

ALX Series

Aluminum Nitride Thin Film Precision Chip



FEATURES

- High thermal conductivity aluminum nitride substrate
- Power rating up to 6.0W
- Resistor tolerance to $\pm 0.1\%$
- TCR to $\pm 25\text{ppm}/^\circ\text{C}$

APPLICATIONS

- Power Supplies
- Power Switching
- Braking System

CHARACTERISTICS

Series	Package size	Power Rating*	Max. Oper. Voltage	Max. Overload Voltage	Resistance Range	Tolerance	TCR
ALX12	1206	2W	100V	200V	50 Ω ~ 30.1K Ω	$\pm 0.1\%$, $\pm 0.25\%$, $\pm 0.5\%$, $\pm 1\%$	± 25 , ± 50
ALX25	2512	6W					

* @70°C; dependant on component mounting by user

CHARACTERISTICS

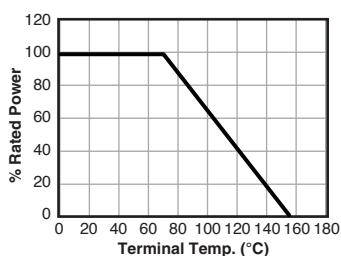
Oper. Temp. Range -55°C to +155°C

Operating Voltage $\sqrt{(P \cdot R)}$ or Max. operating voltage listed above, whichever is lower

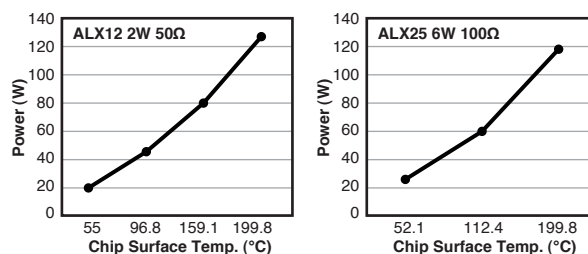
Storage Temp. 15~28°C; Humidity < 80%RH

Reference Standards MIL STD 202, JIS C 5201

Derating



Chip Temperature vs. Applied Power



Chip surface temperature measured using FLIR ETS-320 thermal imaging system with an approximate test card surface temperature

(continued)

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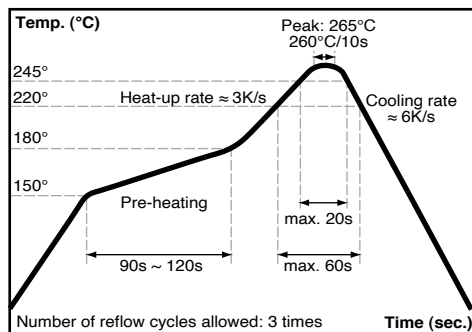
PERFORMANCE

Item	Requirement	Test Method
Temperature Coefficient of Resistance (TCR)	As Spec.	MIL-STD-202 Method 304; +25/-55/+25/+125/+25°C
Short Time Overload	$\Delta R \pm 0.5$	Actual power handling capability is limited by the end user mounting process. As with any high power chip resistor the ability to remove the heat is critical to the overall performance of the device
Insulation Resistance	>9999M Ω	MIL-STD-202 Method 302; Apply 100VDC for 1 minute
Endurance	$\Delta R \pm 1$	MIL-STD-202 Method 108A; 70 $\pm 2^\circ\text{C}$, RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load	$\Delta R \pm 0.4$	MIL-STD-202 Method 103B; 40 $\pm 2^\circ\text{C}$, 90~95% R.H. RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Solderability	95% min. coverage	MIL-STD-202 Method 208H; 245 $\pm 5^\circ\text{C}$ for 3 seconds
Resistance to Soldering Heat	$\Delta R \pm 0.2$	MIL-STD-202 Method 210E; 260 $\pm 5^\circ\text{C}$ for 10 seconds
Low Temperature Operation	$\Delta R \pm 0.2$	JIS-C-5201 1 4.36; 1 hour, -65 $^\circ\text{C}$, followed by 45 minutes of RCWV
High Temperature Exposure	$\Delta R \pm 0.2$	MIL-STD-202 Method 108; At +155 $^\circ\text{C}$ for 1000hrs
Thermal Shock	$\Delta R \pm 0.2$	MIL-STD-202F Method 107G; -55 $^\circ\text{C}$ ~ 155 $^\circ\text{C}$, 100 cycles

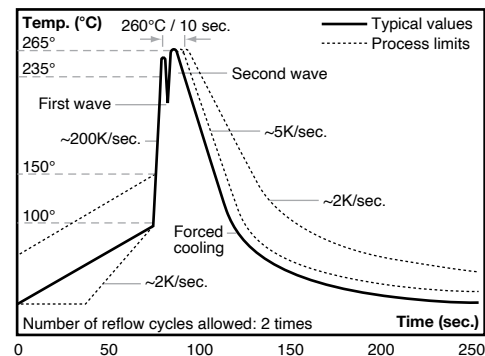
SOLDERING

- (1) Time of IR reflow soldering at maximum temperature point 260 $^\circ\text{C}$: 10s
- (2) Time of wave soldering at maximum temperature point 260 $^\circ\text{C}$: 10s
- (3) Time of soldering iron at maximum temperature point 410 $^\circ\text{C}$: 5s

IR Reflow Soldering

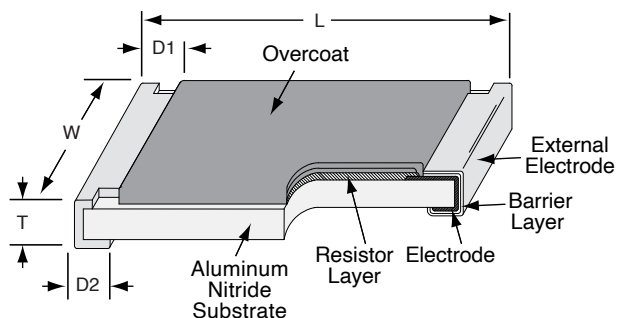


Wave Soldering (Flow Soldering)

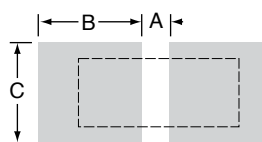


DIMENSIONS

(mm)



Land pattern



Series	A	B	C
ALX12	0.60	1.90	1.80 ± 0.1
ALX25	2.77	2.31	3.20 ± 0.2

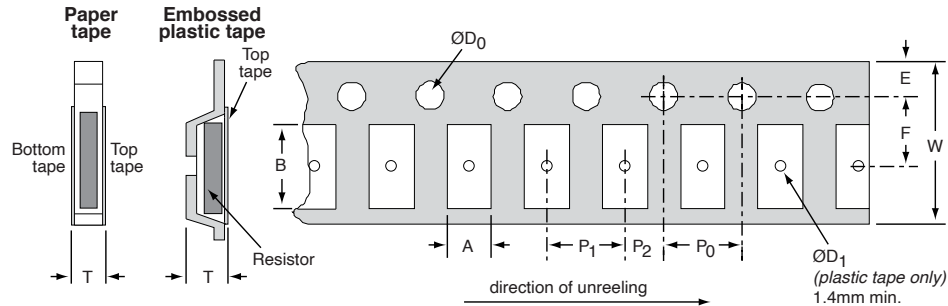
Series	L	W	T	D1	D2	Weight per 1000
ALX12	3.05 ± 0.20	1.55 ± 0.20	0.43 ± 0.15	0.50 ± 0.15	1.20 ± 0.20	10.98g
ALX25	6.30 ± 0.20	3.10 ± 0.20	0.43 ± 0.15	0.70 ± 0.25	1.60 ± 0.25	42.32g

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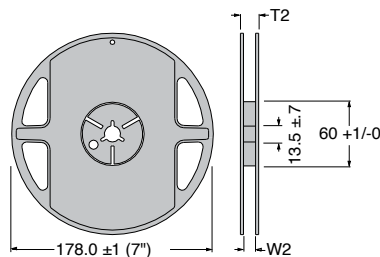
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TAPE AND REEL

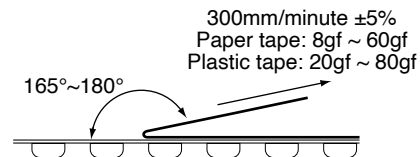
(mm)



Series	Packaging	A	B	W	E	F	P0	P1	P2	D0	T
ALX12	Paper tape	2.00 ±0.05	3.55 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	1.55 ±0.05	0.75 ±0.05
ALX25	Embossed plastic	3.40 ±0.10	6.65 ±0.10	12.0 ±0.10	1.75 ±0.10	5.5 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	1.50 ±0.10	1.00 ±0.20



Series	W2	T2	Qty./reel
ALX12	9.5 ±1.0	11.5 ±1.0	5000
ALX25	13.5 ±1.0	15.5 ±1.0	4000



ORDERING INFORMATION

RoHS Compliant					
ALX series	Size	TCR	Resistance	Tolerance	Tape & Reel
ALX12	12 = 1206	W = 25ppm	10R2 = 10.2Ω	B = 0.1%	
ALX25	25 = 2512	V = 50ppm	1K00 = 1KΩ		
			10K0 = 10KΩ		

Standard Values

ALX12W49R9BET	ALX25W49R9BET
ALX12W75R0BET	ALX25W75R0BET
ALX12W100RBET	ALX25W100RBET
ALX12W150RBET	ALX25W150RBET
ALX12W175RBET	
ALX12W1K00BET	ALX25W1K00BET
ALX12W4K99BET	ALX25W4K99BET
ALX12W10K0BET	ALX25W10K0BET

Marking Example

Resistance	500Ω	2.2KΩ	10KΩ	12.5KΩ
Marking	5000	2201	1002	1252