



WANSEMI
万芯半导体

WP3400BS9

Enhancement Mode N-Channel Power MOSFET

SOT89/NMOS/30V/ ± 12 V/0.9V/5.8A/28m Ω

Rev0.1

30V, 28mΩ, 5.8A, Single N-Channel

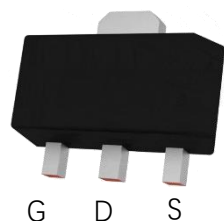
1.Features

- ◆ 30V MOSFET technology
- ◆ Low on-state resistance
- ◆ Fast switching
- ◆ $V_{GS} \pm 12V$

V_{DS}	$R_{DS(on)}$ Typ.	I_D Max.
30V	28mΩ @ 10V	5.8A
	31mΩ @ 4.5V	
	39mΩ @ 2.5V	

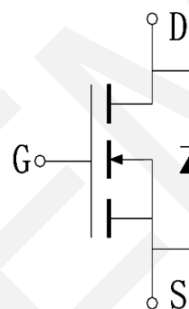
2.Applications

- ◆ Power Switching Application
- ◆ Load Switching



SOT89

Pin Description



Schematic Diagram

3. Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
WP3400BS9	3400	SOT89	4,000	48,000

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

Parameter	Symbol	Maximum	Units
Drain to Source Voltage	V_{DSS}	30	V
Gate to Source Voltage	V_{GSS}	± 12	V
Drain Current (DC)	I_D	5.8	A
Drain Current (Pulse), $PW \leq 300\mu s$	I_{DP}	20	A
Total Dissipation	P_D	1.2	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. Thermal Resistance Ratings (Note 2)

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	103	$^{\circ}\text{C}/\text{W}$

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

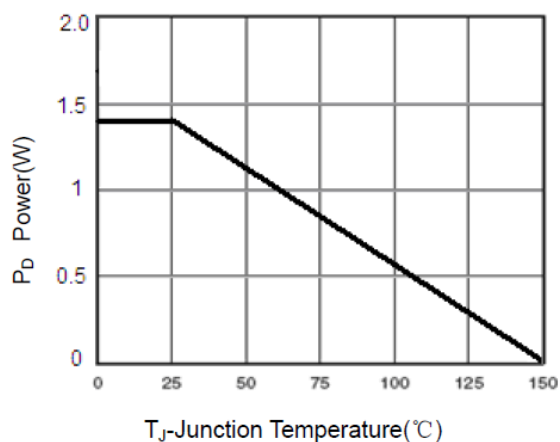
6. Electrical Characteristics at $T_a=25^{\circ}\text{C}$ (Note 3)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu\text{A}$, $V_{GS} = 0\text{V}$	30	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30\text{V}$, $V_{GS} = 0\text{V}$	-	-	1	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS} = \pm 12\text{V}$, $V_{DS} = 0\text{V}$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_{DS} = 250\mu\text{A}$	0.5	0.9	1.5	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	$I_D = 5.8\text{A}$, $V_{GS} = 10\text{V}$	-	28	32	$\text{m}\Omega$
		$I_D = 4\text{A}$, $V_{GS} = 4.5\text{V}$	-	31	40	$\text{m}\Omega$
		$I_D = 3\text{A}$, $V_{GS} = 2.5\text{V}$	-	39	50	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$, $V_{DS}=15\text{V}$, Frequency=1.0MHz	-	563	-	pF
Output Capacitance	C_{oss}		-	39	-	pF
Reverse Transfer Capacitance	C_{rss}		-	33	-	pF
Turn-ON Delay Time	$t_{d(on)}$	$V_{DD} = 15\text{V}$, $R_L=2.7\Omega$, $V_{GS} = 10\text{V}$, $R_G = 3\Omega$	-	3.3	-	ns
Rise Time	t_r		-	4.8	-	ns
Turn-OFF Delay Time	$t_{d(off)}$		-	26	-	ns
Fall Time	t_f		-	4	-	ns
Total Gate Charge	Q_g	$V_{DS} = 15\text{V}$, $V_{GS} = 4.5\text{V}$, $I_D = 5\text{A}$	-	9.5	-	nC
	Q_{gs}		-	1.5	-	nC
	Q_{gd}		-	3	-	nC
Diode Forward Voltage	V_{FSD}	$I_S = 5.8\text{A}$, $V_{GS} = 0$	-	0.9	1.2	V

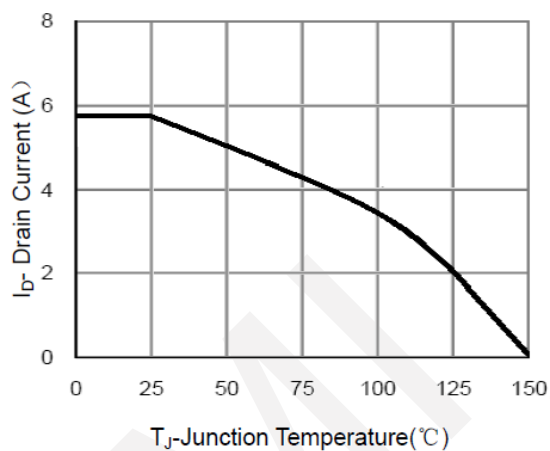
Note 3: Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



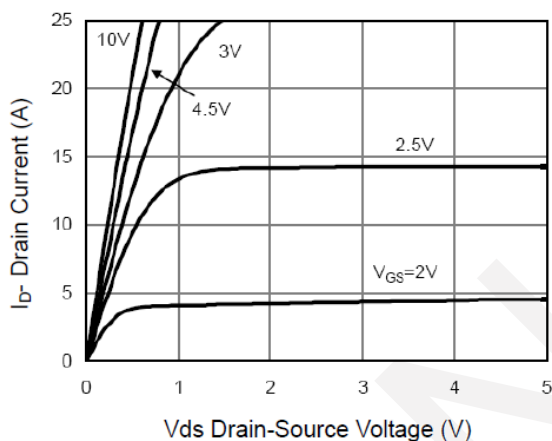
7. Typical Electrical and Thermal Characteristics



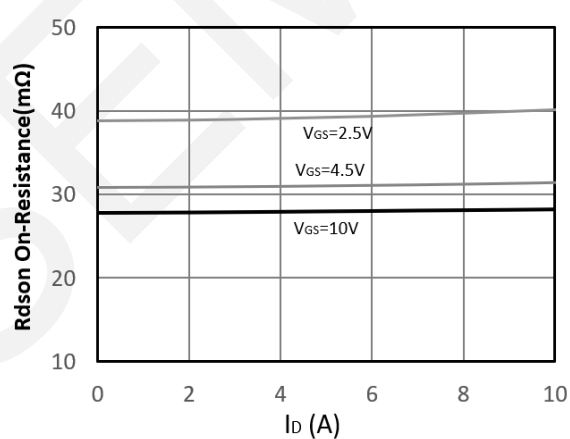
Power Dissipation



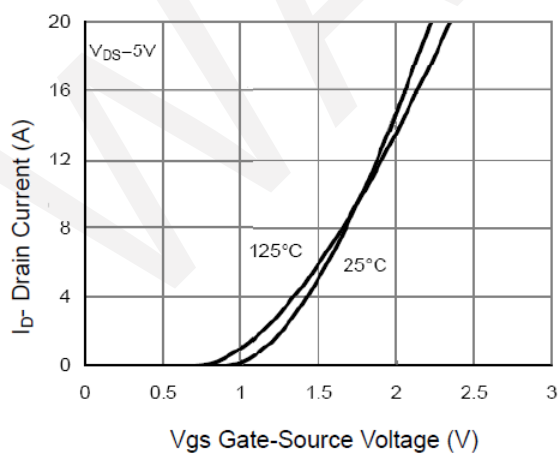
Drain Current



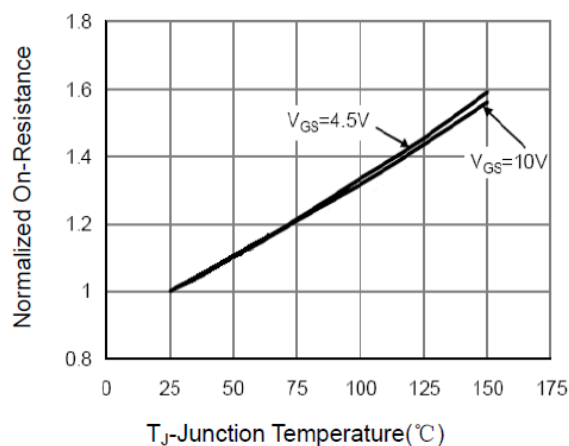
Output Characteristics



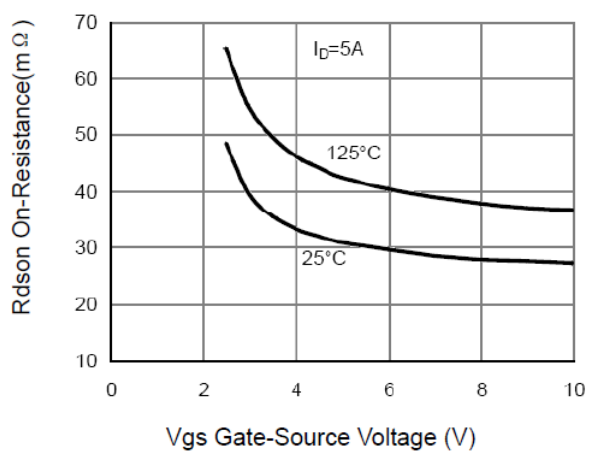
Drain-Source On-Resistance



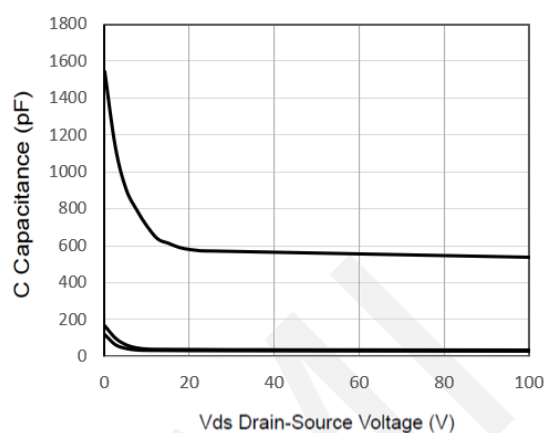
Transfer Characteristics



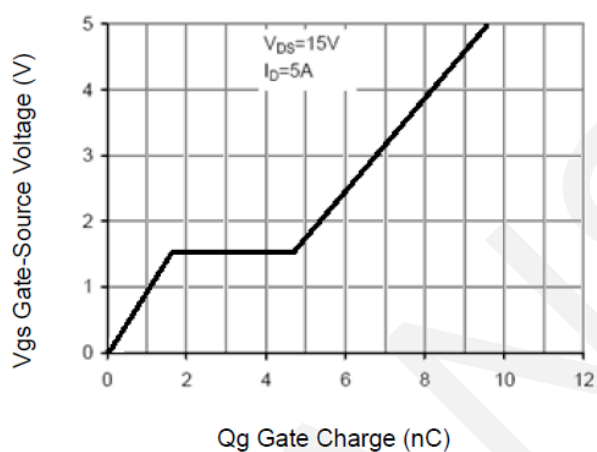
Drain-Source On-Resistance



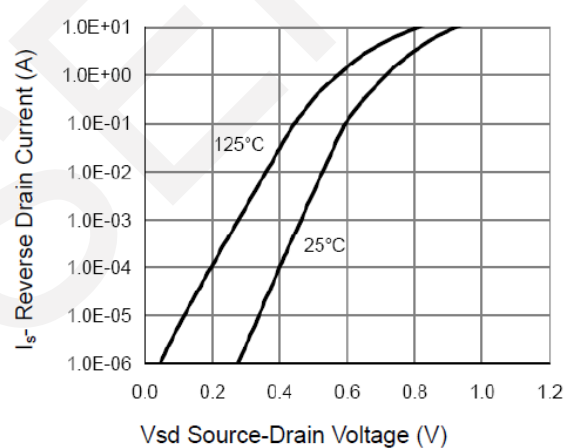
Rdson vs Vgs



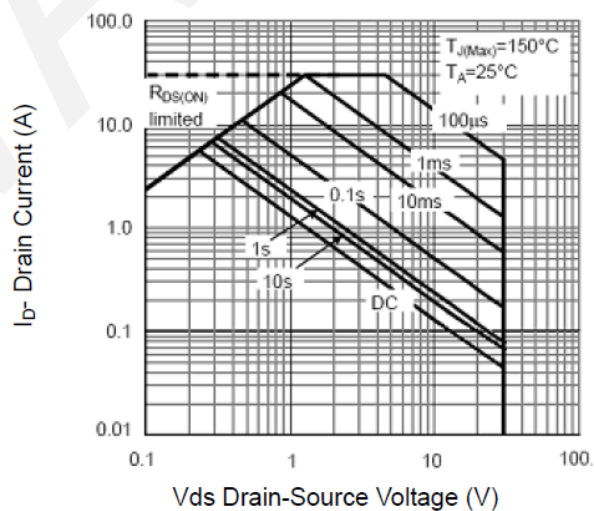
Capacitance vs Vds



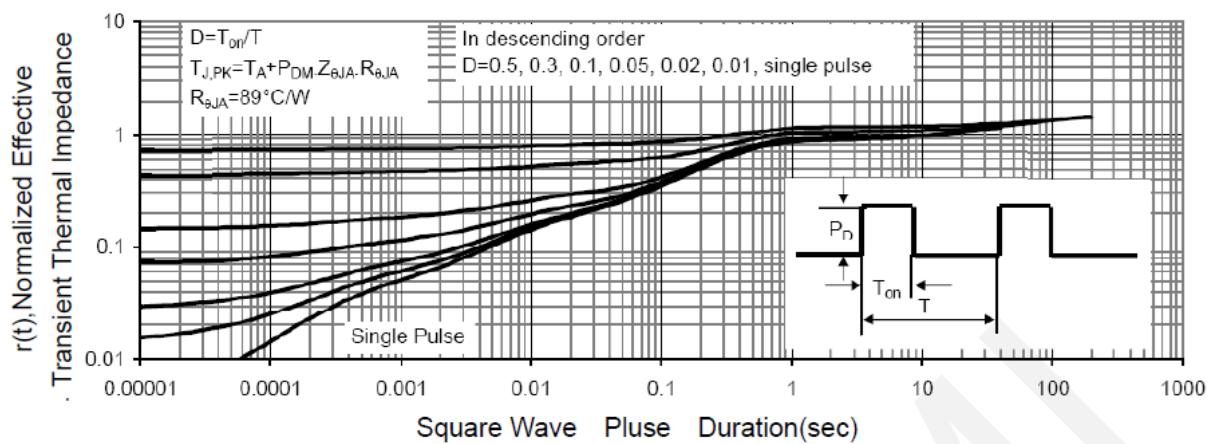
Gate Charge



Source- Drain Diode Forward

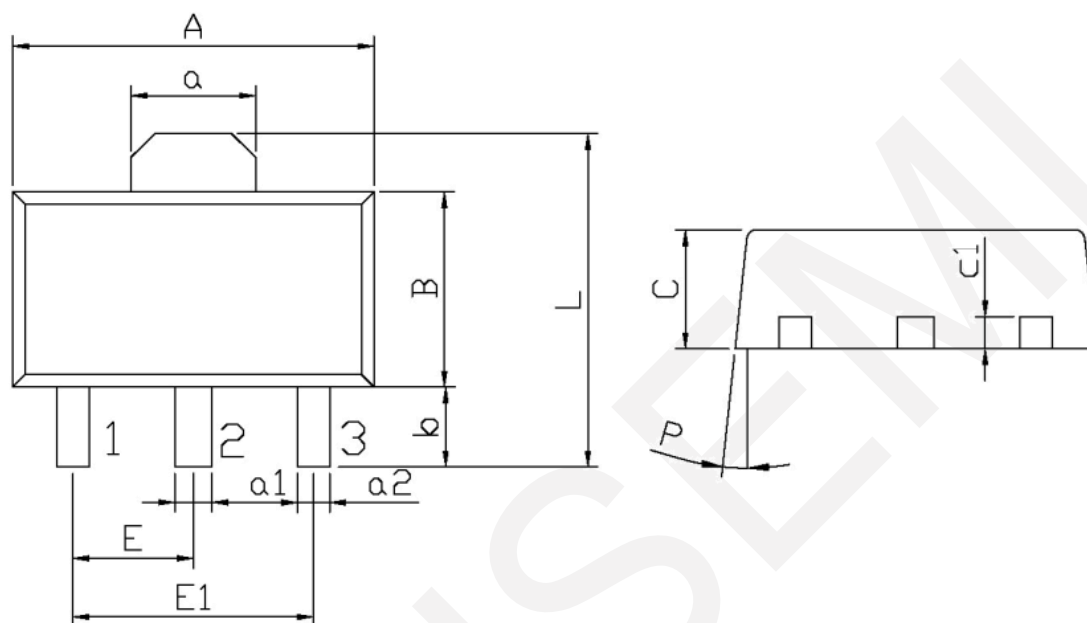


Safe Operation Area



Normalized Maximum Transient Thermal Impedance

8.Package Dimensions



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.4	4.7	a1	0.36	0.56
B	2.35	2.65	a2	0.30	0.50
L	3.878	4.478	C	1.40	1.70
a	1.45	1.65	c1	0.35	0.50
E	1.40	1.60	P	6°	
E1	2.80	3.20			
b	0.80	1.20			

9. Important Notice

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