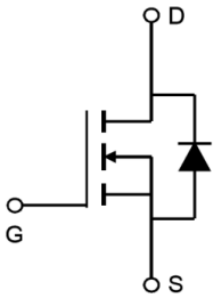
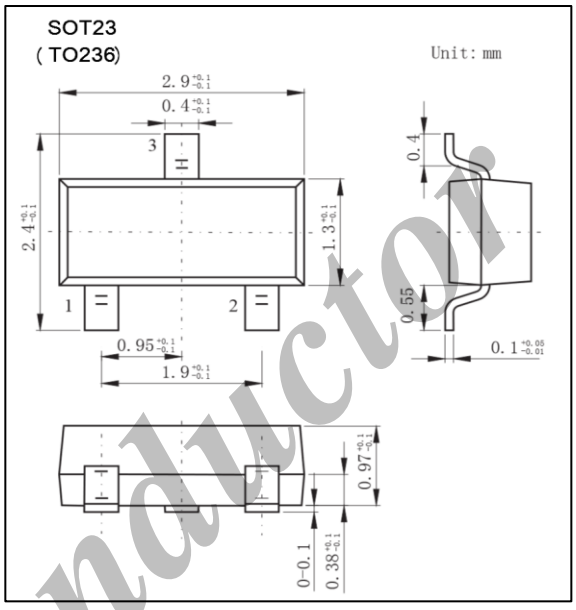
AP3400A
30V N-Channel Enhancement Mode MOSFET

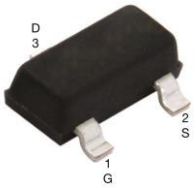
- **General Description**

AP3400A 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.





Top View



- **Applications**

- DC/DC converter for portable devices
- Load switch

- **Product Summary**

V_{DS}	30V
I_D (at V_{GS} = 10V)	5.8A
$R_{DS(ON)}$ (at V_{GS} = 10V)	< 28mΩ
$R_{DS(ON)}$ (at V_{GS} = 4.5V)	< 33mΩ
$R_{DS(ON)}$ (at V_{GS} = 2.5V)	< 52mΩ

- **Absolute Maximum Ratings Ta = 25℃**

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current	T_A=25℃	I_D	5.8	A
	T_A=70℃		4.9	
Pulsed Drain Current *		I_{DM}	30	
Power Dissipation	T_A=25℃	P_D	1.4	W
	T_A=70℃		1	
Thermal Resistance. Junction- to-Ambient		$R_{\theta JA}$	125	℃/W
Thermal Resistance. Junction- to-Case		$R_{\theta JC}$	60	℃/W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	℃

* Repetitive rating, pulse width limited by junction temperature.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V, V_{GS}=0V			1	μA
		V_{DS}=24V, V_{GS}=0V, T_J=55°C			5	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±12V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.7	1.1	1.4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=5.8A		22.8	28	mΩ
		V_{GS}=10V, I_D=5.8A T_J=125°C		32	39	
		V_{GS}=4.5V, I_D=5A		27.3	33	mΩ
		V_{GS}=2.5V, I_D=4A		43.3	52	mΩ
On state drain current	$I_{D(ON)}$	V_{GS}=4.5V, V_{DS}=5V	30			A
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=5A	10	15		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, f=1MHz		823	1050	pF
Output Capacitance	C_{oss}			99		pF
Reverse Transfer Capacitance	C_{rss}			77		pF
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz		1.4	3.6	Ω
Total Gate Charge	Q_g	V_{GS}=4.5V, V_{DS}=15V, I_D=5.8A		9.7	12	nC
Gate Source Charge	Q_{gs}			1.6		nC
Gate Drain Charge	Q_{gd}			3.1		nC
Turn-On Delay Time	$t_{D(on)}$	V_{GS}=10V, V_{DS}=15V, R_L=2.7Ω, R_{GEN}=3Ω		3.3	5	ns
Turn-On Rise Time	t_r			4.8	7	ns
Turn-Off Delay Time	$t_{D(off)}$			26.3	40	ns
Turn-Off Fall Time	t_f			4.1	6	ns
Body Diode Reverse Recovery Time	t_{rr}	I_F=5A, d_I/d_t=100A/ μs		16	20	ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=5A, d_I/d_t=100A/ μs		8.9	12	nC
Maximum Body-Diode Continuous Current	I_S				2.5	A
Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS}=0V		0.71	1	V

- **Ordering Information**

Ordering Part Number	Package	MOQ
AP3400A	SOT23 (TO236)	3,000 pcs / reel

- **Typical Characteristics**

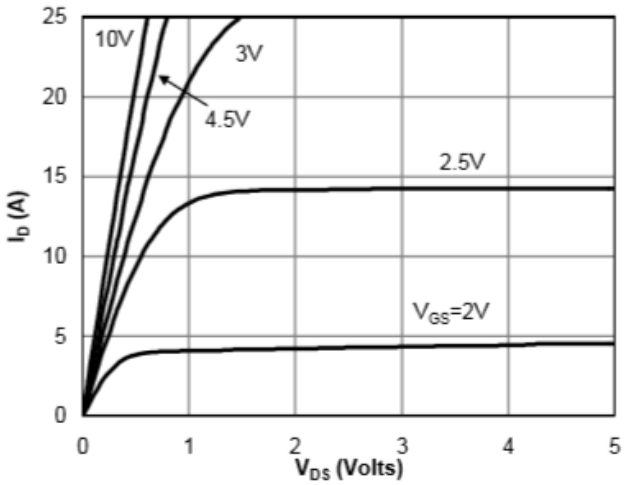


Fig 1: On-Region Characteristics

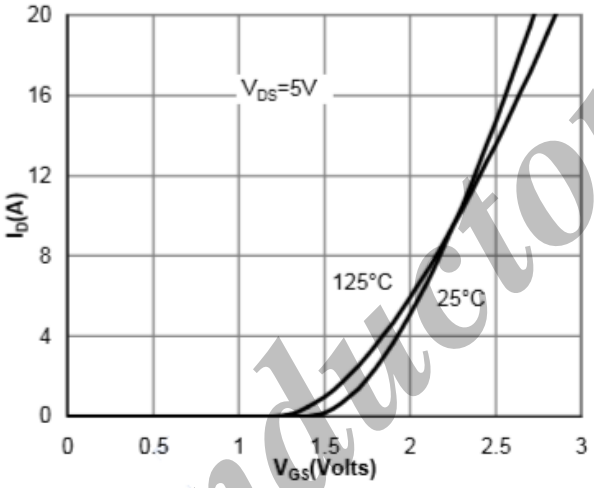


Figure 2: Transfer Characteristics

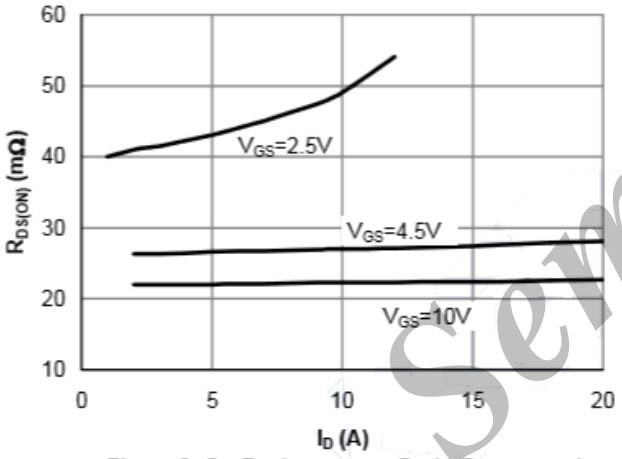


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

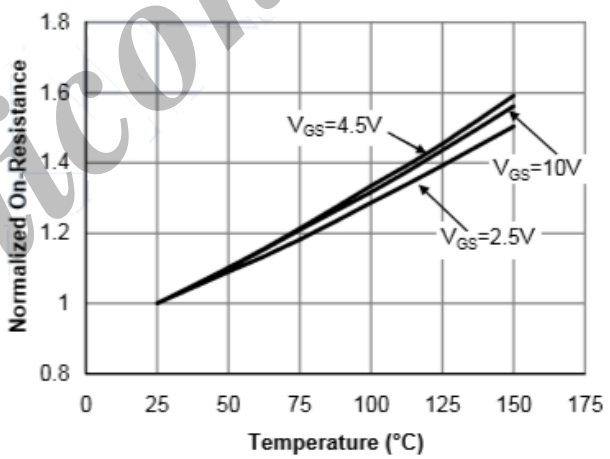


Figure 4: On-Resistance vs. Junction Temperature

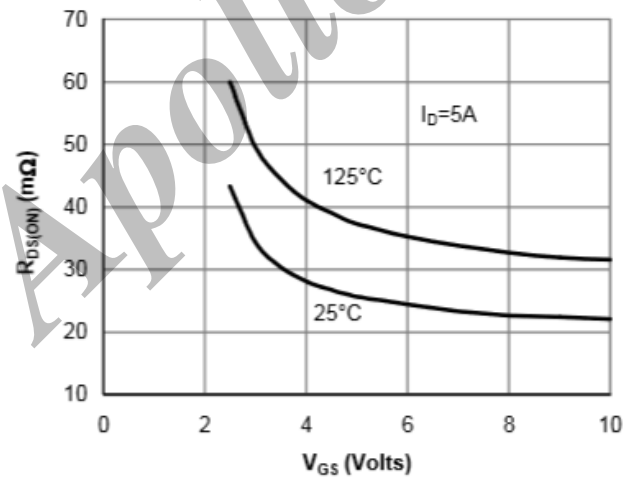


Figure 5: On-Resistance vs. Gate-Source Voltage

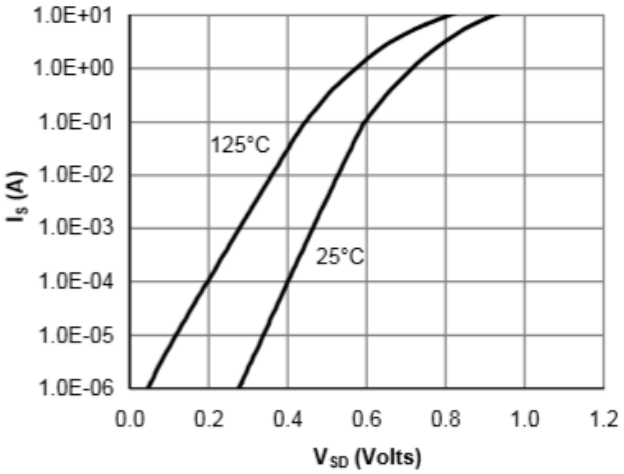


Figure 6: Body-Diode Characteristics

- **Typical Characteristics**

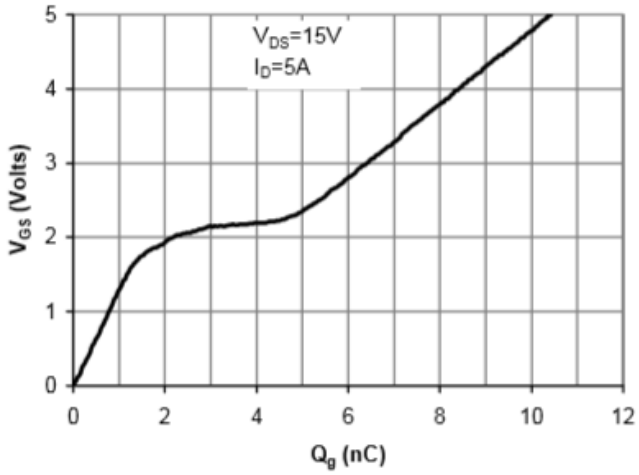


Figure 7: Gate-Charge Characteristics

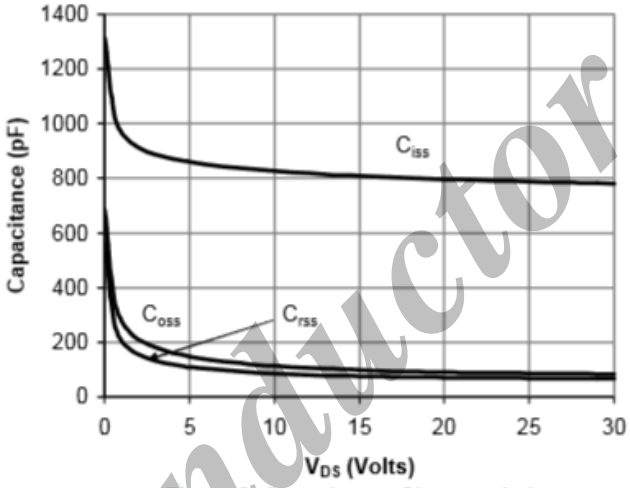


Figure 8: Capacitance Characteristics

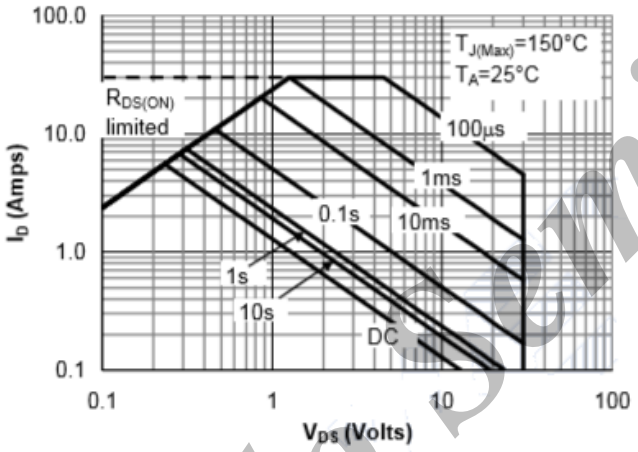


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

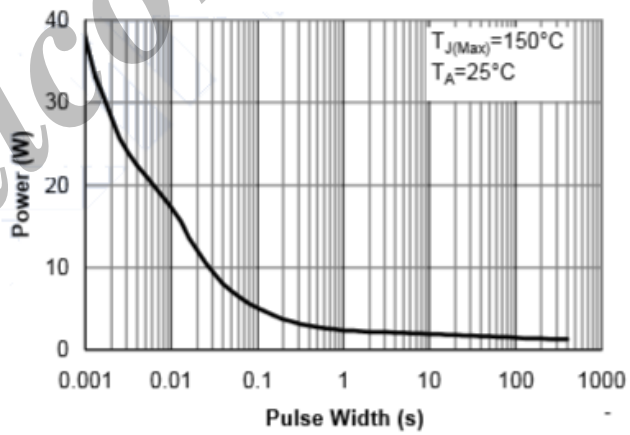


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

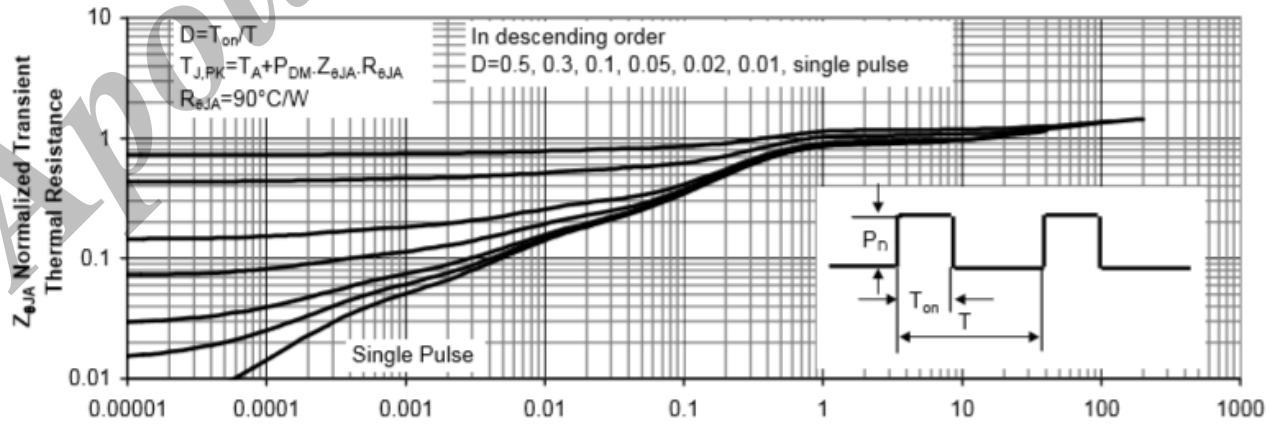


Figure 11: Normalized Maximum Transient Thermal Impedance

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