



WANSEMI
万芯半导体

WP8205K

Enhancement Mode N-Channel Power MOSFET

SOT23-6/NMOS/20V/ ± 12 V/0.8V/5A/22m Ω

Rev0.1

20V, 22mΩ, 5A, N-Channel MOSFET

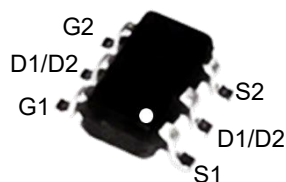
1.Features

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

V _{DS} Typ.	R _{DS(on)} Typ.	I _D Max.
20V	22mΩ @ 4.5V	5A
	32mΩ @ 2.5V	

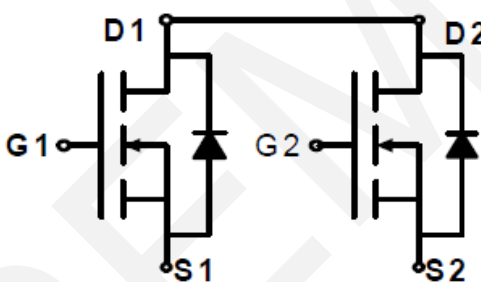
2.Applications

- ◆ 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.
WP8205K	8205A*	SOT23-6	3,000	180,000

4.Absolute Max Ratings at Ta=25°C (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	5	A
Drain Current (Pulse)	I _{DM}	20	A
Maximum Power Dissipation	P _D	1.7	W
Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-55 to +150	°C

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°C (Note 2)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu A, V_{GS} = 0V$	20	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 12V, V_{DS} = 0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_{DS} = 250\mu A$	0.45	0.8	1.0	V
Drain to Source On-State Resistance	$R_{DS(on)}$	$I_D = 5A, V_{GS} = 4.5V$	-	22	30	m Ω
		$I_D = 2A, V_{GS} = 2.5V$	-	32	45	m Ω
Input Capacitance	C_{iss}	$V_{GS} = 0V,$ $V_{DS} = 10V,$ Frequency=1.0MHz	-	455	-	pF
Output Capacitance	C_{oss}		-	64	-	pF
Reverse Transfer Capacitance	C_{rss}		-	55	-	pF
Turn-ON Delay Time	$t_{d(on)}$	$V_{DD} = 10V, I_D = 2A,$ $V_{GS} = 4.5V,$ $R_{GEN} = 3\Omega$	-	4	-	ns
Turn-ON Rise Time	t_r		-	10	-	ns
Turn-OFF Delay Time	$t_{d(off)}$		-	65	-	ns
Turn-ON Fall Time	t_f		-	33	-	ns
Total Gate Charge	Q_g	$V_{DS} = 10V,$ $V_{GS} = 0 \text{ to } 4.5V,$ $I_D = 2A$	-	6	-	nC
Gate-Source Charge	Q_{gs}		-	1	-	nC
Gate-Drain Charge	Q_{gd}		-	1.5	-	nC
Diode Forward Voltage	V_{SD}	$I_S = 5A, V_{GS} = 0V$	0.4	-	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

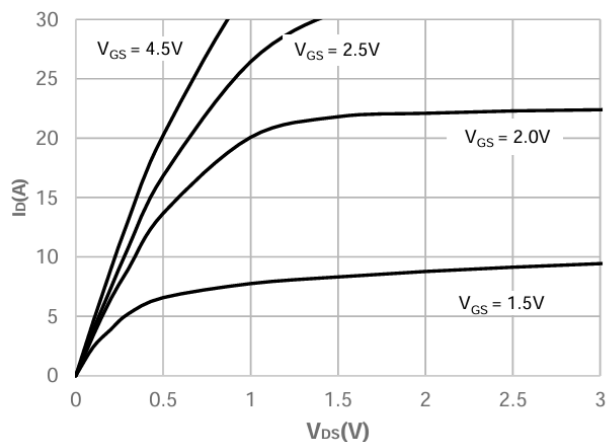


Figure 1 Output Characteristics

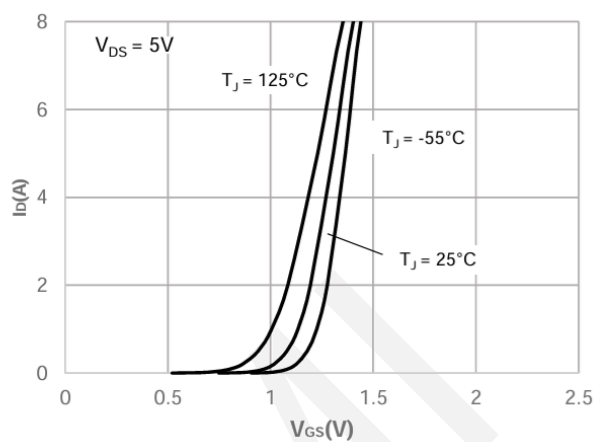


Figure 2 Transfer Characteristics

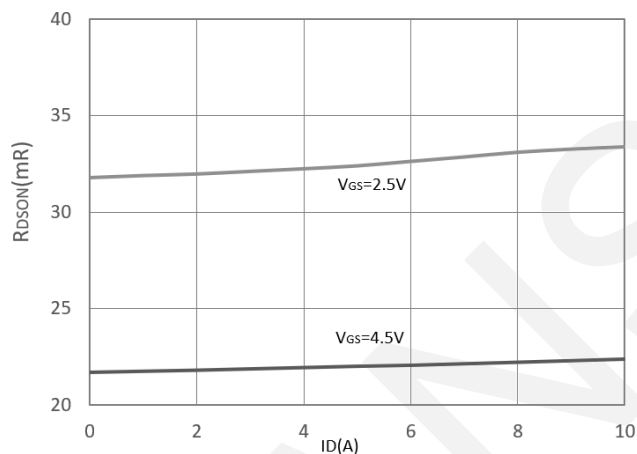


Figure 3 On-Resistance vs. Drain Current and Gate Voltage

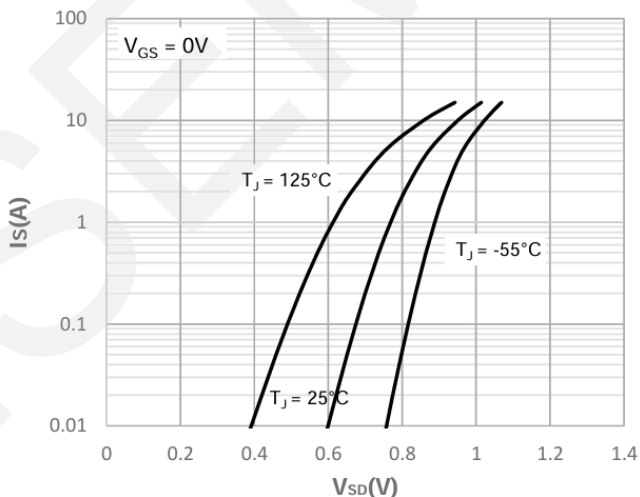


Figure 4 Body Diode Characteristics

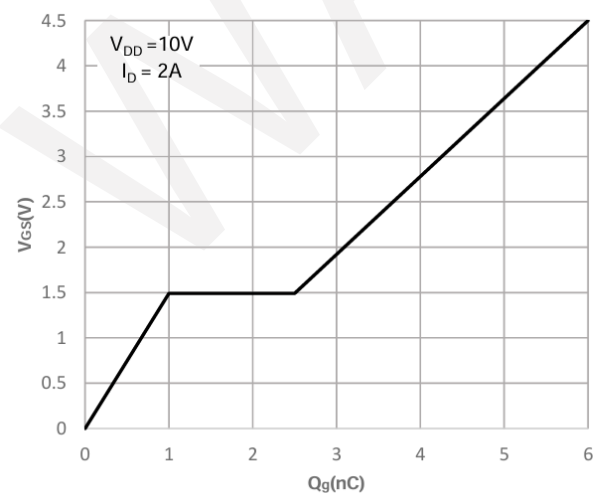


Figure 5 Gate Charge Characteristics

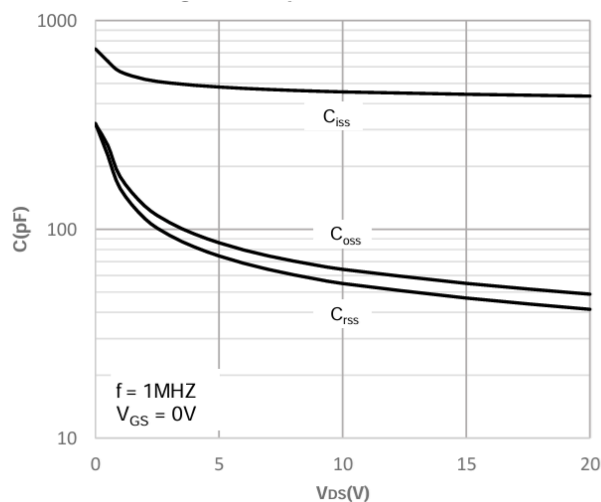


Figure 6 Capacitance Characteristics

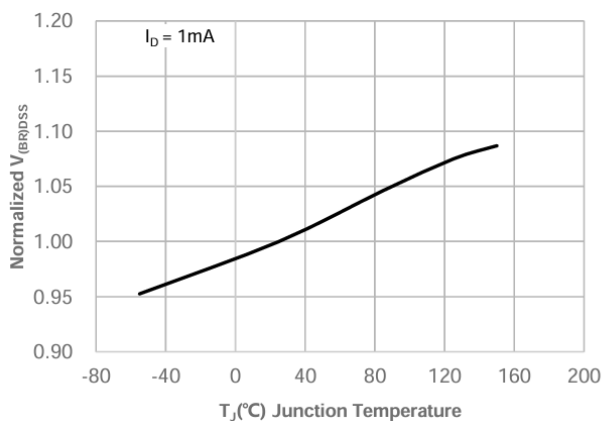


Figure 7 Normalized Breakdown voltage vs. Junction Temperature

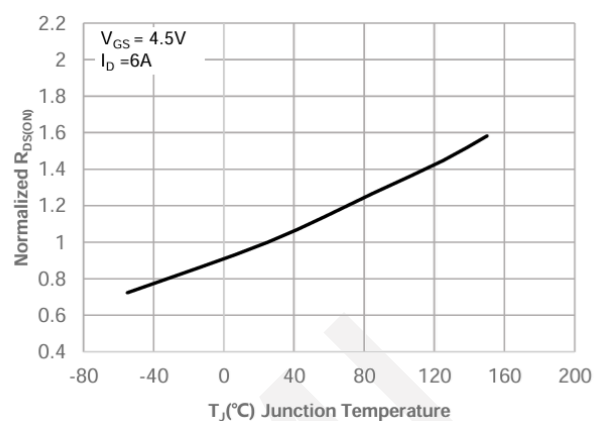


Figure 8 Normalized on Resistance vs. Junction Temperature

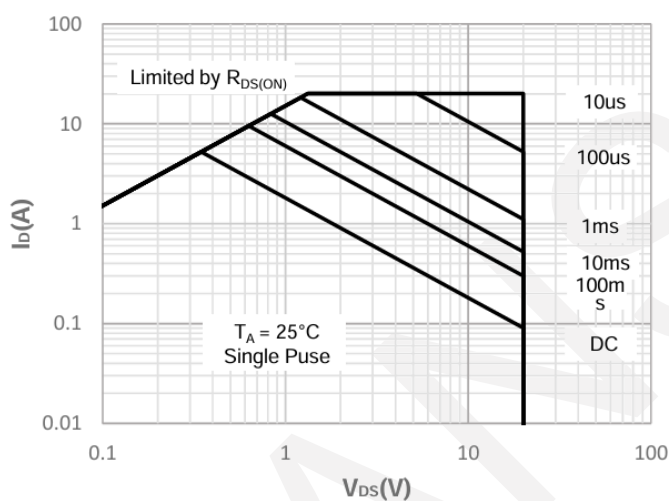


Figure 9 Maximum Forward Biased Safe Operating Area

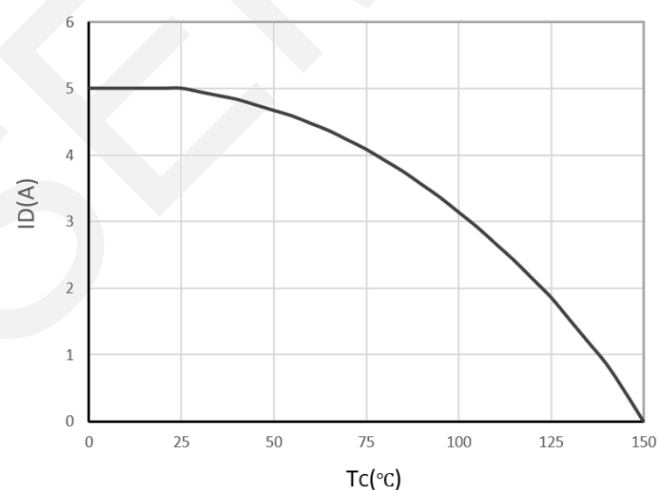


Figure 10 Maximum Continuous Drain Current vs. Ambient Temperature

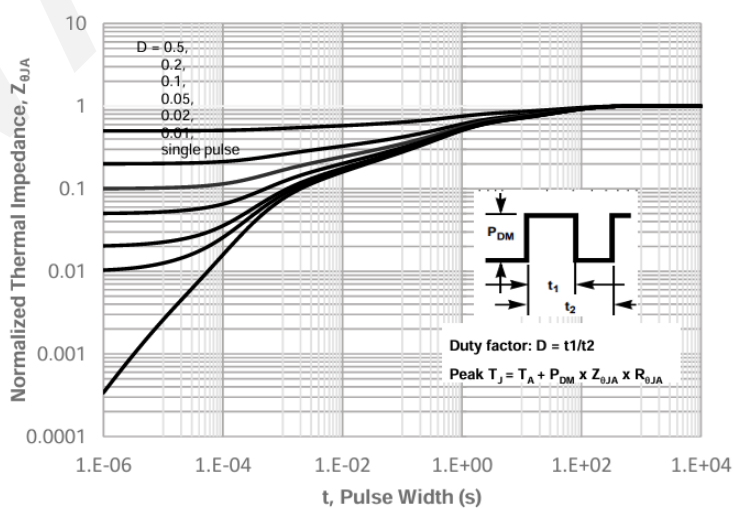
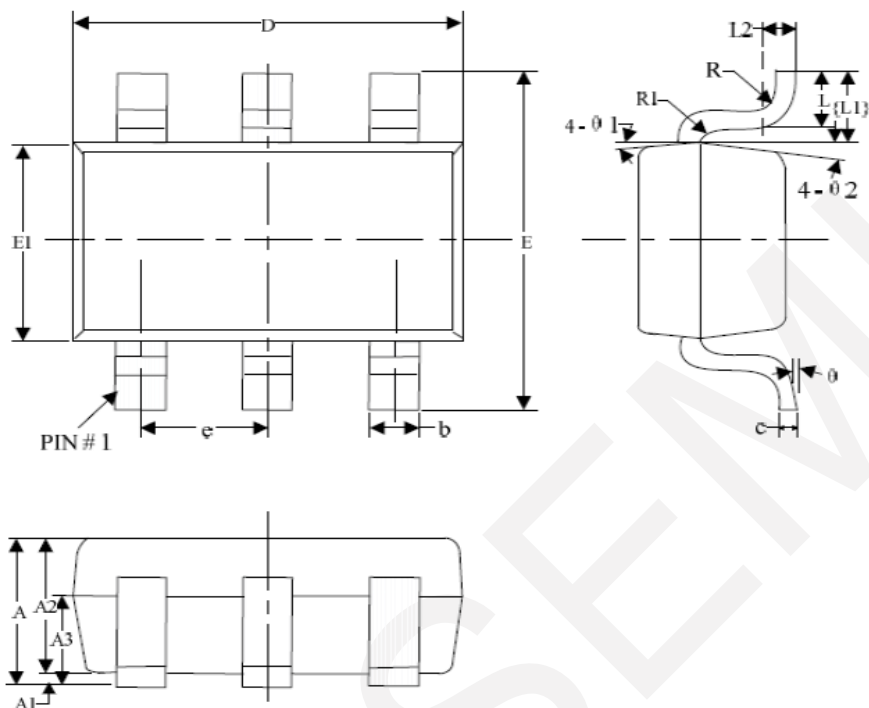


Figure 11 Maximum Transient Thermal Impedance
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7.Package Dimensions

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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