

### • General Description

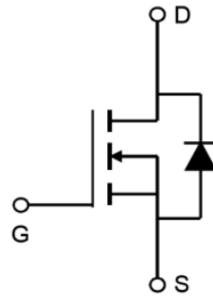
AP2302A combines advanced MOSFET technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ . This device is most suitable to load-switch or PWM applications.

### • Applications

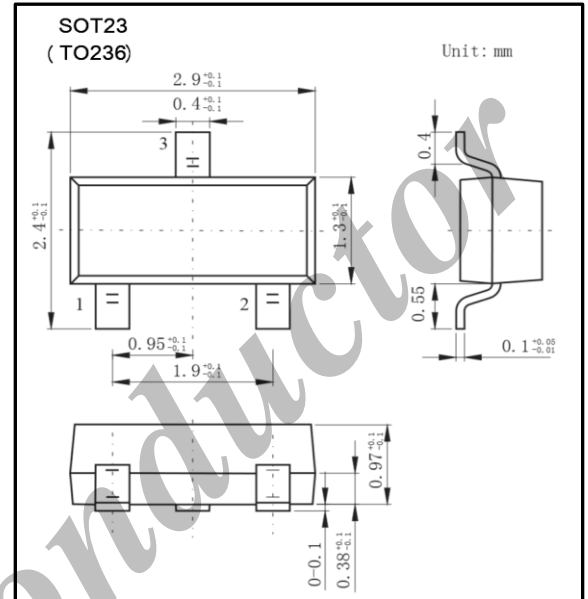
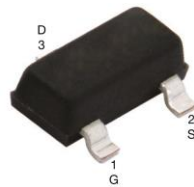
- DC/DC converter for portable devices
- Load switch

### • Product Summary

$V_{DS}$	20V
$I_D$ (at $V_{GS} = 4.5V$ )	2.8A
$R_{DS(ON)}$ (at $V_{GS} = 4.5V$ )	< 85m $\Omega$
$R_{DS(ON)}$ (at $V_{GS} = 2.5V$ )	< 115m $\Omega$



Top View



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	
Continuous Drain Current <sup>*b</sup>	$I_D$ ( $T_a = 25^\circ C$ )	2.8	A
	$I_D$ ( $T_a = 70^\circ C$ )	2.2	
Pulsed Drain Current <sup>*a</sup>	$I_{DM}$	10	
Power Dissipation <sup>*b</sup>	$P_D$ ( $T_a = 25^\circ C$ )	1.25	W
	$P_D$ ( $T_a = 70^\circ C$ )	0.8	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$ <sup>*b</sup>	100	$^\circ C/W$
	$R_{\theta JA}$ <sup>*c</sup>	166	
Junction Temperature	$T_J$	150	$^\circ C$
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	$V_{DSS}$	$I_D=250\mu A, V_{GS}=0V$	20			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$			1	$\mu A$
		$V_{DS}=20V, V_{GS}=0V, T_J=55^\circ C$			10	
Gate-Body leakage current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 8V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.62	0.95	1.9	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=3.6A$		45	85	m $\Omega$
		$V_{GS}=2.5V, I_D=3.1A$		70	115	
Forward Transconductance *d	$g_{FS}$	$V_{DS}=5V, I_D=3.6A$		8		S
Input Capacitance	$C_{iss}$	$V_{GS}=0V, V_{DS}=10V, f=1MHz$		300		pF
Output Capacitance	$C_{oss}$			120		
Reverse Transfer Capacitance	$C_{rss}$			80		
Total Gate Charge	$Q_g$	$V_{GS}=4.5V, V_{DS}=10V, I_D=3.6A$		4	10	nC
Gate Source Charge	$Q_{gs}$			0.65		
Gate Drain Charge	$Q_{gd}$			1.5		
Turn-On Delay Time	$t_{D(on)}$	$V_{GS}=4.5V, V_{DS}=10V, I_D=3.6A, R_L=5.5\Omega, R_{GEN}=6\Omega$		7	15	ns
Turn-On Rise Time	$t_r$			55	80	
Turn-Off Delay Time	$t_{D(off)}$			16	60	
Turn-Off Fall Time	$t_f$			10	25	
Continuous Source Current (Diode Conduction)	$I_S$			1.6		A
Diode Forward Voltage	$V_{SD}$	$I_S=1.6A, V_{GS}=0V$		0.76	1.2	V

Note

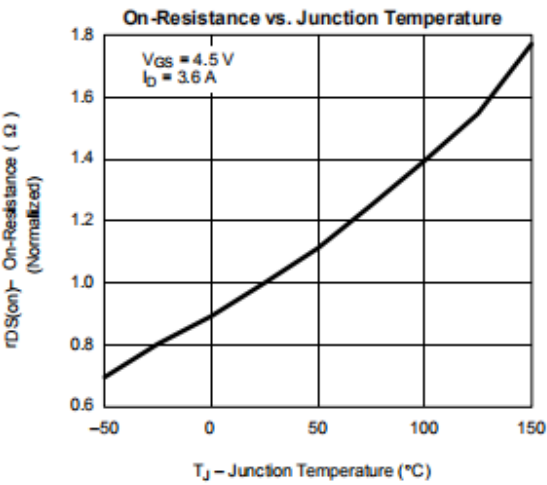
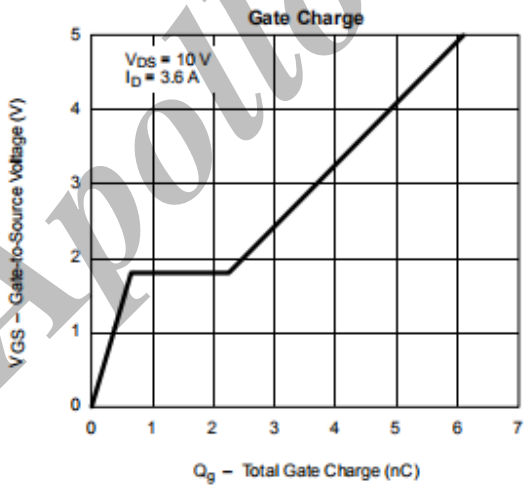
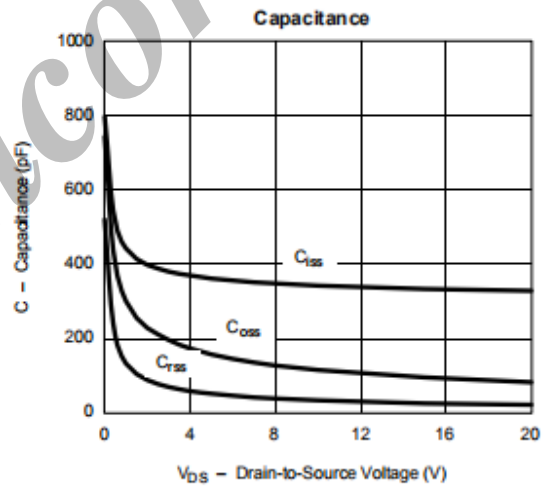
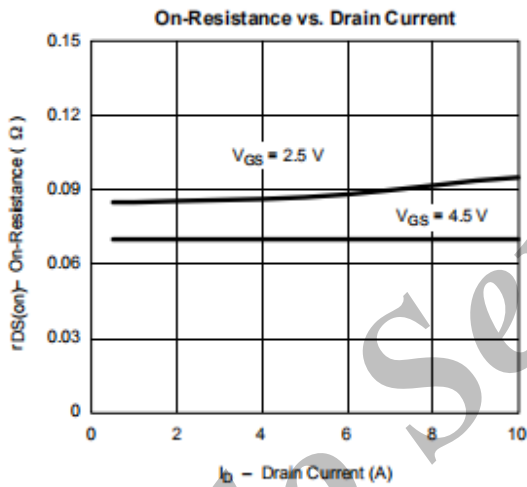
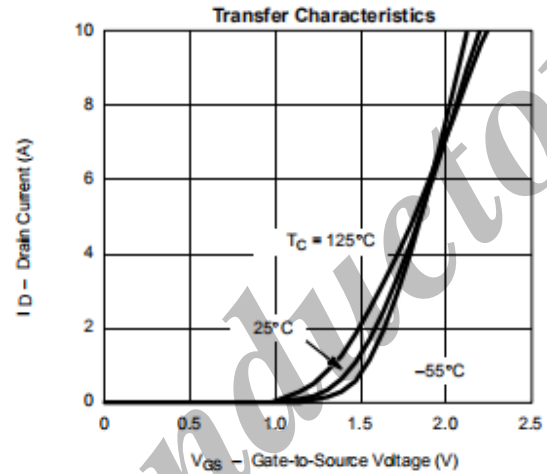
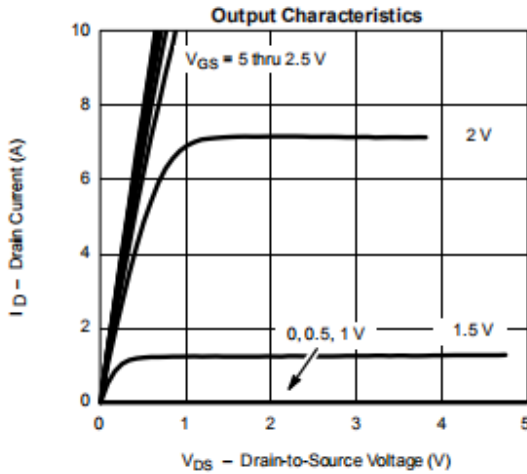
\*d Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$

• **Ordering Information**

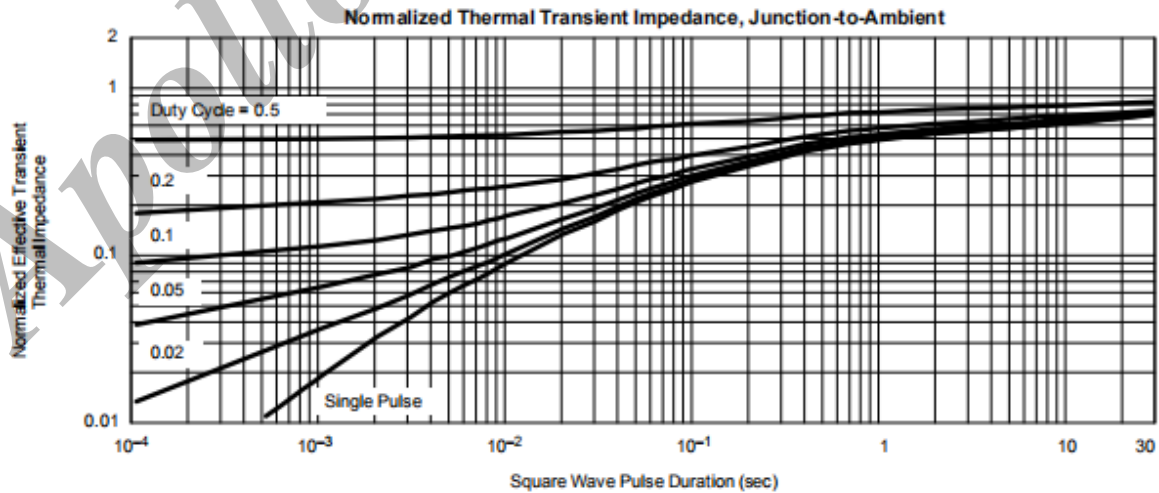
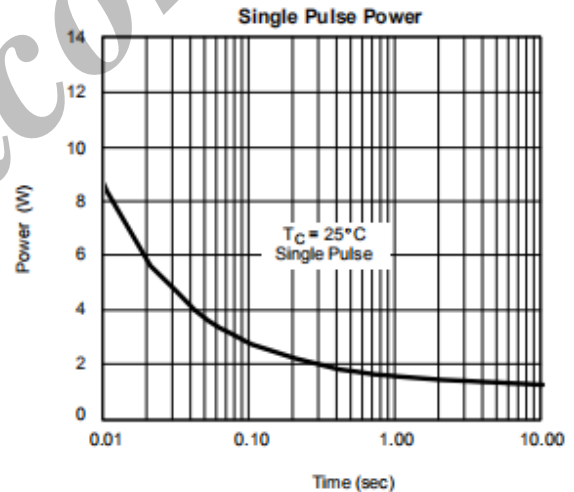
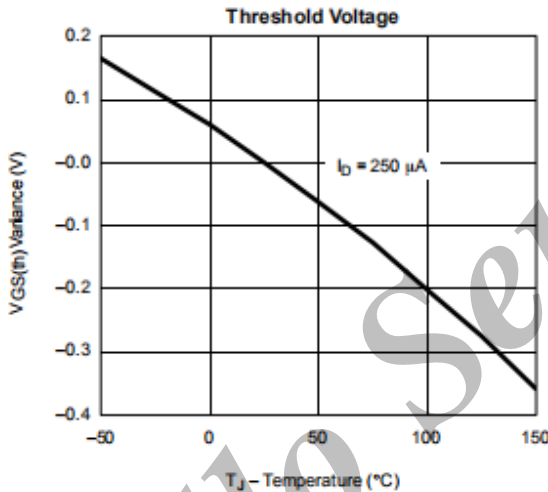
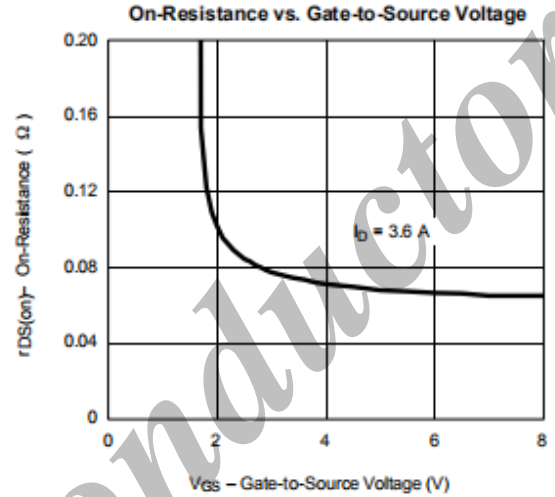
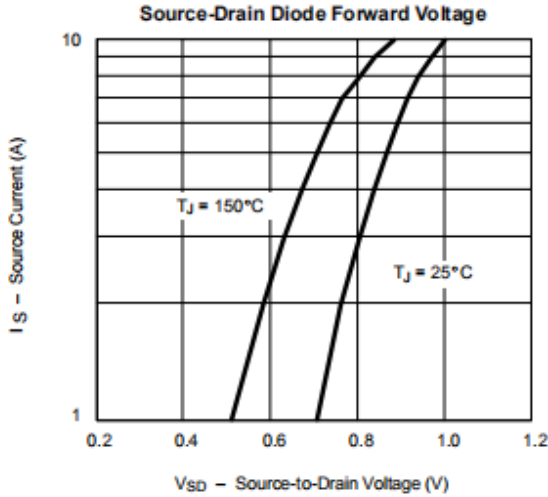
Ordering Part Number	Package	MOQ
AP2302A	SOT23 (T0236)	3,000 pcs / reel

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• Typical Characteristics (25°C unless noted)



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