



AO3400

32mΩ, 30V, N-Channel Power MOSFET

Features

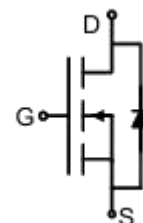
- High power and current handling capability
- Lead free product is acquired
- Surface mount package

General Description

$V_{(BR)DSS}$	$R_{DS(ON)_{max}}$	I_D
30V	32mΩ@10V	6A
	35mΩ@4.5V	

Application

- PWM Applications
- Load Switch
- Power management



Ordering Information

Product Name	Package
AO3400	SOT-23



Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$, unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 12	V
Continuous Drain Current ^{Note 1}	$T_C = 25^\circ\text{C}$	I_D	6	A
Pulsed Drain Current ^{Note 2}	$T_C = 25^\circ\text{C}$	I_{DM}	24	A
Max Power Dissipation ^{Note 3}	$T_C = 25^\circ\text{C}$	P_D	1.98	W
Operation and Storage junction temperature		T_J, T_{SGT}	-55 to 150	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	-	62.83	-	$^\circ\text{C/W}$

**AO3400****32mΩ, 30V, N-Channel Power MOSFET****Electrical Characteristics**(T_A= 25 °C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Statistic Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	-	-	1	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	0.6	0.9	1.2	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =5A	-	21	32	mΩ
		V _{GS} =4.5V, I _D =5A	-	23	35	
		V _{GS} =2.5V, I _D =3A	-	29	44	
Gate Resistance	R _G	f=1MHz, Open Drain	-	1.56	-	Ω
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V =	-	894	-	pF
Output Capacitance	C _{oss}	V _{DS} 15V	-	48	-	pF
Reverse Transfer Capacitance	C _{rss}	f=1MHz	-	42	-	pF
Turn-on Delay Time	t _{d(on)}	V _{DD} =15V	-	2.8	-	ns
Rise Time	t _r	V _{GS} =10V	-	25.	-	
Turn-off Delay Time	t _{d(off)}	I _D =5A	-	518.	-	
Fall Time	t _f	R _G =3Ω	-	6	-	
Gate Charge Characteristics				6.8		
Total Gate Charge	Q _g	V _{GS} =4.5V	-	8.7	-	nC
Gate to Source Charge	Q _{gs}	V _{DS} =15V	-	3	-	
Gate to Drain Charge	Q _{gd}	I _D =5A	-	1.6	-	
Reverse Diode Characteristics						
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =5A	-	0.85	1.2	V

Notes:

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating; pulse width limited by max. junction temperature.
- 3) P_D is based on max. junction temperature, using junction-case thermal resistance.



Typical Performance Characteristics

Figure 1: Typ. Output Characteristics

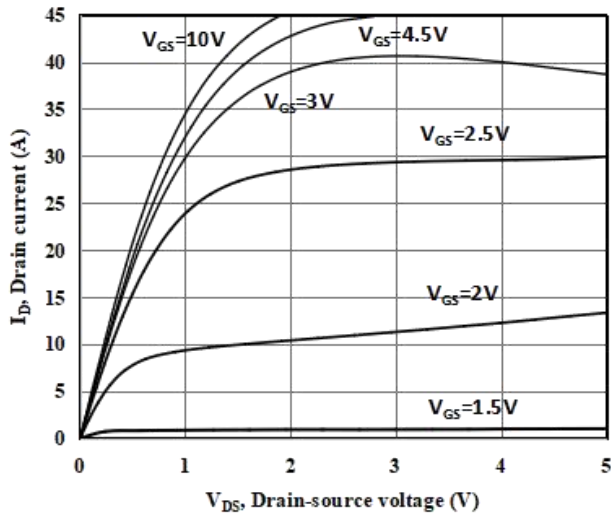


Figure 2: Typ. Transfer Characteristics

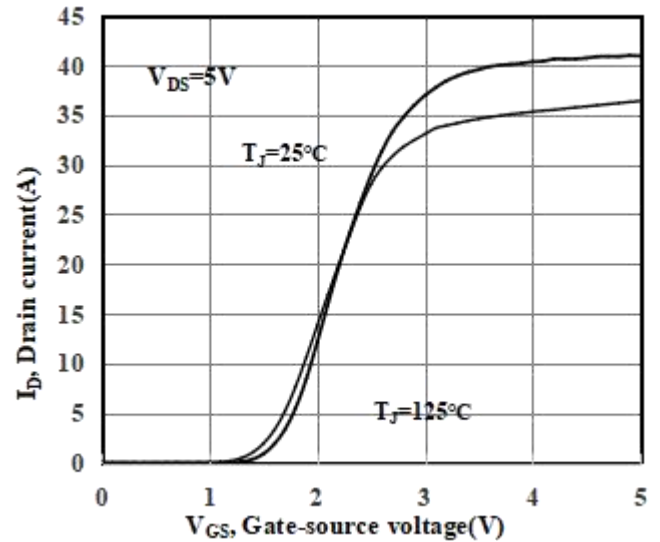


Figure 3: Typ. On-Resistance vs. Drain Current

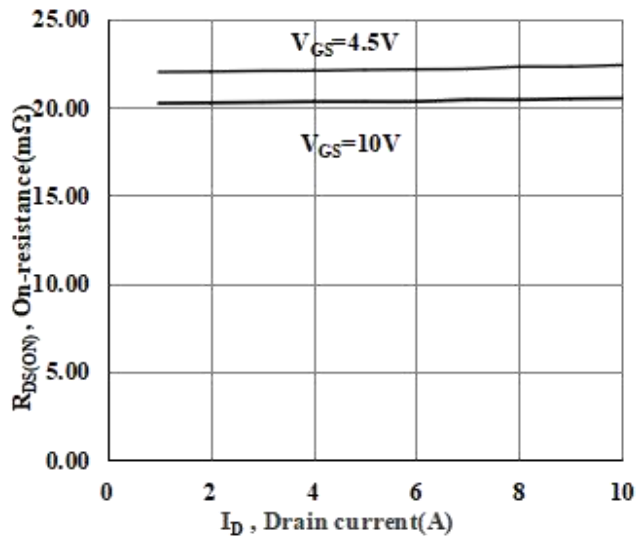


Figure 4: On-Resistance vs. Temperature

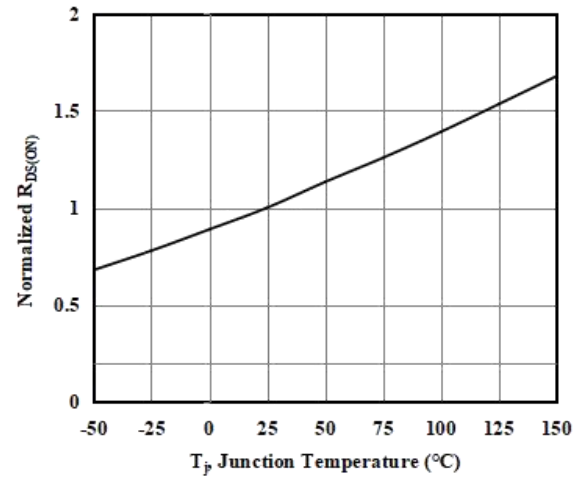


Figure 5: I_S vs. Source to Drain Voltage

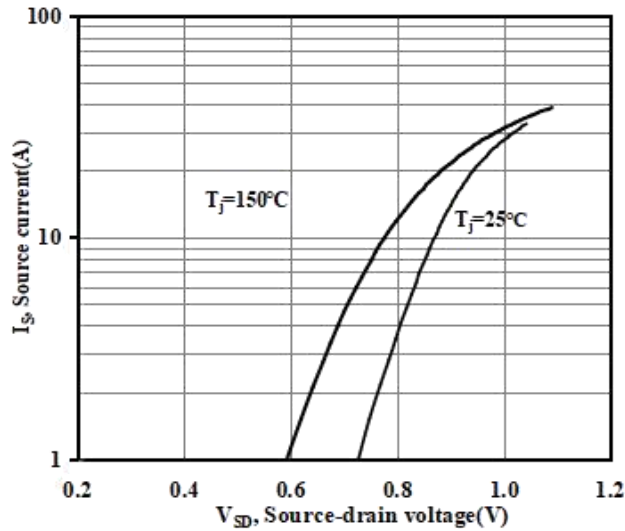


Figure 6: Gate Charge Characteristics

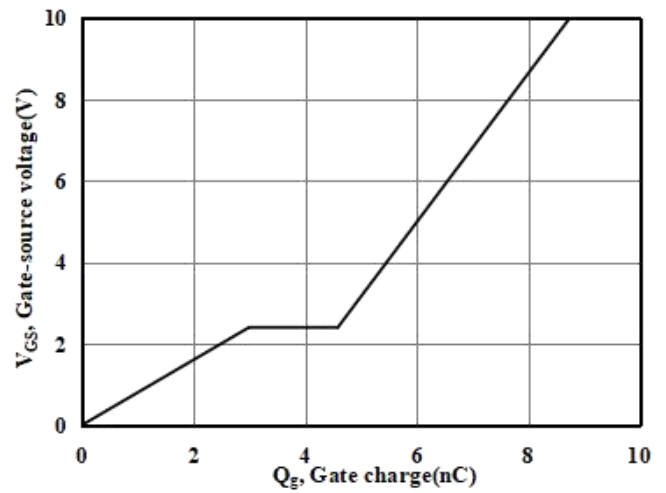


Figure 7: Capacitance Characteristics

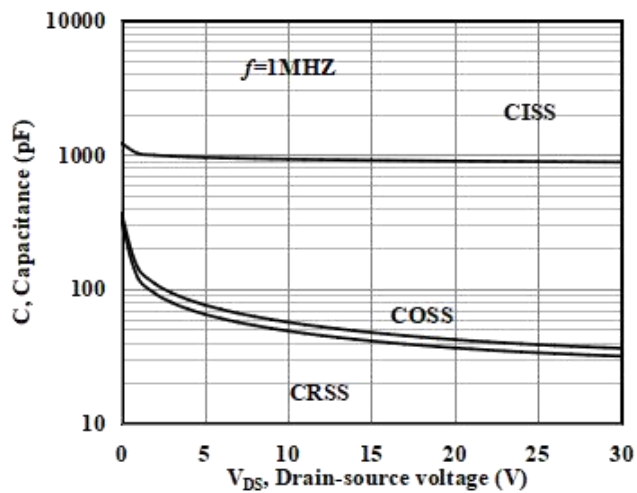
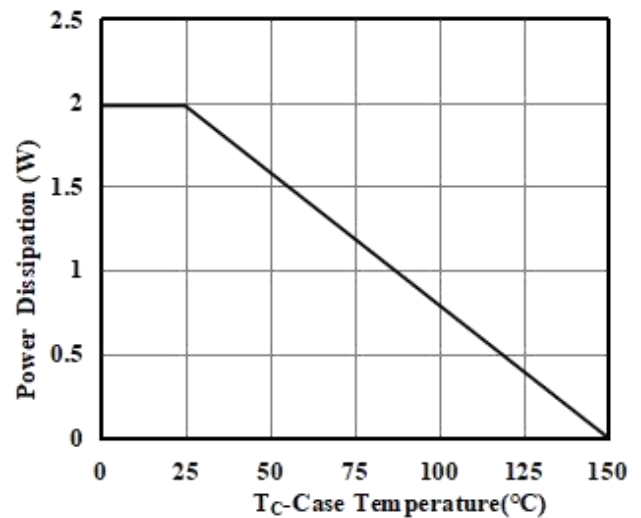


Figure 8: Power Dissipation





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Figure 9: Safe Operating Area

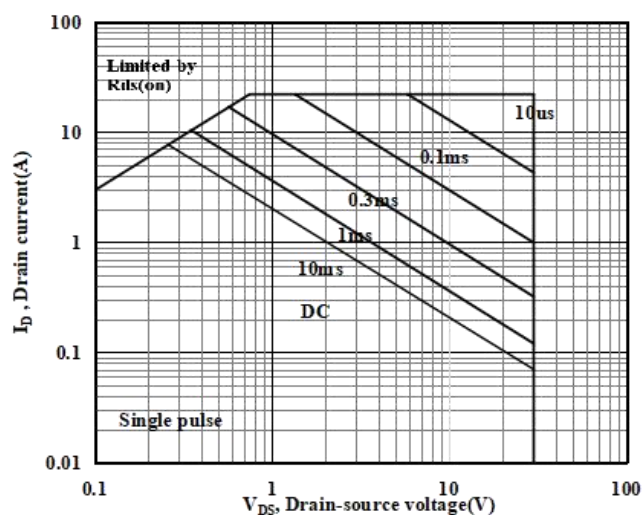
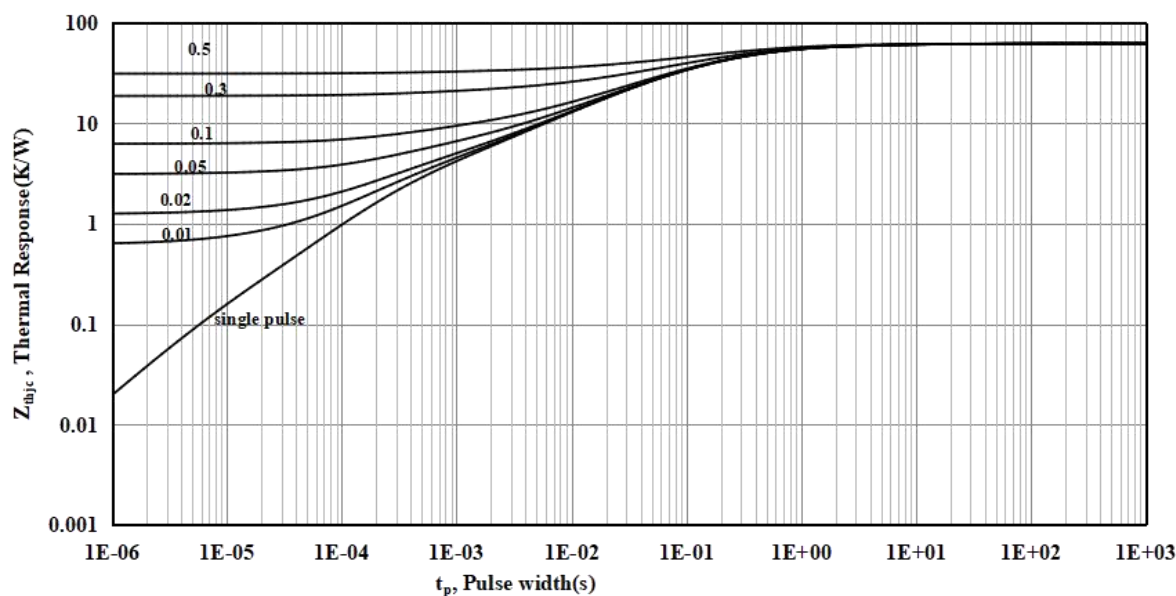


Figure 10: Normalized Max Transient Thermal Impedance

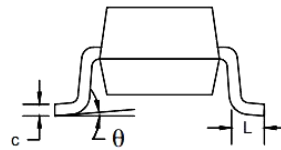
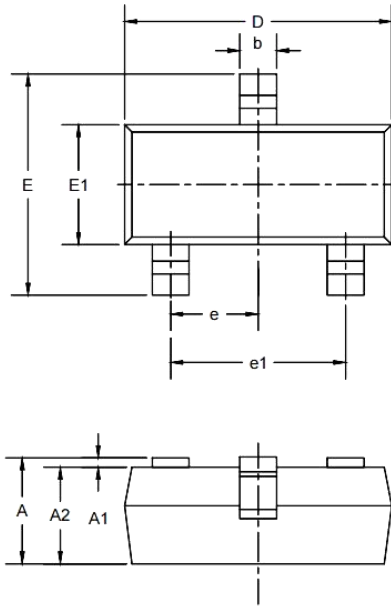




Mechanical Dimensions

SOT-23 Package Information

COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)



SYMBOL	MIN	MAX
A	0.9	1.15
A1	0	0.1
A2	0.9	1.05
b	0.3	0.5
c	0.08	0.15
D	2.8	3
E	2.25	2.55
E1	1.2	1.4
e	0.95TYP	
e1	1.8	2
L	0.3	0.5
θ	0°	8°