

• General Description

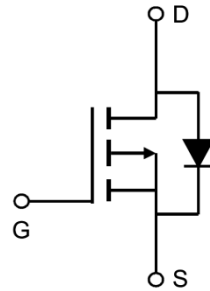
AP2303A combines advanced MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is most suitable to load switch or PWM applications.

• Applications

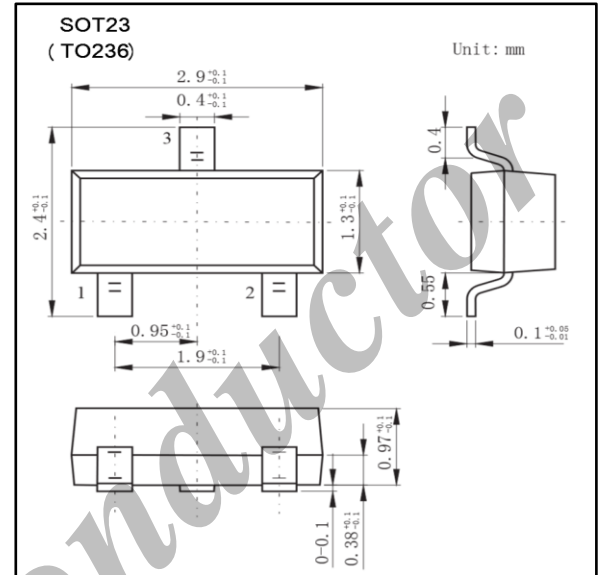
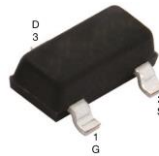
- DC-DC converter for portable devices
- Load switch

• Product Summary

V_{DS}	30V
I_D (at $V_{GS} = -10V$)	-1.4A
$R_{DS(ON)}$ (at $V_{GS} = -10V$)	< 200m Ω
$R_{DS(ON)}$ (at $V_{GS} = -4.5V$)	< 380m Ω



Top View



• Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating		Unit	
		$t \leq 5s$	Steady State		
Drain-Source Voltage	V_{DS}	-30		V	
Gate-Source Voltage	V_{GS}	± 20		V	
Continuous Drain Current ($T_j = 150^\circ\text{C}$)	I_D	$T_a = 25^\circ\text{C}$	-1.4	-1.3	A
		$T_a = 70^\circ\text{C}$	-1.1	-1.0	
Pulsed Drain Current (Pulse width limited by maximum junction temperature)	I_{DM}	-10			
Power Dissipation	P_D	$T_a = 25^\circ\text{C}$	0.9	0.7	W
		$T_a = 70^\circ\text{C}$	0.57	0.45	
Junction and Storage Temperature Range	T_j, T_{STG}	-55 to 150		$^\circ\text{C}$	
Thermal Characteristics					
Thermal Resistance, Junction-to-Ambient (Surface Mounted on FR4 Board)	$R_{\theta JA}$	175		$^\circ\text{C}/\text{W}$	

• **Electrical Characteristics Ta = 25°C**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Parameters						
Drain-Source Breakdown Voltage	V_{DSS}	$I_D = -250\mu A, V_{GS} = 0V$	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$			-1	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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0		-3.0	V
On-State Drain Current (** Note a)	$I_{D(ON)}$	$V_{DS} \leq -5V, V_{GS} = -10V$	-6			A
Static Drain-Source On-Resistance (** Note a)	$R_{DS(ON)}$	$V_{GS} = -10V, I_D = -1.7A$			200	m Ω
		$V_{GS} = -4.5V, I_D = -1.3A$			380	
Forward Transconductance (** Note a)	g_{FS}	$V_{DS} = -5V, I_D = -1.7A$		2.0		S
Diode Forward Voltage	V_{SD}	$I_S = -0.75A, V_{GS} = 0V$			-1.2	V
Maximum Body-Diode Continuous Current	I_S				-0.75	A
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{DS} = -15V, V_{GS} = 0V, f = 1MHz$ (** Note b)		180		pF
Output Capacitance	C_{oss}			50		
Reverse Transfer Capacitance	C_{rss}			35		
Switching Parameters						
Total Gate Charge (4.5V)	Q_g	$V_{DS} = -15V, V_{GS} = -10V, I_D = -1.7A$ (** Note b)		4.3	10	nC
Gate Source Charge	Q_{gs}			0.8		
Gate Drain Charge	Q_{gd}			1.3		
Turn-On Delay Time	$t_{D(on)}$	$V_{DD} = -15V, R_L = 15\Omega,$ $I_D = -1A, V_{GEN} = -4.5V, R_{GEN} = 6\Omega,$ (** Note c)		55	80	ns
Turn-On Rise Time	t_r			40	60	
Turn-Off Delay Time	$t_{D(off)}$			10	20	
Turn-Off Fall Time	t_f			10	20	

Notes

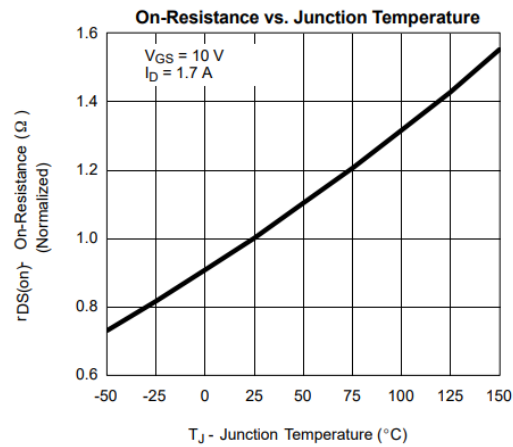
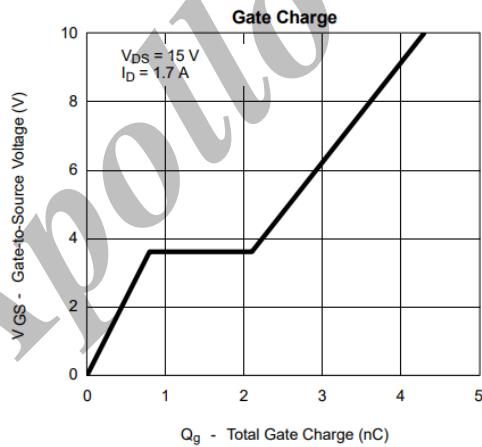
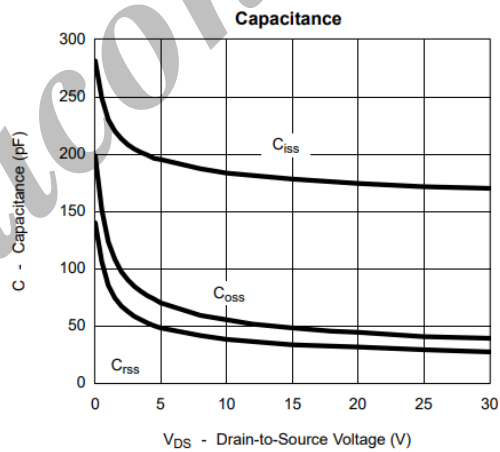
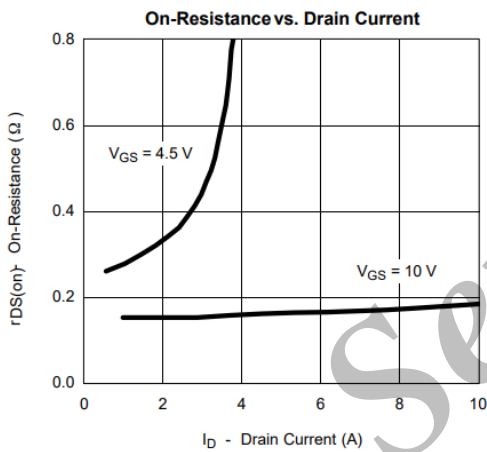
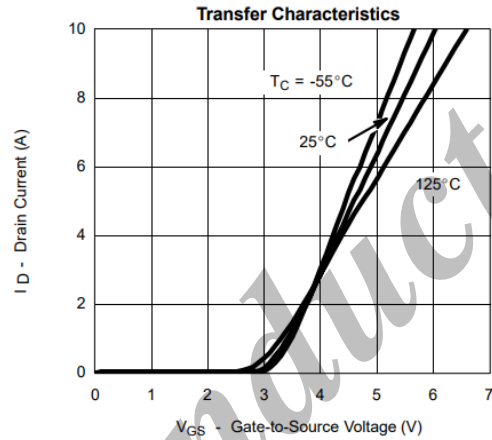
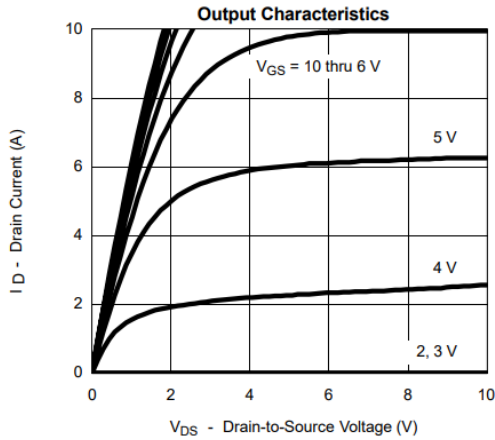
- a. Pulse test: $PW \leq 300\mu s$, duty cycle $\leq 2\%$.
- b. For DESIGN AID ONLY, not subject to production testing.
- c. Switching time is essentially independent of operating temperature.

• **Ordering Information**

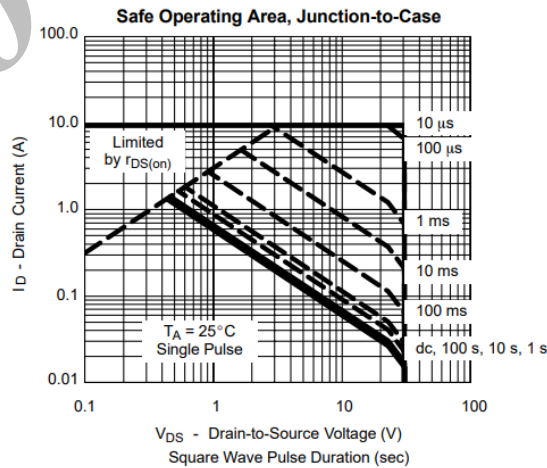
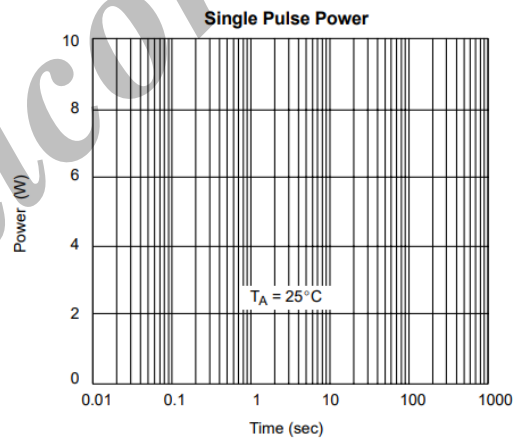
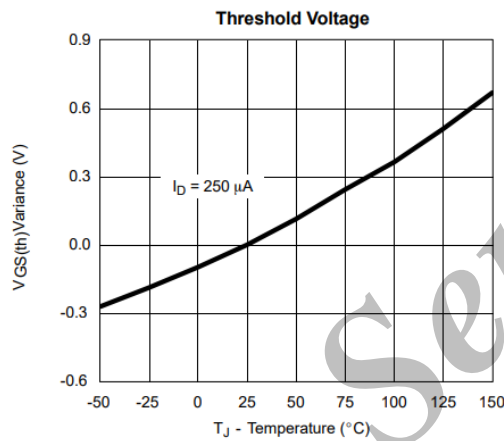
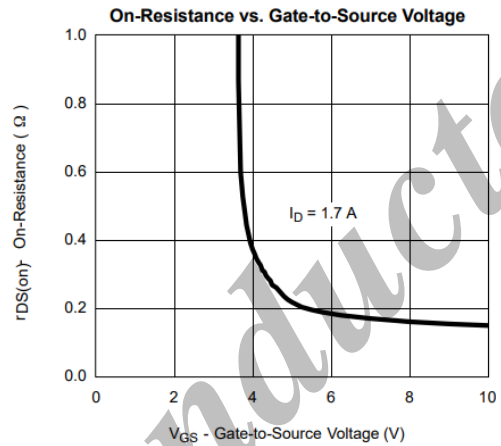
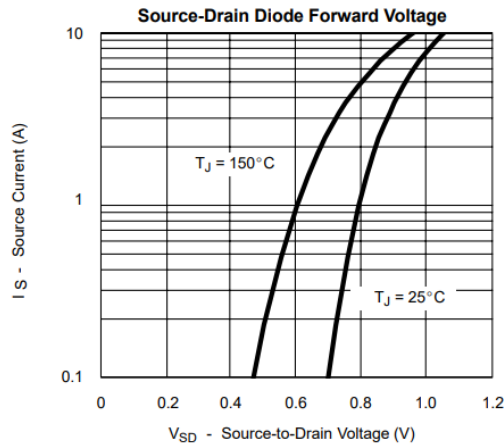
Ordering Part Number	Package	MOQ
AP2303A	SOT23 (T0236)	3,000 pcs / reel

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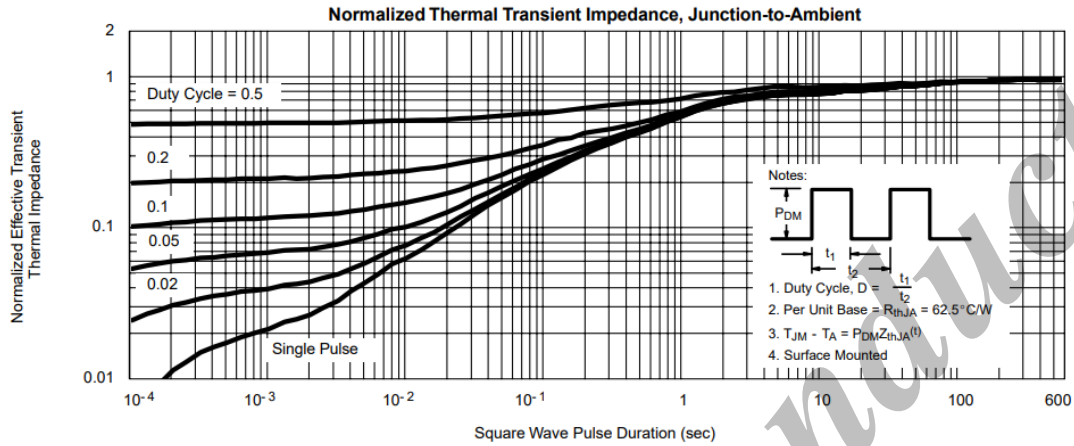
• Typical Electrical and Thermal Characteristics



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