

• General Description

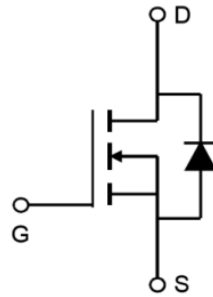
AP2304A combines advanced MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is most suitable to load-switch or PWM applications.

• Applications

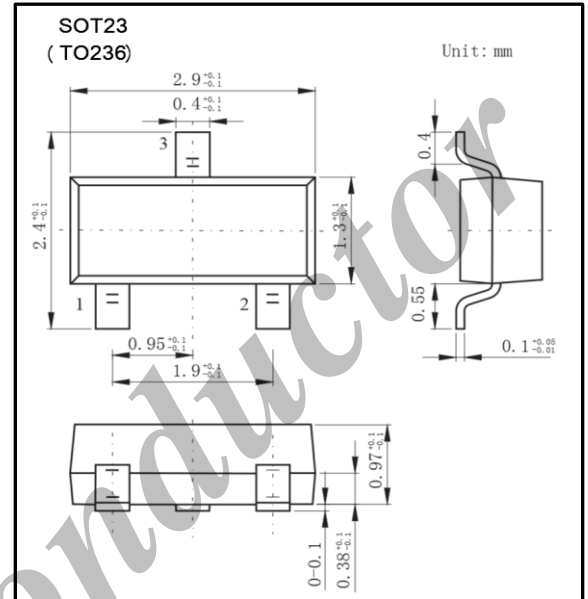
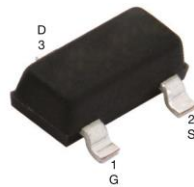
- DC/DC converter for portable devices
- Load switch

• Product Summary

V_{DS}	30V	
$R_{DS(ON)}$ (at $V_{GS} = 10V, I_D = 2.5A$)	< 117m Ω	
$R_{DS(ON)}$ (at $V_{GS} = 4.5V, I_D = 2.0A$)	< 190m Ω	



Top View



• Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$ unless noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^{*b}	I_D ($T_a = 25^\circ\text{C}$)	2.5	A
	I_D ($T_a = 70^\circ\text{C}$)	2.0	
Pulsed Drain Current ^{*a}	I_{DM}	10	
Power Dissipation ^{*b}	P_D ($T_a = 25^\circ\text{C}$)	1.25	W
	P_D ($T_a = 70^\circ\text{C}$)	0.8	
Thermal Resistance. Junction-to-Ambient	$R_{\theta JA}$ ^{*b}	100	$^\circ\text{C}/\text{W}$
	$R_{\theta JA}$ ^{*c}	166	
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	

Notes

- *a Pulse width limited by maximum junction temperature
- *b Surface Mounted on FR4 Board, $t \leq 5s$.
- *c Surface Mounted on FR4 Board.

• **Electrical Characteristics (Ta = 25°C unless noted)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	$I_D=250\mu A, V_{GS}=0V$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$			0.5	μA
		$V_{DS}=30V, V_{GS}=0V, T_J=55^\circ C$			10	
Gate-Body Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.5		3	V
On-state Drain Current *d	$I_{D(ON)}$	$V_{DS}\geq 4.5V, V_{GS}=10V$	6			A
		$V_{DS}\geq 4.5V, V_{GS}=4.5V$	4			
Static Drain-Source On-Resistance *d	$R_{DS(ON)}$	$V_{GS}=10V, I_D=2.5A$		92	117	m Ω
		$V_{GS}=4.5V, I_D=2.0A$		142	190	
Forward Transconductance *d	g_{FS}	$V_{DS}=4.5V, I_D=2.5A$		4.6		S
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=15V, f=1MHz$		240		pF
Output Capacitance	C_{oss}			110		
Reverse Transfer Capacitance	C_{rss}			17		
Gate Charge	Q_g	$V_{GS}=5V, V_{DS}=15V, I_D=2.5A$		2.4	4	nC
Total Gate Charge	Q_{gt}	$V_{GS}=10V, V_{DS}=15V, I_D=2.5A$		4.5	10	
Gate Source Charge	Q_{gs}			0.8		
Gate Drain Charge	Q_{gd}			1.0		
Turn-On Delay Time	$t_{D(on)}$	$V_{GEN}=10V, V_{DD}=15V, I_D=1A, R_L=15\Omega, R_{GEN}=6\Omega$		8	20	ns
Turn-On Rise Time	t_r			12	30	
Turn-Off Delay Time	$t_{D(off)}$			17	35	
Turn-Off Fall Time	t_f			8	20	
Continuous Source Current (Diode Conduction)	I_S				1.25	A
Diode Forward Voltage	V_{SD}	$I_S=1.25A, V_{GS}=0V$		0.77	1.2	V

Note

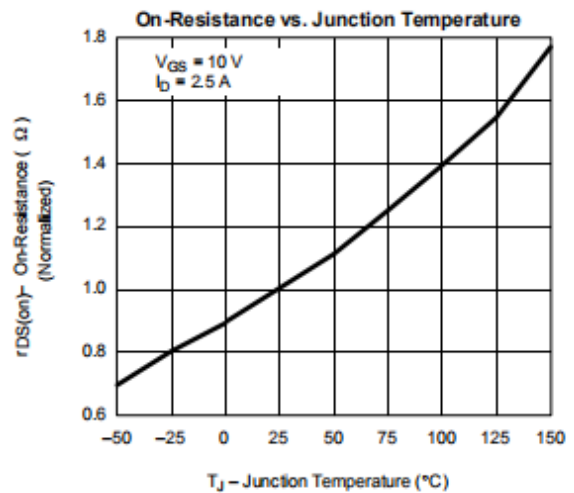
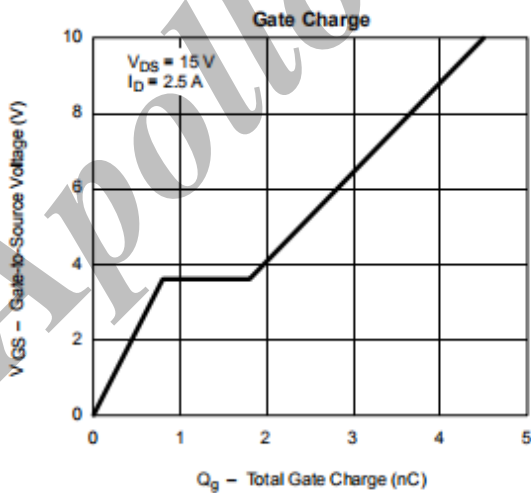
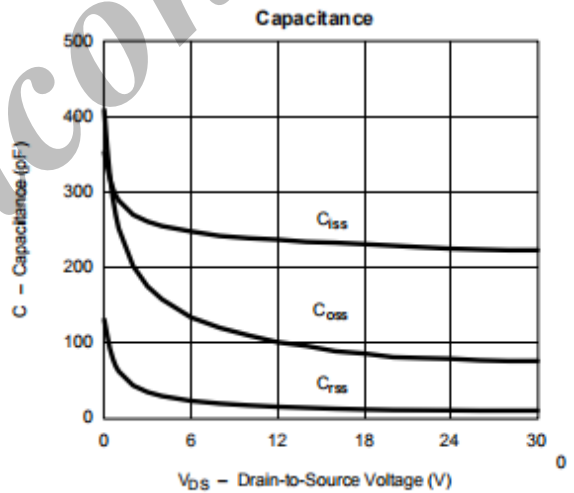
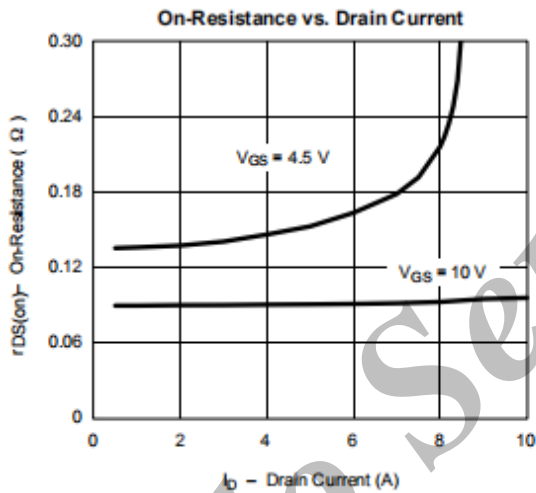
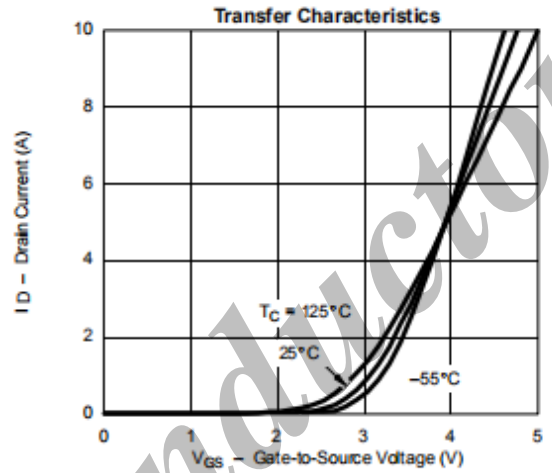
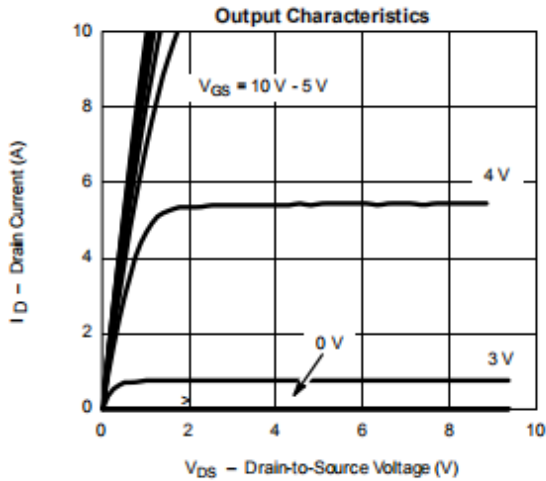
*d Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

• **Ordering Information**

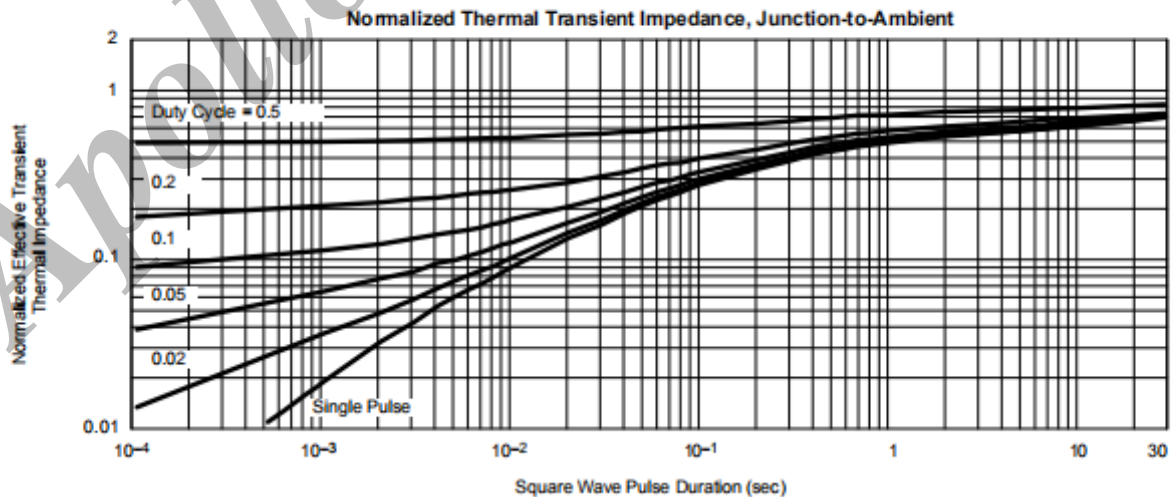
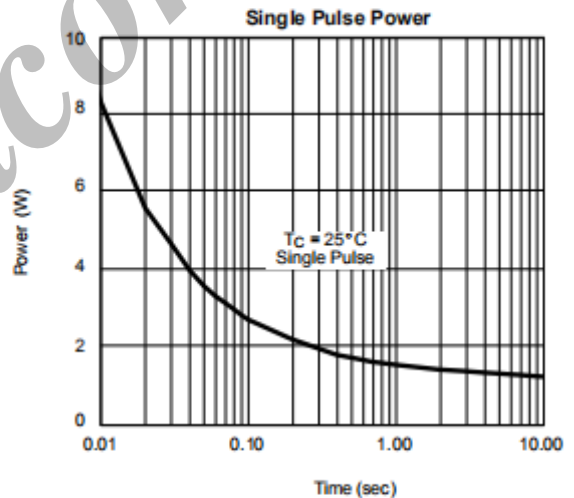
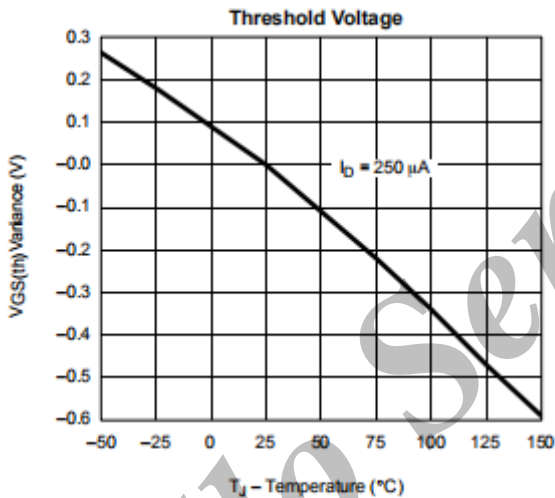
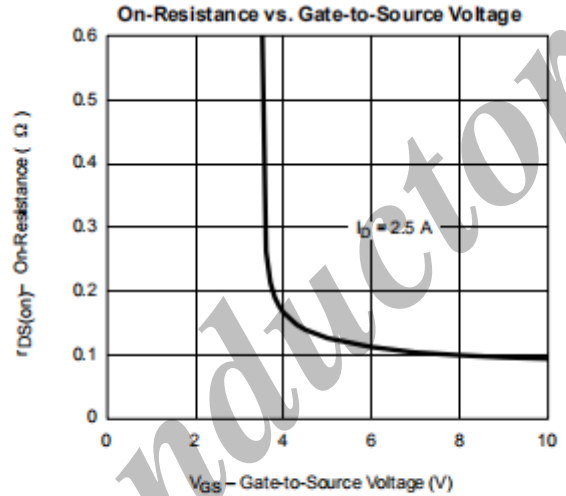
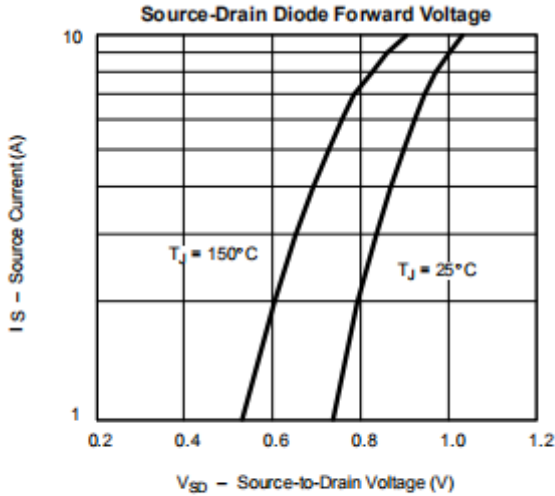
Ordering Part Number	Package	MOQ
AP2304A	SOT23 (T0236)	3,000 pcs / reel

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• Typical Characteristics (25°C unless noted)



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