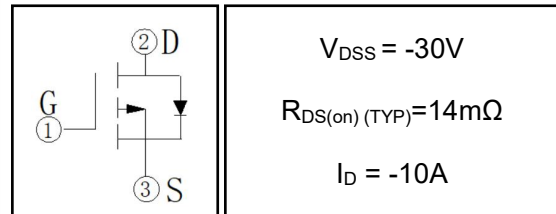


10A 30V P-channel Enhancement Mode Power MOSFET

1 Description

This P-channel enhanced vdmofets, used advanced trench technology and design, provide to excellent $R_{DS(on)}$ with low gate charge. Which accords with the RoHS standard.

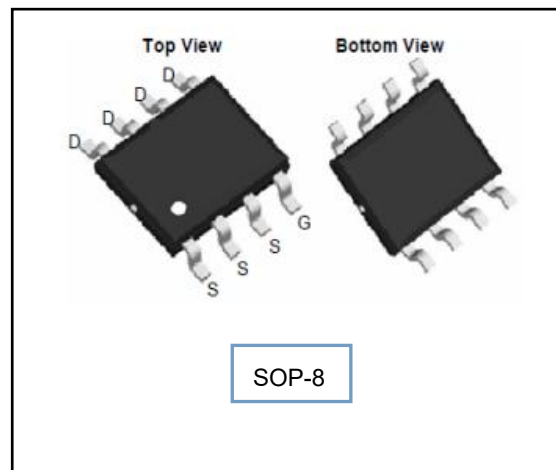


2 Features

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

3 Applications

- DC-DC Converter.
- Load Switch
- Power Management
- PWM Applications



4 Electrical Characteristics

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

Parameter	Symbol	Rating	Units
Drain-to-Source Voltage	V_{DSS}	-30	V
Gate-to-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current	$T_C=25^\circ C$	I_D	-10
	$T_C=100^\circ C$		-6.3
Pulsed Drain Current ⁽¹⁾	I_{DM}	-40	A
Single Pulse Avalanche Energy ⁽⁴⁾	E_{AS}	60	mJ
Avalanche Current ⁽⁴⁾	I_{AS}	-16	A
Power Dissipation	$T_A=25^\circ C$	P_{tot}	3.2
	$T_A=100^\circ C$		1.6
Junction Temperature Range	T_j	-55~150	$^\circ C$
Storage Temperature Range	T_{stg}	-55~150	$^\circ C$

4.2 Thermal Characteristics

Parameter	Symbol	Rating	Unit
Thermal Resistance, Junction to Case-sink	R_{thJC}	-	$^\circ C/W$
Thermal Resistance, Junction to Ambient	R_{thJA}	39	$^\circ C/W$

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	-30	-35	--	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =-30V, V _{GS} =0V, T _C =25°C	--	--	-1	μA
		V _{DS} =-24V, 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	-1.0	-1.5	-2.5	V
Drain-to-Source on-state Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-10A	--	14	18	mΩ
		V _{GS} =-4.5V, I _D =-5A	--	18	25	
Forward Transfer Conductance	g _{fs}	V _{DS} =-5V, I _D =-5A	--	16	--	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-15V, f=1.0MHz	--	1806	--	pF
Output Capacitance	C _{oss}		--	308	--	
Reverse Transfer Capacitance	C _{rss}		--	218	--	
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	I _D =-1A, V _{DD} =-15V, V _{GS} =-10V, R _G =2.5Ω	--	10	--	nS
Turn-on Rise Time	t _r		--	26	--	
Turn-off Delay Time	t _{d(off)}		--	35	--	
Turn-off Fall Time	t _f		--	8	--	
Total Gate Charge	Q _g	I _D =-10A, V _{DD} =-15V, V _{GS} =-10V	--	31	--	nC
Gate-to-Source Charge	Q _{gs}		--	6	--	
Gate-to-Drain("Miller") Charge	Q _{gd}		--	9	--	
Drain-Source Diode Characteristics						
Diode Forward Voltage ⁽³⁾	V _{FSD}	V _{GS} =0V, I _S =-10A	--	0.87	-1.2	V
Diode Forward Current	I _S		--	--	-10	A
Reverse Recovery Time ⁽³⁾	t _{rr}	T _J =25°C, I _F =-10A, dI _F /dt=100A/μs, V _{GS} =0V	--	--	--	nS
Reverse Recovery Charge ⁽³⁾	Q _{rr}		--	--	--	nC

Notes:

- 1: Repetitive rating, pulse width limited by maximum junction temperature.
- 2: Surface mounted on FR4 Board, t_s≤10sec.
- 3: Pulse width ≤ 300μs, duty cycle ≤ 2%.
- 4: L=0.5mH, I_D=-16A, V_{DD}=-24V, V_{GATE}=-30V, Start T_J=25°C.

5 Typical characteristics diagrams

Figure1. Power Dissipation

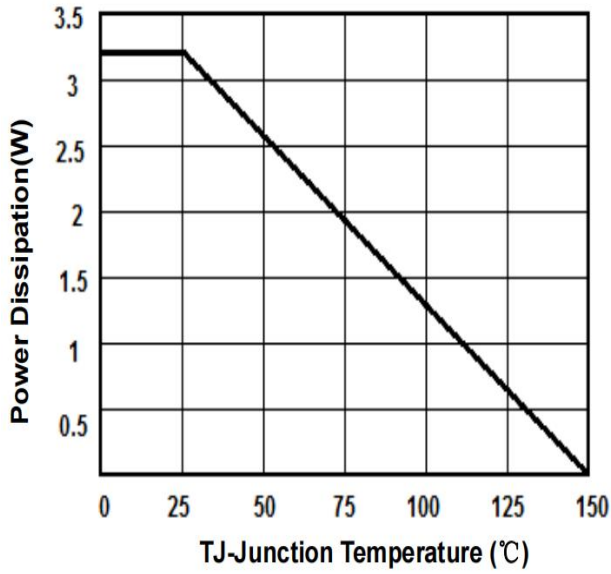


Figure2. Drain Current

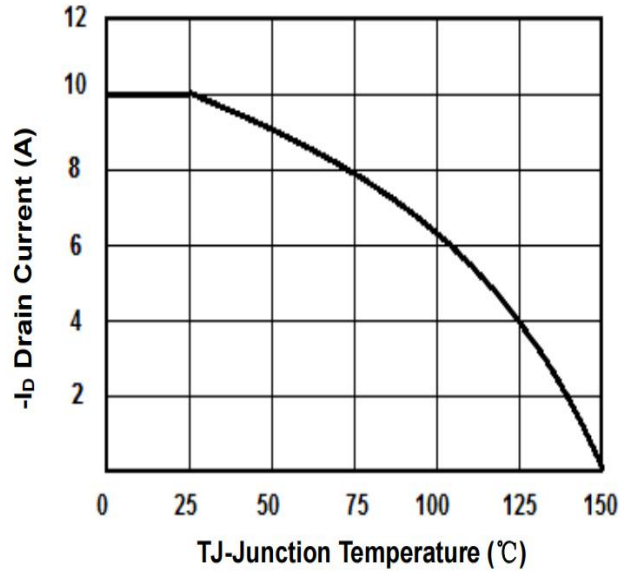


Figure3. Output Characteristics

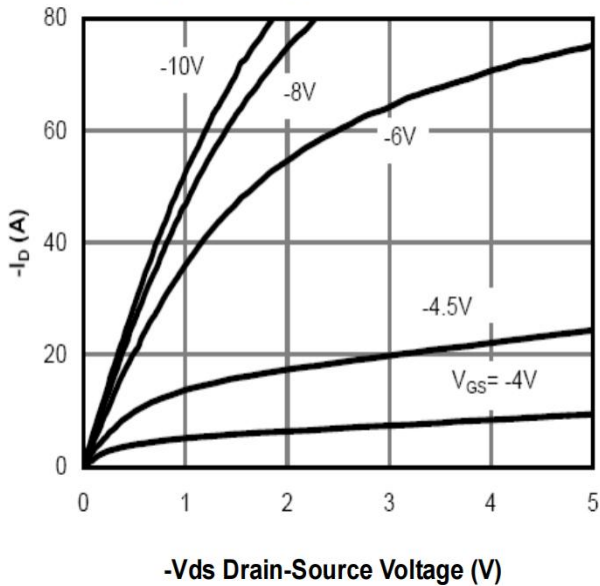
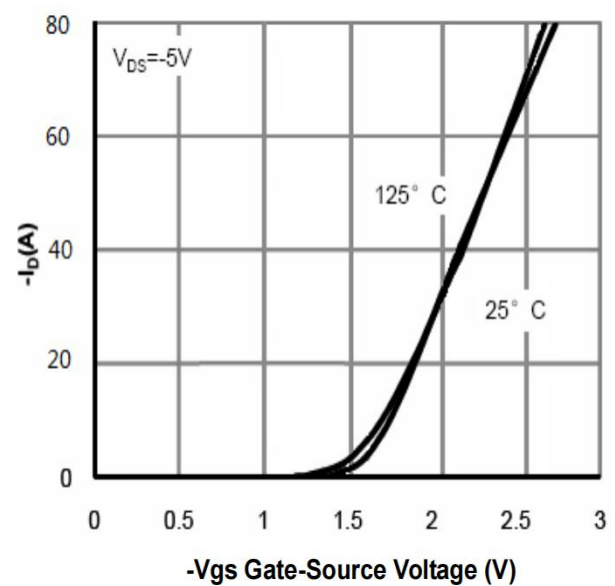


Figure4. Transfer Characteristics



5 Typical characteristics diagrams(continues)

Figure5. Capacitance

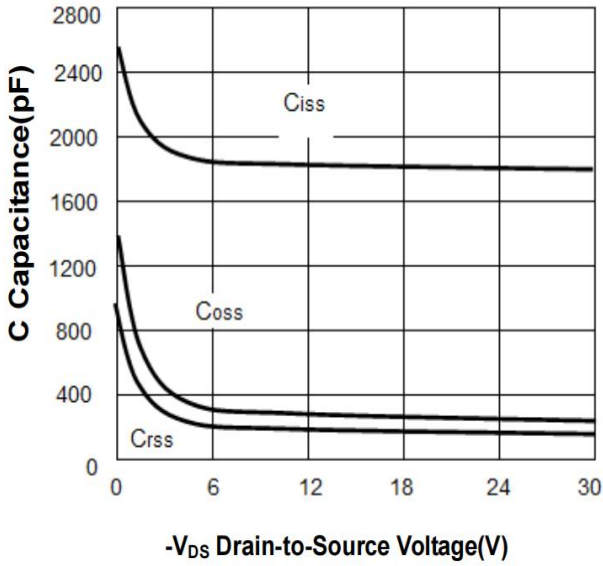


Figure6. R_{DS(ON)} vs Junction Temperature

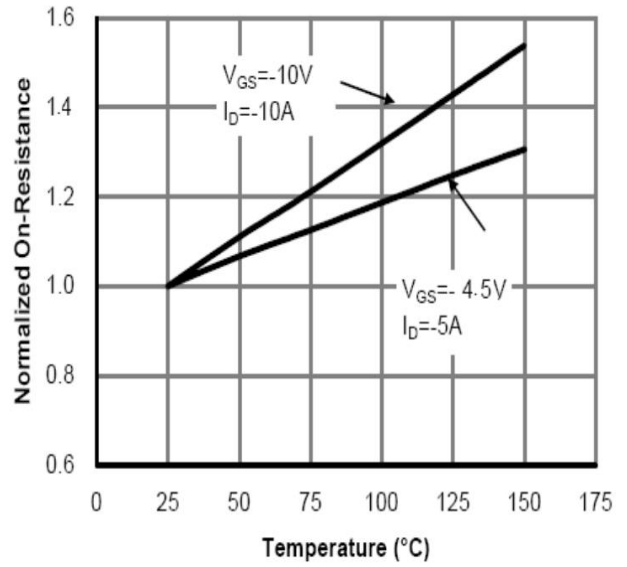


Figure7. Max BV_{DSS} vs Junction Temperature

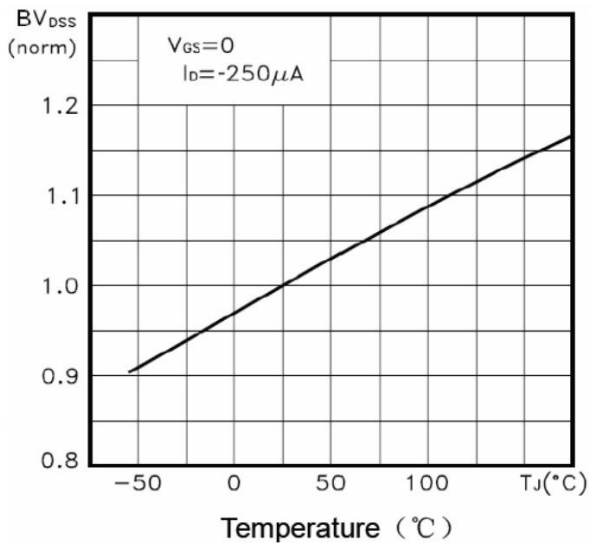
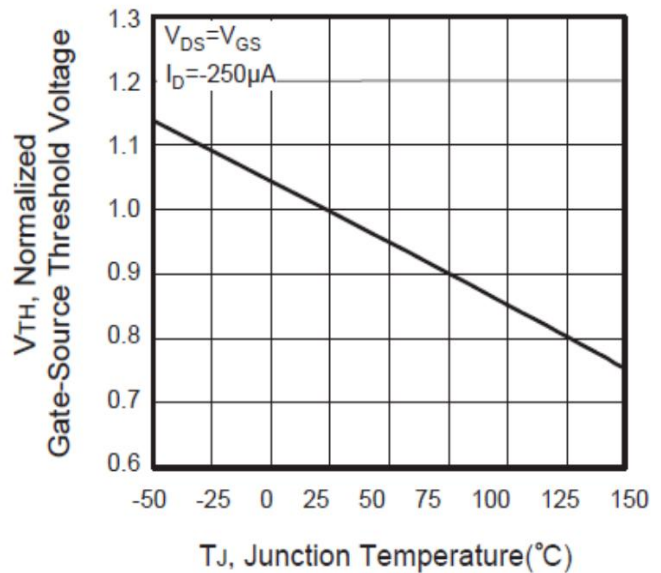


Figure8. V_{GS(th)} vs Junction Temperature



5 Typical characteristics diagrams(continues)

Figure9. Gate Charge Waveforms

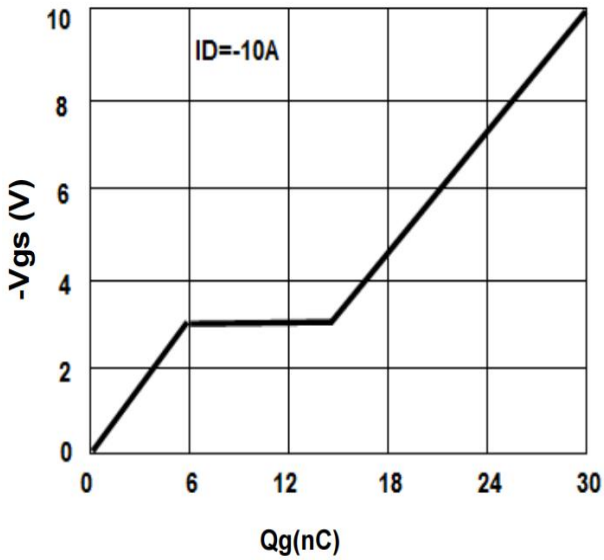


Figure10. Maximum Safe Operating Area

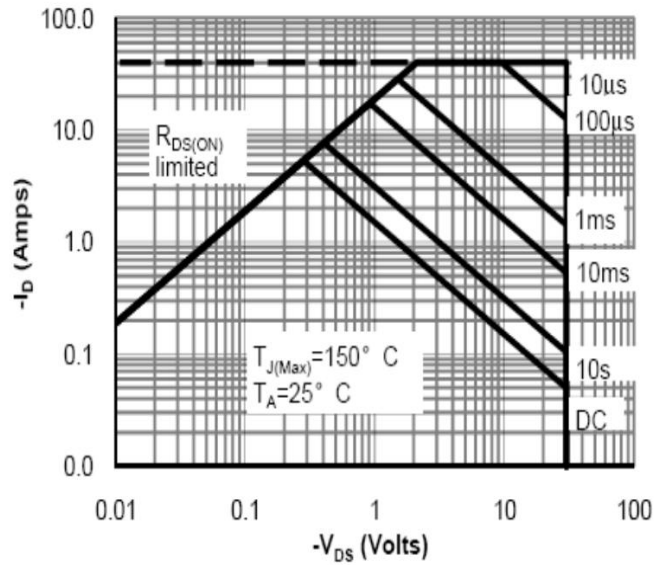
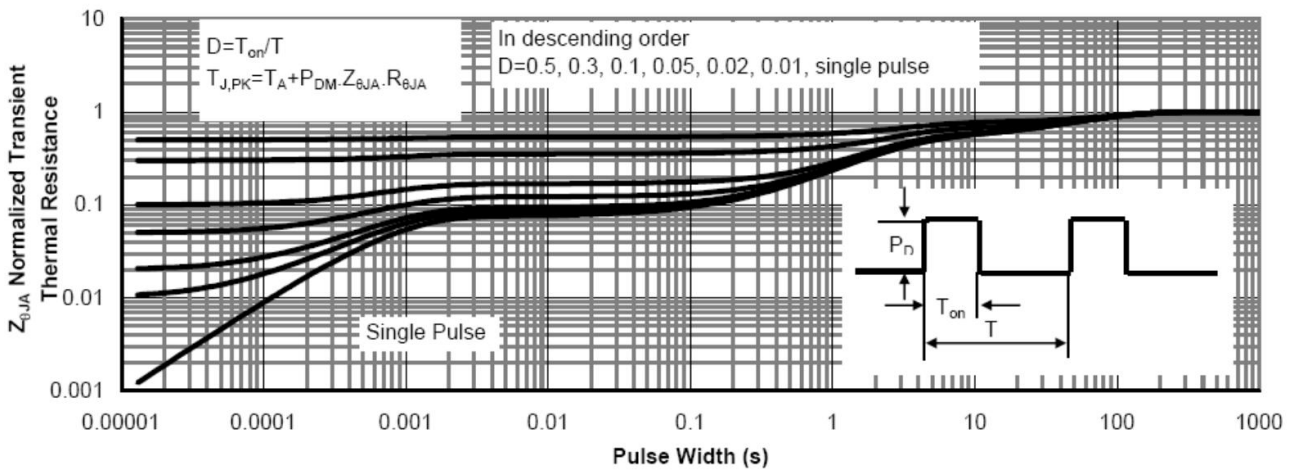
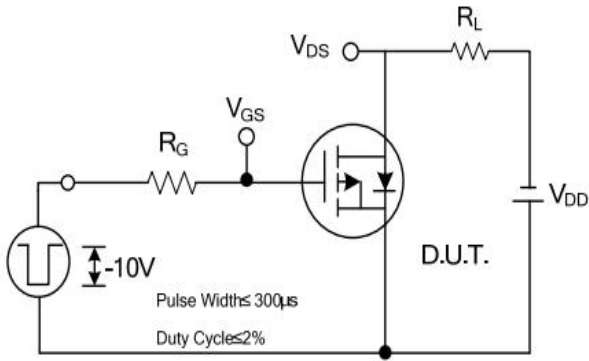


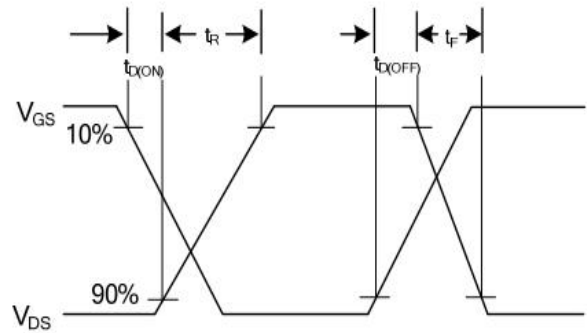
Figure11. Normalized Maximum Transient Thermal Impedance



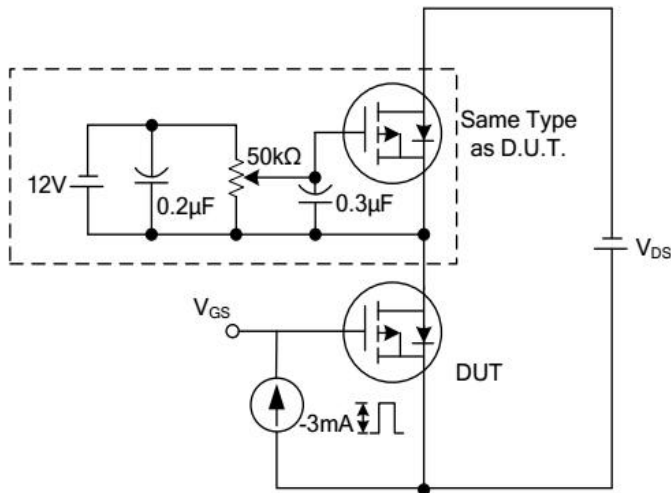
6 Typical Test Circuit and Waveform



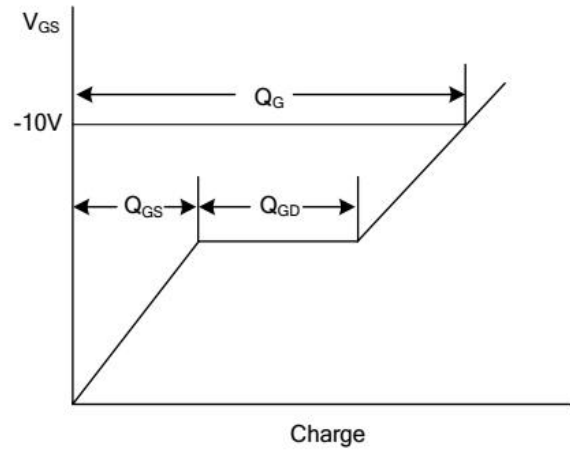
Switching Test Circuit



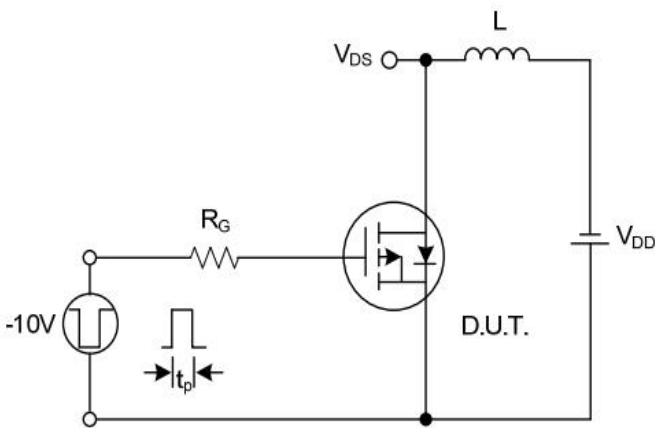
Switching Waveforms



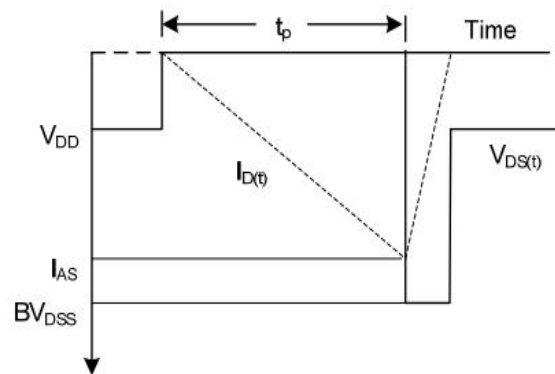
Gate Charge Test Circuit



Gate Charge Waveform

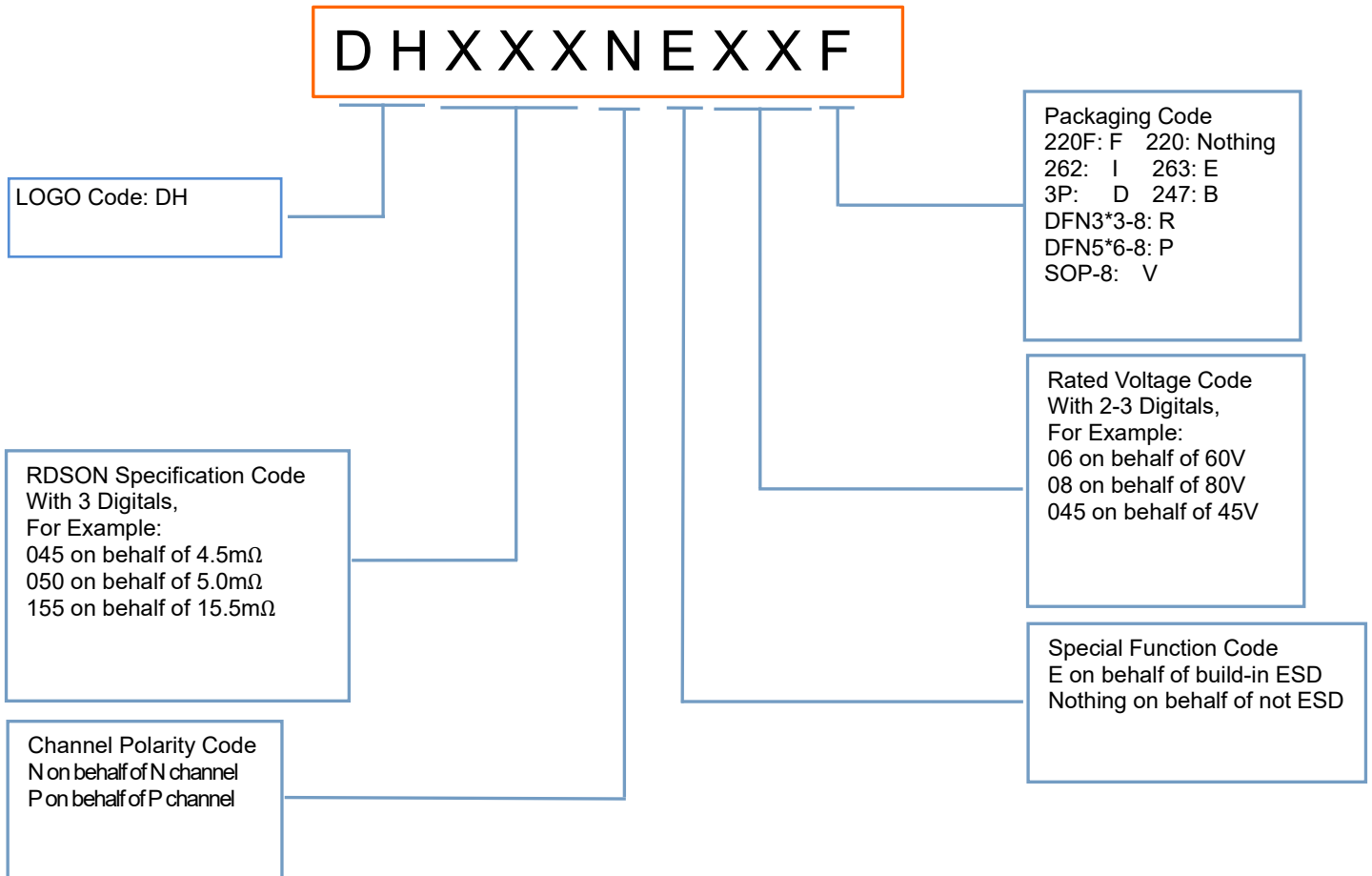


Unclamped Inductive Switching Test Circuit



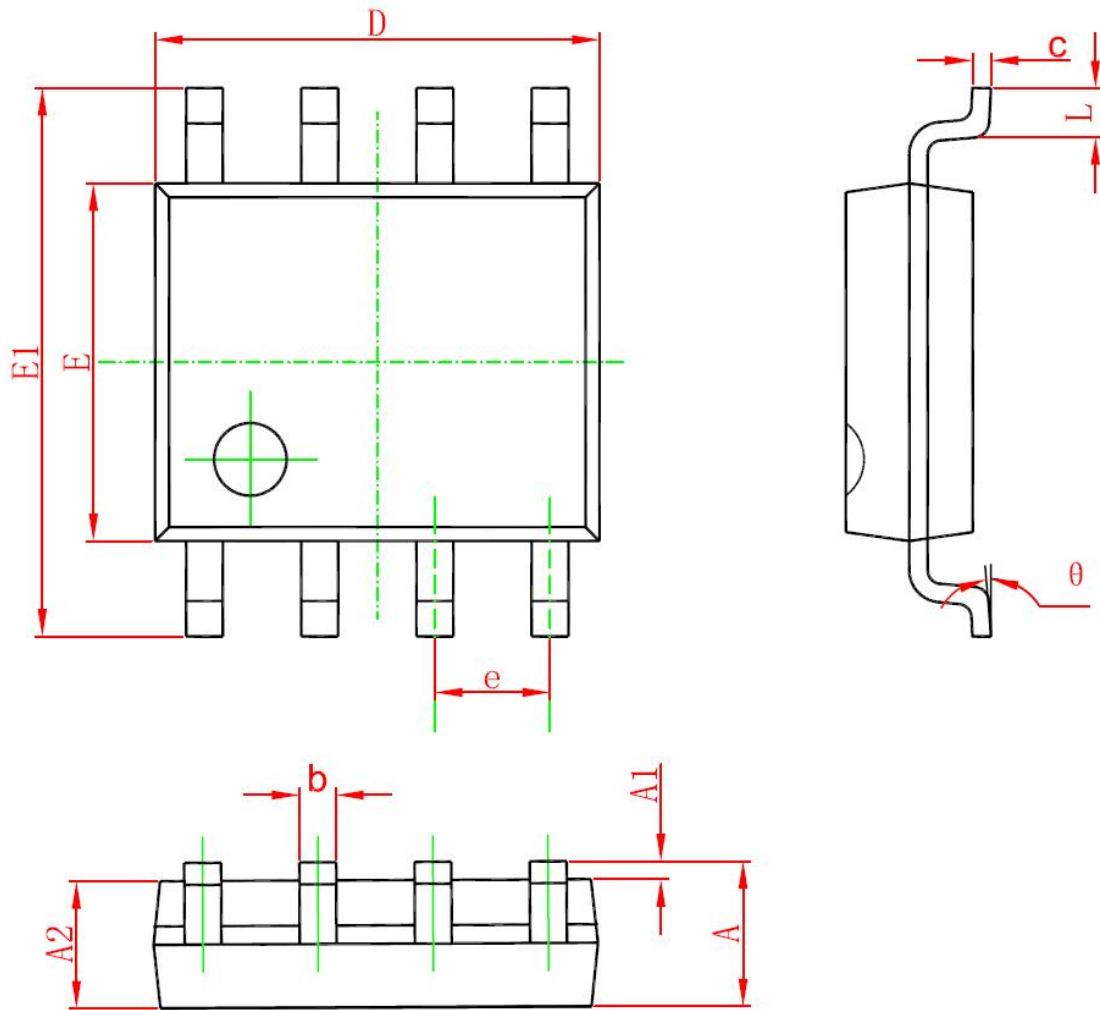
Unclamped Inductive Switching Waveforms

7 Product Names Rules



8 Product Specifications and Packaging Models

Product Model	Package Type	Mark Name	RoHS	Package	Quantity
DH160P03V	SOP-8	DH160P03V	Pb-free	Tape & Reel	2500/box

9 Dimensions


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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
2020.10.18	1.0	Original	