

General Description

The HSW2N10D is the high cell density trench N-ch MOSFETs, which provides excellent $R_{DS(on)}$ and efficiency for most of the small power switching and load switch applications.

The HSW2N10D meet the RoHS and Green Product requirement with full function reliability approved.

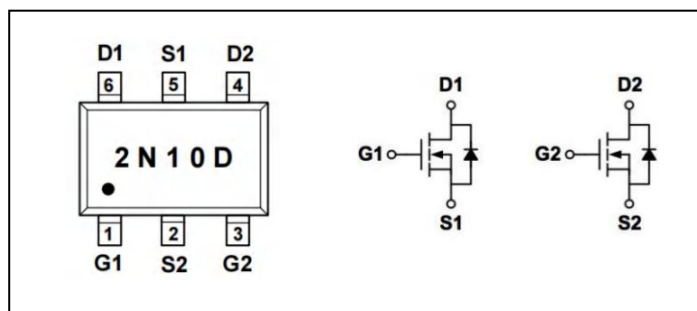
Features

- PWM applications
- Load switch

Product Summary

V_{DS}	100	V
$R_{DS(ON),Max}$	260	m Ω
I_D	2	A

SOT23-6L Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_A=25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 4.5V^1$	2	A
$I_D@T_A=70^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 4.5V^1$	1.6	A
I_{DM}	Pulsed Drain Current ²	8	A
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation ³	0.7	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	---	100	$^\circ\text{C/W}$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	100	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =4.5V, I _D =2A	---	220	260	mΩ
		V _{GS} =2.5V, I _D =1.5A	---	240	280	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.0	1.4	2.0	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =100V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =100V, V _{GS} =0V, T _J =55°C	---	---	5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =1A	---	33	---	S
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V, I _D =1A	---	5.5	---	nC
Q _{gs}	Gate-Source Charge		---	0.9	---	
Q _{gd}	Gate-Drain Charge		---	1.3	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =50V, V _{GS} =4.5V, R _G =6Ω I _D =1A	---	5.5	---	ns
T _r	Rise Time		---	11	---	
T _{d(off)}	Turn-Off Delay Time		---	11	---	
T _f	Fall Time		---	6	---	
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	---	330	---	pF
C _{oss}	Output Capacitance		---	11	---	
C _{rss}	Reverse Transfer Capacitance		---	13	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =1A, T _J =25°C	---	---	1.2	V

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The power dissipation is limited by 150°C junction temperature
- 4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

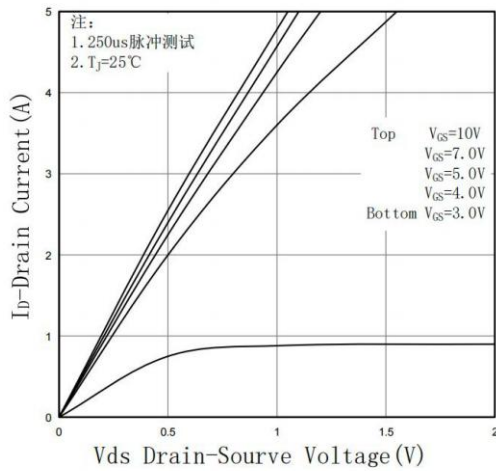


Fig.1 Output Characteristic

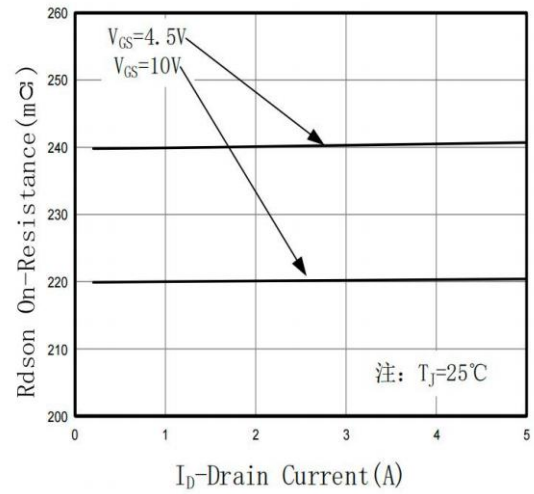


Fig.2 On-Resistance vs. Drain

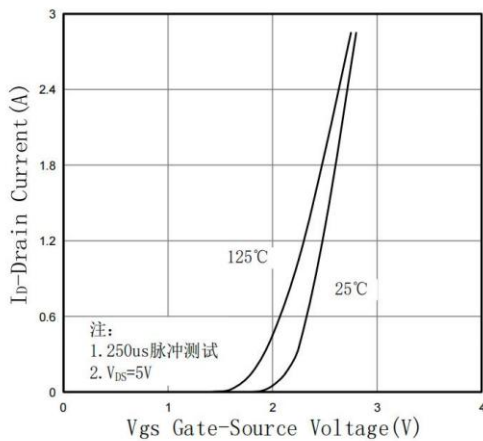


Fig.3 Forward Characteristics Of Reverse

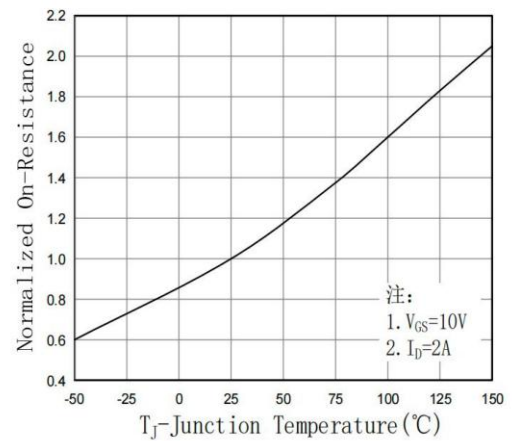


Fig.4 Gate-Charge Characteristics

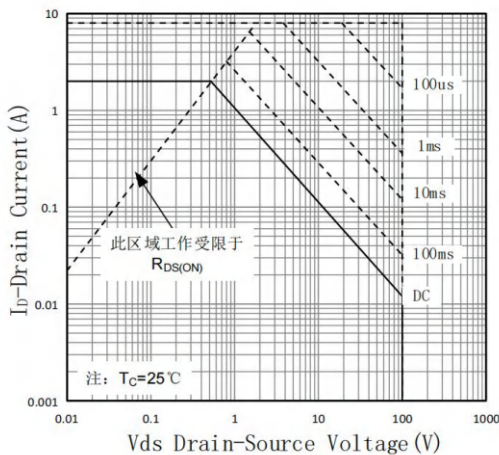


Fig.5 Safe Operating Area

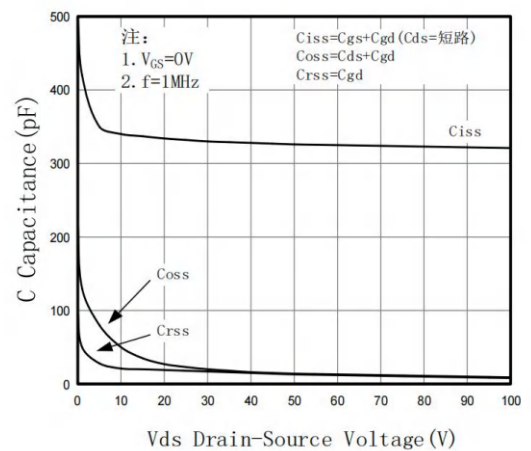


Fig.6 Capacitance Characteristic

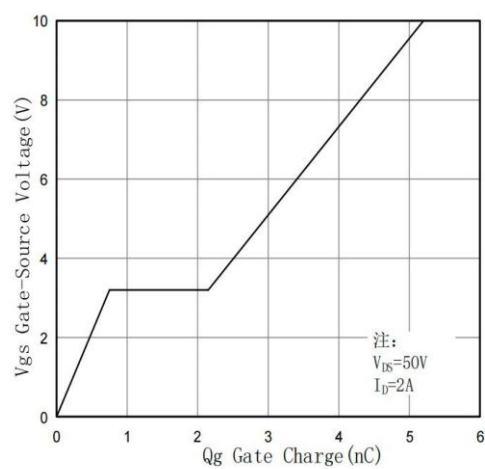


Fig.7 Gate-Charge Characteristic

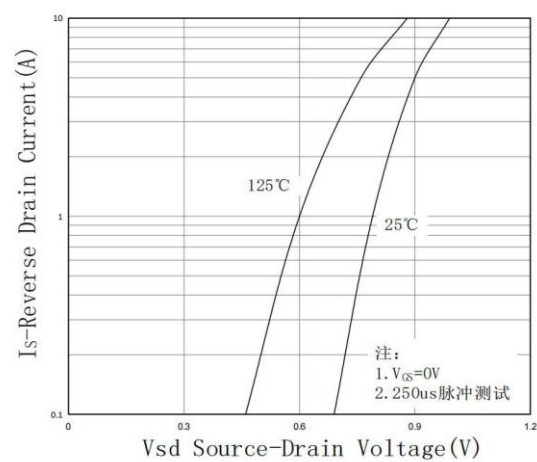
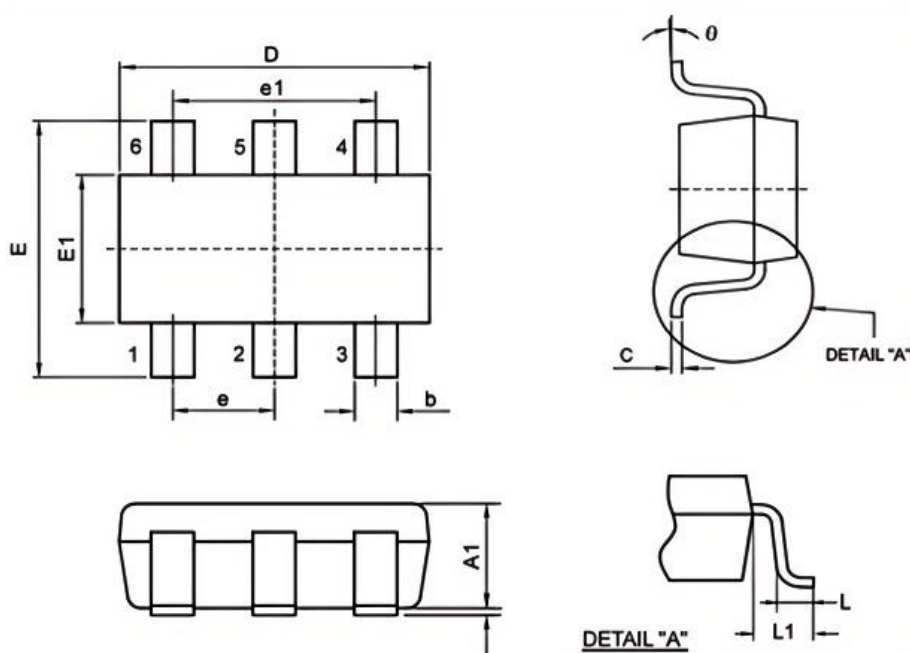


Fig.8 Body Diode

Ordering Information

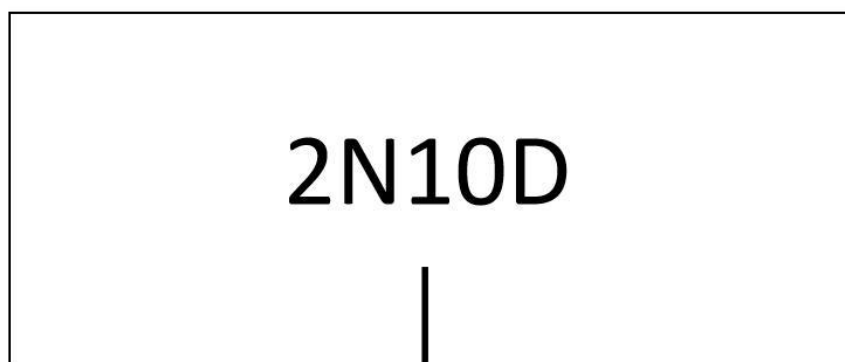
Part Number	Package code	Packaging
HSW2N10D	SOT23-6L	3000/Tape&Reel

SOT23-6L Package Outline



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
D	2.692	3.099	0.106	0.122
E	2.591	3.000	0.102	0.118
E1	1.397	1.803	0.055	0.071
e	0.950 REF.		0.037 REF.	
e1	1.900 REF.		0.075 REF.	
b	0.300	0.500	0.012	0.020
C	0.080	0.200	0.003	0.008
A	0.000	0.100	0.000	0.004
A1	0.700	1.200	0.028	0.048
L	0.300	0.600	0.012	0.024
L1	0.600 REF.		0.023 REF.	
θ	0°	9°	0°	9°

HSW2N10D TOP Marking



Part Number