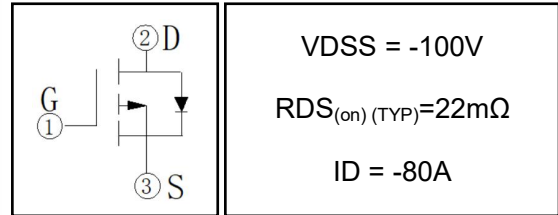


80A 100V P-channel Enhancement Mode Power MOSFET

1 Description

These P-channel enhanced vdmofets, used advanced trench technology and design, provide to excellent Rdson with low gate charge. Which accords with the RoHS standard.



2 Features

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

3 Applications

- Used in various power switching circuit for system miniaturization and higher efficiency.
- Portable equipment and battery powered systems
- Alertor application



4 Electrical Characteristics

4.1 Absolute Maximum Rating (Tc=25°C, unless otherwise noted)

Parameter	Symbol	Rating		Units
		DH100P70/ DH100P70I/DH100P70E	DH100P 70F	
Drain-to-Source Voltage	V_{DSS}	-100		V
Gate-to-Source Voltage	V_{GSS}	± 20		V
Continuous Drain Current	I_D	$T_C = 25^\circ C$	-80	A
		$T_C = 100^\circ C$	-50	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	-200		A
Single Pulse Avalanche Energy ⁽⁴⁾	E_{AS}	456		mJ
Power Dissipation	P_{tot}	$T_a = 25^\circ C$	2	2
		$T_C = 25^\circ C$	250	96
Isolation Voltage	V_{ISO}	/	2500	V
Junction Temperature Range	T_j	-55~175		°C
Storage Temperature Range	T_{stg}	-55~175		°C
Maximum Temperature for soldering	T_L	300		°C

4.2 Thermal Characteristics

Parameter	Symbol	Rating		Units
		DH100P70/ DH100P70I/DH100P70E	DH100P 70F	
Thermal Resistance, Junction to Case-sink	R_{thJC}	0.6	1.56	°C/W
Thermal Resistance, Junction to Ambient	R_{thJA}	75	75	°C/W

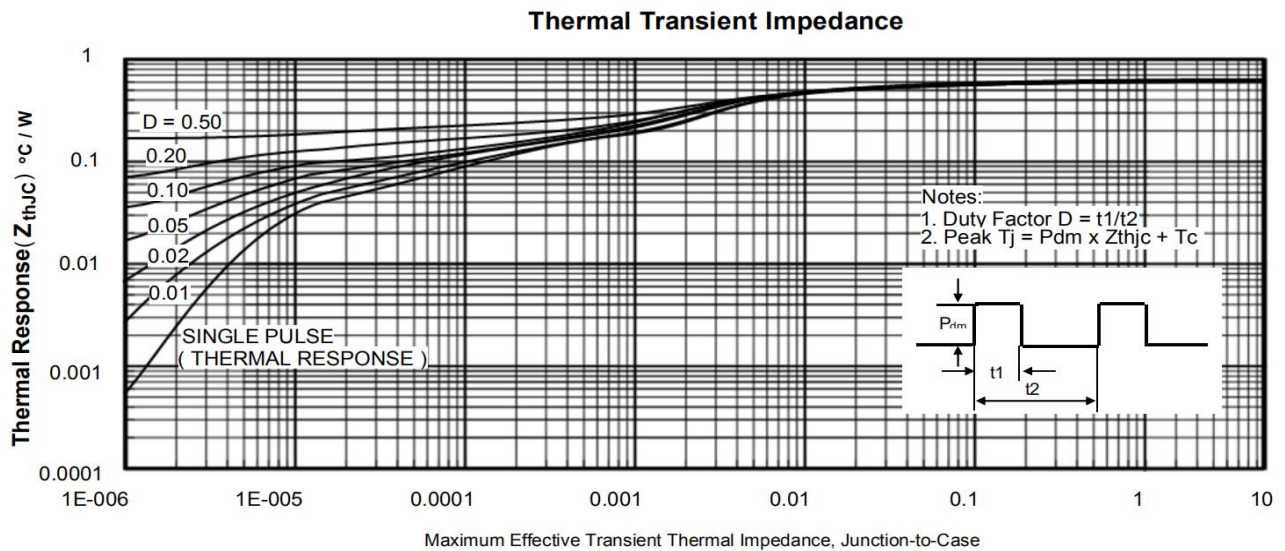
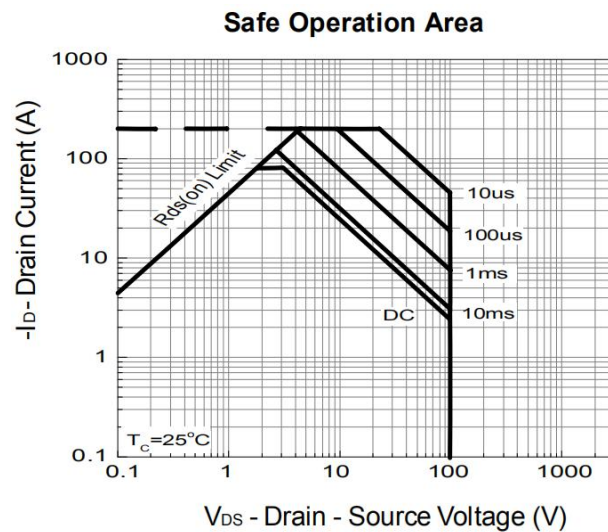
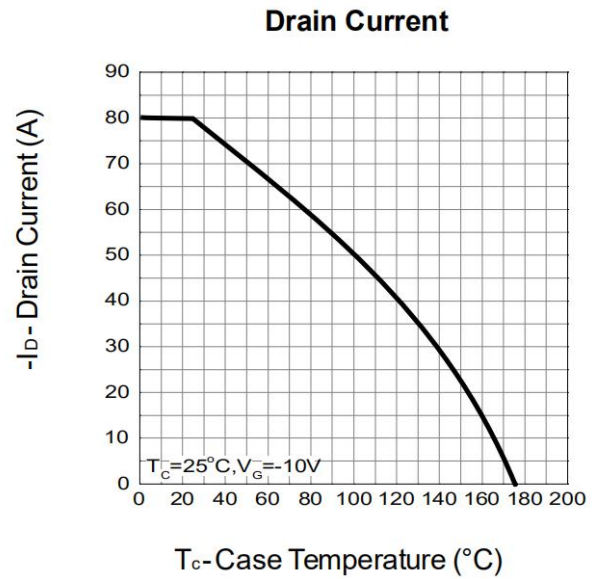
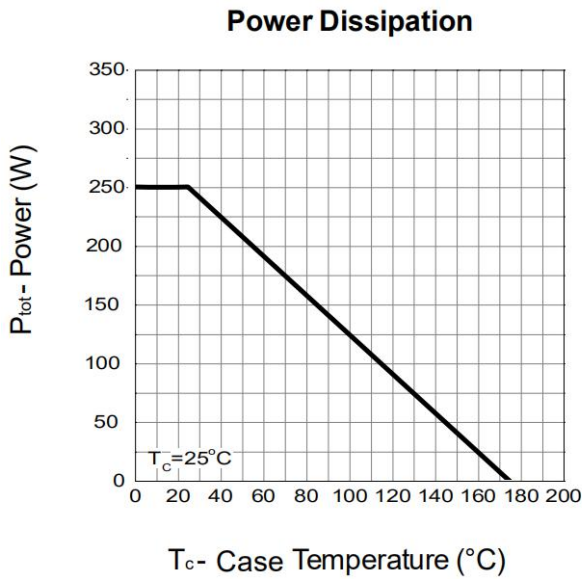
4.3 Electrical Characteristics (T_c=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Value			Units
			Min	Typ	Max	
Off Characteristics						
Drain-to-Source Breakdown Voltage	BV _{DSS}	I _D =-250μA, V _{GS} =0V	-100	--	--	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =-100V, V _{GS} =0V, T _C =25°C	--	--	-1	μA
		V _{DS} =-80V, V _{GS} =0V, T _C =125°C	--	--	-100	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±20V	--	--	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-2	-3	V
Drain-to-Source on-state Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-40A	--	22	28	mΩ
		V _{GS} =-4.5V, I _D =-40A	--	24	30	
Forward Transfer Conductance	g _{fs}	V _{DS} =-15V, I _D =-16A	--	41	--	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-20V, f=1.0MHz	--	9800	--	pF
Output Capacitance	C _{oss}		--	1210	--	
Reverse Transfer Capacitance	C _{rss}		--	805	--	
Gate Resistance	R _G	V _{GS} =0V, V _{DS} =0V, f=1.0MHz	--	1.0	--	Ω
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	I _D =-40A, V _{DD} =-50V, V _{GS} =-10V, R _G =6Ω	--	30	--	nS
Turn-on Rise Time	t _r		--	79	--	
Turn-off Delay Time	t _{d(off)}		--	82	--	
Turn-off Fall Time	t _f		--	69	--	
Total Gate Charge	Q _g	I _D =-40A, V _{DD} =-80V, V _{GS} =-10V	--	205	--	nC
Gate-to-Source Charge	Q _{gs}		--	37	--	
Gate-to-Drain("Miller") Charge	Q _{gd}		--	86	--	
Drain-Source Diode Characteristics						
Diode Forward Voltage ⁽³⁾	V _{FSD}	V _{GS} =0V, I _S =-40A	--	--	-1.2	V
Diode Forward Current	I _S		--	--	-80	A
Reverse Recovery Time ⁽³⁾	t _{rr}	T _J =25°C, I _F =-40A, di _F /dt=-100A/μS, V _{GS} =0V	--	80	--	nS
Reverse Recovery Charge ⁽³⁾	Q _{rr}		--	105	--	nC

Notes:

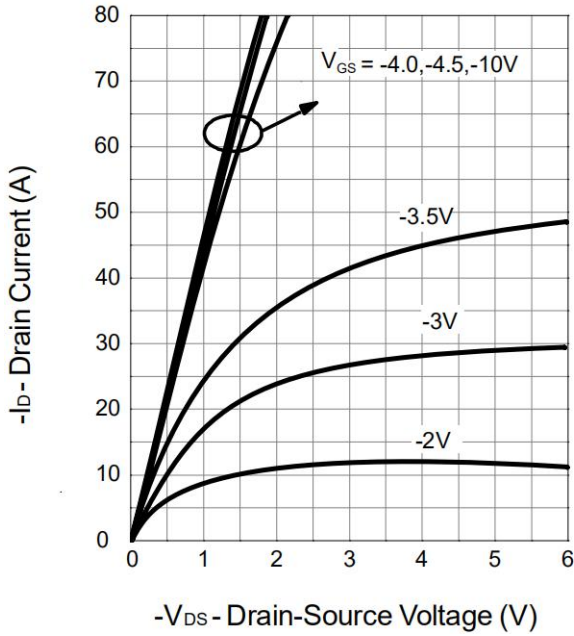
- 1: Repetitive rating, pulse width limited by maximum junction temperature.
- 2: Surface mounted on FR4 Board, t_≤10sec.
- 3: Pulse width ≤ 300μs, duty cycle ≤ 2%.
4. L=0.5mH, I_D=-43A, V_{DD}=-80V, V_{GATE}=-100V, Start T_J=25°C.

5 Typical characteristics diagrams

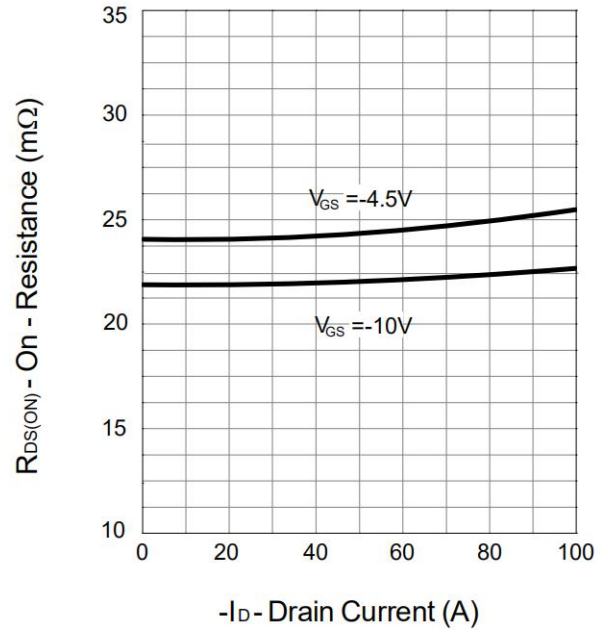


5 Typical characteristics diagrams(continues)

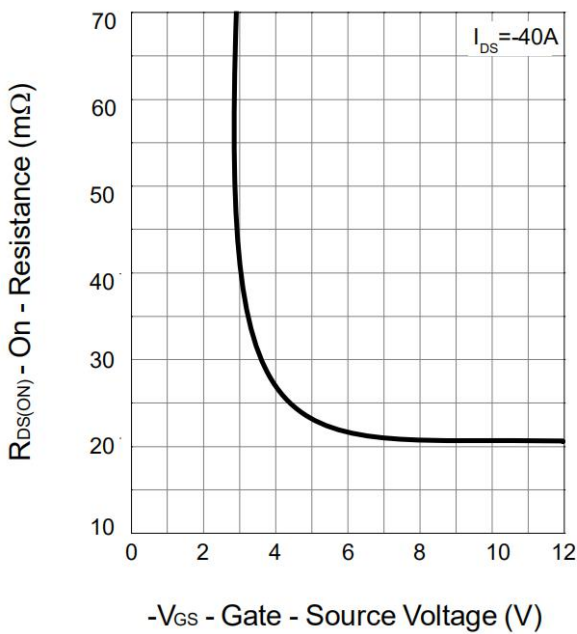
Output Characteristics



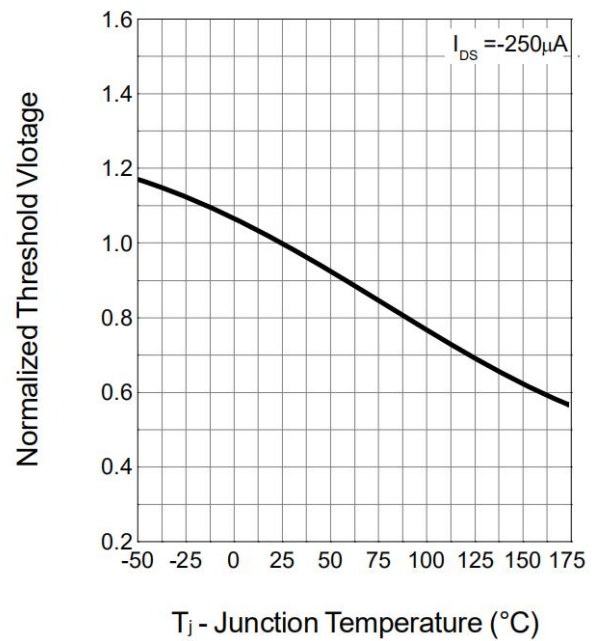
Drain-Source On Resistance



Drain-Source On Resistance

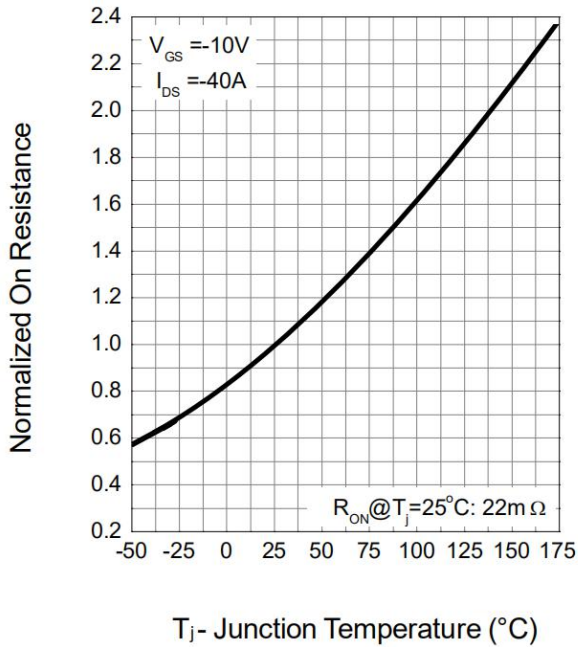


Gate Threshold Voltage

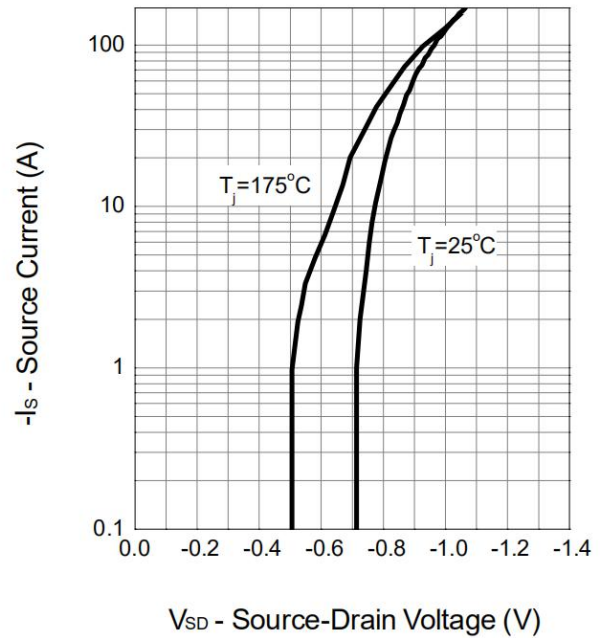


5 Typical characteristics diagrams(continues)

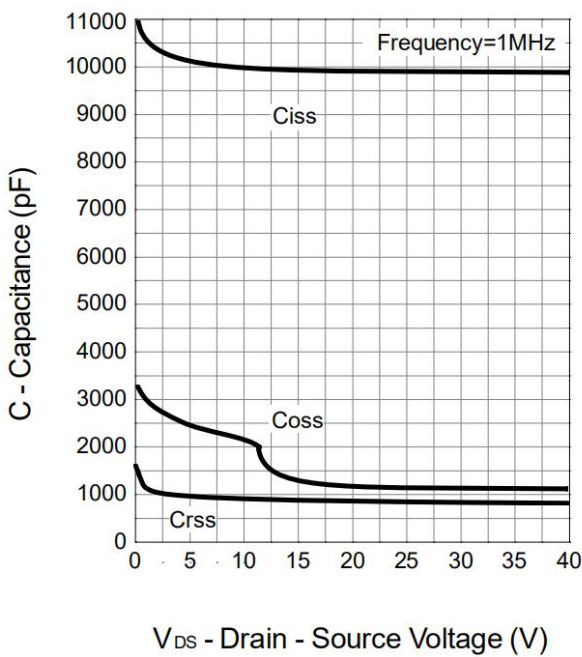
Drain-Source On Resistance



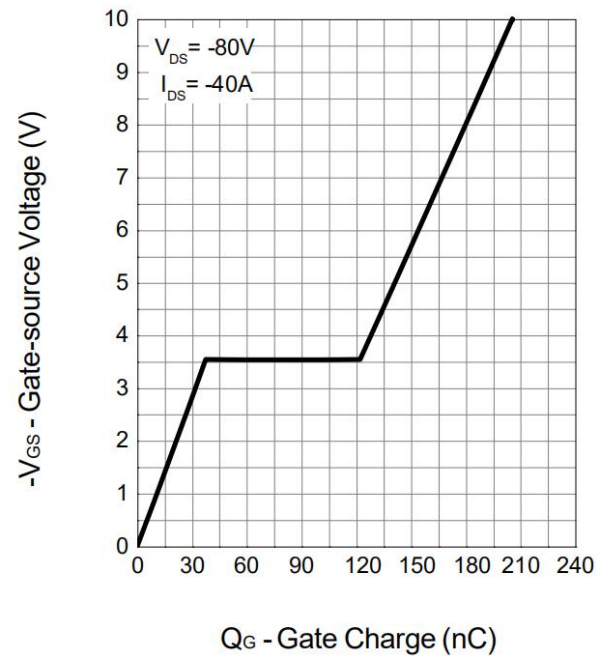
Source-Drain Diode Forward



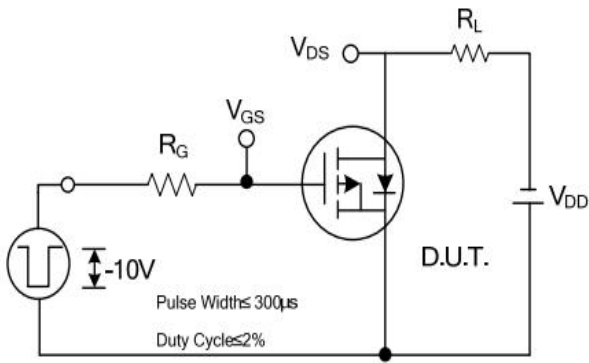
Capacitance



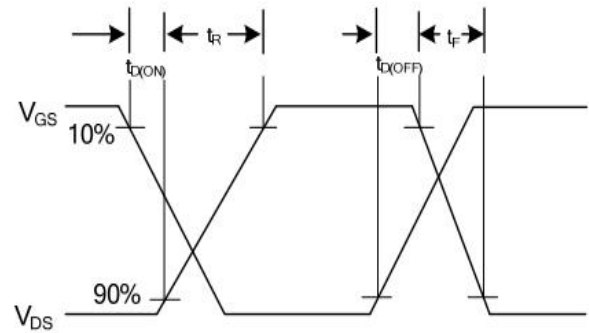
Gate Charge



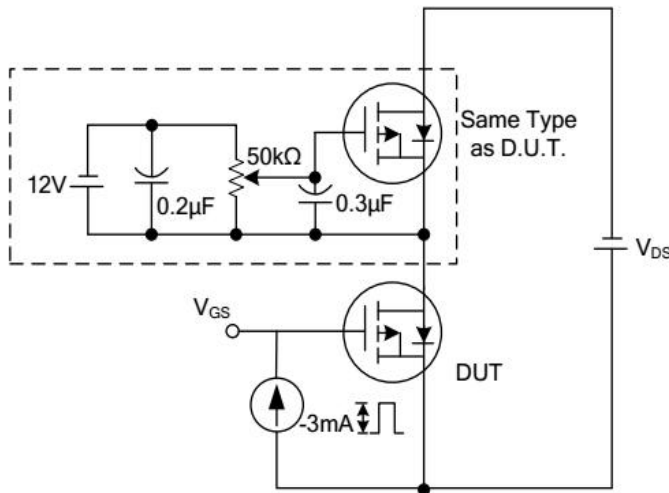
6 Typical Test Circuit and Waveform



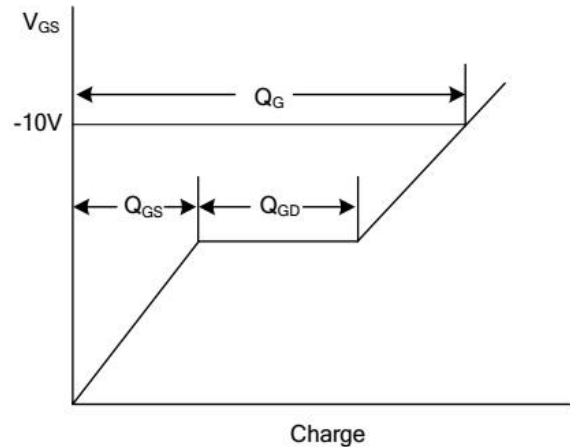
Switching Test Circuit



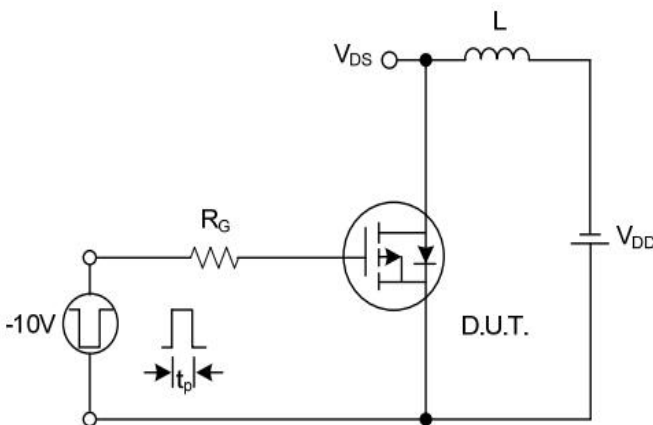
Switching Waveforms



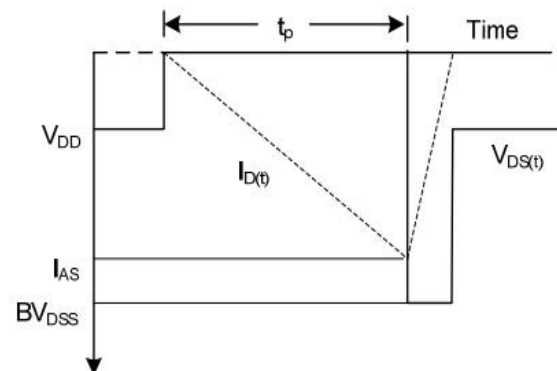
Gate Charge Test Circuit



Gate Charge Waveform

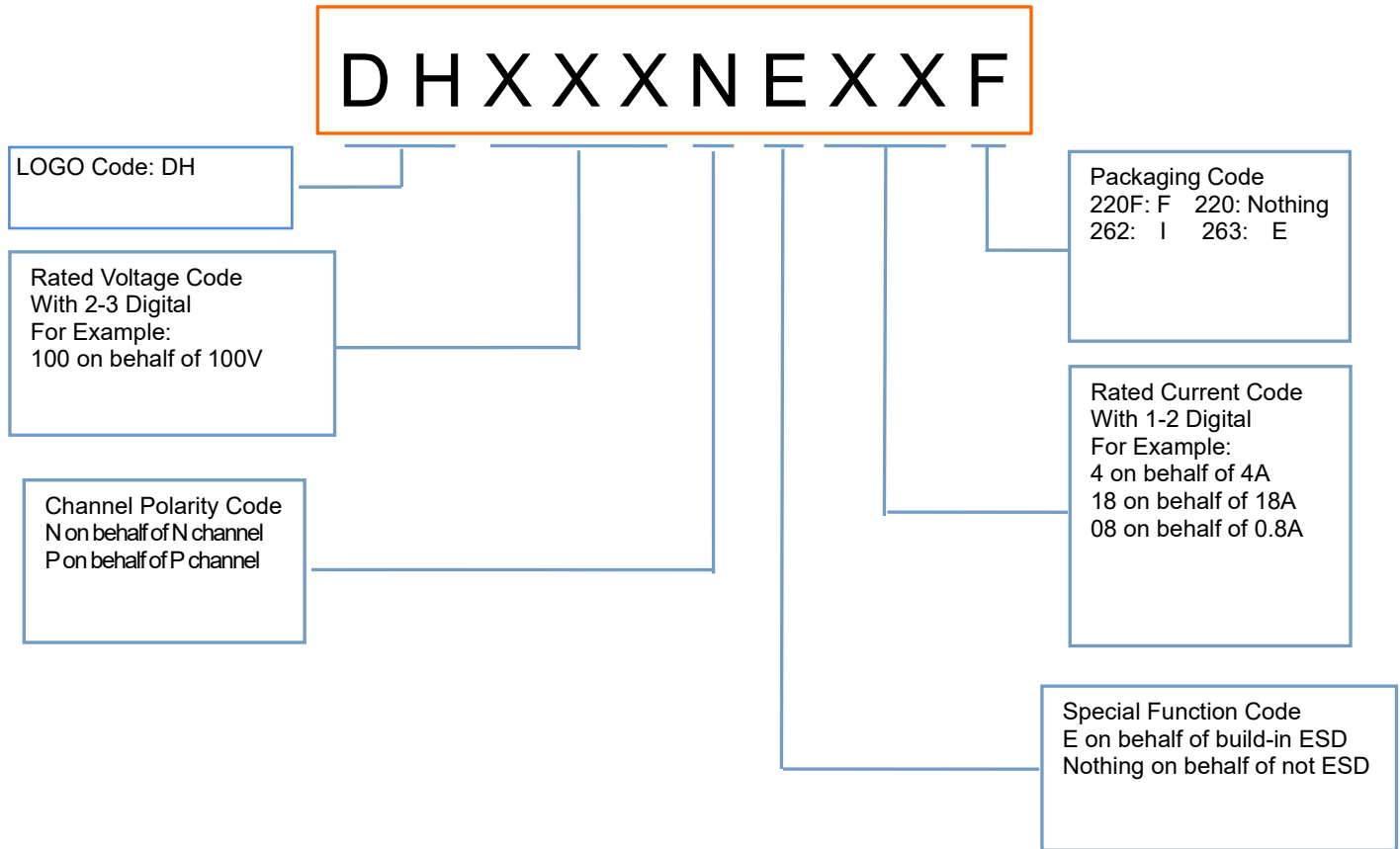


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

7 Product Names Rules

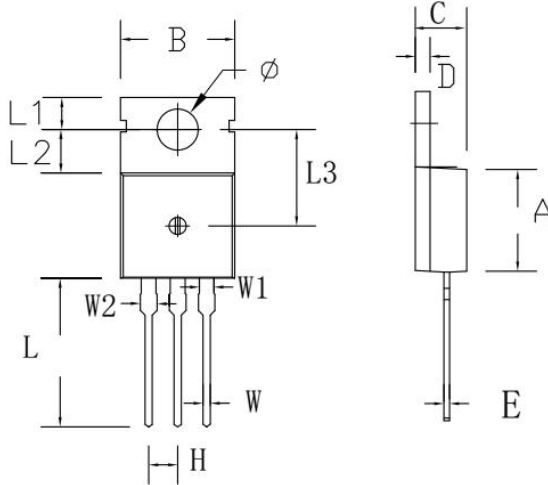


8 Product Specifications and Packaging Models

Product Model	Package Type	Mark Name	RoHS	Package	Quantity
DH100P70	TO-220C	DH100P70	Pb-free	Tube	1000/box
DH100P70F	TO-220F	DH100P70F	Pb-free	Tube	1000/box
DH100P70I	TO-262	DH100P70I	Pb-free	Tube	1000/box
DH100P70E	TO-263	DH100P70E	Pb-free	Tape & Reel	800/box

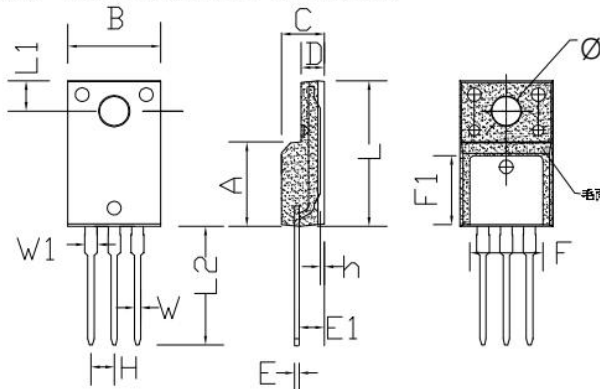
9 Dimensions

TO-220C PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	min.	max.	min.	max.
A	8.80	9.30	0.346	0.366
B	9.70	10.30	0.382	0.406
C	4.25	4.75	0.167	0.187
D	1.20	1.45	0.047	0.057
E	0.40	0.60	0.016	0.024
H	2.54 TYP		0.100 TYP	
W	0.60	0.95	0.024	0.037
W1	1.05	1.45	0.041	0.057
W2	1.20	1.60	0.047	0.063
L	12.60	13.40	0.496	0.528
L1	2.45	2.95	0.096	0.116
L2	3.45	3.95	0.136	0.156
L3	8.15	8.65	0.321	0.341
Φ	3.50	3.90	0.138	0.154

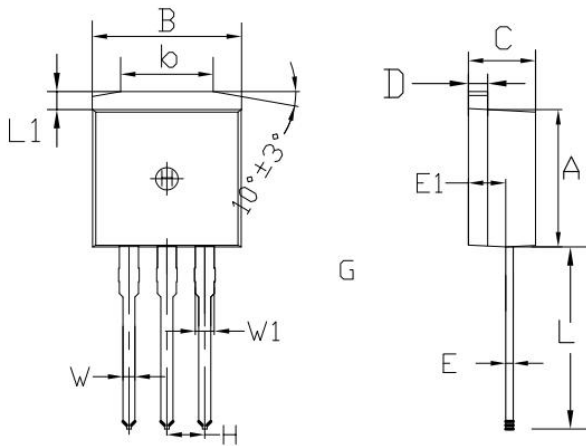
TO-220F PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	min.	max.	min.	max.
A	8.80	9.30	0.346	0.366
B	10.00	10.50	0.394	0.413
C	4.30	4.90	0.169	0.193
D	2.30	2.70	0.091	0.106
L	15.55	16.15	0.612	0.636
h	0.40	0.60	0.016	0.024
L1	3.15	3.55	0.124	0.140
L2	12.65	13.35	0.498	0.526
W	0.70	0.90	0.028	0.035
W1	1.15	1.55	0.045	0.061
H	2.54 TYP		0.100 TYP	
E	0.48	0.53	0.019	0.021
Φ	2.90	3.40	0.114	0.134
E1	2.40	2.90	0.094	0.114
F	7.75	8.25	0.305	0.325
F1	7.35	7.85	0.289	0.309

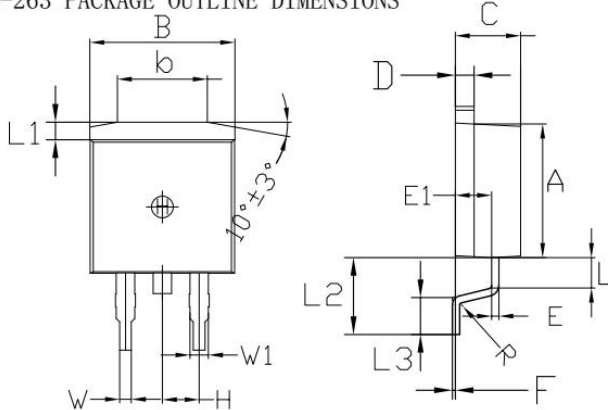
9 Dimensions(continues)

TO-262 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	min.	max.	min.	max.
A	8.80	9.30	0.346	0.366
B	9.70	10.30	0.382	0.406
C	4.25	4.75	0.167	0.187
D	1.20	1.45	0.047	0.057
E	0.40	0.60	0.016	0.024
L	12.25	13.75	0.482	0.541
L1	1.15	1.45	0.045	0.057
E1	2.4	2.6	0.0945	0.1024
W	0.80	0.82	0.0315	0.034
W1	1.20	1.30	0.047	0.051
H	2.54 TYP		0.200 TYP	
b	5.50	6.50	0.216	0.256

TO-263 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	min.	max.	min.	max.
A	8.80	9.30	0.346	0.366
B	9.70	10.30	0.382	0.406
C	4.25	4.75	0.167	0.187
D	1.20	1.45	0.047	0.057
E	0.40	0.60	0.016	0.024
L	1.90	2.30	0.075	0.091
L1	1.15	1.45	0.045	0.057
R	0.24	0.26	0.0095	0.0102
W	0.80	0.82	0.0315	0.0323
W1	1.20	1.30	0.047	0.051
H	2.54 TYP		0.200 TYP	
b	5.50	6.50	0.216	0.256
E1	2.4	2.6	0.0946	0.1024
L2	5.20	5.80	0.205	0.228
L3	2.20	3.20	0.087	0.126
F	0.03	0.23	0.0012	0.0091

10 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.

11 Appendix

Revision history:

Date	REV.	Description	Page
2019.03.12	1.0	Original	