

### **ARJM11 Series**

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21.30 x 15.90 x 13.60mm **RoHS/RoHS II Compliant** MSL Level = 1

### **Features**

- IEEE 802.3 compliant and UL certified
- High performance integrated magnetics for EMI suppression
- Suitable for CAT5 and CAT6 UTP cabling
- RoHS peak wave solder temperature rating 265°C
- Extended operating temperature -40 to 85°C option

## **Applications**

- Single port 10/100/1G/5G Base-T LAN
- Network Interface Cards
- Switches/Routers
- Network attached storage
- Servers, NIC's
- Media converters

## **Electrical Specifications**

Parameters	Minimum	Typical	Maximum	Units	Notes
Turn Ratio (±3%)		1CT:1CT			100kHz, 0.1V
	350				100kHz, 0.1V, 8mADC
Inductance	200			μН	For 2.5G Base-T only
	160				For 5G Base-T only
Operating Temperature	-40		+85	°C	See options
Storage Temperature	-40		+85	°C	
HiPOT		2250		VDC	VDC for 60 sec.
		100 Ba	se-T		
Insertion Loss			-1.0	dB	0.3-100MHz
	-18				1-30MHz
Return Loss	-13			dB	30-60MHz
	-10				60-100MHz
Crosstalk	-30			dB	1-1000MHz
CMRR	-30			dB	1-100MHz
		100 Base-T I	PoE, PoE+		
Insertion Loss			-1.1	dB	0.5-100MHz
	-18				0.5-30MHz
Return Loss	-15			dB	30-60MHz
	-12				60-80MHz
Crosstalk	-35			dB	0.5-40MHz
Crossiaik	-30			ав	40-100MHz
CMRR	-30			dB	0.5-100MHz
DC Resistance			1.0	Ω	Secondary (cable) side
POE Balanced			350	mA	@57VDC continuous
DC line current			500	IIIA	@57VDC for 200ms
POE+ Balanced			600	mA	@57VDC continuous
DC line current			720	IIIA	@57VDC for 200ms





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Parameters	Minimum	Typical	Maximum	Units	Notes
		1000 B	ase-T		
Insertion Loss	-		-1.1	dB	0.3-100MHz
	-16				1-30MHz
Return Loss	-13			dB	30-60MHz
	-10				60-100MHz
Crosstalk	-30			dB	1-100MHz
CMRR	-30			dB	1-100MHz
		2.5G B	ase-T		
т ,, т			-1.0	dB	1-50MHz
Insertion Loss			-1.5		50-125MHz
D 4 I	-18			dB	1-40MHz
Return Loss	-18+15log(f/40)†				40-250MHz
C4-11-	-35			dB	1-40MHz
Crosstalk	-35+15log(f/40)†			ав	40-125MHz
CMRR	-30			dB	1-200MHz
		5G Ba	se-T		
	-0.5				1-50MHz
т ", т	-1.0			10	50-125MHz
Insertion Loss	-2.0			dB	125-200MHz
	-2.5			=	200-250MHz
D -4 I	-20			4D	1-50MHz
Return Loss	-20+15log(f/40)†			dB	50-250MHz
C	-25			4D	1-125MHz
Crosstalk	-20	dB		dB	125-250MHz
CMRR	-23			dB	1-250MHz

<sup>†</sup>f represents the test frequency specified in MHz

**ARJM11 Series is RoHS/RoHS II Compliant** 

MSL level: 1

**UL Certification Number: E503350** 





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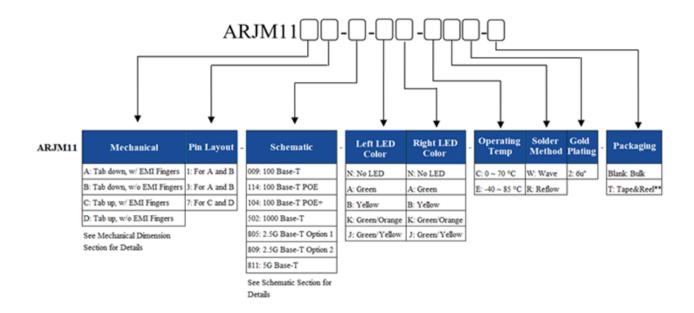


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21.30 x 15.90 x 13.60mm **RoHS/RoHS II Compliant** MSL Level = 1

### **Part Number Identification**



Not all combinations are supported. Please see the tables on the next pages for available part numbers.

\*\*Part numbers containing 'R' in the suffix refers to the reflow soldering method. These devices are available in bulk/tray and T&R packaging. See available parts list below and the Packaging section for more detail.





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## **Available Part Numbers**

## **100 Base-T Standard Part Numbers**

Part Number	Speed	Tab Direction	LED (Left:Right)	Operating Temp	Solder Method	Pkg Format
ARJM11A1-009-AB-ER2	100 Base-T	Tab Down	G : Y	-40°C ~ 85°C	Reflow	B, C
ARJM11A1-009-AB-EW2	100 Base-T	Tab Down	G : Y	-40°C ~ 85°C	Wave	A
ARJM11A1-009-AB-EW4	100 Base-T	Tab Down	G : Y	-40°C ~ 85°C	Wave	A
ARJM11A1-009-NN-ER3	100 Base-T	Tab Down	No LED	-40°C ~ 85°C	Reflow	B, C
ARJM11A1-009-NN-EW2	100 Base-T	Tab Down	No LED	-40°C ~ 85°C	Wave	A
ARJM11A3-009-AB-ER2	100 Base-T	Tab Down	G : Y	-40°C ~ 85°C	Reflow	B, C
ARJM11B1-009-AB-EW2	100 Base-T	Tab Down	G : Y	-40°C ~ 85°C	Wave	A
ARJM11B1-009-NN-ER2	100 Base-T	Tab Down	No LED	-40°C ~ 85°C	Reflow	B, C
ARJM11B1-009-NN-EW2	100 Base-T	Tab Down	No LED	-40°C ~ 85°C	Wave	A
ARJM11C7-009-AB-EW2	100 Base-T	Tab Up	G : Y	-40°C ~ 85°C	Wave	A
ARJM11C7-009-KB-EW2	100 Base-T	Tab Up	G/O:Y	-40°C ~ 85°C	Wave	A
ARJM11C7-009-NN-EW2	100 Base-T	Tab Up	No LED	-40°C ~ 85°C	Wave	A
ARJM11D7-009-AB-EW2	100 Base-T	Tab Up	G : Y	-40°C ~ 85°C	Wave	A
ARJM11D7-009-NN-EW2	100 Base-T	Tab Up	No LED	-40°C ~ 85°C	Wave	A

## 100 Base-T POE and POE+ Standard Part Numbers

Part Number	Speed	Tab Direction	LED (Left:Right)	Operating Temp	Solder Method	Pkg Format
ARJM11C7-104-AB-EW2	100 Base-T POE+	Tab Up	G : Y	-40°C ~ 85°C	Wave	B, C
ARJM11C7-104-BA-EW2	100 Base-T POE+	Tab Up	Y : G	-40°C ~ 85°C	Wave	B, C
ARJM11C7-114-BA-EW2	100 Base-T POE	Tab Up	Y : G	-40°C ~ 85°C	Wave	B, C
ARJM11C7-114-NN-CW2	100 Base-T POE	Tab Up	No LED	$0^{\circ}\text{C} \sim 70^{\circ}\text{C}$	Wave	B, C
ARJM11D7-104-AB-EW2	100 Base-T POE+	Tab Up	G : Y	-40°C ~ 85°C	Wave	B, C
ARJM11D7-114-AB-ER2	100 Base-T POE	Tab Up	G : Y	-40°C ~ 85°C	Reflow	B, C
ARJM11D7-114-AB-EW2	100 Base-T POE	Tab Up	G : Y	-40°C ~ 85°C	Wave	B, C
ARJM11D7-114-NN-EW4	100 Base-T POE	Tab Up	No LED	-40°C ~ 85°C	Wave	B, C





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## **1000 Base-T Standard Part Numbers**

Part Number	Speed	Tab Direction	LED (Left:Right)	Operating Temp	Solder Method	Pkg Method
ARJM11A1-502-AB-CW2	1000 Base-T	Tab Down	G : Y	$0^{\circ}\text{C} \sim 70^{\circ}\text{C}$	Wave	A
ARJM11A1-502-AB-ER2	1000 Base-T	Tab Down	G : Y	-40°C ~ 85°C	Reflow	B, C
ARJM11A1-502-AB-EW2	1000 Base-T	Tab Down	G : Y	-40°C ~ 85°C	Wave	A
ARJM11A1-502-JJ-EW2	1000 Base-T	Tab Down	G/Y:G/Y	-40°C ~ 85°C	Wave	A
ARJM11A1-502-NN-EW2	1000 Base-T	Tab Down	No LED	-40°C ~ 85°C	Wave	A
ARJM11B1-502-AB-EW2	1000 Base-T	Tab Down	G : Y	-40°C ~ 85°C	Wave	A
ARJM11B1-502-NN-EW2	1000 Base-T	Tab Down	No LED	-40°C ~ 85°C	Wave	A
ARJM11C7-502-AB-ER2	1000 Base-T	Tab Up	G : Y	-40°C ~ 85°C	Reflow	B, C
ARJM11C7-502-AB-EW2	1000 Base-T	Tab Up	G : Y	-40°C ~ 85°C	Wave	A
ARJM11C7-502-KB-EW2	1000 Base-T	Tab Up	G/O: Y	-40°C ~ 85°C	Wave	A
ARJM11C7-502-NN-EW2	1000 Base-T	Tab Up	No LED	-40°C ~ 85°C	Wave	A
ARJM11D7-502-AB-EW2	1000 Base-T	Tab Up	G : Y	-40°C ~ 85°C	Wave	A
ARJM11D7-502-NN-EW2	1000 Base-T	Tab Up	No LED	-40°C ~ 85°C	Wave	A

## **2.5 Base-T Standard Part Numbers**

Part Number	Speed	Tab Direction	LED (Left:Right)	Operating Temp	Solder Method	Pkg Format
ARJM11A1-805-AB-EW2	2.5G Base-T	Tab Down	G : Y	$-40$ °C $\sim 85$ °C	Wave	A
ARJM11B1-805-AB-EW2	2.5G Base-T	Tab Down	G : Y	$-40$ °C $\sim 85$ °C	Wave	A
ARJM11B1-805-KB-CW2	2.5G Base-T	Tab Down	G/O : Y	$0^{\circ}\text{C} \sim 70^{\circ}\text{C}$	Wave	A
ARJM11B1-805-KB-EW2	2.5G Base-T	Tab Down	G/O:Y	-40°C ~ 85°C	Wave	A
ARJM11C7-809-AB-EW2	2.5G Base-T	Tab Up	G : Y	-40°C ~ 85°C	Wave	A
ARJM11D7-809-AB-EW2	2.5G Base-T	Tab Up	G : Y	-40°C ~ 85°C	Wave	A

## **5G Base-T Standard Part Numbers**

Part Number	Speed	Tab Direction	LED (Left:Right)	Operating Temp	Solder Method	Pkg Format
ARJM11A1-811-AB-EW2	5G Base-T	Tab Down	G : Y	-40°C ~ 85°C	Wave	A
ARJM11B1-811-AB-EW2	5G Base-T	Tab Down	G : Y	-40°C ~ 85°C	Wave	A
ARJM11C7-811-AB-EW2	5G Base-T	Tab Up	G : Y	-40°C ~ 85°C	Wave	A
ARJM11D7-811-AB-EW2	5G Base-T	Tab Up	G : Y	$-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$	Wave	A



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21.30 x 15.90 x 13.60mm **RoHS/RoHS II Compliant** MSL Level = 1

### **Materials**

1. Housing:

Material:

PBT, UL94V-0 Standard Color: Black

3. Insert:

Material:

PBT, UL94V-0

Contact Material: Phosphor Bronze

Plating (1): Nickel Plating (2): Gold, 6u"

5. Metal Shell:

Material: Brass Plating (1): Nickel 2. Contact Pin:

Material: Phosphor Bronze

Plating (1): Nickel Plating (2): 100%Sn

4. LED:

Material: Diffused Epoxy Lens, 0.5x0.5mm

Carbon Steel wireframe leads

Note: Abracon LLC will not alter any material composition, without prior written notification.





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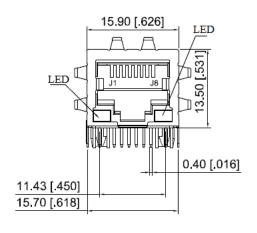
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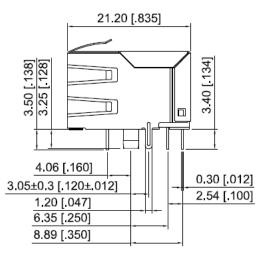


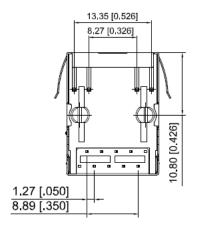
21.30 x 15.90 x 13.60mm RoHS/RoHS II Compliant MSL Level = 1

### **Mechanical Specifications**

## A: Tab Down, w/ EMI Fingers (Wave)

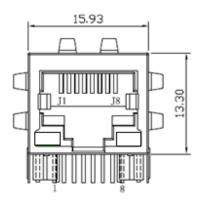


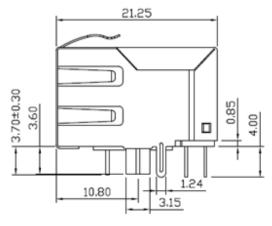


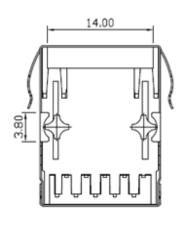


Dimensions: mm[inch] (Unless otherwise specified, all tolerances are  $\pm 0.25[0.010]$ )

### A: Tab Down, w/ EMI Fingers (Reflow)







Dimensions are in mm. Tolerances are  $\pm 0.25$ mm unless noted otherwise.





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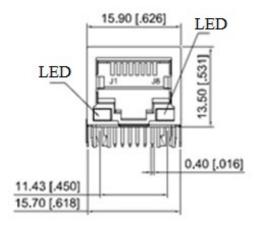


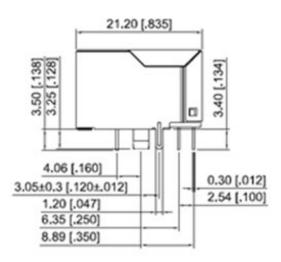
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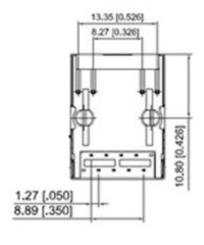


21.30 x 15.90 x 13.60mm RoHS/RoHS II Compliant MSL Level = 1

### B: Tab Down, w/o EMI Fingers (Wave)

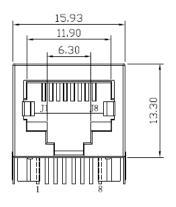


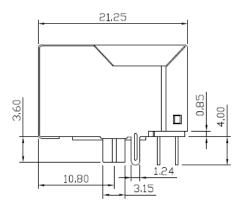


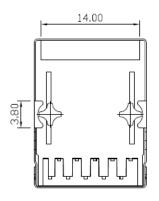


Dimensions: mm[inch] (Unless otherwise specified, all tolerances are  $\pm 0.25[0.010]$ )

### B: Tab Down, w/o EMI Fingers (Reflow)







Dimensions are in mm. Tolerances are  $\pm 0.25$ mm unless noted otherwise.





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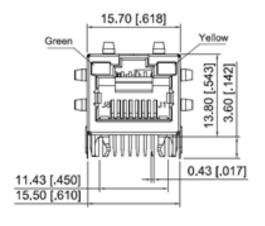


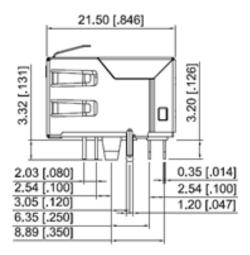
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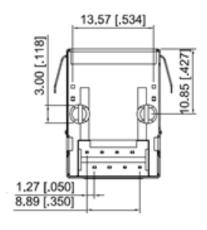


21.30 x 15.90 x 13.60mm RoHS/RoHS II Compliant MSL Level = 1

## C: Tab Up, w/ EMI Fingers (Wave)

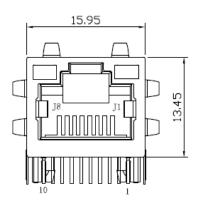


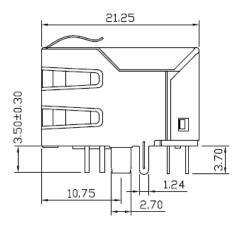


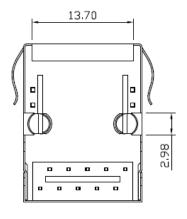


Dimensions: mm[inch] (Unless otherwise specified, all tolerances are  $\pm 0.25[0.010]$ )

### C: Tab Up, w/ EMI Fingers (Reflow)







Dimensions are in mm. Tolerances are  $\pm 0.25$ mm unless noted otherwise.





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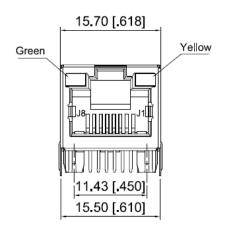


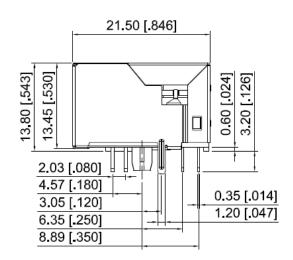
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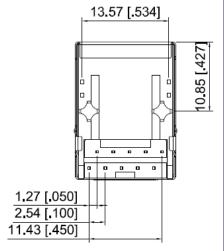


21.30 x 15.90 x 13.60mm RoHS/RoHS II Compliant MSL Level = 1

### D: Tab Up, w/o EMI Fingers (Wave)

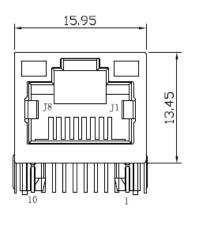


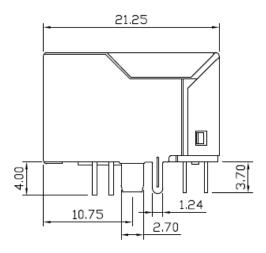


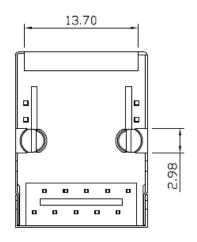


Dimensions: mm[inch] (Unless otherwise specified, all tolerances are  $\pm 0.25[0.010]$ )

### D: Tab Up, w/o EMI Fingers (Reflow)







Dimensions are in mm. Tolerances are  $\pm 0.25$ mm unless noted otherwise.



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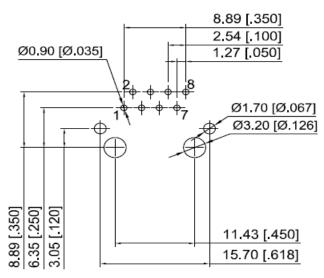


21.30 x 15.90 x 13.60mm RoHS/RoHS II Compliant MSL Level = 1

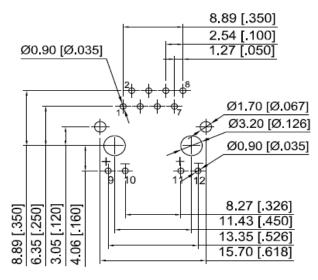
### **Recommended Layout**

## Pin Layout = 1 (Horizontal LEDs/ No LEDs)

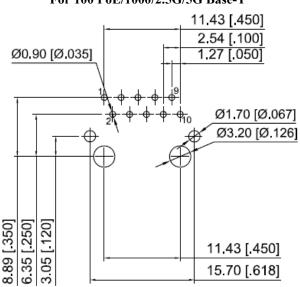
8 Pins, no LED For 100 Base-T



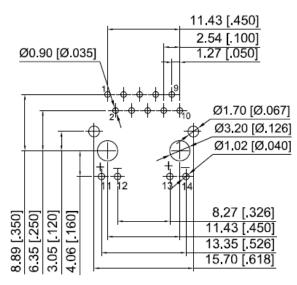
8 Pins, w/ LED For 100 Base-T



10 Pins, no LED For 100 PoE/1000/2.5G/5G Base-T



10 Pins, w/ LED For 100 PoE/1000/2.5G/5G Base-T



Dimensions: mm[inch] Layout tolerances are  $\pm 0.05[0.002]$ mm unless noted otherwise.





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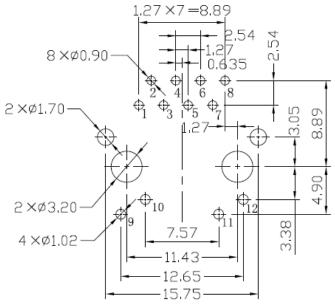
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21.30 x 15.90 x 13.60mm **RoHS/RoHS II Compliant** MSL Level = 1

## Pin Layout = 3 (diagonal LEDs)

### 8 Pins, w/ LEDs For 100 Base-T



Suggested PCB Layout (Top View)

Dimensions: mm. Layout tolerances are  $\pm 0.05$ mm unless noted otherwise.





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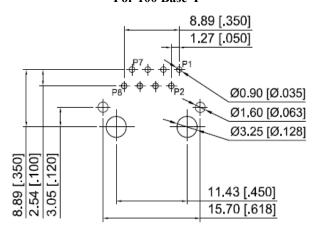
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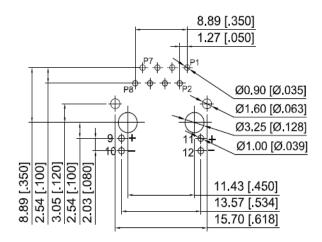
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### Pin Layout = 7 (Vertical LEDs/ No LEDs)

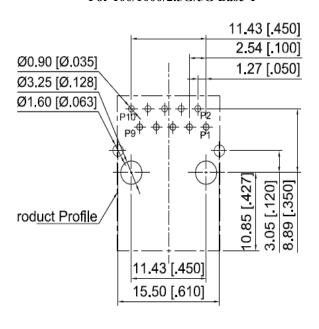
8 Pins, no LED For 100 Base-T



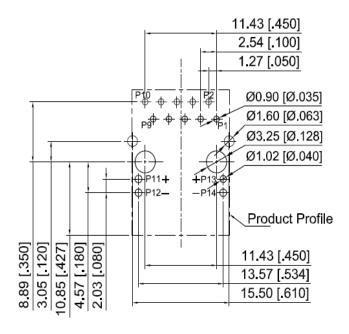
8 Pins, w/ LED For 100 Base-T



10 Pins, no LED For 100/1000/2.5G/5G Base-T



10 Pins, w/ LED For 100/1000/2.5G/5G Base-T



Dimensions: mm. Layout tolerances are  $\pm 0.05$ mm unless noted otherwise.





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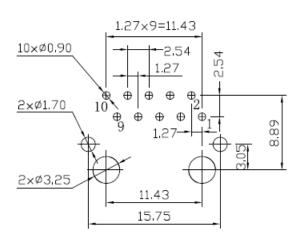


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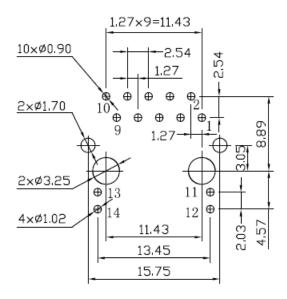


21.30 x 15.90 x 13.60mm **RoHS/RoHS II Compliant** MSL Level = 1

10 Pins, no LED For 100 Base-T w/ POE, POE+



10 Pins, w/ LED For 100 Base-T w/ POE, POE+



Dimensions are in mm. Layout tolerances are  $\pm 0.05$ mm unless noted otherwise.





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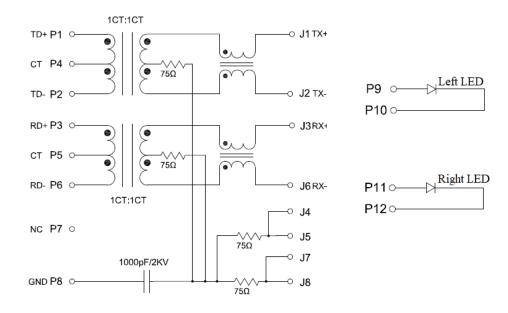
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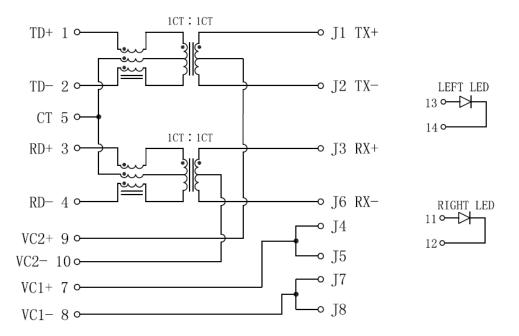
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### **Schematic**

009 (100 Base-T)



104 (100 Base-T & PoE+)







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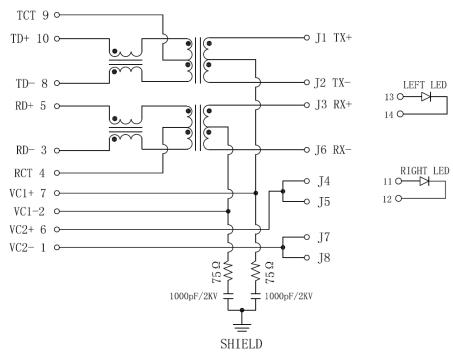


Check Inventory (>)

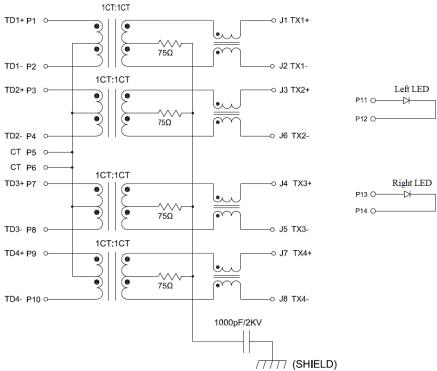


21.30 x 15.90 x 13.60mm **RoHS/RoHS II Compliant** MSL Level = 1

114 (100 Base-T & PoE)



502 (1000 Base-T)





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### **ARJM11 Series**

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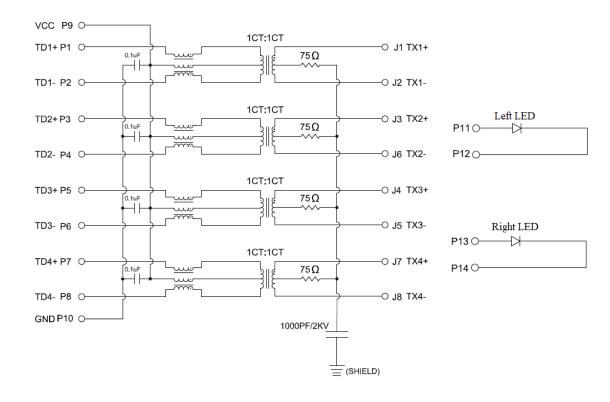


Check Inventory

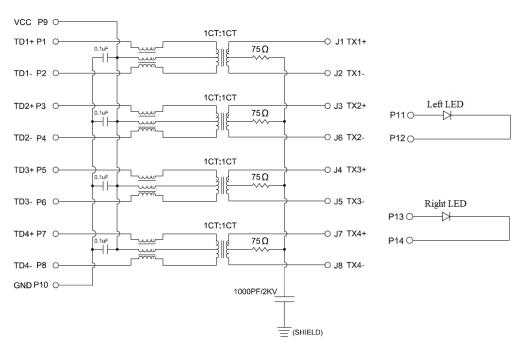


21.30 x 15.90 x 13.60mm RoHS/RoHS II Compliant MSL Level = 1

805 (2.5G Base-T)



809 (2.5G Base-T) 811 (5G Base-T)





5101 Hidden Creek Ln Spicewood TX 78669 Phone: 512-371-6159 | Fax: 512-351-8858 For terms and conditions of sales, please visit: www.abracon.com

**REVISED: 01-21-20** 

ABRACON IS ISO9001-2015 CERTIFIED



### **ARJM11 Series**

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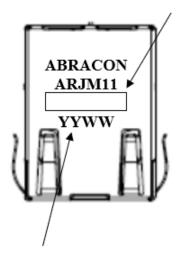
21.30 x 15.90 x 13.60mm **RoHS/RoHS II Compliant** MSL Level = 1

### **LED SPECIFICATIONS FOR ALL SCHEMATICS** 20mA Forward Current

Color	Green	Yellow	Orange
Wavelength	565nm Typ	585nm Typ	605nm Typ
Forward Voltage	2.2V Typ	2.1V Typ	2.1V Typ

### **Device Marking**

Part number excluding packaging characters "-T" XX-XXX-XX-XXX e.g. A1-009-AB-EW2



YY: Year: E.g. 21 for 2021

WW: Week: E.g. 05 for the 5th week of the year.





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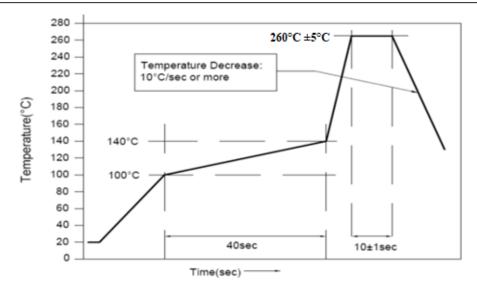
Check Inventory



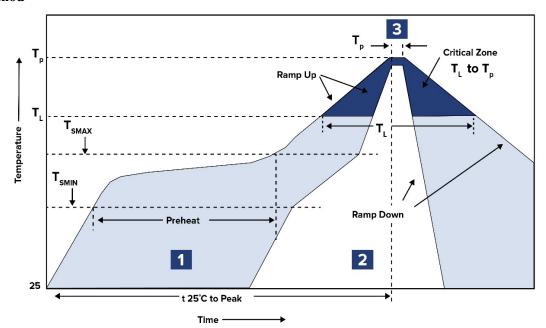
21.30 x 15.90 x 13.60mm RoHS/RoHS II Compliant MSL Level = 1

## **Soldering Profile**

#### **Wave Method**



#### **Reflow Method**



Zone	Description	Temperature	Times
1	Preheat	$T_{SMIN} \sim T_{SMAX} = 150^{\circ}C \sim 180^{\circ}C$	$120 \sim 180 \text{ sec.}$
2	Reflow	$T_L=217^{\circ}C$	$60 \sim 150 \text{ sec.}$
3	Peak heat	$T_P = 260^{\circ}C \pm 5^{\circ}C$	10 sec. MAX





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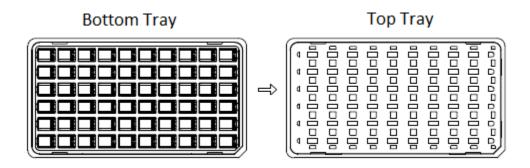
21.30 x 15.90 x 13.60mm **RoHS/RoHS II Compliant** MSL Level = 1

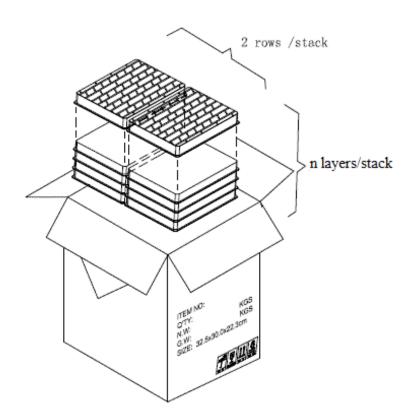
### **Packaging**

Bulk/Tray (50pcs/tray)

Format A – 40 trays/carton, Weight: 5.7g/pc, Carton Gross Weight: 15.2Kg

Format B – 24 trays/carton, Weight: 5.7g/pc, Carton Gross Weight: 9.0Kg









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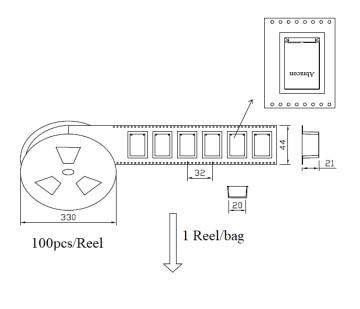
Check Inventory

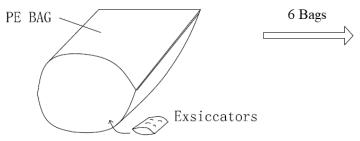


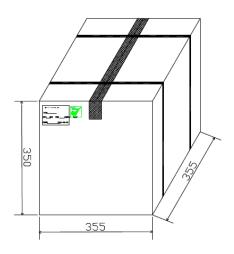
21.30 x 15.90 x 13.60mm RoHS/RoHS II Compliant MSL Level = 1

Tape & Reel (100pcs/reel)

Format C – 6 Reels/carton, Weight: 5.7g/pc, Carton Gross Weight: 7.0Kg







**Dimensions: mm** 

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