WANSEMI
万代半导体

WP8205AA

Enhancement Mode N-Channel Power MOSFET

SOT23-6/NMOS/20V/±12V/0.7V/4A/20mΩ

Rev1.5

20V, 20mΩ, 4A, N-Channel MOSFET

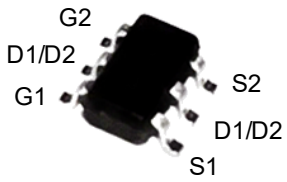
1.Features

- 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	20.0mΩ @ 4.5V	4A
	23.0mΩ @ 2.5V	

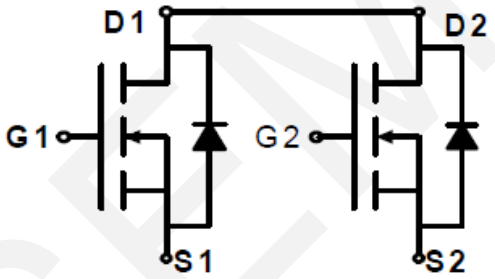
2.Applications

- 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.
WP8205AA	8205A	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	4	A
Drain Current (Pulse)	I_{DM}	20	A
Maximum Power Dissipation	P_D	1.9	W
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55 to +150	℃
Lead Temperature for Soldering Purposes (1/8″ from case for 10 s)	T_L	260	℃

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	19.1	20		V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 18V, 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	1.0	V
Drain to Source On-State Resistance	$R_{DS(on)}$	I_D = 4A, V_{GS} = 4.5V	-	20	27	mΩ
		I_D = 3A, V_{GS} = 2.5V	-	23	33	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=10V, Frequency=1.0MHz		370		pF
Output Capacitance	C_{oss}			89		pF
Reverse Transfer Capacitance	C_{rss}			10		pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DD} = 10V, I_D = 3A, V_{GS} = 4.5V, R_{GEN} = 10Ω		200		ns
Turn-ON Rise Time	t_r			236		ns
Turn-OFF Delay Time	$t_{d(off)}$			36		ns
Turn-ON Fall Time	t_f			165		ns
Total Gate Charge	Q_g	V_{DS} = 10V, V_{GS} = 4.5V, I_D = 1A		7.5		nC
Gate-Source Charge	Q_{gs}			3.0		nC
Gate-Drain Charge	Q_{gd}			1.5		nC
Diode Forward Voltage	V_{SD}	I_S = 4A, V_{GS} = 0V	0.4	0.8	1.2	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

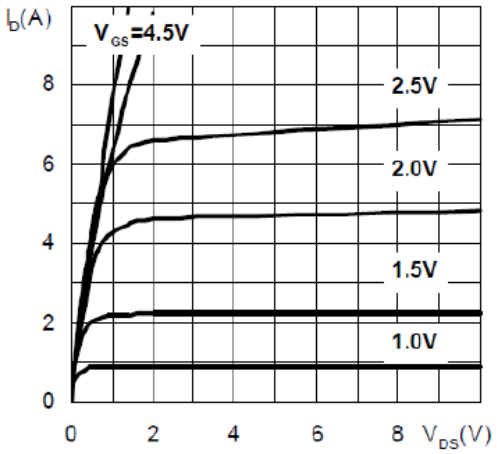


Figure 1 Output Characteristics

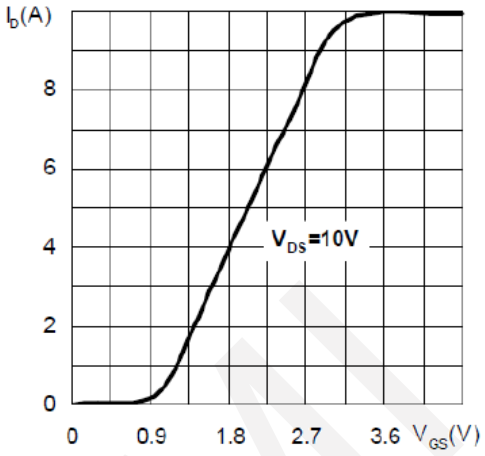


Figure 2 Transfer Characteristics

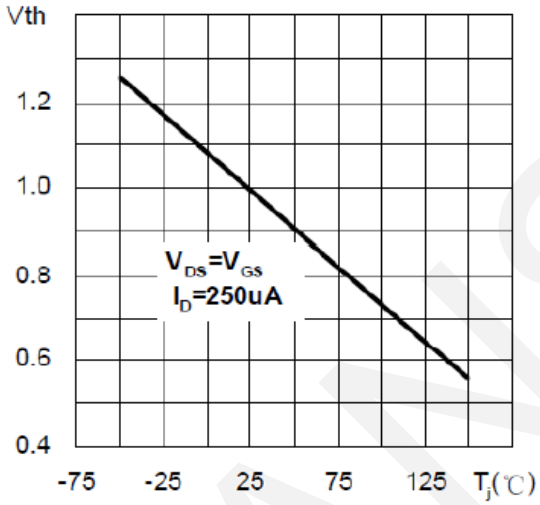


Figure 3 Thershold Voltage vs. Temperature

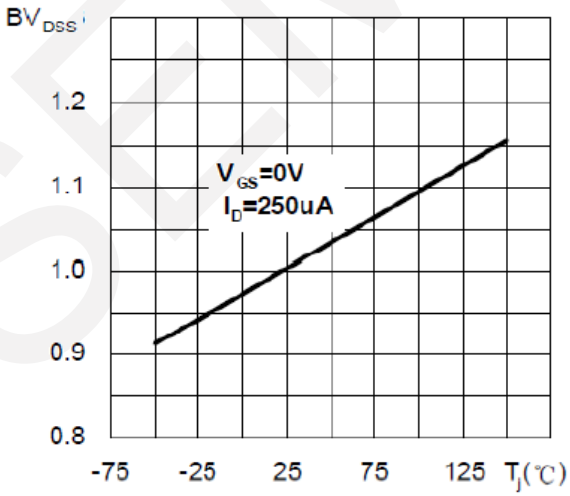


Figure 4 BVDSS vs. Temperature

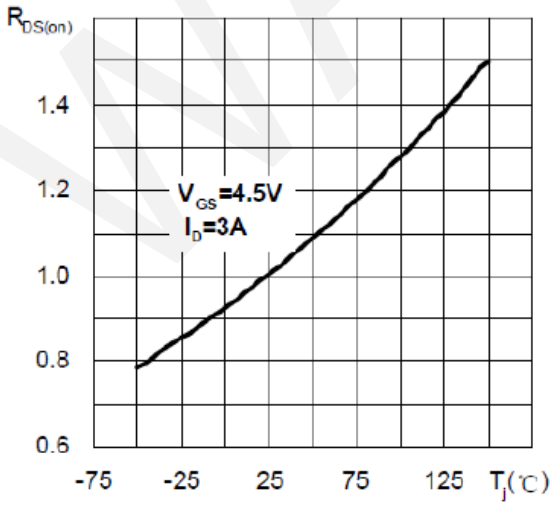


Figure 5 Rds(on) vs. Temperature

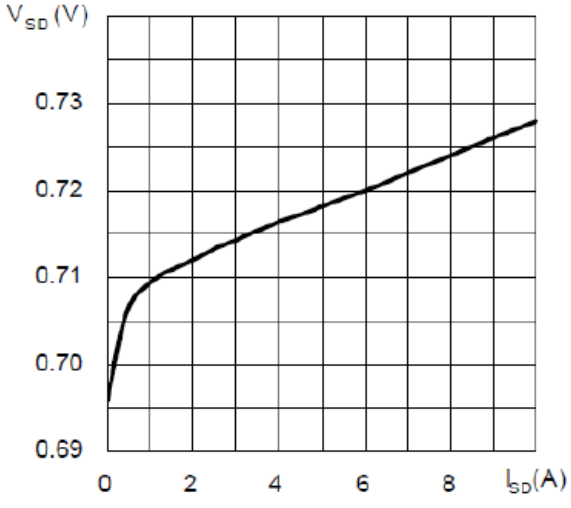


Figure 6 Source to Drain vs. Temperature

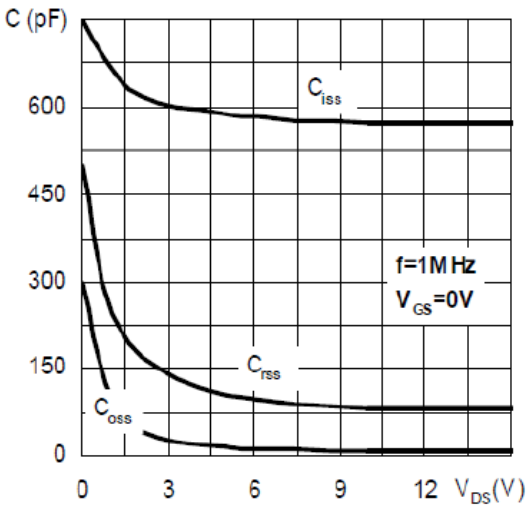


Figure 7 Capacitance

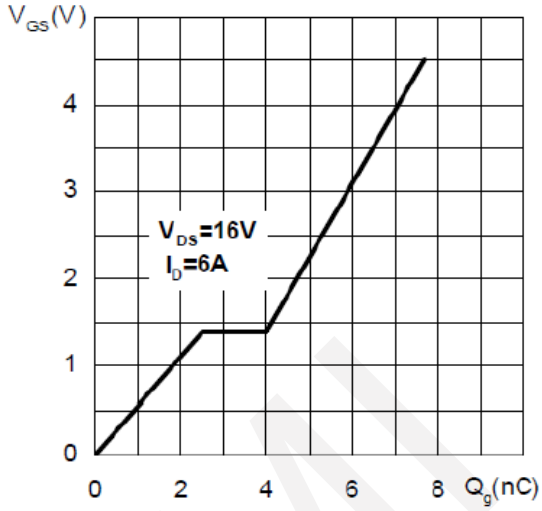


Figure 8 Gate Charge

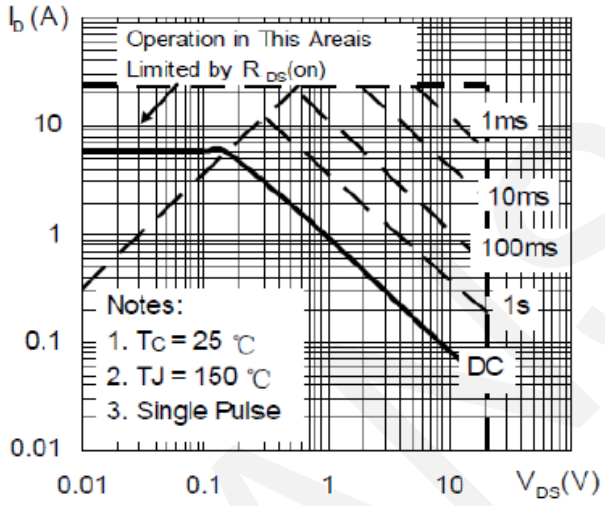


Figure 9 Safe Operating Area

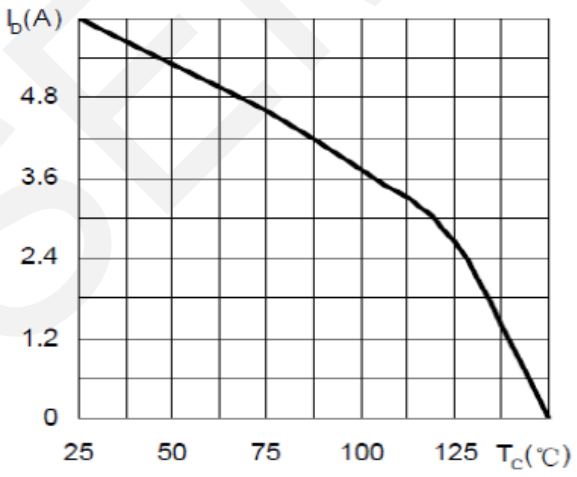


Figure 10 Maximum Drain Current vs. Case Temperature

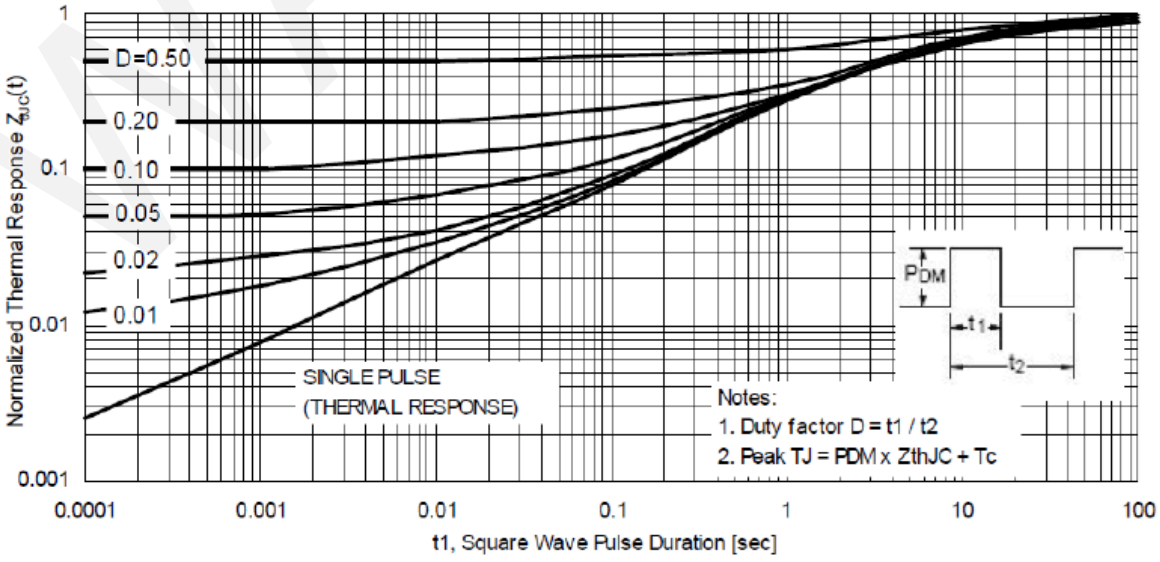
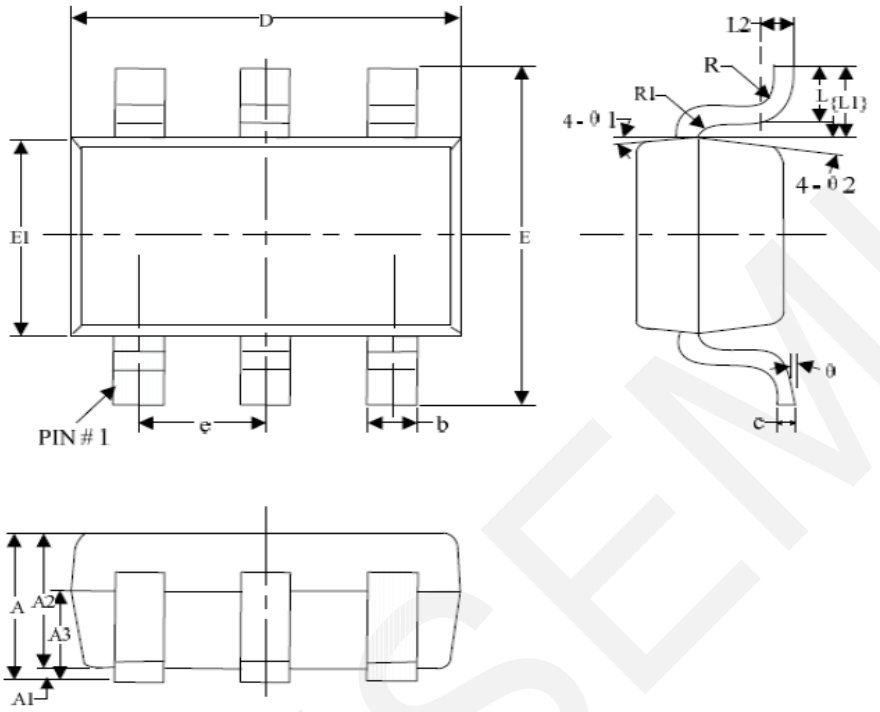


Figure 11 Maximum Transient Thermal Impedence

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°

8.Important Notice

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