WANSEMI
万代半导体

WP2312A

Enhancement Mode N-Channel Power MOSFET

SOT23-3/NMOS/20V/±12V/0.8V/6A/18.5mΩ

Rev0.6

20V, 18.5mΩ, 6A, Single N-Channel

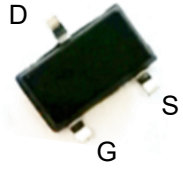
1.Features

- 20V MOSFET technology
- Low on-state resistance
- Fast switching
- Vgs±12V

V_{DS}	$R_{DS(on)}$ Typ.	I_D Max.
20V	18.5mΩ @ 4.5V	6A
	32mΩ @ 2.5V	

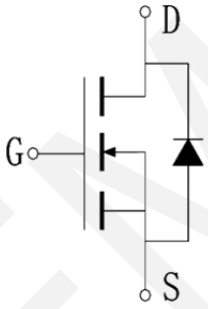
2.Applications

- Power Switching Application
- Load Switching



SOT23-3

Pin Description



Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Tube	PCS/CTN.
WP2312A	2312A	SOT23-3	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 (DC)	I_D	6	A
Drain Current (Pulse), PW≤300μs	I_{DP}	24	A
Total Dissipation	P_D	1.4	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.Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Thermal Resistance，Junction-to-Ambient	$R_{\theta JA}$	70	℃/W

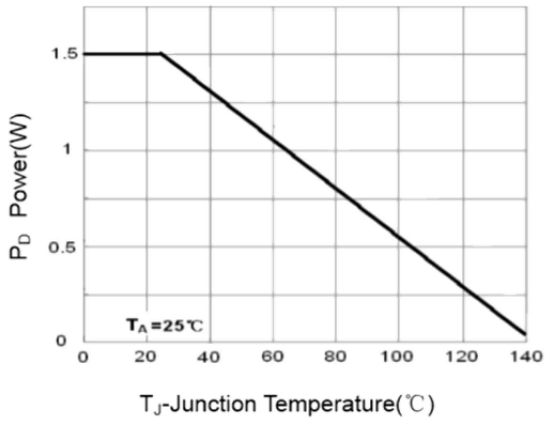
Note 2：When mounted on 1 inch square copper board t ≤ 10sec The value in any given application depends on the user's specific board design.

6.Electrical Characteristics at Ta=25℃ (Note 3)

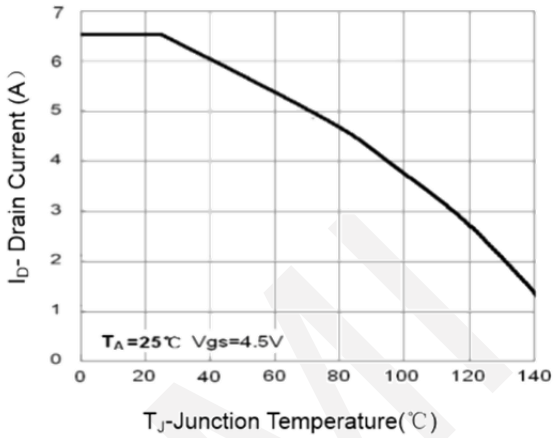
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	20	24		V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20V, V_{GS} = 0V			1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±12V, V_{DS} = 0V			±100	nA
Forward Transconductance	g_{FS}	V_{GS}=5V, I_D=6A		10		S
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	0.5	0.8	1.1	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	I_D = 6A, V_{GS} = 4.5V	-	18.5	25	mΩ
		I_D = 3A, V_{GS} = 2.5V	-	32		mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=10V, Frequency=1.0MHz		900		pF
Output Capacitance	C_{oss}			220		pF
Reverse Transfer Capacitance	C_{rss}			100		pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DD} = 10V, I_D=6A V_{GEN} = 4.5V, R_G = 6Ω		10		ns
Rise Time	t_r			11		ns
Turn-OFF Delay Time	$t_{d(off)}$			35		ns
Fall Time	t_f			30		ns
Total Gate Charge	Q_g	V_{DS} = 10V, V_{GS} = 4.5V, I_D = 6A		12		nC
	Q_{gs}			2.3		nC
	Q_{gd}			1		nC
Diode Forward Voltage	V_{FSD}	I_D = 6A, V_{GS} = 0		0.9	1.2	V

Note 3：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.

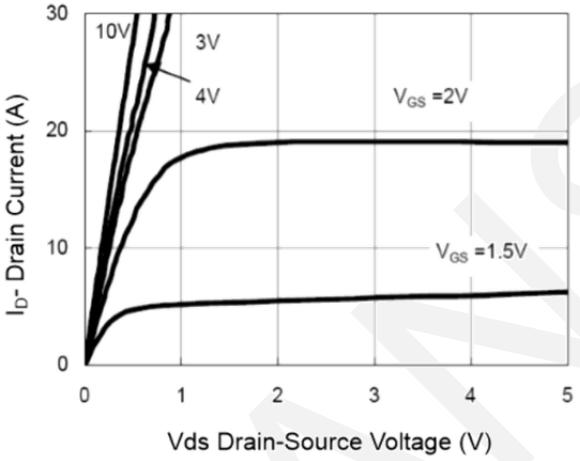
7.Typical electrical and thermal characteristics



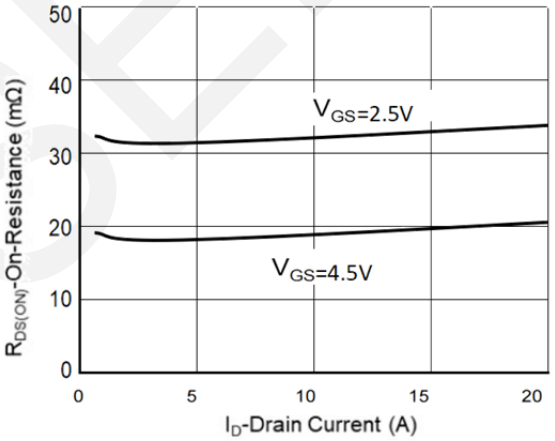
Power Dissipation



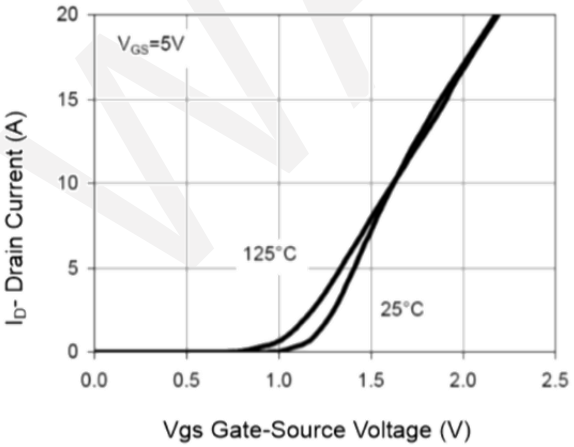
Drain Current



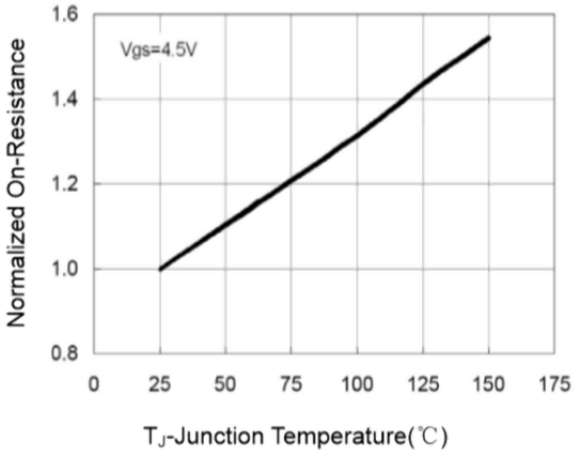
Output Characteristics



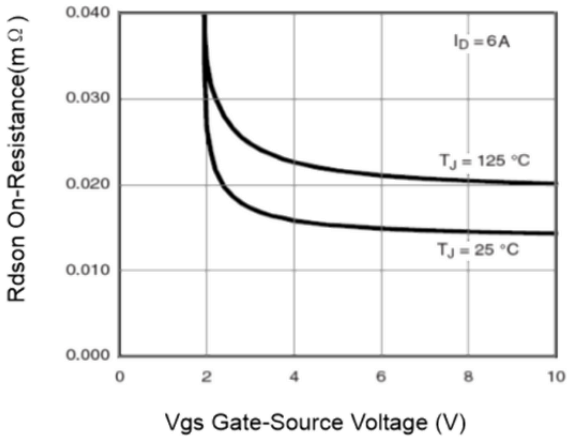
Drain-Source On-Resistance



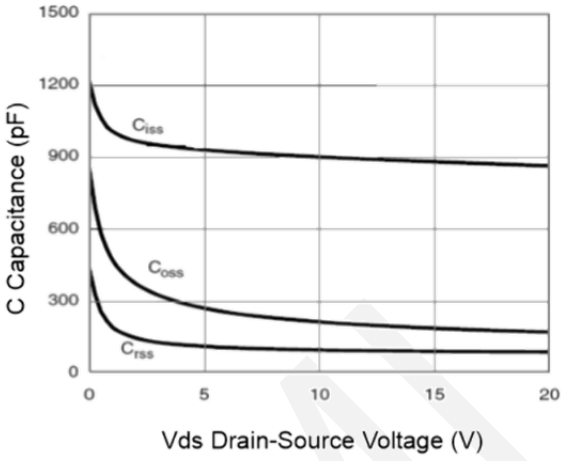
Transfer Characteristics



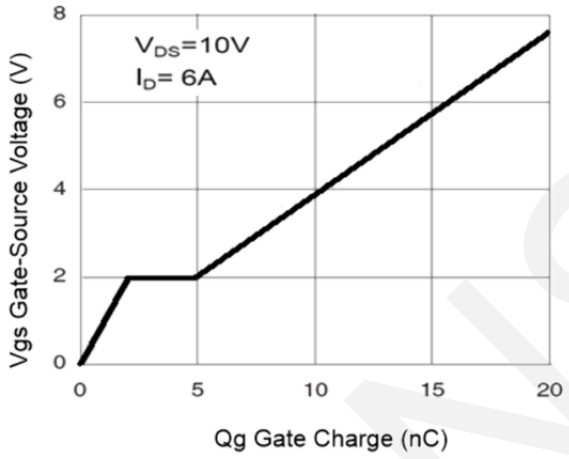
Drain-Source On-Resistance



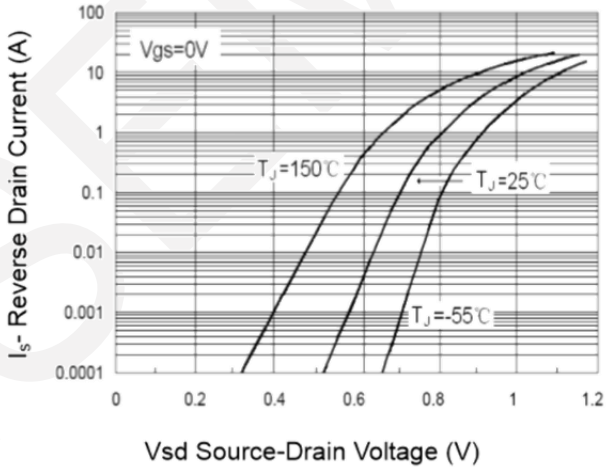
Rdson VS Vgs



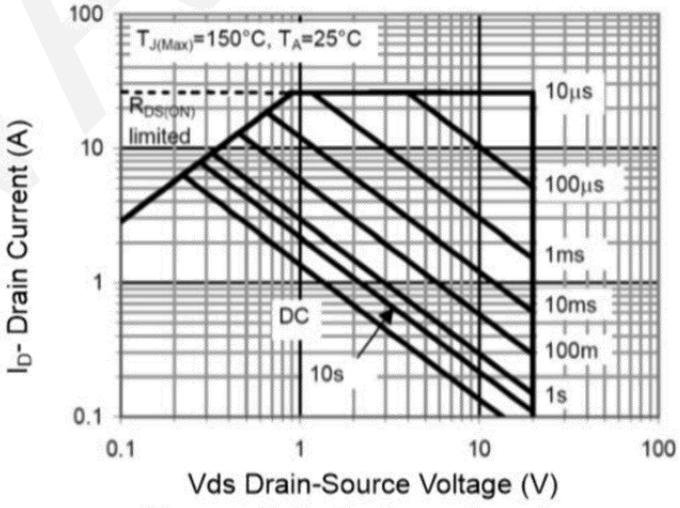
Capacitance VS Vds



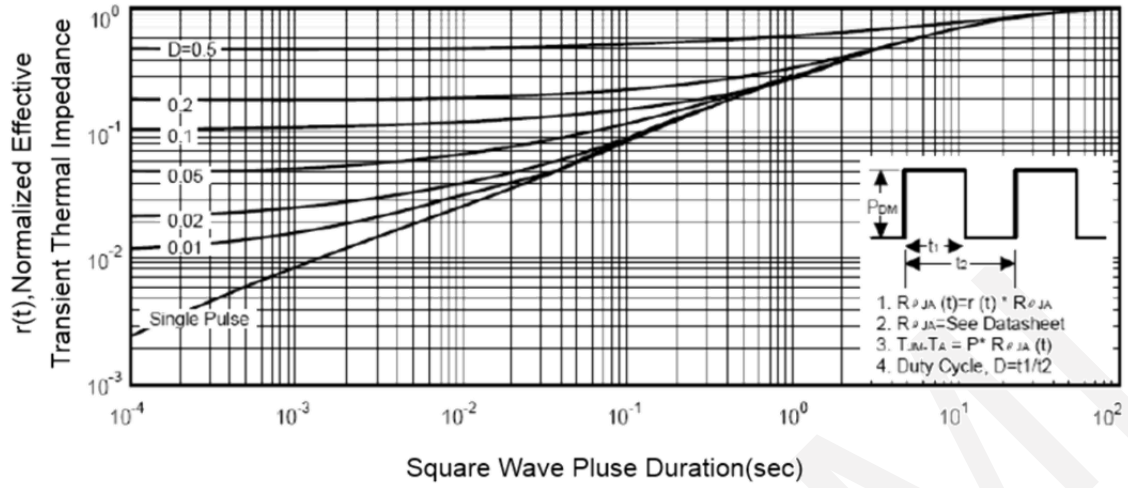
Gate Charge



Source-Drain Diode Forward

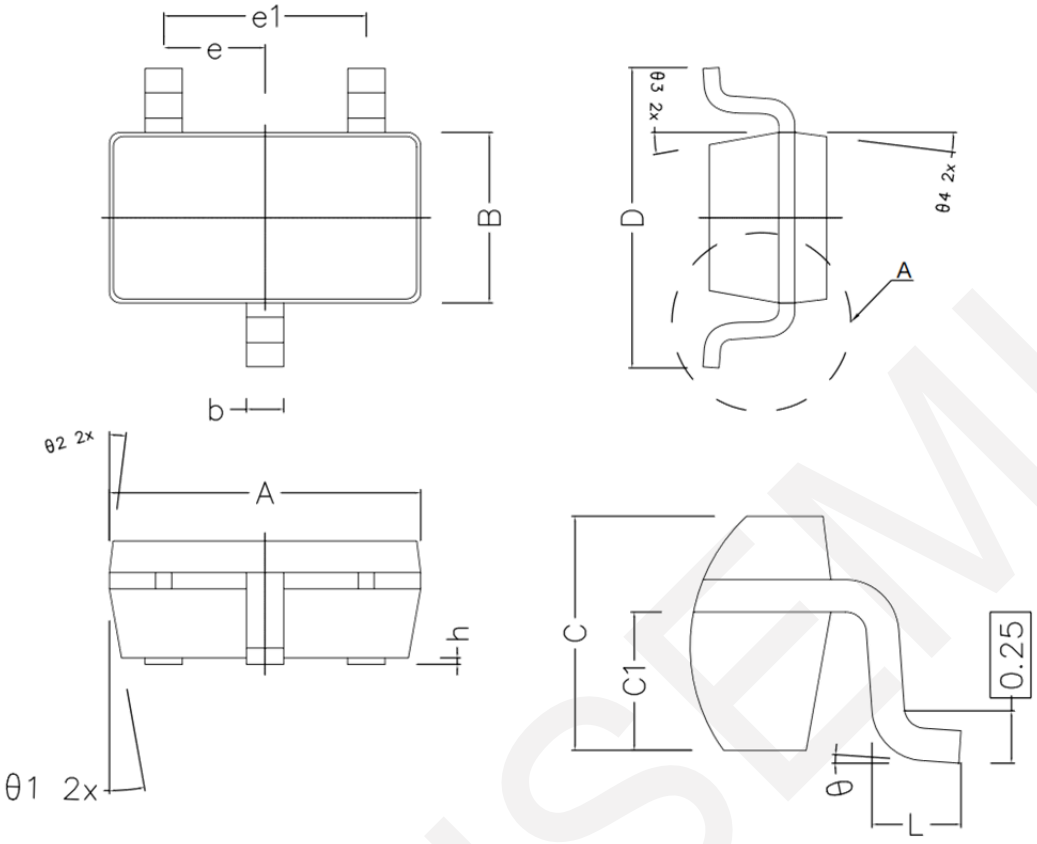


Safe Operation Area



Normalized Maximum Transient Thermal Impedance

8.Package Dimensions



COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A	2.820	2.920	3.020
B	1.500	1.600	1.700
C	1.050	1.100	1.150
C1	0.600	0.650	0.700
D	2.650	2.800	2.950
L	0.300	0.450	0.600
b	0.280	0.350	0.420
h	0.020	0.050	0.100
e	0.950TYPE		
e1	1.900TYPE		
θ_1	10° TYPE		
θ_2	7° TYPE		
θ_3	10° TYPE		
θ_4	7° TYPE		
θ	0° ~ 8°		

9. Important Notice

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