WANSEMI
万代半导体

WP8820S6

Enhancement Mode N-Channel Power MOSFET

SOT23-6/NMOS/20V/±12V/0.7V/8A/11mΩ

Rev1.0

20V, 11mΩ, 8A, N-Channel MOSFET

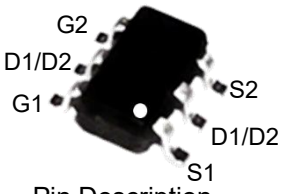
1.Features

- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

V_{DS} Typ.	$R_{DS(on)}$ Typ.	I_D Max.
20V	11mΩ @ 4.5V	8A
	14mΩ @ 2.5V	

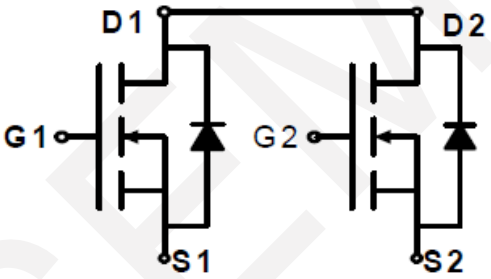
2.Applications

- Battery Protection
- Battery Powered Systems
- Power Management in Notebook Computer
- Portable Equipment



Pin Description

SOT23-6



Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
WP8820S6	8820	SOT23-6	3,000	180,000

4.Absolute Max Ratings at Ta=25℃ (Note1)

Parameter	Symbol	Maximum	Units
Drain to Source Voltage	V_{DSS}	20	V
Gate to Source Voltage	V_{GSS}	±12	V
Drain Current-Continuous	I_D	8	A
Drain Current (Pulse)	I_{DM}	32	A
Maximum Power Dissipation	P_D	1.8	W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{stg}	-55 to +150	℃

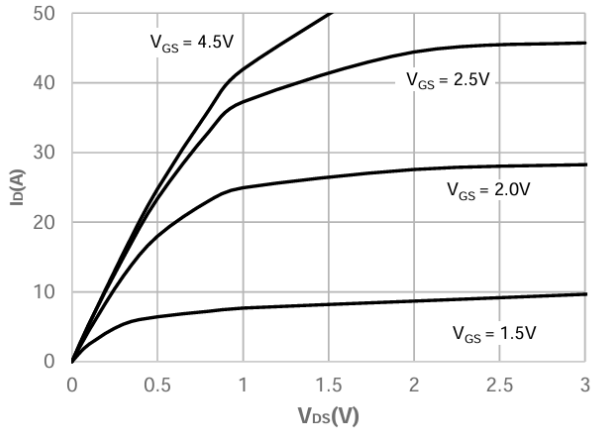
Note 1: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

5.Electrical Characteristics at Ta=25℃ (Note 2)

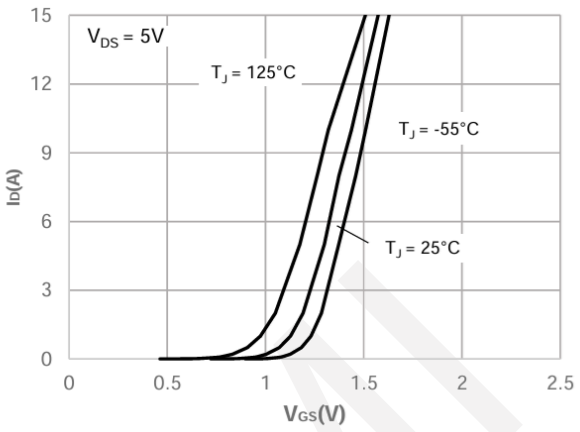
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	20	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20V, V_{GS} = 0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±12V, V_{DS} = 0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	0.4	0.7	1.5	V
Drain to Source On-State Resistance	$R_{DS(on)}$	I_D = 4A, V_{GS} = 4.5V	-	11	13	mΩ
		I_D = 3A, V_{GS} = 2.5V	-	14	22	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=10V, Frequency=1.0MHz	-	1358	-	pF
Output Capacitance	C_{oss}		-	403	-	pF
Reverse Transfer Capacitance	C_{rss}		-	253	-	pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DD} = 10V, I_D = 3A, V_{GS} = 4.5V, R_{GEN}= 3Ω	-	5	-	ns
Turn-ON Rise Time	t_r		-	16	-	ns
Turn-OFF Delay Time	$t_{d(off)}$		-	23	-	ns
Turn-ON Fall Time	t_f		-	7	-	ns
Total Gate Charge	Q_g	V_{DD} = 10V, V_{GS} =0 to 4.5V, I_D = 3A	-	9	-	nC
Gate-Source Charge	Q_{gs}		-	1.5	-	nC
Gate-Drain Charge	Q_{gd}		-	2.5	-	nC
Diode Forward Voltage	V_{SD}	I_S = 4A, V_{GS} = 0V	0.4	-	1.4	V

Note 2: Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

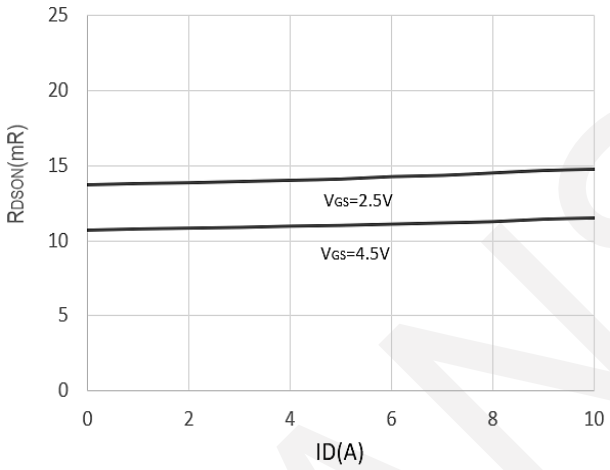
6.Typical electrical and thermal characteristics



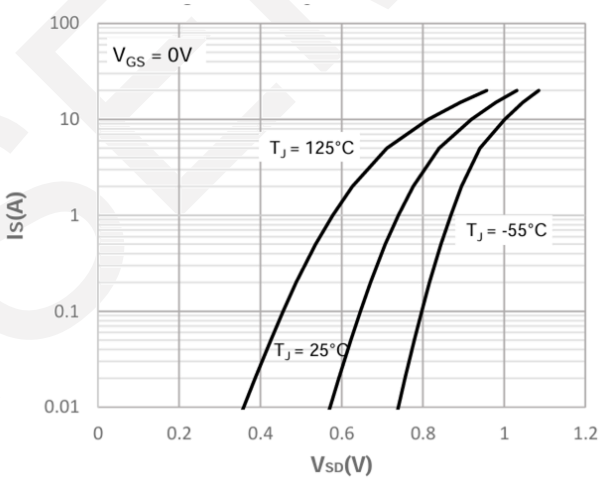
Output Characteristics



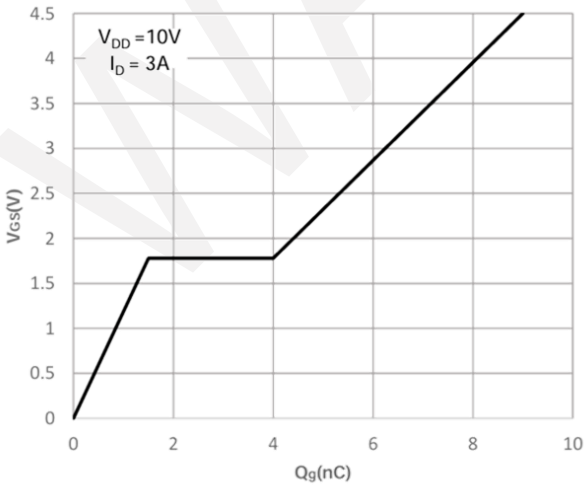
Typical Transfer Characteristics



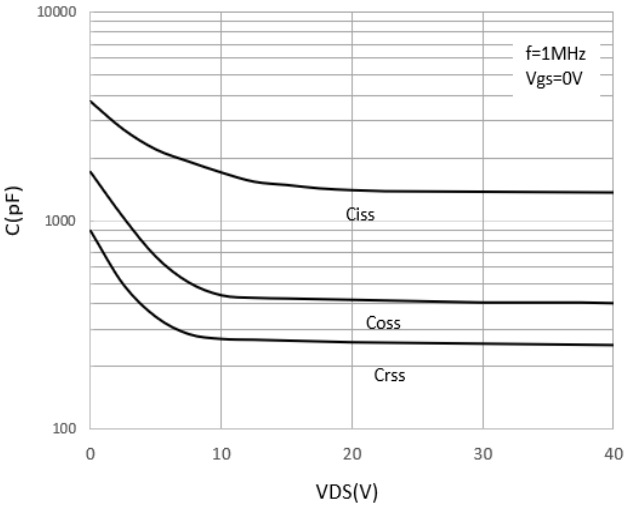
On-resistance vs. Drain Current



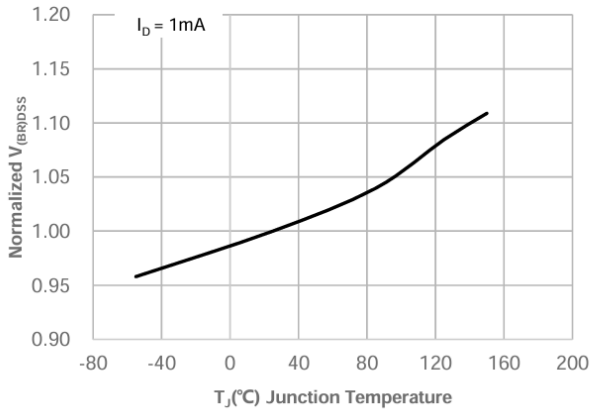
Body Diode Characteristics



Gate Charge Characteristics

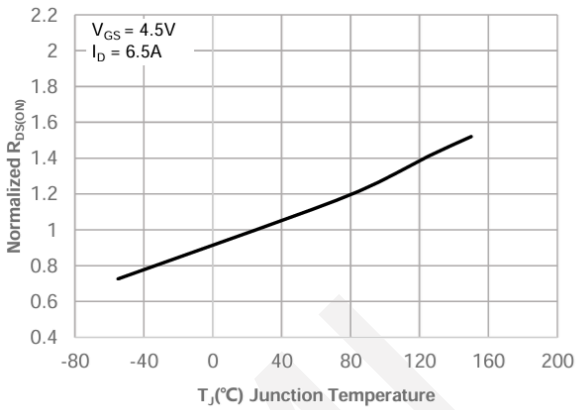


Capacitance Characteristics



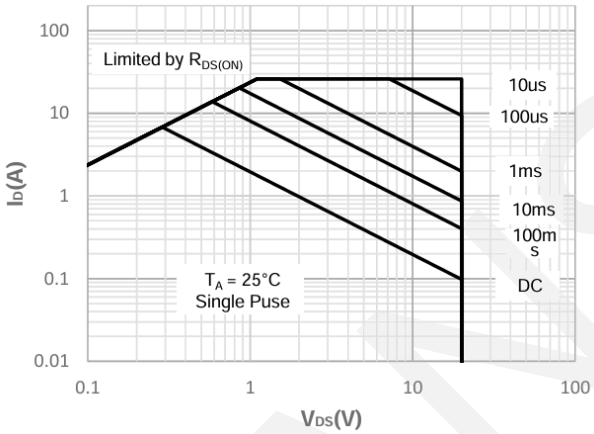
Normalized Breakdown Voltage vs.

Junction Temperature

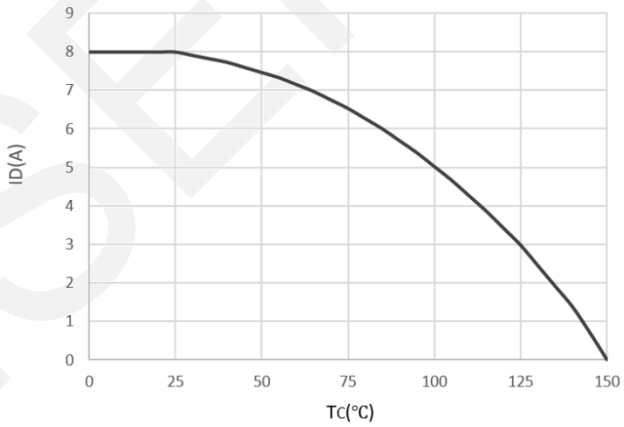


Normalized on Resistance vs.

Junction Temperature

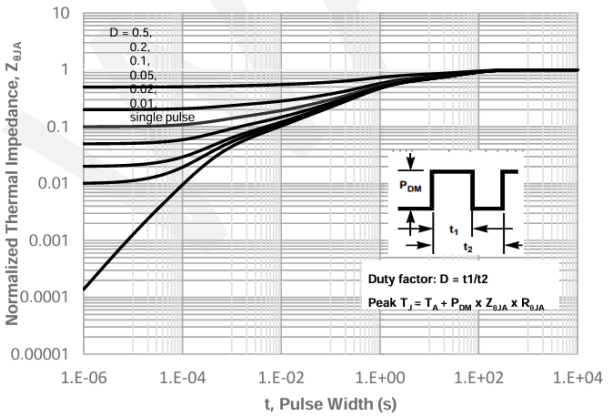


Maximum Safe Operating Area



Maximum Continuous Drain Current vs.

Case Temperature

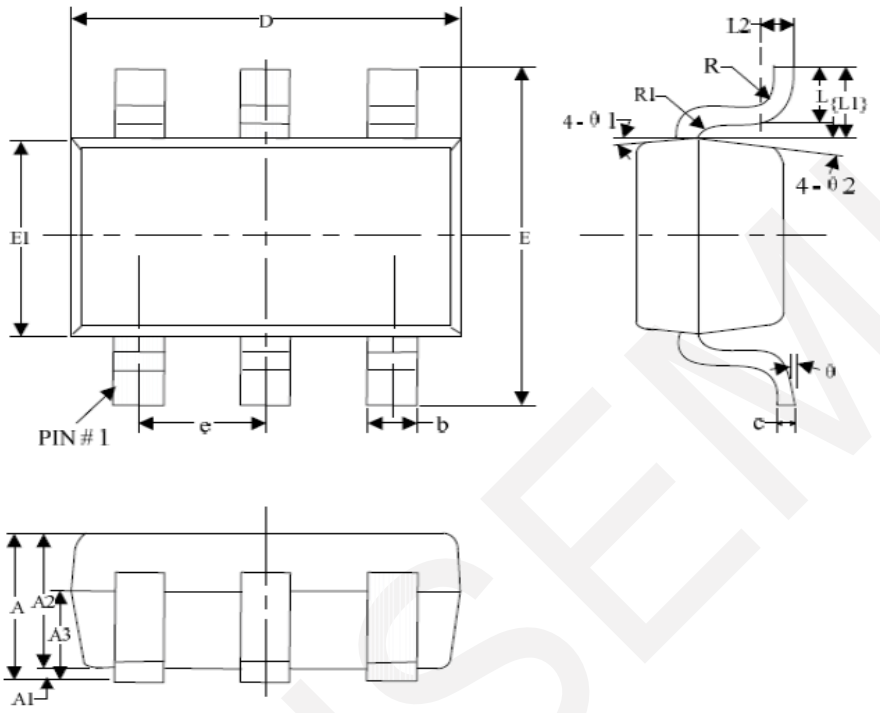


Normalized Maximum Transient

Thermal Impedance

7.Package Dimensions

SOT23-6



Dimensions（unit：mm）

SYMBOL	MIN	NOM	MAX	SYMBOL	MIN	NOM	MAX
A	-	-	1.30	e	0.85	0.95	1.05
A1	0	-	0.15	L	0.35	0.45	0.60
A2	0.90	1.10	1.30	L1		0.59REF	
A3	0.60	0.65	0.70	L2		0.25BSC	
b	0.39	-	0.49	R	0.05	-	-
c	0.12	-	0.19	R1	0.05	-	0.02
D	2.85	2.95	3.15	θ	0°	-	8°
E	2.60	2.80	3.00	θ1	3°	5°	7°
E1	1.55	1.65	1.75	θ2	6°	8°	10°

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