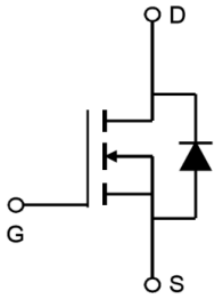
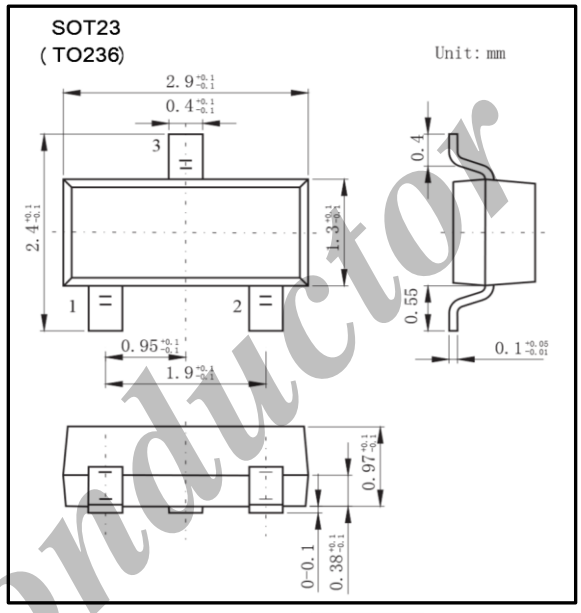
AP2308A
60V N-Channel Enhancement Mode MOSFET

- **General Description**

AP2308A 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.

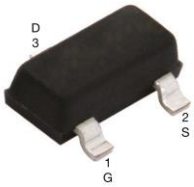




- **Applications**

- DC/DC converter for portable devices
- Load switch

Top View



- **Product Summary**

V_{DS}	60V
$R_{DS(ON)}$ (at V_{GS} = 10V, I_D = 2.0A)	< 160mΩ
$R_{DS(ON)}$ (at V_{GS} = 4.5V, I_D = 1.7A)	< 220mΩ

Pb-Free

RoHS COMPLIANT

- **Absolute Maximum Ratings (Ta = 25℃ unless noted)**

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current *b	I_D (Ta = 25°C)	2.0	A
	I_D (Ta = 70°C)	1.6	
Pulsed Drain Current *a	I_{DM}	10	
Continuous Source Current (Diode Conduction) *b	I_S	1.0	
Power Dissipation *b	P_D (Ta = 25°C)	1.25	W
	P_D (Ta = 70°C)	0.8	
Thermal Resistance. Junction-to-Ambient	$R_{\theta JA}$ (t ≤ 5s) *b	100	°C/W
	$R_{\theta JA}$ (Steady State) *c	166	
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{STG}	-55 to 150	

Notes
*a Pulse width limited by maximum junction temperature
*b Surface Mounted on FR4 Board, t ≤ 5s.
*c Surface Mounted on FR4 Board.

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

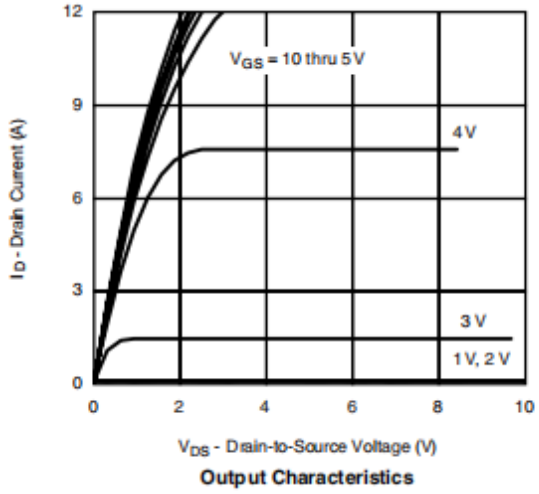
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			0.5	μA
		V_{DS}=60V, V_{GS}=0V, T_J=55°C			10	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	1.5		3	V
On-state Drain Current *d	$I_{D(ON)}$	V_{DS}≥ 4.5V, V_{GS}=10V	6			A
		V_{DS}≥ 4.5V, V_{GS}=4.5V	4			
Static Drain-Source On-Resistance *d	$R_{DS(ON)}$	V_{GS}=10V, I_D=2.0A			160	mΩ
		V_{GS}=4.5V, I_D=1.7A			220	
Forward Transconductance *d	g_{FS}	V_{DS}=4.5V, I_D=2.0A		4.6		S
Diode Forward Voltage *d	V_{SD}	I_S=1A, V_{GS}=0V			1.2	V
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz		240		pF
Output Capacitance	C_{oss}			50		
Reverse Transfer Capacitance	C_{rss}			15		
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=30V, I_D=2A		4.8	10	nC
Gate Source Charge	Q_{gs}			0.8		
Gate Drain Charge	Q_{gd}			1		
Gate Resistance	R_g		0.5		3.3	Ω
Turn-On Delay Time	$t_{D(on)}$	V_{GEN}=4.5V, V_{DD}=30V, I_D=1A, R_L=30Ω, R_g=6Ω		7	15	ns
Turn-On Rise Time	t_r			10	20	
Turn-Off Delay Time	$t_{D(off)}$			17	35	
Turn-Off Fall Time	t_f			6	15	

Note
*d Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

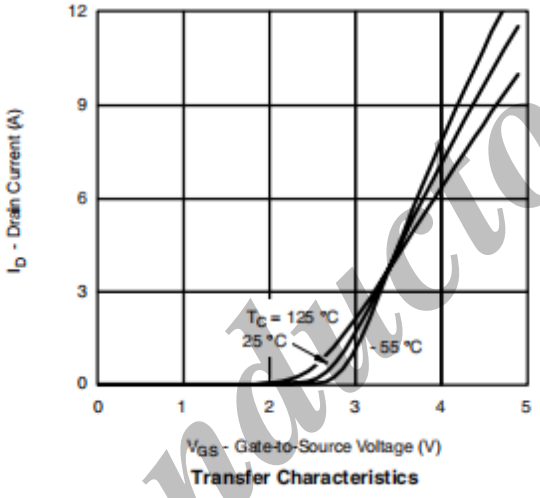
- **Ordering Information**

Ordering Part Number	Package	MOQ
AP2308A	SOT23 (TO236)	3,000 pcs / reel

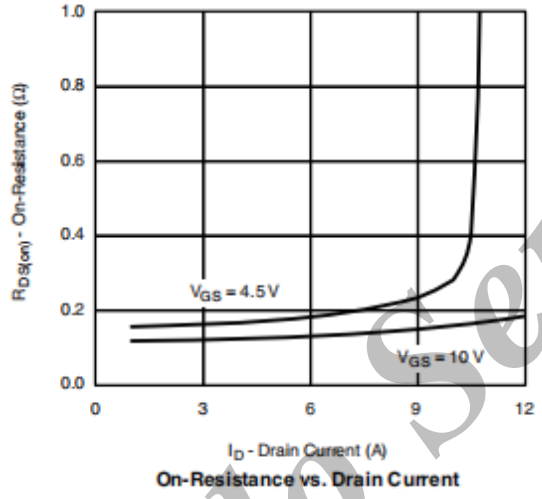
- **Typical Characteristics (25℃ unless noted)**



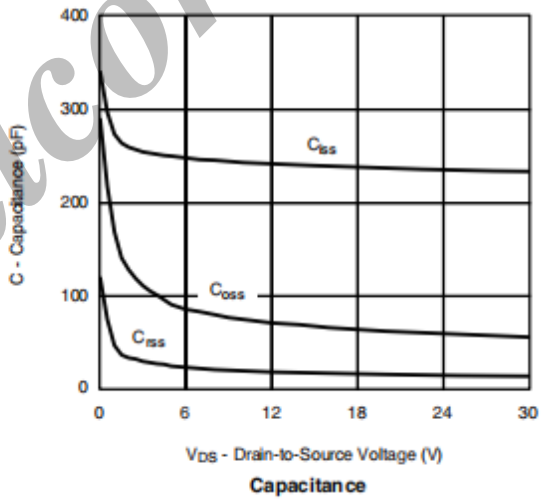
Output Characteristics



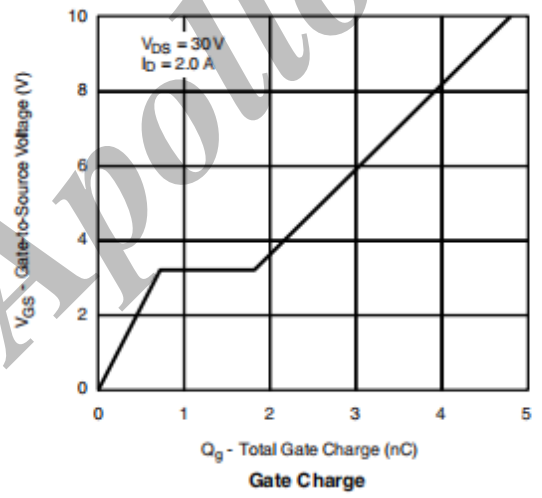
Transfer Characteristics



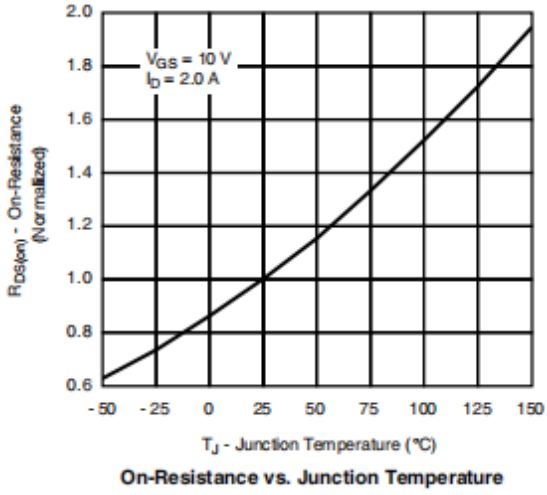
On-Resistance vs. Drain Current



Capacitance

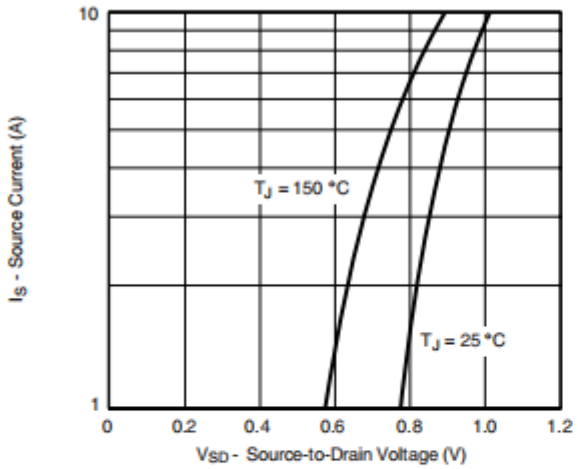


Gate Charge

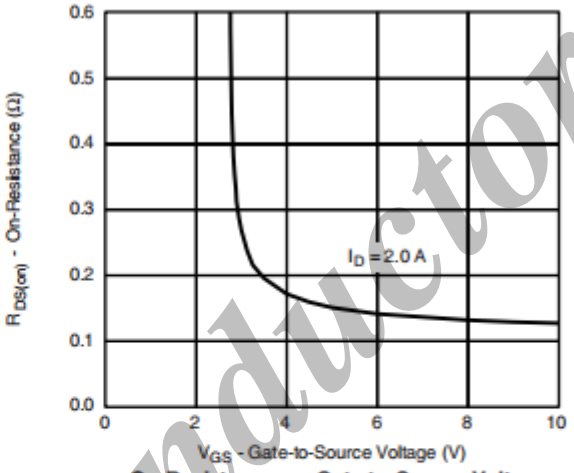


On-Resistance vs. Junction Temperature

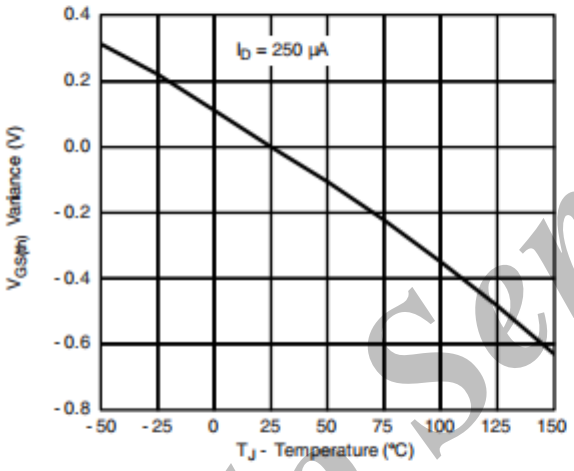
- **Typical Characteristics (25℃ unless noted)**



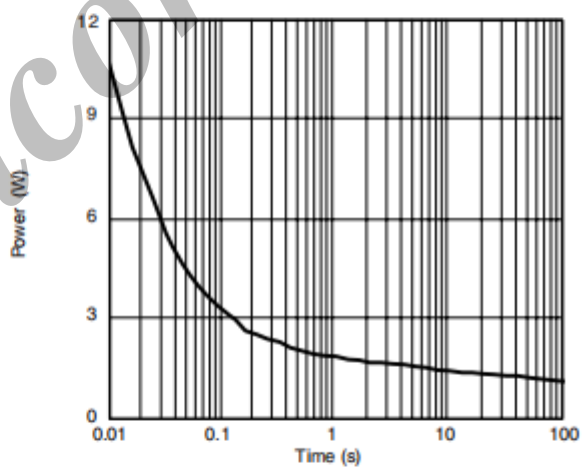
Source-Drain Diode Forward Voltage



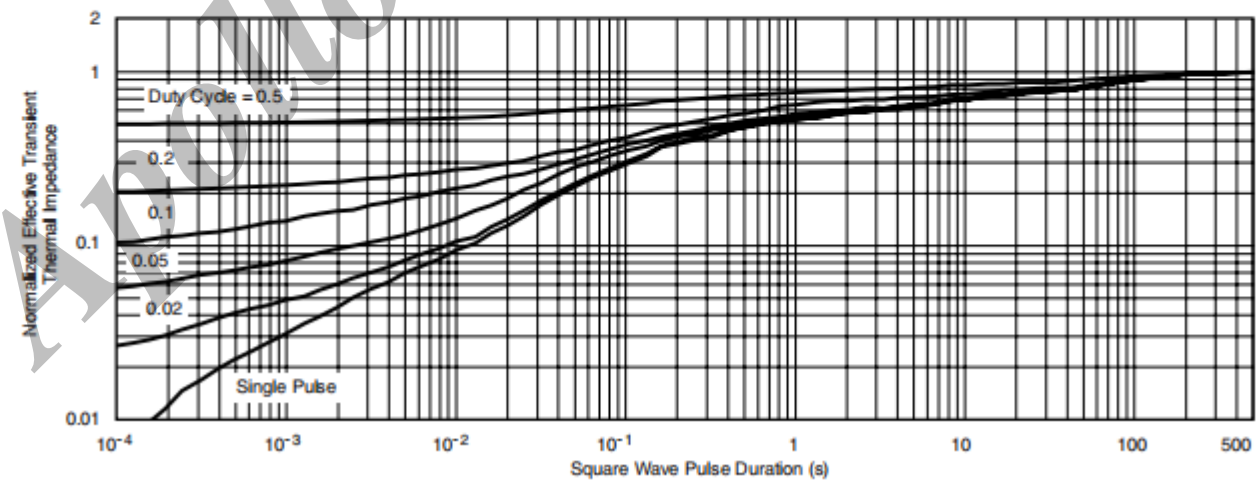
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient

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