AO3404A

30V N Channel Enhancement MOSFET

Description

The AO3404Ais the new generation trench N-ch MOSFET has been designed to minimize the on-state resistance (RDS(ON)) yet maintain superior switching performance, making it ideal for high efficiency power management applications

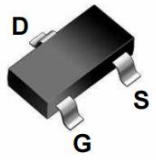
V_{DSS}	30V
I_D	6.5A
$R_{DS(ON)}$	24mΩ@ V_{GS}=4.5V
$R_{DS(ON)}$	17mΩ @ V_{GS}=10V

Features

- 30V,6.5A, RDS(ON) =17mΩ@VGS = 10V
- Improved dv/dt capability
- Fast switching

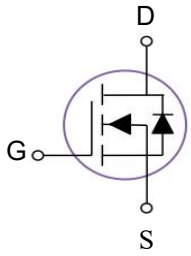
Outline

SOT-23-3L



Equivalent

(1)Gate
(2)Source
(3)Drain



Applications

- **MB / VGA / Vcore**
- Load Switch
- Power Management

Packaging specifications

Part No.	Package	Marking	Basic ordering unit.(pcs)
AO3404A	SOT-23-3L	X4**	3000

Absolute Maximum Ratings

Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuous(Note2)	T_C=25°C	I_D	6.5	A
	T_C=70°C		5.3	A
-Pulsed(Note 1、Note 2)		I_{DM}	26	A
Maximum Power Dissipation	T_C=25°C	P_D	1.6	W
	T_C=70°C		1	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C
Thermal Resistance Junction-Ambient		$R_{\theta JA}$	62	°C /W

Electrical Characteristics (T_C=25 ℃, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
OFF 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} = ±20V , V_{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D=250uA	1.2	1.7	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} =4.5V , I_D =5A		24	35	mΩ
		V_{GS} =10V , I_D =6A		17	25	mΩ
DYNAMIC CHARACTERISTICS Note4						
Input Capacitance	C_{ISS}	V_{DS} =25V , V_{GS} =0 V , f =1.0MHz		346		pF
Output Capacitance	C_{OSS}			55		pF
Reverse Transfer Capacitance	C_{RSS}			33		pF
Total Gate Charge	Qg	V_{DS} =15V , I_D =6A , V_{GS} =4.5V		4.2		nC
Gate-Source Charge	Qgs	V_{DS} =15V , I_D =6A , V_{GS} =4.5V		1.0		nC
Gate-Drain Charge	Qgd			2.2		nC
SWITCHING CHARACTERISTICS Note4						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD} =15V , I_D =1A , V_{GS} =4.5V , R_G =6Ω		2.8		ns
Rise Time	tr			7.3		ns
Turn-Off Delay Time	tD(OFF)			16		ns
Fall Time	tf			4.8		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=1A			1	V

Notes：

1、 Pulse Test Width < 300us,Duty Cycle< 2%

2、 Drain current limited by maximum junction temperature.

3、 Guaranteed by design,not subject to production testing.

Typical Performance Characteristics

Fig.1 Continuous Drain Current vs. TC

T_C , Case Temperature (℃)

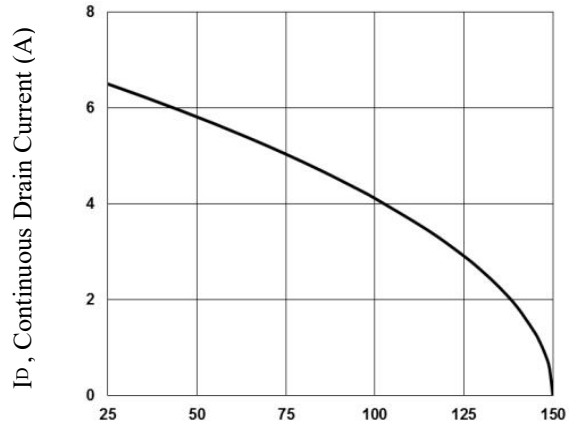


Fig.2 Normalized RDSON vs. TJ

T_J , Junction Temperature (℃)

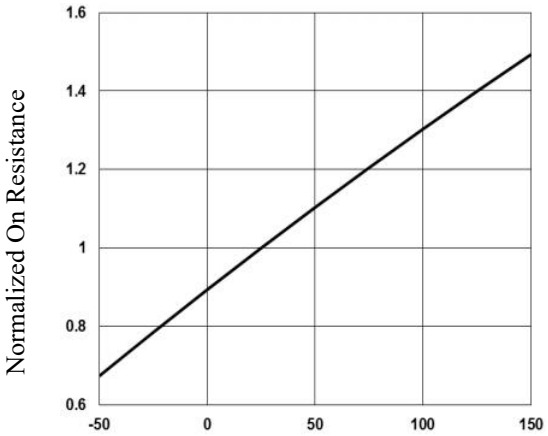


Fig.3 Normalized Vth vs. TJ

T_J , Junction Temperature (℃)

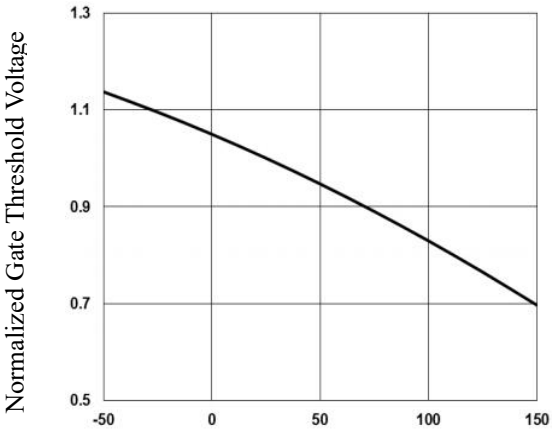


Fig.4 Gate Charge Waveform

Qg , Gate Charge (nC)

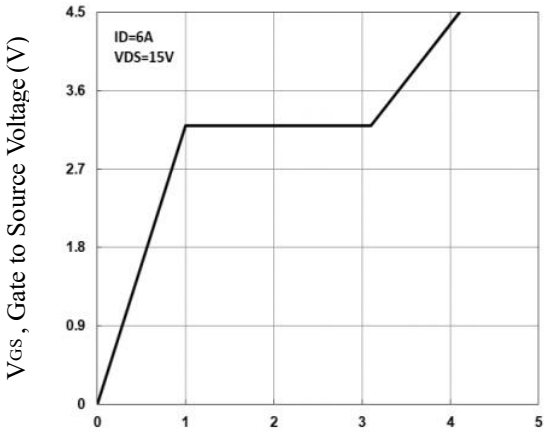


Fig.5 Typical Output Characteristics

V_{DS} ,Drain to Source Voltage (V)

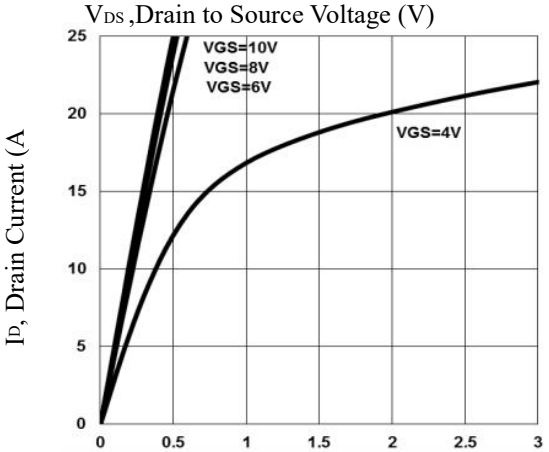


Fig.6 Turn-On Resistance vs. ID

I_D , Drain Current (A)

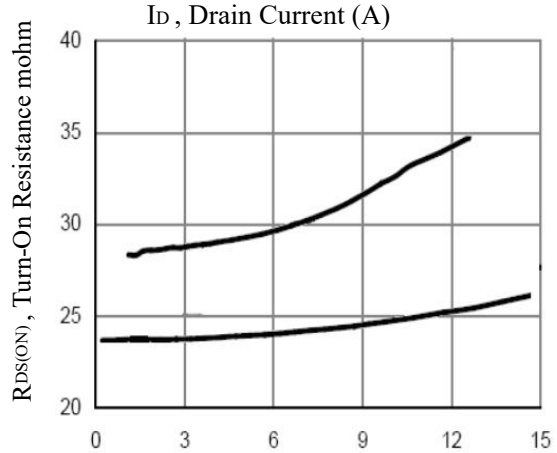


Fig.7 Maximum Safe Operation Area

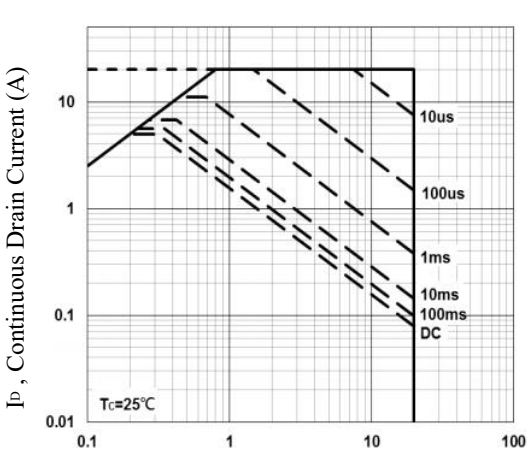


Fig.8 Normalized Transient Impedance

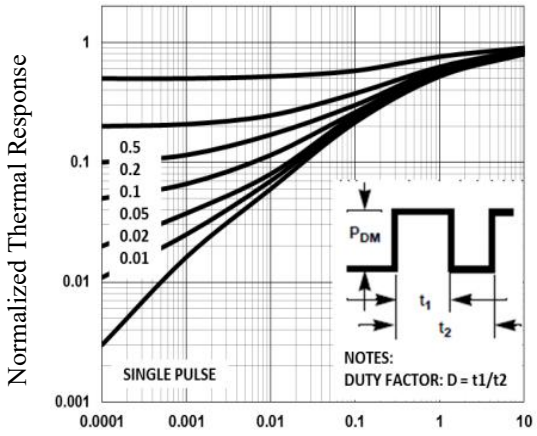


Fig.9 Switching Time Waveform

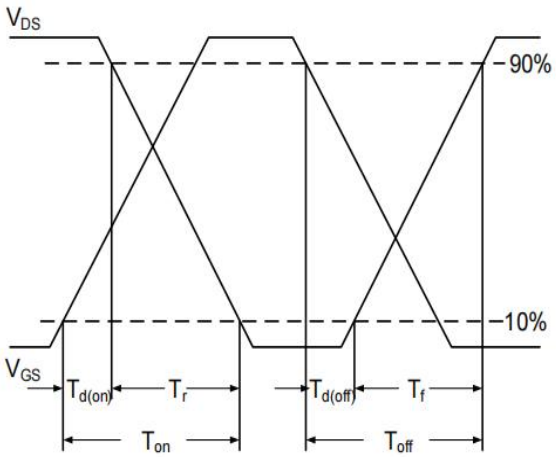
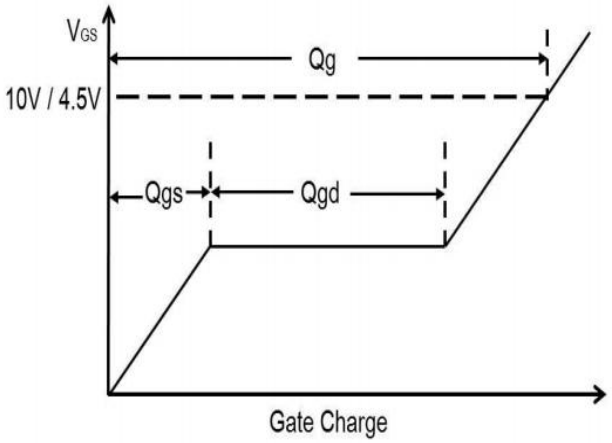
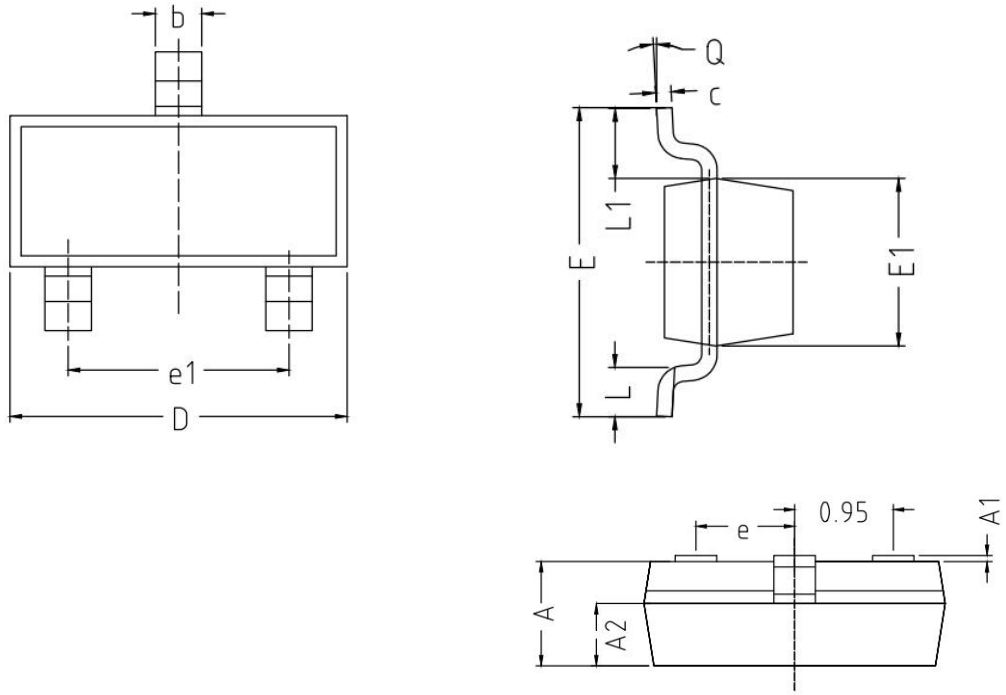


Fig.10 Gate Charge Waveform



SOT-23-3L Package Information



SOT-23-3LPKG		
SYMBOL	MIN	MAX
A	1.050	1.100
A1	0.000	0.100
A2	1.000	1.050
b	0.300	0.450
c	0.100	0.200
D	2.800	3.000
E	2.650	2.750
E1	1.500	1.600
e	0.90	0.95
e1	1.800	2.00
L	0.35	0.450
L1	0.40	0.45
Q	8°	9°