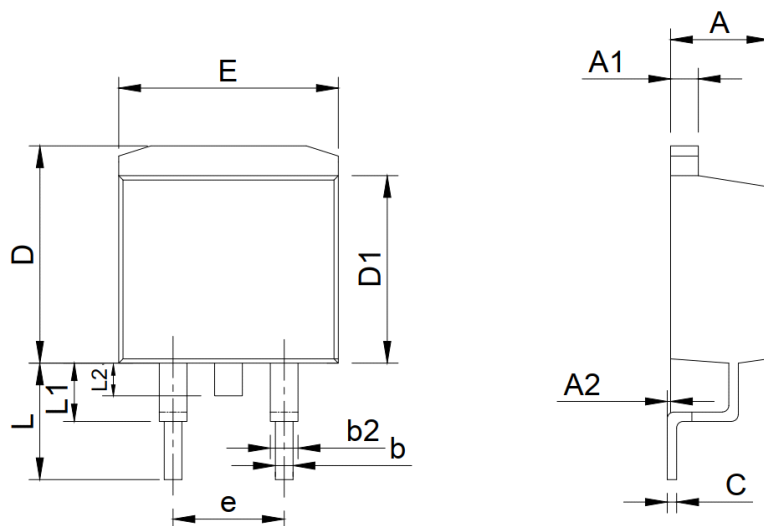
Dimensions

TO-220 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	4.25	4.87	0.167	0.192
A1	1.07	1.47	0.042	0.058
A2	2.03	2.92	0.080	0.115
b	0.51	1.11	0.020	0.044
b1	0.97	1.6	0.038	0.063
C	0.3	0.7	0.012	0.028
D	14.6	15.9	0.575	0.626
D1	8.04	9.3	0.317	0.366
E	9.57	10.57	0.377	0.416
e	2.34	2.74	0.092	0.108
L	12.58	14.3	0.495	0.563
L1	2.8	4.2	0.110	0.165
P	3.4	4.14	0.134	0.163
Q	2.45	3	0.096	0.118

TO-263 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	4.25	4.87	0.167	0.192
A1	1.07	1.47	0.042	0.058
A2	0	0.25	0.000	0.010
b	0.61	1.01	0.024	0.040
b1	1.2	1.34	0.047	0.053
C	0.3	0.6	0.012	0.024
D	9.48	10.84	0.373	0.427
D1	8.49	9.3	0.334	0.366
E	9.7	10.31	0.382	0.406
e	4.88	5.28	0.192	0.208
L	4.46	5.85	0.176	0.230
L1	1.33	2.33	0.052	0.092
L2	0	2.2	0.000	0.087

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