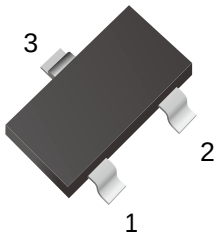
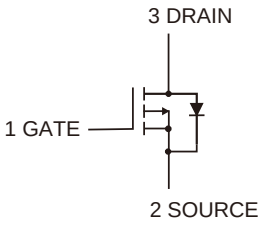
LTM3401PA

P-Channel Mosfet

Features



- V_{DS}=-30V，I_D= -4.2A
- $R_{DS(on)}$ < 70mΩ (V_{GS} = -10V)
- $R_{DS(on)}$ < 80mΩ (V_{GS} = - 4.5V)
- $R_{DS(on)}$ < 120mΩ (V_{GS} = -2.5V)
- High Power and Current Handing Capability
- Lead Free Product is Acquired
- Surface Mount Package
- Lead free in comply with EU RoHS 2011/65/EU directives



Mechanical Data

- Case: SOT-23
- Approx. Weight: 8.1mg

Ordering Information

Part Number	Marking	Shipping	Reel
LTM3401PA-TR3	A1	3000PCS Tape&Reel	7 inchs
LTM3401PA-TR12	A1	12000PCS Tape&Reel	13 inchs

Maximum Ratings (Ta=25℃ unless otherwise noted)

Symbol	Parameter		Value	Units
V_{DSS}	Drain-source Voltage		-30	V
V_{GSS}	Gate-source-Voltage		±12	V
I_D	ContinuousDrain Current	T_C=25℃	-4.2	A
		T_C=100℃	-2.7	
I_{DM}	Pulsed Drain Current (note 1)		-17	A
P_D	Power Dissipation		1.2	W
T_J, T_{STG}	Operating And Storage Temperature Range		-55 to 150	℃
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient		104	℃/W

Thermal Characteristics (Ta=25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
$V_{(BR)Dss}$	Drain-source Breakdown Voltage	V_{GS}=0V,I_D=-250μA	-30			V
I_{Dss}	Zero Gate Voltage Drain Current	V_{DS}=-24V,V_{GS}=0V			-1	μA
I_{GSS}	Gate –body Leakage Current	V_{DS}=0V,V_{GS}=±10V			±100	nA
$V_{GS(th)}$	Gate-Threshold Voltage (note 2)	V_{DS}=V_{GS},I_D=-250μA	-0.7	-1	-1.3	V
$R_{DS(on)}$	Drain-source On-Resistance(note 2)	V_{GS}=-10V,I_D=-4.2A V_{GS}=-4.5V,I_D=-4A V_{GS}=-2.5V,I_D=-1A		48 56 72	70 80 120	mΩ
g_{FS}	Forward Transconductance	V_{DS}=-5V,I_D=-4.2A		10		S

Dynamic Characteristics

Ciss	Input Capacitance	V_{DS}=-15V		880		pF
Coss	Output Capacitance	V_{GS}=0V		105		
Crss	Reverse Transfer Capacitance	f=1MHz		65		
Qg	Total Gate Charge	V_{DS}=-15V		8.5		nC
Qgs	Gate-Source Charge	I_D=-4.2A		1.8		
Qgd	Gate-Drain(“Miller”) Charge	V_{GS}=-4.5V		2.7		

Switching Characteristics

td(on)	Turn-on Delay Time	V_{DD}=-15V,I_D=-4.2A, V_{GS}=-10V, R_{GEN}=6Ω		7		ns
tr	Turn-on Rise Time			3		
td(off)	Turn-off Delay Time			30		
tf	Turn-off Fall Time			12		

Drain-Source Diode Characteristics and Maximum Ratings

I_S	Maximum Continuous Drain to Source Diode Forward Current				-4.2	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current				-17	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V,I_S=-4.2A,			-1.2	V
trr	Reverse Recovery Time	V_{GS}=0V,I_S=-4.2A, di/dt=100A/μs		11		ns
Qrr	Reverse Recovery Charge			3.5		nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2.Pulse Test : Pulse Width≤300μs, Duty Cycle≤2%.

Characteristic Curves

Fig.1 On-Region Characteristics

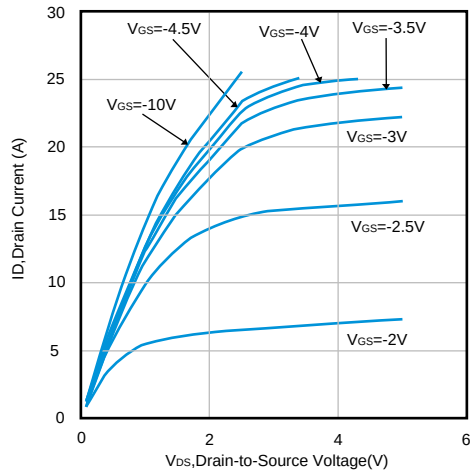


Fig.2 Transfer Characteristics

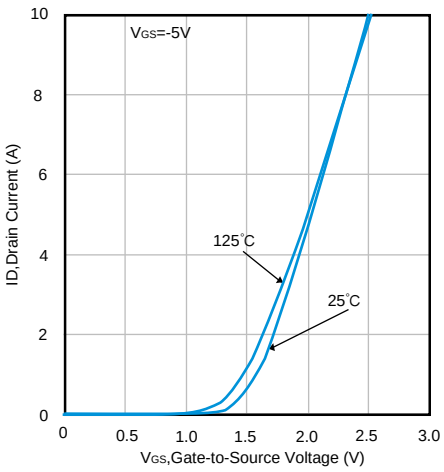


Fig.3 $R_{DS(on)}$ (Ω) vs I_D

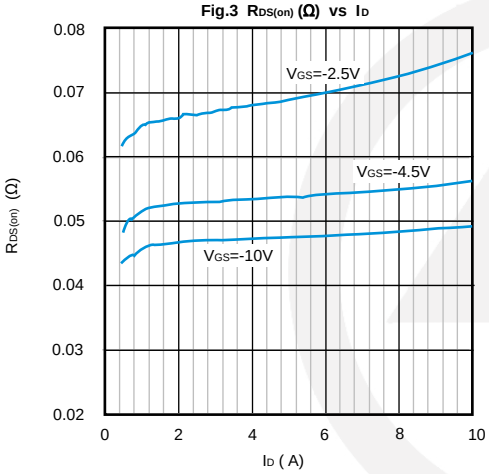


Fig.4 Temperature vs Gate Threshold Voltage

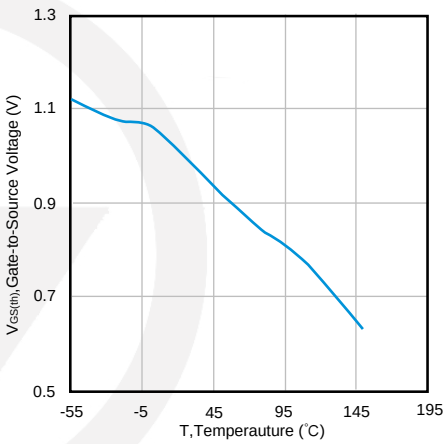


Fig.5 $R_{DS(on)}$ vs V_{GS}

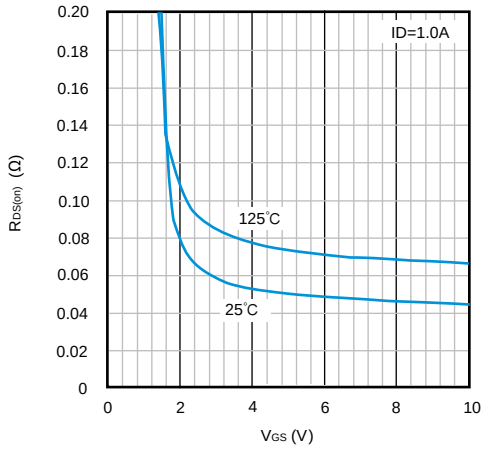
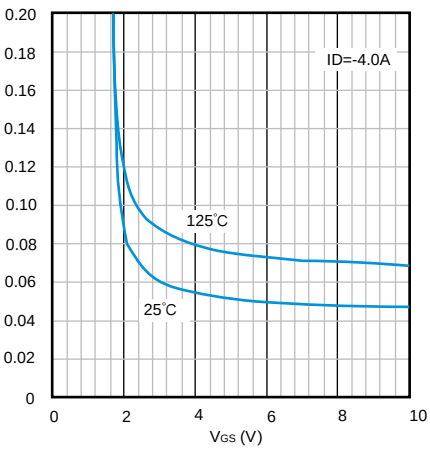
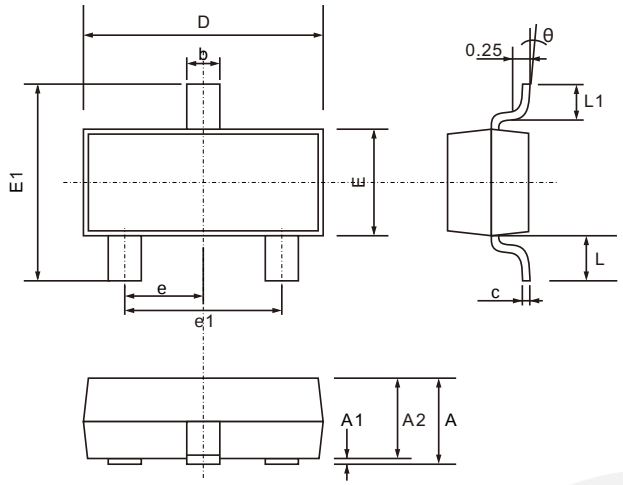


Fig.5 $R_{DS(on)}$ vs V_{GS}



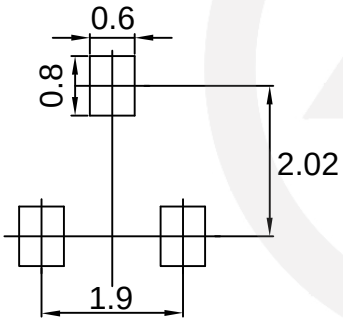
SOT-23 Package Outline



Unit: mm

SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.200
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.200
D	2.700	3.100
E	1.200	1.400
E1	2.200	2.600
e	0.950 TYP.	
e1	1.750	2.050
L	0.550 TYP.	
L1	0.300	0.500
θ	0°	8°

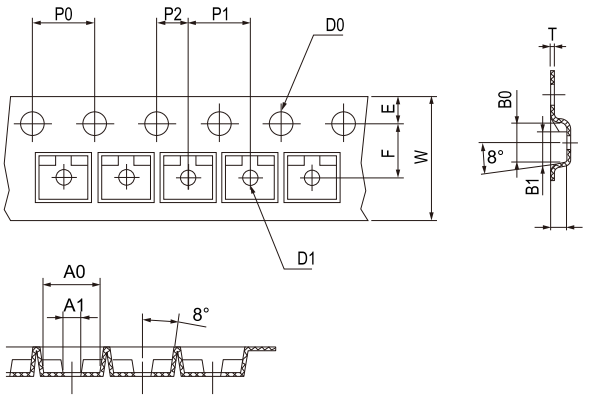
SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm
3.The pad layout is for reference purpose only.

Carrier Tape Dimensions

Unit：mm

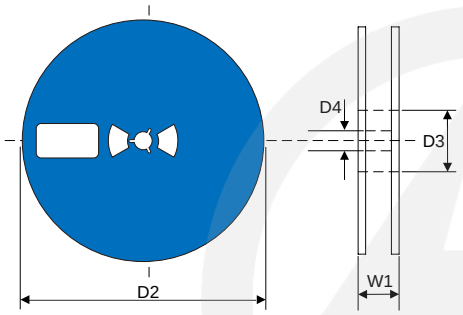


Symbol	Spec	Symbol	Spec
A0	3.15±0.10	P0	4.00±0.05
A1	1.09±0.10	P1	4.00±0.02
B0	2.77±0.10	W	8.00±0.10
B1	2.15±0.10	E	1.75±0.10
K0	1.22±0.10	F	3.50±0.05
D0	1.50±0.10	T	2.00±0.10
D1	1.00±0.10		

Reel Dimensions

Unit：mm

7” Reel

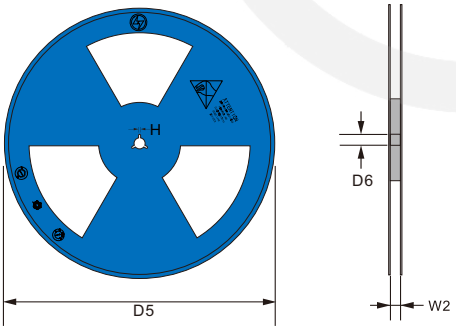


D2	Φ178.0±2.0
D3	Φ50
D4	13.0±0.5
W1	12±0.5
Quantity: 3000PCS	

Reel Dimensions

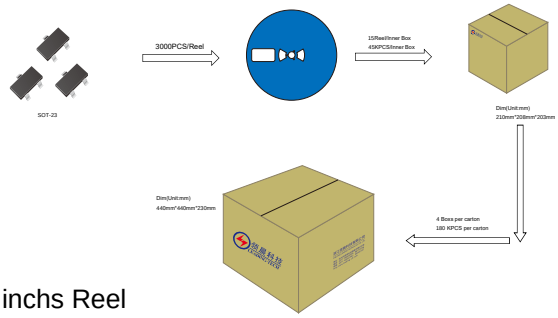
Unit：mm

13” Reel

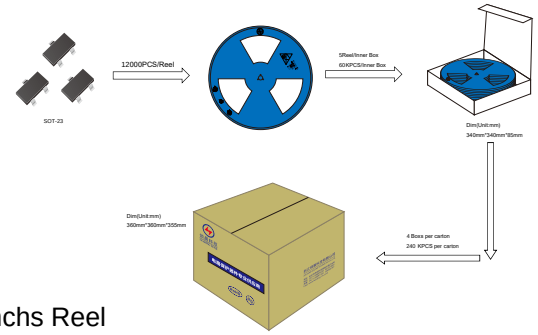


D5	Φ330.0±2.0
D6	Φ13.5±0.5
H	2.5±1.0
W2	12±0.5
Quantity: 12000PCS	

Packaging



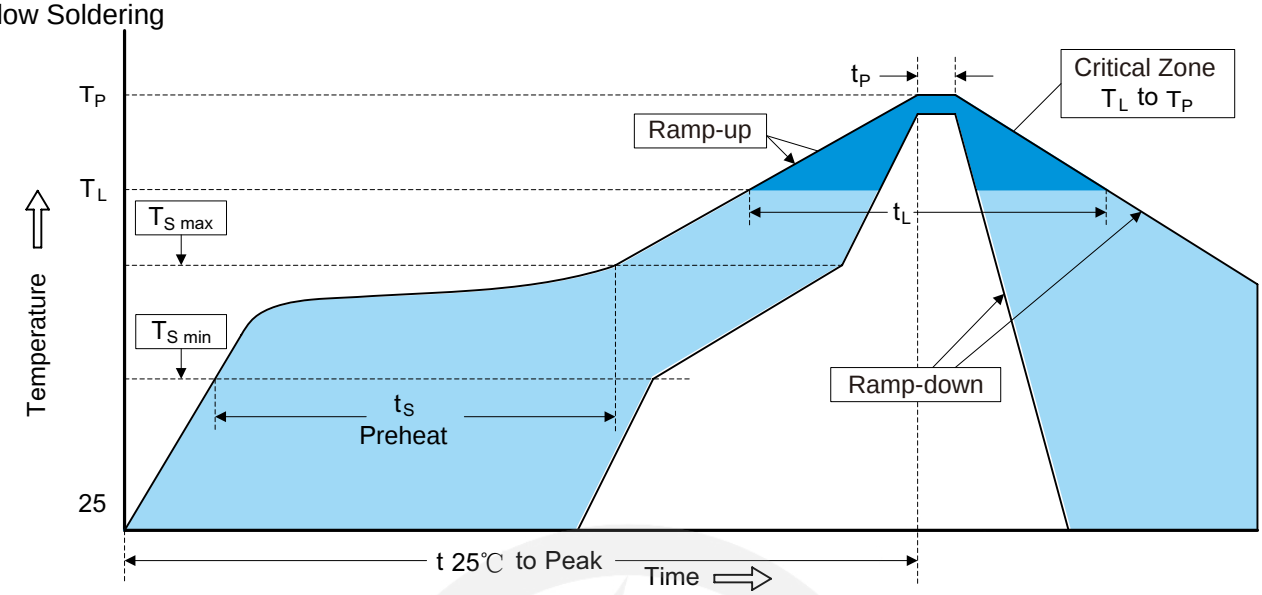
7 inchs Reel



13 inchs Reel

Recommended Soldering Conditions

Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3℃/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_S)	 150℃ 200℃ 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3℃/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	 217℃ 60-150 seconds
Peak Temperature (T_P)	260℃
Time within 5℃ of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.

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Version Update Information

Series NO.	Enactment/Revision Date	Effective Date	Version	Revision Content	Revision Reason	Revision Person	Note
01	2024.10.17	2024.10.17	3.0	New file	/	Ding	
02	2026.03.05	2026.03.05	3.1	Package outline E1(max)=2.6mm	/	Ding	