



AOS
SEMICONDUCTOR

产品规格说明书

Product Data Sheet

SI2306A

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电源管理IC



通信接口芯片



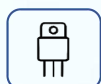
二三极管



LDO稳压器



逻辑器件



MOSFETs



运算放大器



显示驱动



MCU单片机



光电器件

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MOSFET

30V N-Channel MOSFET

1.Description

The SI2306A uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

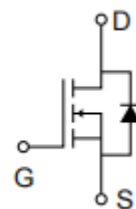
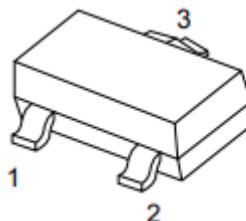
2.Features

- ★ $V_{DS(V)}=30V$
- ★ $R_{DS(ON)}=35m\Omega(V_{GS}=10V), I_D=4A$
- ★ $R_{DS(ON)}<50m\Omega(V_{GS}=4.5V), I_D=3.5A$

3.Pinning information

Pin	Symbol	Description
1	G	GATE
2	S	SOURCE
3	D	DRAIN

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4.Absolute Maximum Ratings $T_A=25^{\circ}C$

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	
Continunous Drain Current $T_J=150^{\circ}C$ *1	$T_A=25^{\circ}C$	I_D	3.6	A
	$T_A=70^{\circ}C$		3	
Pulsed Drain Current		I_{DM}	16	
Power Dissipation *1	$T_A=25^{\circ}C$	P_D	1.25	W
	$T_A=70^{\circ}C$		0.8	
Thermal Resistance.Junction-to-Ambient	$t \leq 5$ sec	R_{thJA}	100	$^{\circ}C/W$
	Steady State		130	
Junction Temperature		T_J	150	$^{\circ}C$
Storage Temperature Range		T_{STG}	-55 to 150	

*1.Surface Mounted on FR4 Board, $t \leq 5$ sec



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5. Electrical Characteristics $T_A=25^{\circ}\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1		3	
Gate-Body Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$			0.5	μA
		$V_{DS}=30V, V_{GS}=0V, T_J=55^{\circ}\text{C}$			10	
On-State Drain Current	$I_{D(ON)}$	$V_{DS} \geq 4.5V, V_{GS}=10V$	6			A
		$V_{DS} \geq 4.5V, V_{GS}=4.5V$	4			
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=4A$			35	m Ω
		$V_{GS}=4.5V, I_D=3.5A$			50	
Forward Transconductance	g_{FS}	$V_{DS}=4.5V, I_D=3.5A$		6.9		S
Diode Forward Voltage	V_{SD}	$I_S=1.25V, V_{GS}=0V$		0.8	1.2	V
Gate Charge *	Q_g	$V_{GS}=5V, V_{DS}=15V, I_D=3.5A$		4.2	7	nC
Total Gate Charge *	Q_g	$V_{DS}=10V$ $V_{GS}=15V$ $I_D=3.5A$		8.5	20	
Gate Source Charge*	Q_{gs}			1.9		
Gate-Drain Charge*	Q_{gd}			1.35		
Gate Resistance	R_g		0.5		2.4	Ω
Input Capacitance*	C_{iss}	$V_{DS}=15V$ $V_{GS}=0V$ $f=1\text{MHz}$		555		pF
Output Capacitance*	C_{oss}			120		
Reverse Transfer Capacitance*	C_{rss}			60		
Turn-On Time	$t_{D(on)}$	$V_{DD}=15V$ $R_L=15\Omega$ $I_D=1A$ $V_{GEN}=-10V$ $R_G=6\Omega$		9	20	ns
	t_r			7.5	18	
Turn-Off Time	$t_{D(off)}$			17	35	
	t_f			5.2	12	

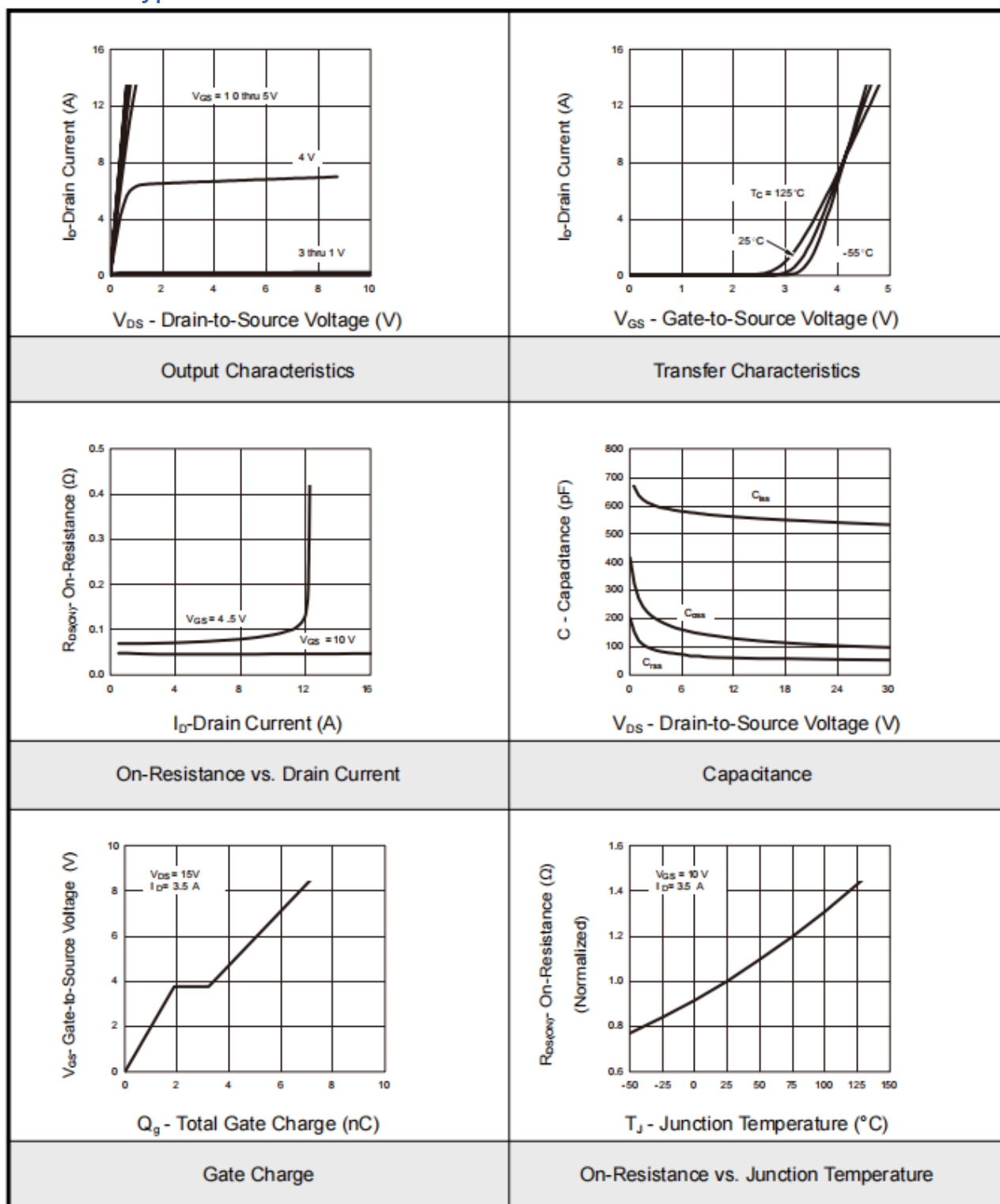
* Pulse test: $PW \leq 300\mu s$ duty cycle $\leq 2\%$.



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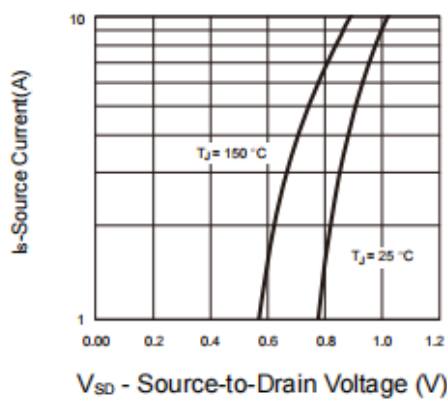
6.1 Typical Characteristics



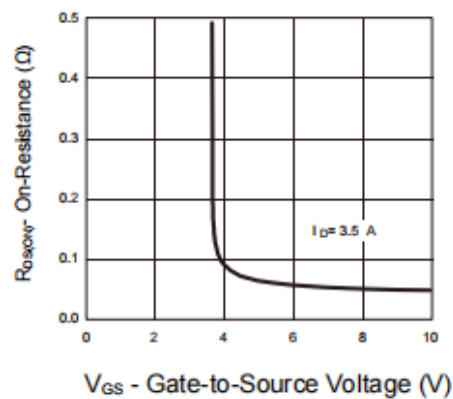
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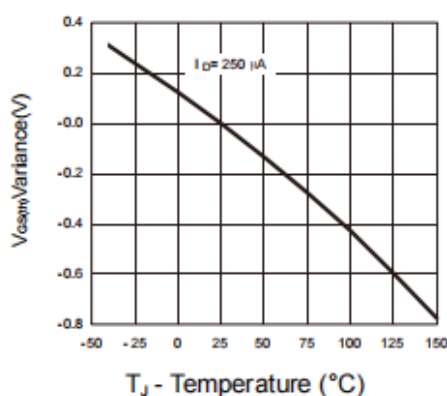
6.2 Typical Characteristics



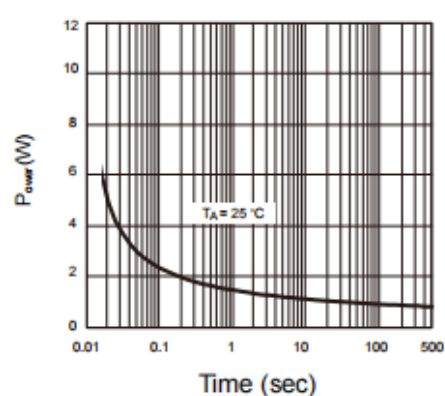
Source-Drain Diode Forward Voltage



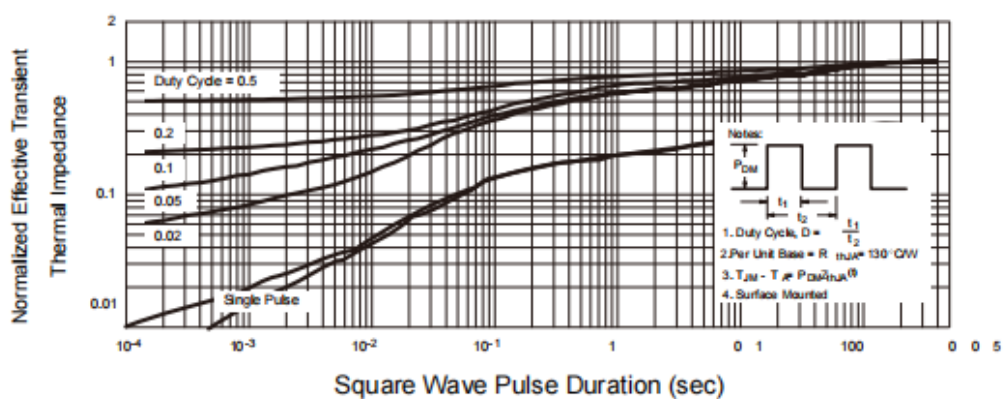
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



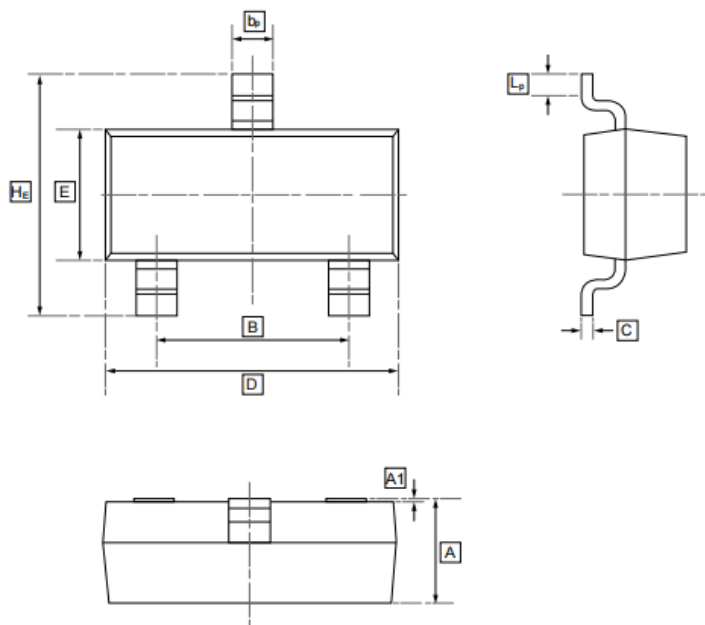
Normalized Thermal Transient Impedance, Junction-to-Ambient



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7.SOT-23 Package Outline Dimensions



DIMENSIONS(mm are the original dimensions)

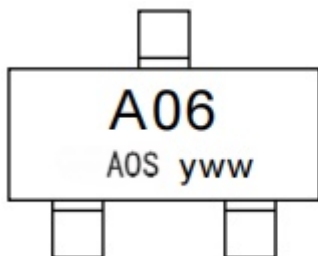
Symbol	A	B	b _P	C	D	E	H _E	A1	L _P
Min	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20
Max	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50



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8.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
SI2306A	SOT-23	3000	Tape and reel

