

Description

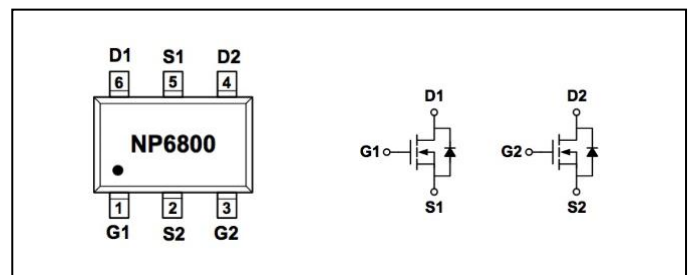
The HSW6800 is the high cell density trenched N-ch MOSFETs, which provides excellent R_{DS(ON)} and efficiency for most of the small power switching and load switch applications.

The HSW6800 meet the RoHS and Green Product requirement with full function reliability approved.

- Green Device Available
- Super Low Gate Charge
- Excellent C_{dv/dt} effect decline
- Advanced high cell density Trench technology

Product Summary

V _{DS}	30	V
R _{DS(ON),max}	45	mΩ
I _D	4	A

SOT23-6L Pin Configuration

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	30	V
V _{GS}	Gate-Source Voltage	±12	V
I _D @T _A =25°C	Continuous Drain Current, V _{GS} @ 4.5V ₁	4	A
I _D @T _A =70°C	Continuous Drain Current, V _{GS} @ 4.5V ₁	3	A
I _{DM}	Pulsed Drain Current ₂	16	A
P _D @T _A =25°C	Total Power Dissipation ₃	1.4	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient ¹	---	90	°C/W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
B _V DSS	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	30	---	---	V
ΔB _V DSS/ΔT _J	BVDSS Temperature Coefficient	Reference to 25°C, I _D =1mA	---	0.029	---	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =4.5V, I _D =4A	---	32	45	mΩ
		V _{GS} =2.5V, I _D =3A	---	45	60	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	0.6	0.9	1.3	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	-2.82	---	mV/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =24V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =24V, V _{GS} =0V, T _J =55°C	---	---	5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±12V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =2A	---	5	---	S
Q _g	Total Gate Charge (4.5V)	V _{DS} =15V, V _{GS} =4.5V, I _D =4A	---	9.5	---	nC
Q _{gs}	Gate-Source Charge		---	1.6	---	
Q _{gd}	Gate-Drain Charge		---	3	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =15V, V _{GS} =4.5V, R _G =3.3Ω I _D =3A	---	3.2	---	ns
T _r	Rise Time		---	4.9	---	
T _{d(off)}	Turn-Off Delay Time		---	22	---	
T _f	Fall Time		---	4	---	
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	880	---	pF
C _{oss}	Output Capacitance		---	99	---	
C _{rss}	Reverse Transfer Capacitance		---	73	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,4}	V _G =V _D =0V, Force Current	---	---	4	A
I _{SM}	Pulsed Source Current ^{2,4}		---	---	16	A
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 2OZ 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.



Dual N-CH Fast Switching MOSFETs

Typical Characteristics

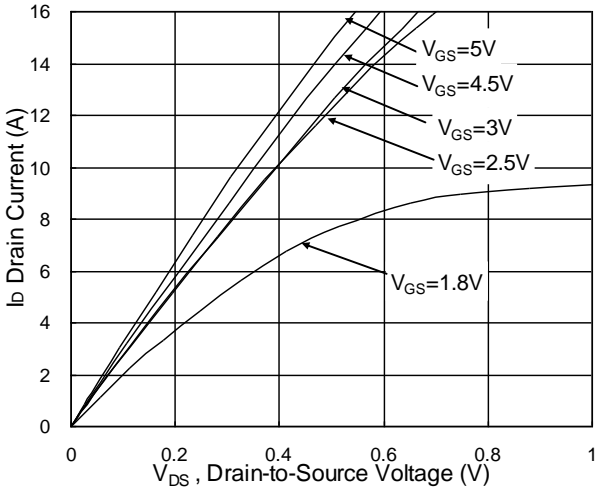


Fig.1 Typical Output Characteristics

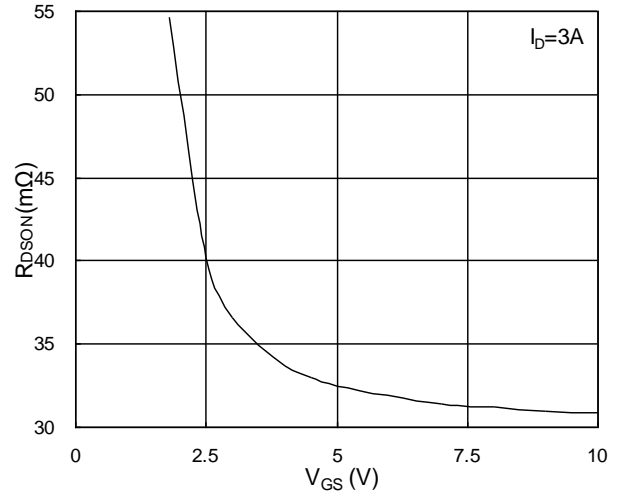


Fig.2 On-Resistance vs. Gate-Source

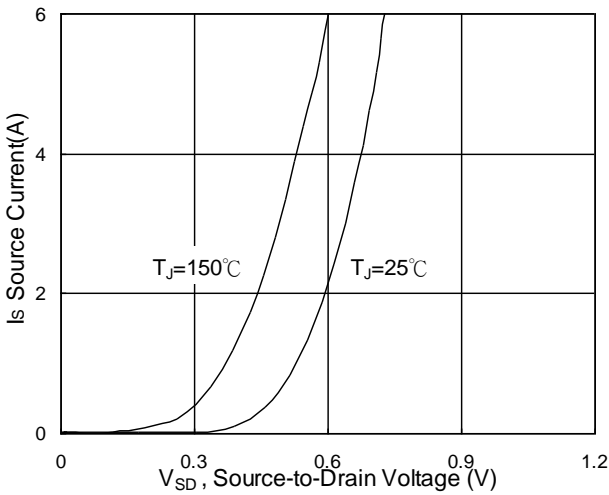


Fig.3 Forward Characteristics Of Reverse

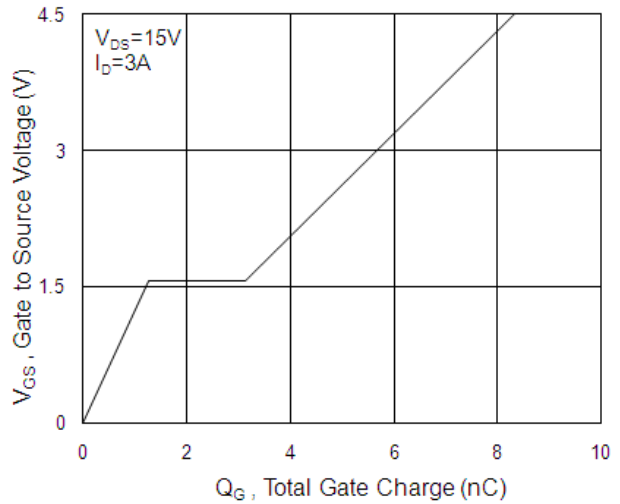


Fig.4 Gate-Charge Characteristics

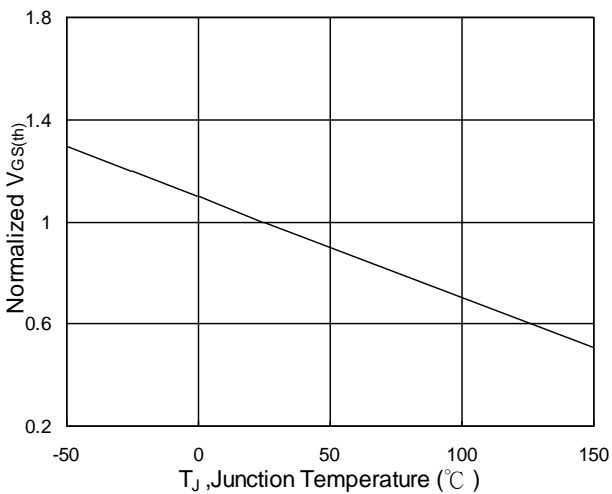


Fig.5 Normalized V_{GS(th)} vs. T_J

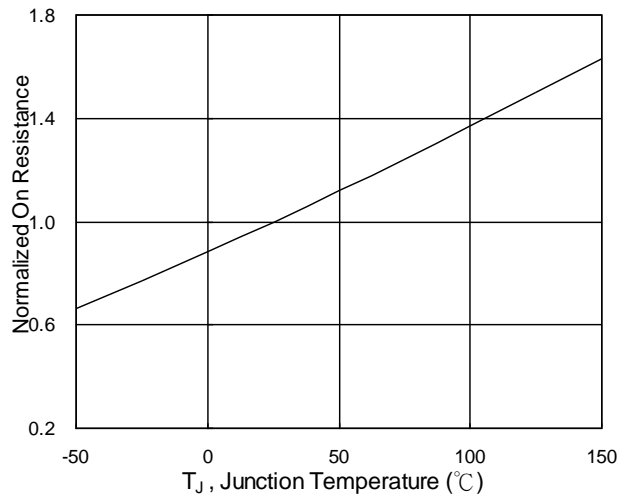


Fig.6 Normalized R_{DS(on)} vs. T_J



Dual N-CH Fast Switching MOSFETs

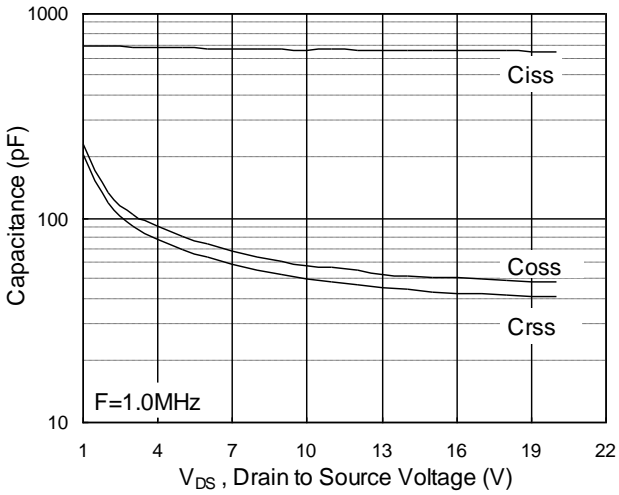


Fig.7 Capacitance

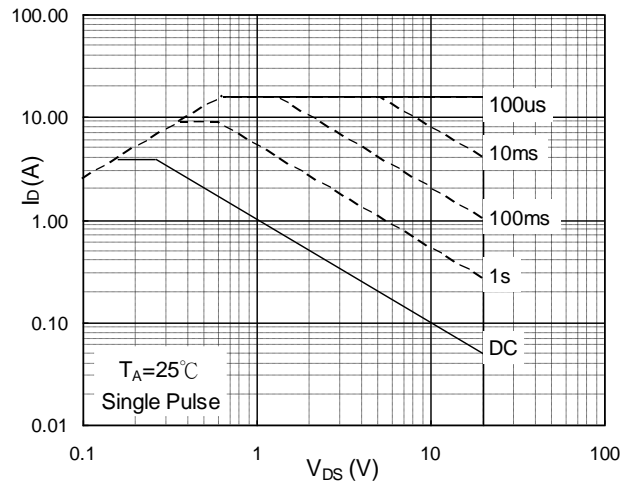


Fig.8 Safe Operating Area

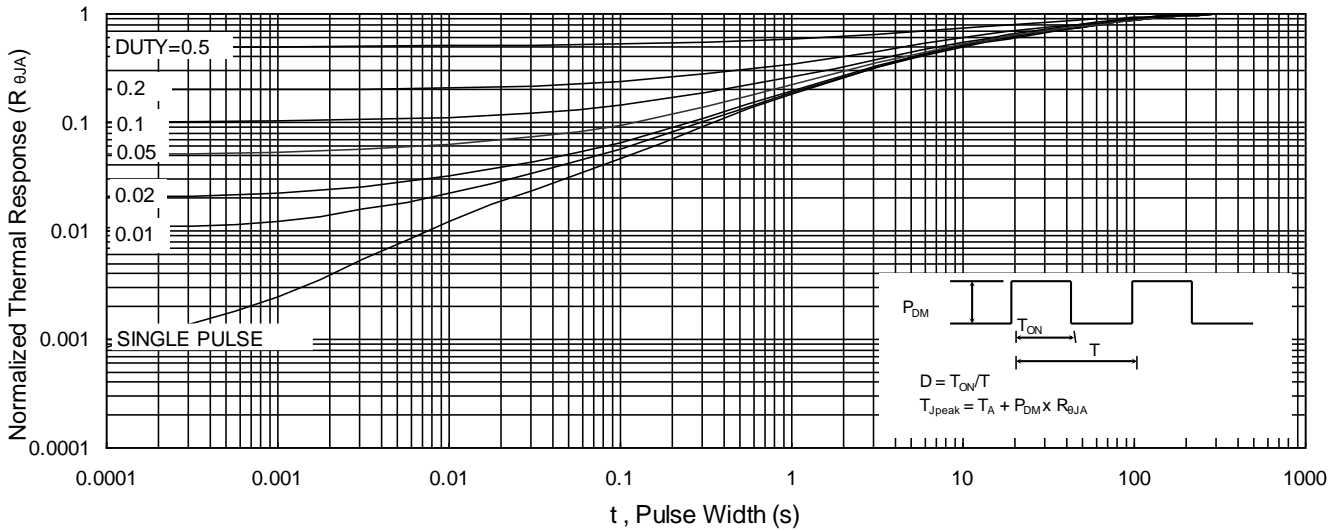


Fig.9 Normalized Maximum Transient Thermal Impedance

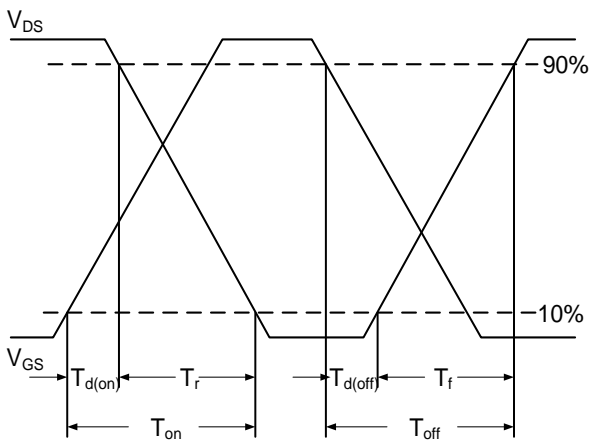


Fig.10 Switching Time Waveform

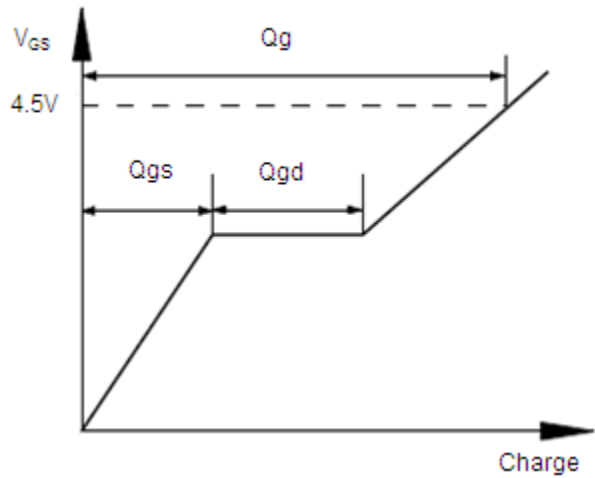
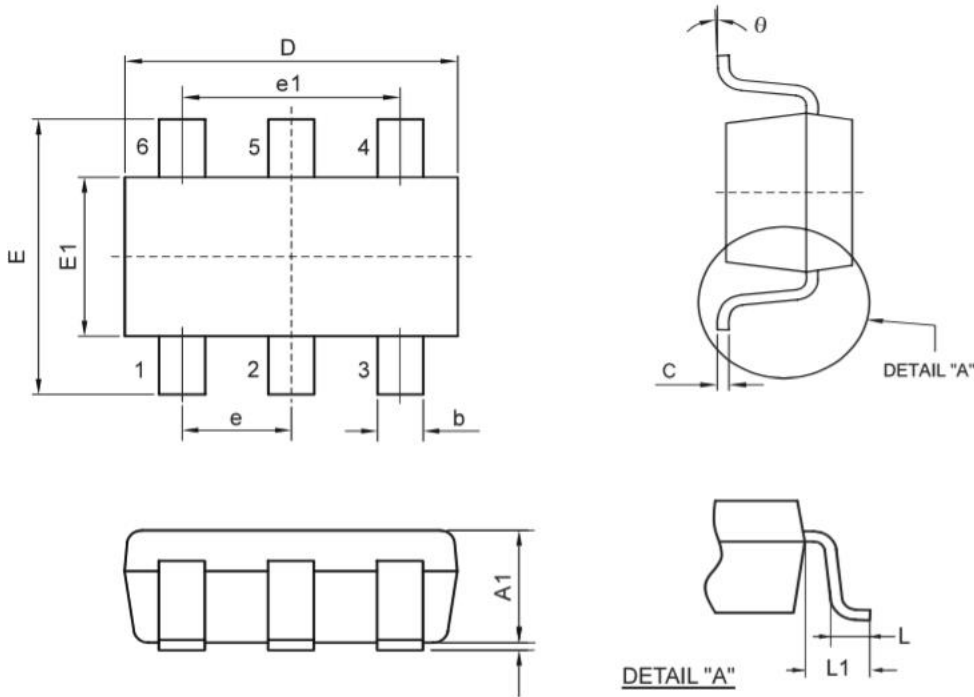


Fig.11 Gate Charge Waveform



SOT23-6L Package Outline Dimensions



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°