AO3401A

P-Channel Enhancement Mode MOSFET

V_{DSS}	-30 V
I_D	-4.2A
$R_{DS(ON)}$	42 m Ω

DESCRIPTION

The AO3401A is the high cell density trenched P-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications.

The AO3401A meet the RoHS and Green Product requirement with full function reliability approved.

X1DV

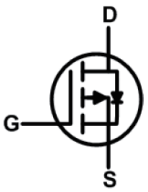
FEATURES

Green Device Available
Super Low Gate Charge
Excellent CdV/dt effect decline
Advanced high cell density Trench technology



SOT23-3L top view

Equivalent Circuit



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±12	V
I_D@T_A=25℃	Continuous Drain Current	-4.2	A
I_D@T_A=70℃	Continuous Drain Current	-3.6	A
I_{DM}	Pulsed Drain Current[2]	-16	A
P_D@T_A=25℃	Total Power Dissipation[3]	1.4	W
P_D@T_A=70℃	Total Power Dissipation[3]	0.9	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	---	105	℃/W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1] (t ≤10s)	---	---	℃/W

Electrical Characteristics T_J=25°C unless otherwise noted

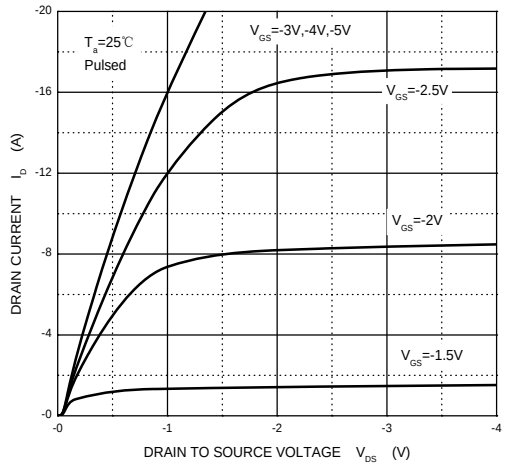
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -30V, V_{GS} = 0V	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±12V	-	-	±100	nA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.7	-1	-1.3	V
Drain-Source on-Resistance[3]	$R_{DS(on)}$	V_{GS} = -10V, I_D = -4.2A	-	42	60	mΩ
		V_{GS} = -4.5V, I_D = -4A	-	51	75	
		V_{GS} = -2.5V, I_D = -1A	-	60	90	
Dynamic Characteristics[4]						
Input Capacitance	C_{iss}	V_{DS} = -15V, V_{GS} =0V, f =1MHz	-	745	-	pF
Output Capacitance	C_{oss}		-	70	-	
Reverse Transfer Capacitance	C_{rss}		-	57	-	
Switching Characteristics[4]						
Total Gate Charge	Q_g	V_{GS} = -4.5V, V_{DS} = -15V, I_D = -4.2A	-	8	-	nC
Gate−Source Charge	Q_{gs}		-	1.8	-	
Gate−Drain Charge	Q_{gd}		-	2.7	-	
Turn-on Delay Time	$t_{d(on)}$	V_{GS} = -10V, V_{DD} = -15V, I_D= -4.2A, R_{GEN} = 6Ω	-	7	-	ns
Rise Time	t_r		-	3	-	
Turn-off Delay Time	$t_{d(off)}$		-	30	-	
Fall Time	t_f		-	12	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage[3]	V_{SD}	I_S = -4.2A, V_{GS} = 0V	-	-	-1.2	V
Continuous Source Current	I_S		-	-	-4.2	A

Notes:

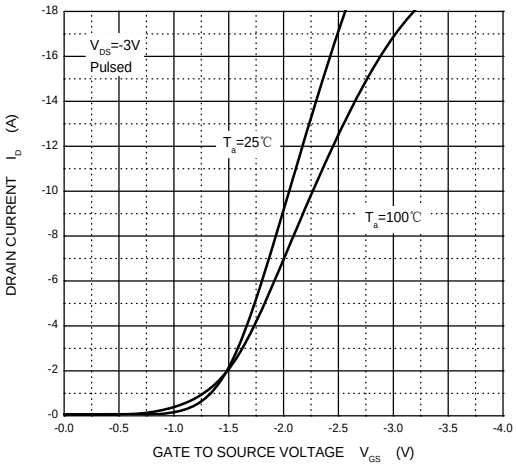
1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C
2. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
3. Pulse Test: Pulse width≤300μs, duty cycle≤2%.
4. This value is guaranteed by design hence it is not included in the production test.

RATING AND CHARACTERISTIC CURVES

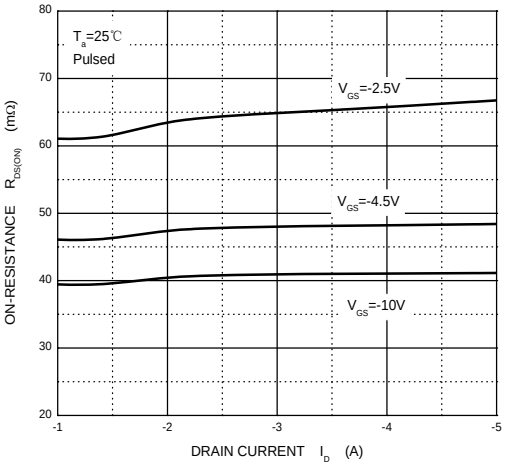
Output Characteristics



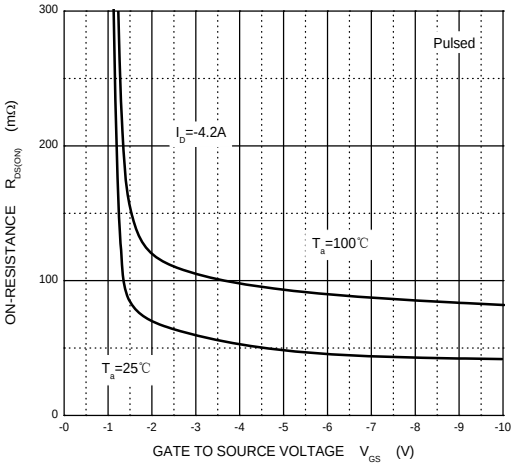
Transfer Characteristics



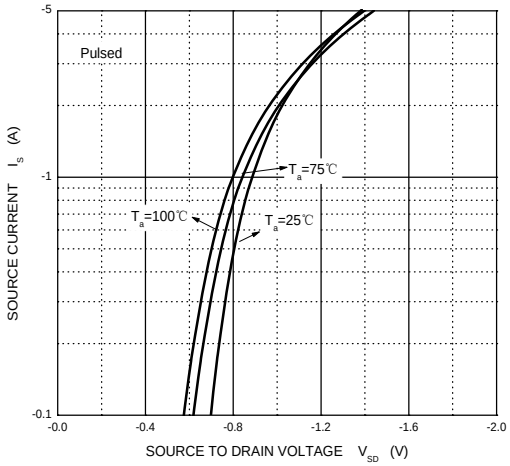
$R_{DS(ON)}$ — I_D



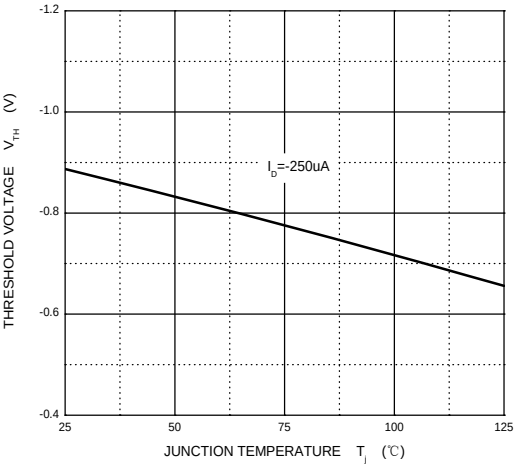
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



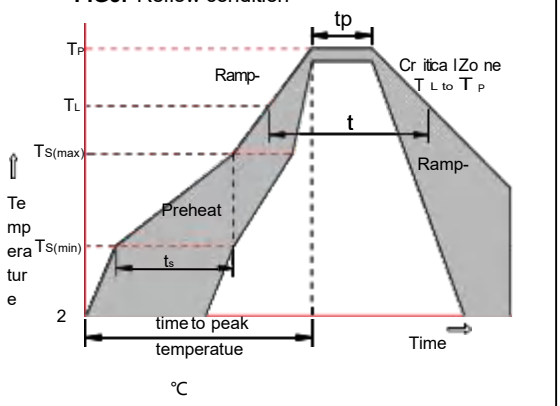
Threshold Voltage



Soldering parameters

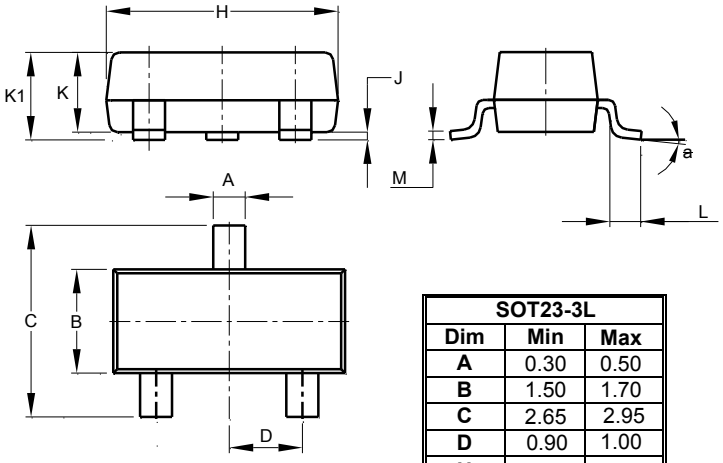
Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

FIG5: Reflow condition

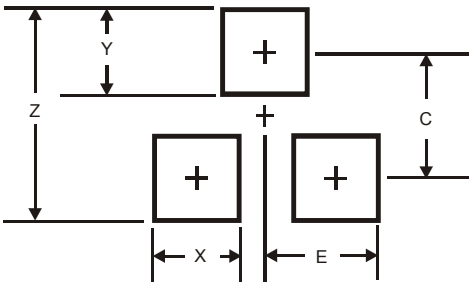


Package Dimensions & Suggested Pad Layout

SOT23-3L



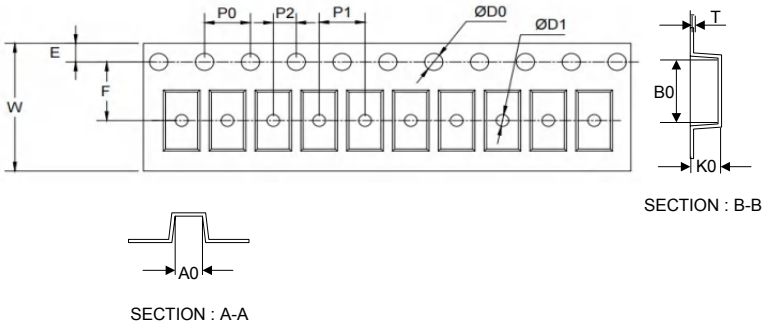
SOT23-3L		
Dim	**Min**	**Max**
A	0.30	0.50
B	1.50	1.70
C	2.65	2.95
D	0.90	1.00
H	2.82	3.02
J		0.10
K	1.05	1.15
K1	1.05	1.25
L	0.30	0.60
M	0.10	0.20
a	0°	8°
All Dimensions in mm		



Dimensions	SOT23-3L
Z	3.3
X	0.9
Y	1.0
C	2.3
E	1.40

Tape & rell specification

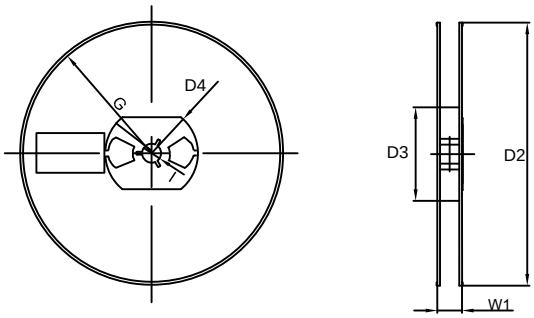
Tape



SECTION : B-B

SECTION : A-A

7” Reel



Symbol	Dimension (mm)
P0	4.00±0.20
P1	4.00±0.20
P2	2.00±0.20
D0	1.55±0.20
D1	1.05±0.20
E	1.55±0.20
F	3.60±0.20
W	8.00±0.20
A0	3.80±0.20
B0	3.50±0.20
K0	1.55±0.20
T	0.25±0.15
D2	178.0±5.0
D3	55Min.
D4	R24.0±3.0
G	R82.0±3.0
I	13.0±2.0
W1	11.0±3.0
Quantity: 3000PCS	