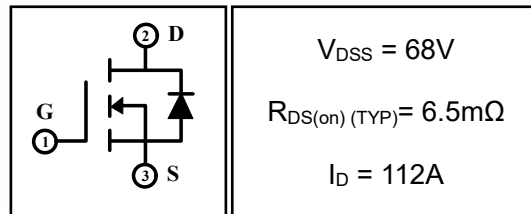


112A 68V N-channel Enhancement Mode Power MOSFET

1 Description

These N-channel enhancement mode power mosfets used advanced trench technology design, provided excellent $R_{DS(on)}$ and low gate charge. Which accords with the RoHS standard.

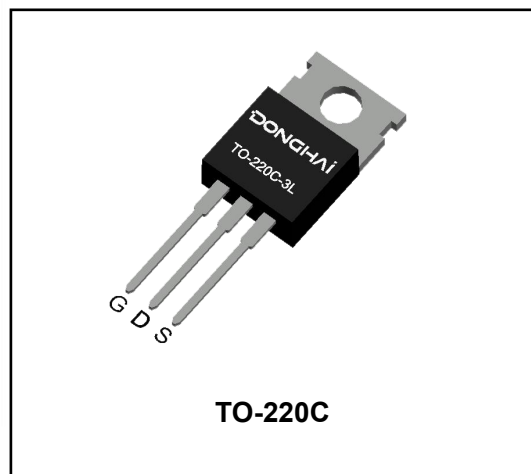


2 Features

- Low on resistance
- Low gate charge
- Fast switching
- Low reverse transfer capacitances
- 100% single pulse avalanche energy test
- 100% ΔV_{DS} test

3 Applications

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



4 Electrical Characteristics

4.1 Absolute Maximum Ratings ($T_c=25^\circ C$, unless otherwise noted)

Parameter		Symbol	Rating	Units
Drain-to-Source Voltage		V_{DSS}	68	V
Gate-to-Source Voltage		V_{GSS}	± 20	V
Continuous Drain Current	$T_c=25^\circ C$	I_D	112	A
	$T_c=100^\circ C$		81	A
Pulsed Drain Current ⁽¹⁾		I_{DM}	445	A
Single Pulse Avalanche Energy ⁽⁴⁾		E_{AS}	600	mJ
Avalanche Current ⁽⁴⁾		I_{AS}	49	A
Power Dissipation	$T_a=25^\circ C$	P_{tot}	2.4	W
	$T_c=25^\circ C$	P_{tot}	171	W
Junction Temperature Range		T_j	$-55 \sim 150$	$^\circ C$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ C$

4.2 Thermal Characteristics

Parameter	Symbol	Typ	Units
Thermal Resistance, Junction to Case-sink	R_{thJC}	0.73	$^\circ C/W$
Thermal Resistance, Junction to Ambient	R_{thJA}	52	$^\circ C/W$

4.3 Electrical Characteristics (Tc=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Value			Units
			Min	Typ	Max	
Off Characteristics						
Drain-to-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	68	--	--	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =68V, V _{GS} =0V, T _C =25℃	--	--	1	μA
		V _{DS} =68V, V _{GS} =0V, T _C =125℃	--	--	100	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Drain-to-Source on-state Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	--	6.5	7.5	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =30V, f=1.0MHz	--	4266	--	pF
Output Capacitance	C _{oss}		--	293	--	
Reverse Transfer Capacitance	C _{rss}		--	230	--	
Gate Resitance	R _G	V _{DD} =0V, V _{GS} =1V, F=1MHz	--	1.99	--	Ω
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	I _D =30A, V _{DD} =30V, V _{GS} =10V, R _{GEN} =6Ω	--	21	--	nS
Turn-on Rise Time	t _r		--	58	--	
Turn-off Delay Time	t _{d(off)}		--	63	--	
Turn-off Fall Time	t _f		--	32	--	
Total Gate Charge	Q _g	I _D =20A, V _{DD} =30V, V _{GS} =10V	--	80	--	nC
Gate-to-Source Charge	Q _{gs}		--	22	--	
Gate-to-Drain(“Miller”) Charge	Q _{gd}		--	23	--	
Drain-Source Diode Characteristics						
Diode Forward Voltage ⁽³⁾	V _{SD}	V _{GS} =0V, I _S =30A	--	--	1.3	V
Diode Forward Current	I _S		--	--	115	A
Reverse Recovery Time ⁽³⁾	t _{rr}	T _J =25℃, I _F =50A, dI _F /dt=100A/μS, V _{GS} =0V	--	34	--	nS
Reverse Recovery Charge ⁽³⁾	Q _{rr}		--	48	--	nC

Notes:

- 1: Repetitive rating, pulse width limited by maximum junction temperature.
- 2: Surface mounted on FR4 Board, t≤10sec.
- 3: Pulse width ≤ 300μs, duty cycle ≤ 2%.
- 4: L=0.5mH, I_D=49A, V_{DD}=50V, V_{GATE}=100V, Start T_J=25°C.

5 Typical characteristics diagrams

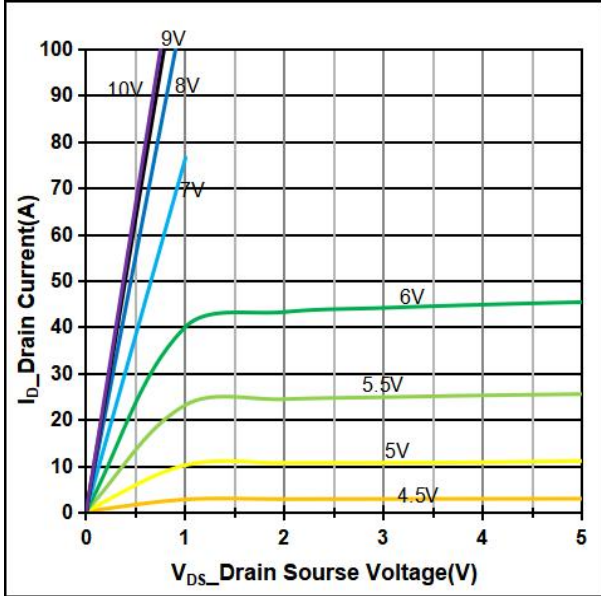


Fig 1 Output Characteristics

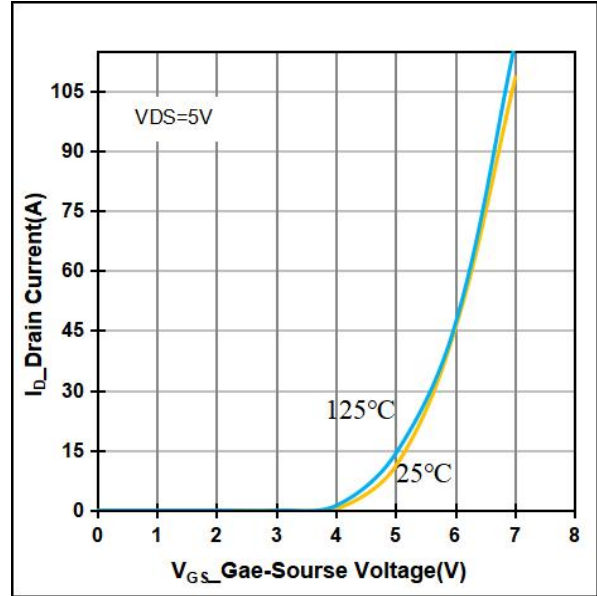


Fig 2 Transfer Characteristics

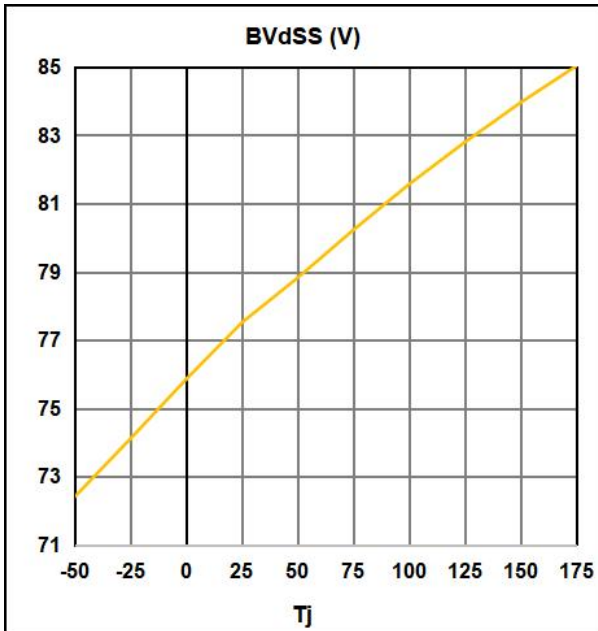


Fig 3 BVdSS vs Junction Temperature

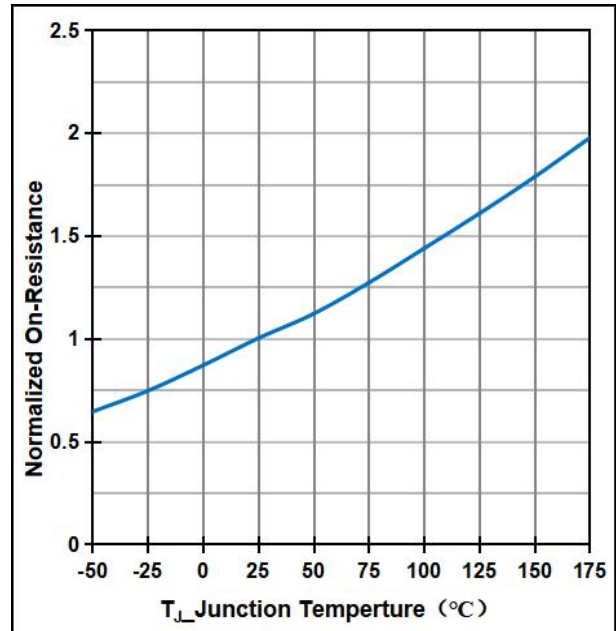


Fig 4 RDSON vs Junction Temperature

5 Typical characteristics diagrams(continues)

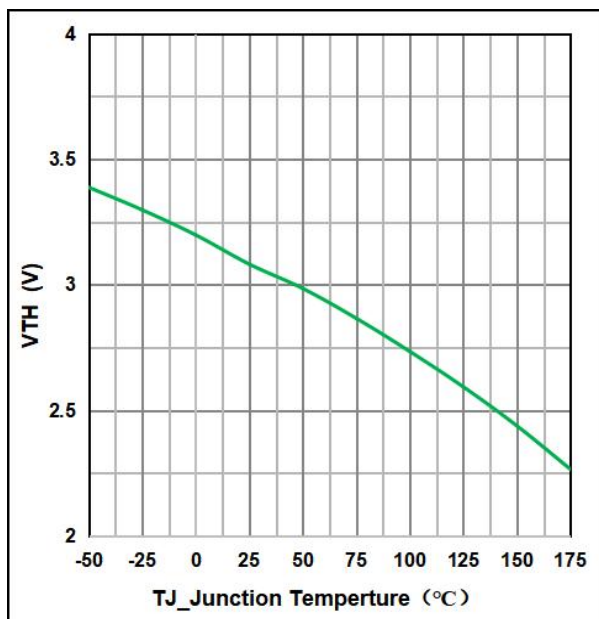


Fig 5 V_{TH} vs Junction Temperature

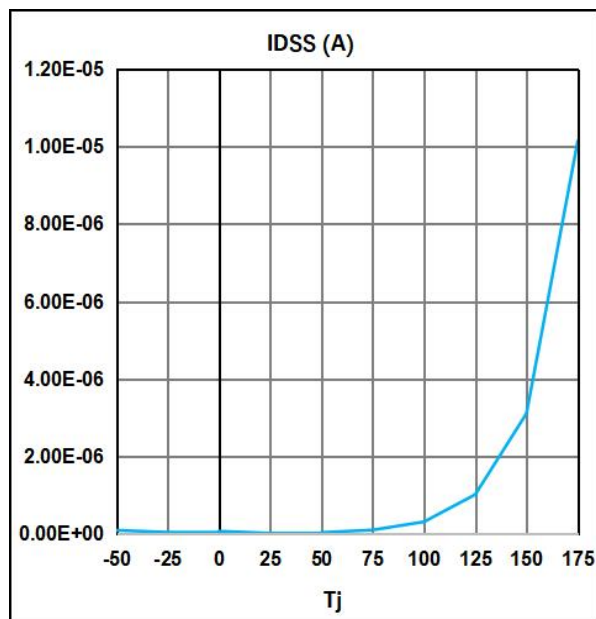


Fig 6 I_{DSS} vs Junction Temperature

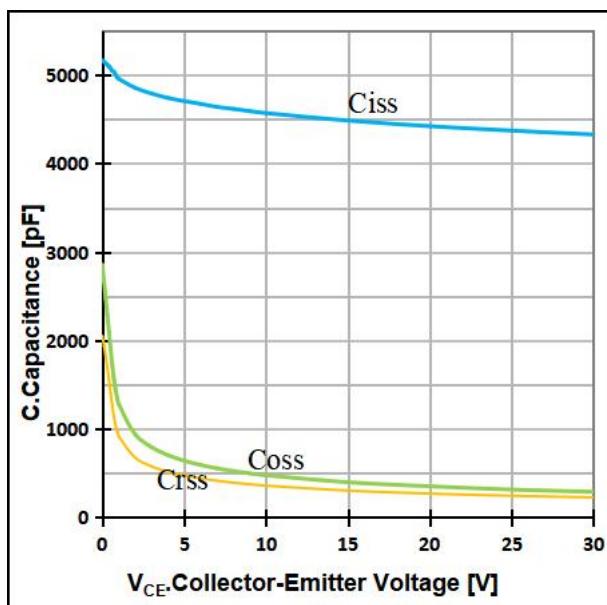


Fig 7 Capacitances vs V_{ds}

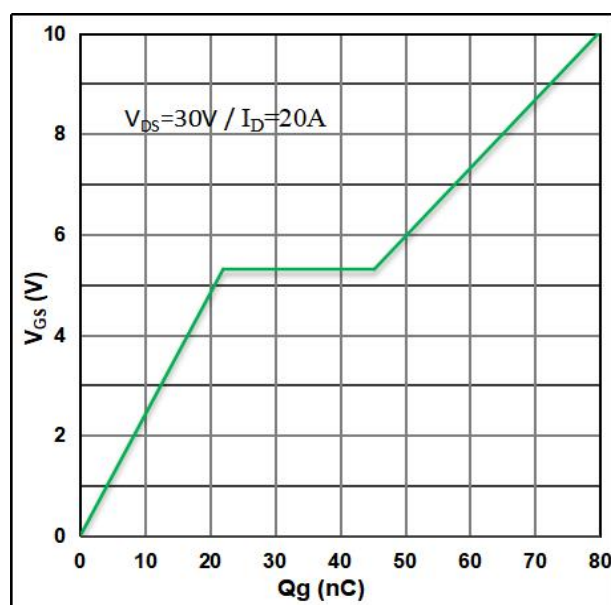
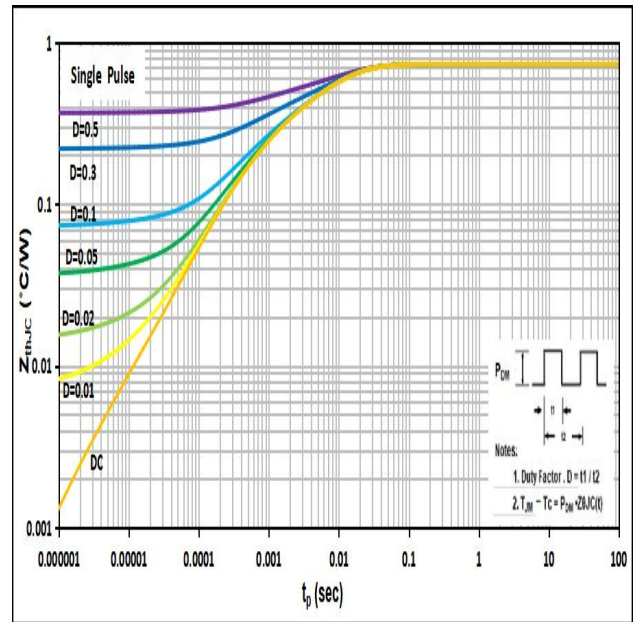
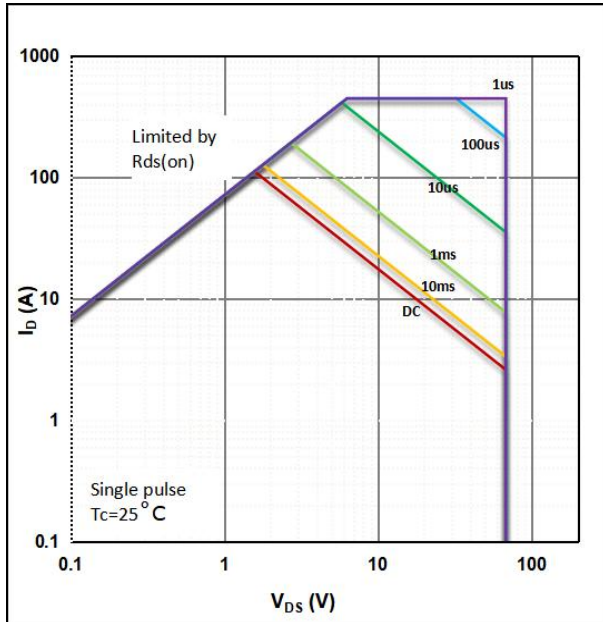
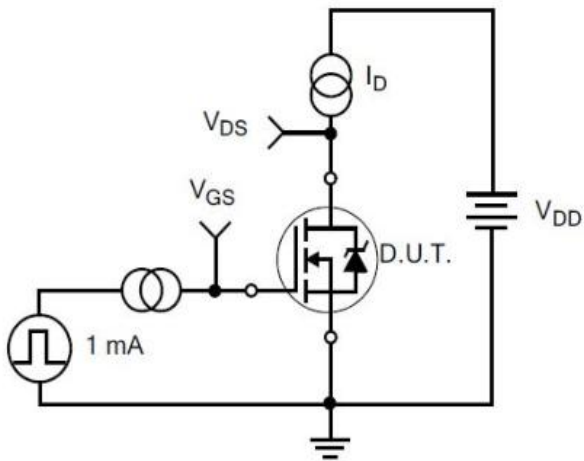


Fig 8 Gate Charge

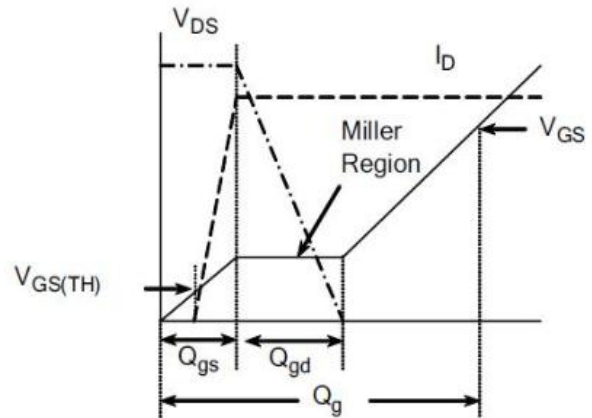
5 Typical characteristics diagrams(continues)



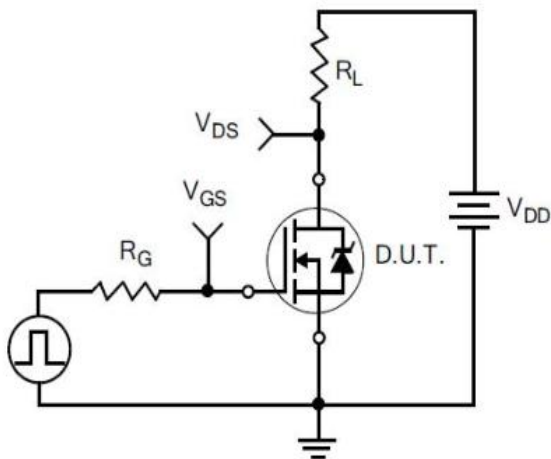
6 Typical Test Circuit and Waveform



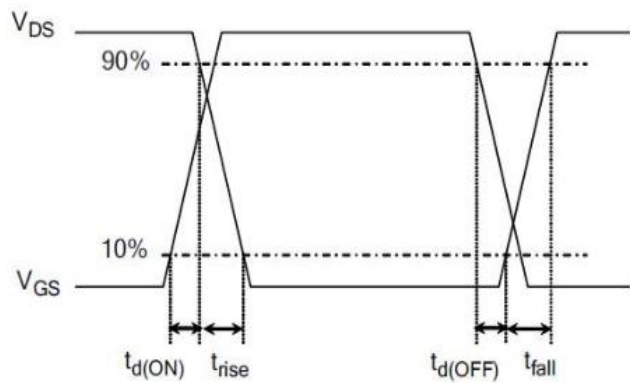
1) Gate Charge Test Circuit



2) . Gate Charge Waveform

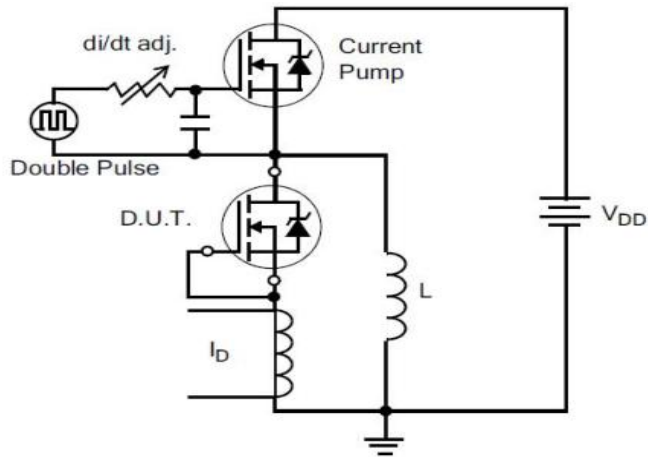


3) Resistive Switching Test Circuit

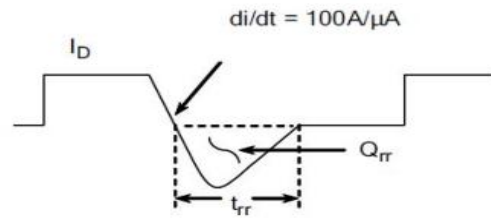


4) Resistive Switching Waveforms

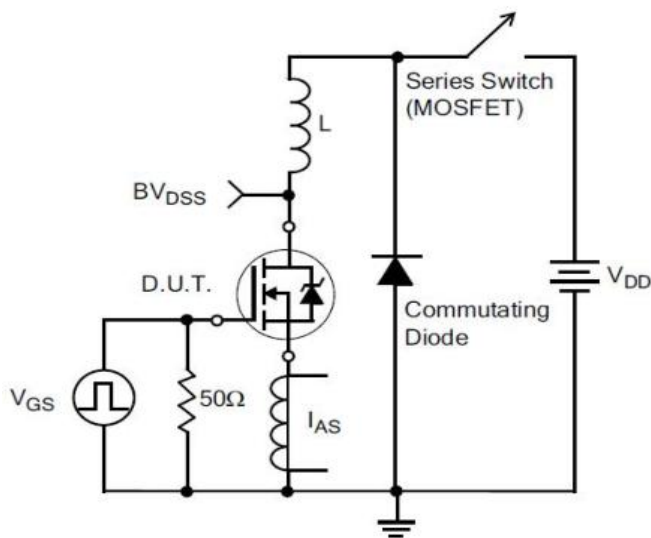
6 Typical Test Circuit and Waveform(continues)



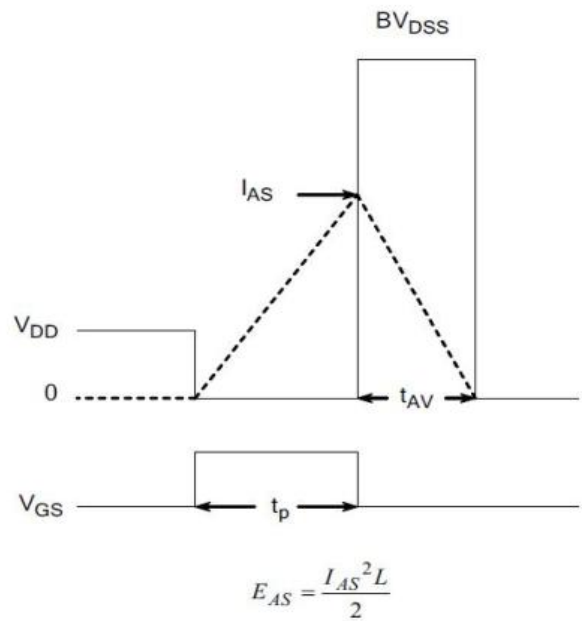
5) Diode Reverse Recovery Test Circuit



6) Diode Reverse Recovery Waveform



7) . Unclamped Inductive Switching Test Circuit



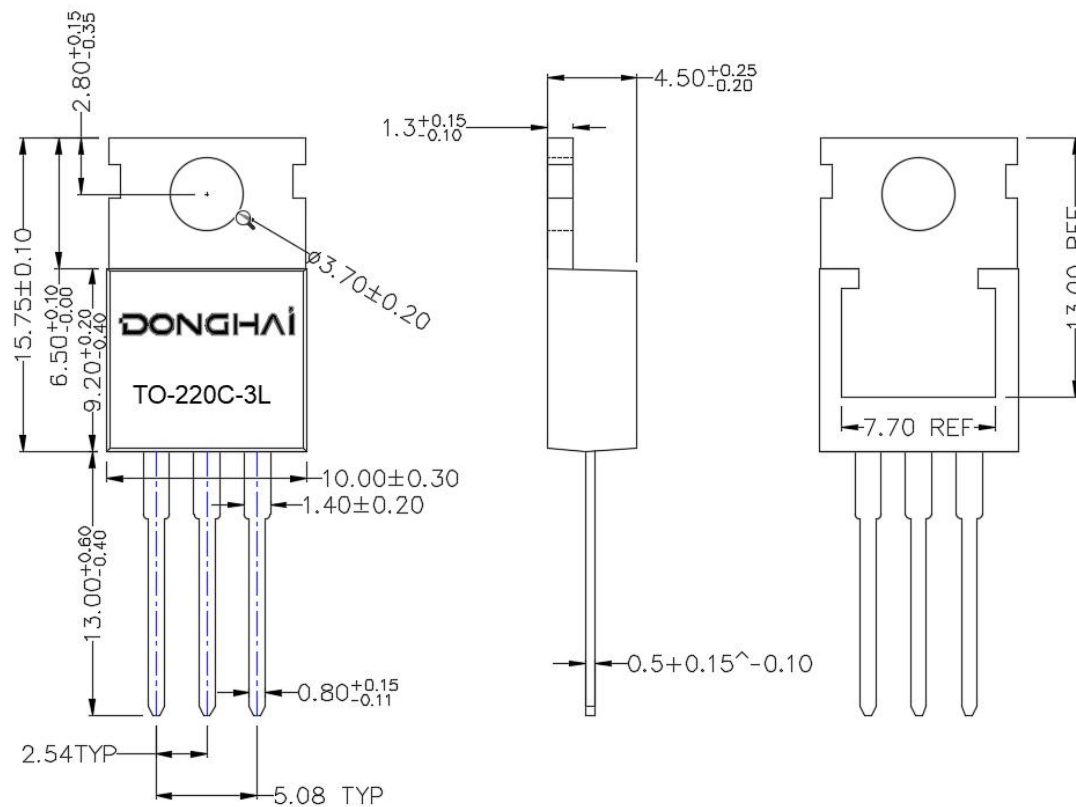
8) Unclamped Inductive Switching Waveforms

7 Product Specifications and Packaging Models

Product Model	Package Type	Mark Name	RoHS	Package	Quantity
DH100N06	TO-220	DH100N06	Pb-free	Tube	1000/box

8 Dimensions

TO-220 PACKAGE OUTLINE



9 Attentions

- Jiangsu Donghai Semiconductor Technology CO.,LTD. reserves the right to change the specification without prior notice! The customer should obtain the latest version of the information before making the order and verify that the information is complete and up to date.
- It is the responsibility of the purchaser for any failure or failure of any semiconductor product under certain conditions. It is the responsibility of the purchaser to comply with safety standards and to take safety measures in the system design and machine manufacturing of Donghai products in order to avoid potential risk of failure. Injury or property damage.
- Product promotion is endless, our company will be dedicated to provide customers with better products.

10 Appendix

Revision history:

Date	REV.	Description	Page
2019.12.13	1.0	Original	10
2022.05.23	2.0	Modified	Full pages
2023.08.02	3.0	Modified	P1-P9