

RJ45G1 R12D 3.2N4YG/YG RL

Weidmüller Interface GmbH & Co. KG

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Germany

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RJ45 transmitter sockets (magnetics) for gigabit applications (1000 base-T) with integrated compensation actively counteracts inductive and capacitive couplings and saves space on the PCB.

The product range encompasses the following designs:

- 90°, lying (horizontal) and 180°, standing (vertical)
- latch up / latch down
- THT, THR or SMD soldering processes
- Wide range of different design types, also with integrated LEDs and shield contact tabs
- Transmission rates of up to 1 Gbps
- Packed either in a tray (TY) or on a roll (tape-on-reel, RL)
- Compatible with modular RJ45 connector according to ANSI / TIA-1096-A and IEC 60603
- Dielectric strength ≥ 1500 V AC RMS (2250 V AC peak value) according to IEEE 802.3
- Dielectric strength ≥ 1500 V AC (peak value) or ≥ 1500 V DC according to IEC 60603
- Compliance with IEEE 802.3 requirements (1000Base-T, 1 Gbps, IEEE 802.3ab or 100Base-Tx, 100 Mbps, IEEE 802.3u)

Properties and advantages:

- Extended temperature range of -40 °C to $+85$ °C for maximum performance
- Reinforced gold layer (30µ") for improved corrosion protection

- At least 0.3mm stand-off ensures a perfect soldering result

General ordering data

Version	PCB plug-in connector, RJ45 jacks transformer, 1000 Mbps, THT/THR solder connection, 90°, Latch option: bottom, Shield tabs: none, 30...80 µ" Ni / ≥ 30 µ" Au, LED: Yes, Green/yellow, Green/yellow, Number of poles: 8, Tape
Order No.	2485370000
Type	RJ45G1 R12D 3.2N4YG/YG RL
GTIN (EAN)	4050118495966
Qty.	200 pc(s).
Packaging	Tape

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Technical data

Dimensions and weights

Depth	21.5 mm	Depth (inches)	0.846 inch
Height	16.9 mm	Height (inches)	0.665 inch
Height of lowest version	13.6 mm	Width	31.2 mm
Width (inches)	1.228 inch	Net weight	8.81 g

System specifications

Colour of left LED	Green/yellow	Colour of right LED	Green/yellow
LED	Yes	Latch option	bottom
Mounting onto the PCB	THT/THR solder connection	Number of poles	8
Number of solder pins per pole	1	Outgoing elbow	90°
Performance-Category	1000 Mbps	Pitch in inches (P)	0.05 inch
Pitch in mm (P)	1.27 mm	Product family	OMNIMATE Data - RJ45 transformer jack
Protection degree	IP20	Shield surface	nickel-plated
Shield tabs	none	Shielding	Yes
Shielding material	Brass	Solder pin length (l)	3.2 mm
Soldering process	Reflow soldering, Manual soldering, Wave soldering	Transmission rate	1000 Mbps
Type of connection	Socket connector		

Electrical properties

Dielectric strength, contact / contact	1000 V DC	Dielectric strength, contact / shield	1500 V DC
Rated current	1.5 A	Rated voltage	125 V

Material data

Insulating material	PA 9T	Colour	black
Colour chart (similar)	RAL 9011	Insulating material group	II
Comparative Tracking Index (CTI)	≥ 500	Moisture Level (MSL)	1
UL 94 flammability rating	V-0	Contact base material	Phosphorus bronze
Contact surface	Gold over nickel	Layer structure of plug contact	30...80 µ" Ni / ≥ 30 µ" Au
Storage temperature, min.	-40 °C	Storage temperature, max.	85 °C
Operating temperature, min.	-40 °C	Operating temperature, max.	85 °C

Packing

Packaging	Tape	VPE length	356 mm
VPE width	354 mm	VPE height	128 mm
Tape reel diameter Ø (A)	330 mm	Surface resistance	$R_s = 10^9 - 10^{12} \Omega$

Classifications

ETIM 6.0	EC002637	ETIM 7.0	EC002637
ETIM 8.0	EC002637	ECLASS 9.0	27-44-04-02
ECLASS 9.1	27-44-04-02	ECLASS 10.0	27-44-04-02
ECLASS 11.0	27-46-02-01		

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Technical data

Approvals

Approvals



ROHS

Conform

Downloads

Approval/Certificate/Document of Conformity	Certificate of Compliance
Engineering Data	STEP
Product Change Notification	PCN PCN
User Documentation	MAN IE GUIDE DE MAN IE GUIDE EN
Catalogues	Catalogues in PDF-format

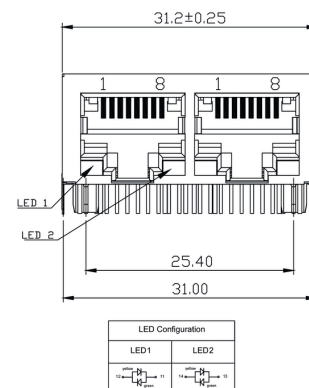
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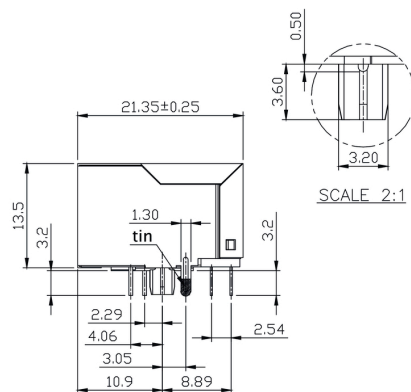
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Drawings

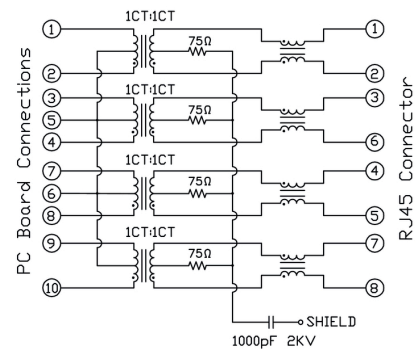
Dimensioned drawing



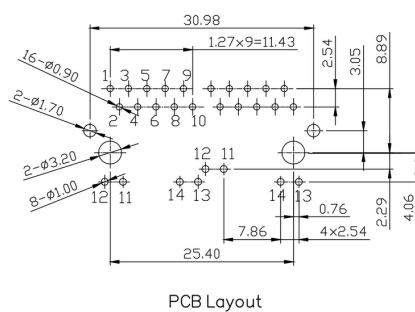
Dimensioned drawing



Wiring diagram



PCB design



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Mating connector (fully pluggable)

straight

RJ45 plug-in connector (no tools required) according to IEC 60603-7-51.



General ordering data

Type	IE-PS-RJ45-FH-180-A-1.1	Version
Order No.	1992850000	RJ45 plug with piercing contacts, straight, Cat.6 _A / Class E _A (ISO/IEC
GTIN (EAN)	4050118378115	11801 2010), EIA/TIA T568 A
Qty.	1 pc(s).	
Type	IE-PS-RJ45-FH-180-B-1.1	Version
Order No.	1992860000	RJ45 plug with piercing contacts, straight, Cat.6 _A / Class E _A (ISO/IEC
GTIN (EAN)	4050118378108	11801 2010), EIA/TIA T568 B
Qty.	1 pc(s).	
Type	IE-PS-RJ45-FH-180-B-1.6	Version
Order No.	1992830000	RJ45 plug with piercing contacts, straight, Cat.6 _A / Class E _A (ISO/IEC
GTIN (EAN)	4050118377972	11801 2010), EIA/TIA T568 B
Qty.	1 pc(s).	
Type	IE-PS-RJ45-FH-180-A-1.6	Version
Order No.	1992820000	RJ45 plug with piercing contacts, straight, Cat.6 _A / Class E _A (ISO/IEC
GTIN (EAN)	4050118377897	11801 2010), EIA/TIA T568 A
Qty.	1 pc(s).	
Type	IE-PS-RJ45-FH-180-P-1.6	Version
Order No.	1992840000	RJ45 plug with piercing contacts, straight, Cat.5 (ISO/IEC 11801),
GTIN (EAN)	4050118378023	PROFINET
Qty.	10 pc(s).	

RJ45 tool-free

RJ45 plug-in connector (tool-less) according to IEC 60603-7-51 for wire outer diameters up to 1.6 mm



RJ45 tool-free

General ordering data

Type	IE-PS-RJ45-FH-BK-P	Version
Order No.	1132060000	RJ45 IDC plug, Cat.5 (ISO/IEC 11801), 4-core, PROFINET
GTIN (EAN)	4032248912162	
Qty.	10 pc(s).	

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Mating connector (fully pluggable)

Type	IE-PS-RJ45-FH-BK	Version
Order No.	1963600000	RJ45 IDC plug, Cat.6 _A / Class E _A (ISO/IEC 11801 2010), 8-core, 4-
GTIN (EAN)	4032248645725	core, EIA/TIA T568 A, EIA/TIA T568 B, PROFINET
Qty.	10 pc(s).	
Type	IE-PS-RJ45-FH-BK-A	Version
Order No.	1132040000	RJ45 IDC plug, Cat.6 _A / Class E _A (ISO/IEC 11801 2010), 8-core, EIA/
GTIN (EAN)	4032248912155	TIA T568 A
Qty.	10 pc(s).	
Type	IE-PS-RJ45-FH-BK-B	Version
Order No.	1132050000	RJ45 IDC plug, Cat.6 _A / Class E _A (ISO/IEC 11801 2010), 8-core, EIA/
GTIN (EAN)	4032248912148	TIA T568 B
Qty.	10 pc(s).	

RJ45 crimp

RJ45 crimp plug-in connector according to IEC 60603-7-51 for wire outer diameters up to 1.05 mm



RJ45 crimp

General ordering data

Type	IE-P70	Version
Order No.	8813120000	RJ45 plug-in connector, with kink protection; 6.2 - 7.1 mm, Cat.6 _A /
GTIN (EAN)	4032248512874	Class E _A (ISO/IEC 11801 2010), IP20
Qty.	10 pc(s).	
Type	IE-P	Version
Order No.	8813100000	RJ45 plug-in connector, without kink protection; 5.5 - 7.1 mm, Cat.6 _A
GTIN (EAN)	4032248512850	/ Class E _A (ISO/IEC 11801 2010), IP20
Qty.	100 pc(s).	
Type	IE-PS-RJ45-TH-BK	Version
Order No.	1963590000	RJ45 crimp plug, Plug with bending protection sleeve in black, Cat.6 _A
GTIN (EAN)	4032248645695	/ Class E _A (ISO/IEC 11801 2010)
Qty.	10 pc(s).	
Type	IE-PM-RJ45-TH	Version
Order No.	1963580000	RJ45 crimp plug, Plug without bending protection sleeve, Cat.6 _A /
GTIN (EAN)	4032248645688	Class E _A (ISO/IEC 11801 2010)
Qty.	100 pc(s).	
Type	IE-PS-RJ45-TH-BK-P	Version
Order No.	2584980000	RJ45 crimp plug, with kink protection; 6.5 - 7.5 mm, Cat.5 (ISO/IEC
GTIN (EAN)	4050118593556	11801)
Qty.	10 pc(s).	
Type	IE-P63	Version
Order No.	8813110000	RJ45 plug-in connector, with kink protection; 5.5 - 6.2 mm, Cat.6 _A /
GTIN (EAN)	4032248512867	Class E _A (ISO/IEC 11801 2010), IP20
Qty.	10 pc(s).	

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Mating connector (fully pluggable)

angled with cable glant

RJ45 plug-in connector (no tools required) according to IEC 60603-7-51.



General ordering data

Type	IE-PS-RJ45-FH-90-P-1.6	Version
Order No.	1518100000	RJ45 plug with piercing contacts, angled, 4x90°, Cat.5 (ISO/IEC 11801), PROFINET
GTIN (EAN)	4050118325232	
Qty.	10 pc(s).	
Type	IE-PS-RJ45-FH-90-B-1.1	Version
Order No.	1518090000	RJ45 plug with piercing contacts, angled, 4x90°, Cat.6 _A / Class E _A
GTIN (EAN)	4050118325300	(ISO/IEC 11801 2010), EIA/TIA T568 B
Qty.	1 pc(s).	
Type	IE-PS-RJ45-FH-90-B-1.6	Version
Order No.	1992890000	RJ45 plug with piercing contacts, angled, 4x90°, Cat.6 _A / Class E _A
GTIN (EAN)	4050118378122	(ISO/IEC 11801 2010), EIA/TIA T568 B
Qty.	1 pc(s).	
Type	IE-PS-RJ45-FH-90-A-1.6	Version
Order No.	1992870000	RJ45 plug with piercing contacts, angled, 4x90°, Cat.6 _A / Class E _A
GTIN (EAN)	4050118378054	(ISO/IEC 11801 2010), EIA/TIA T568 A
Qty.	1 pc(s).	
Type	IE-PS-RJ45-FH-90-A-1.1	Version
Order No.	1518080000	RJ45 plug with piercing contacts, angled, 4x90°, Cat.6 _A / Class E _A
GTIN (EAN)	4050118324969	(ISO/IEC 11801 2010), EIA/TIA T568 A
Qty.	10 pc(s).	

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Drawings

Characteristics

Inductance	350 µH min. @ 100 kHz, 100 mV, 8 mA DC Bias
Leakage Inductance	0.3 µH max. @ 100 kHz, 100 mV
Insertion Loss	1.1 dB max. @ (1 - 100) MHz
Return Loss	18 dB min. @ (1 - 30) MHz 16 dB min. @ (30 - 60) MHz 12 dB min. @ (60 - 80) MHz
Cross Talk	30 dB min. @ (1 - 100) MHz
Common Mode Rejection	30 dB min. @ (1 - 100) MHz

RJ45	G1	R	1	U	3.2	E	4	GY/GY	TY	RJ45G1 R1U 3.2E4GY/GY TY
										Packaging
										TY Tray in box (manual assembly)
										RL Tape on Reel (automated assembly)
										LED
										Y/G Yellow/Green
										G/Y Green/Yellow (standard)
										GY/GY Green-Yellow/Green-Yellow
										O/G Orange/Green
										R/O Red/Orange
										... (further combinations possible)
										N without LED
										Contact surface thickness
										4 1 = 3µ", 2 = 6µ", 3 = 15µ", 4 = 30µ", 5 = 50µ"
										EMI tabs (ground fingers)
										E E = with EMI tabs
										N N = without EMI tabs
										Solder Pin length
										3.2 3.2 mm
										1.6 1.6 mm
										D SMD
										Direction, latch style
										U Horizontal (90°, side entry), latch up
										D Horizontal (90°, side entry), latch down
										V Vertical (180°, top entry)
										Y Diagonal (45°), latch up
										Number of Ports
										1 1 Port
										12; 14; ... multi ports side by side, Multiport
										21; 41; ... multi ports about each other, Multilevel
										Assembly on PCB
										R Through Hole Reflow - THR
										S Soldering process: Wave or Reflow soldering
										S Surface Mount Technology - SMT
										T Soldering process: Reflow soldering
										Through Hole Technology - THT
										Soldering process: Wave
										Performance Category
										C5 Category 5
										C6 Category 6
										C6A Category 6A
										C5e Category 5e
										M 10/100 Mbit
										G1 10/100/1000 Mbit
										G10 10 Gbit
										U Unshielded
										MP 10/100 Mbit with POE
										MP+ 10/100 Mbit with POE+

Type codes

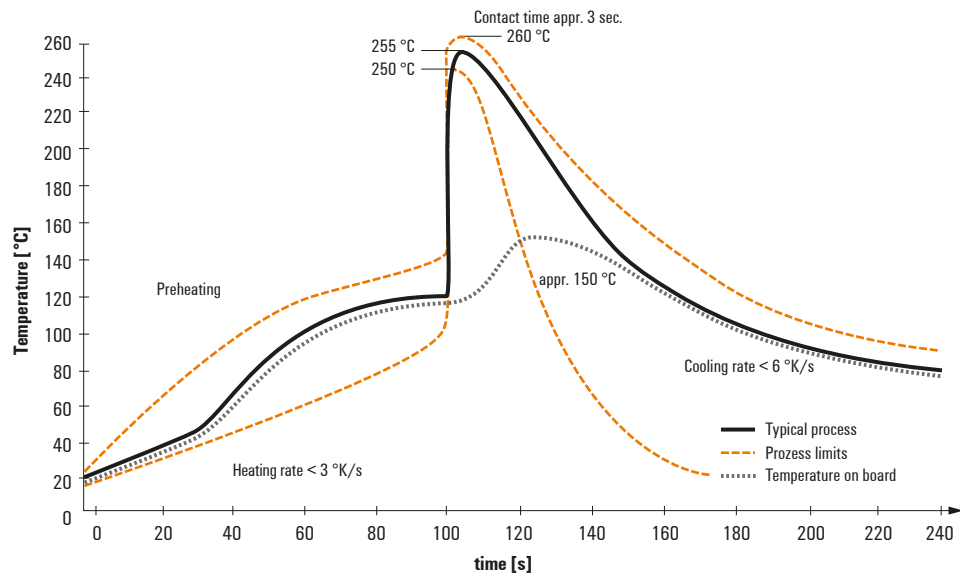
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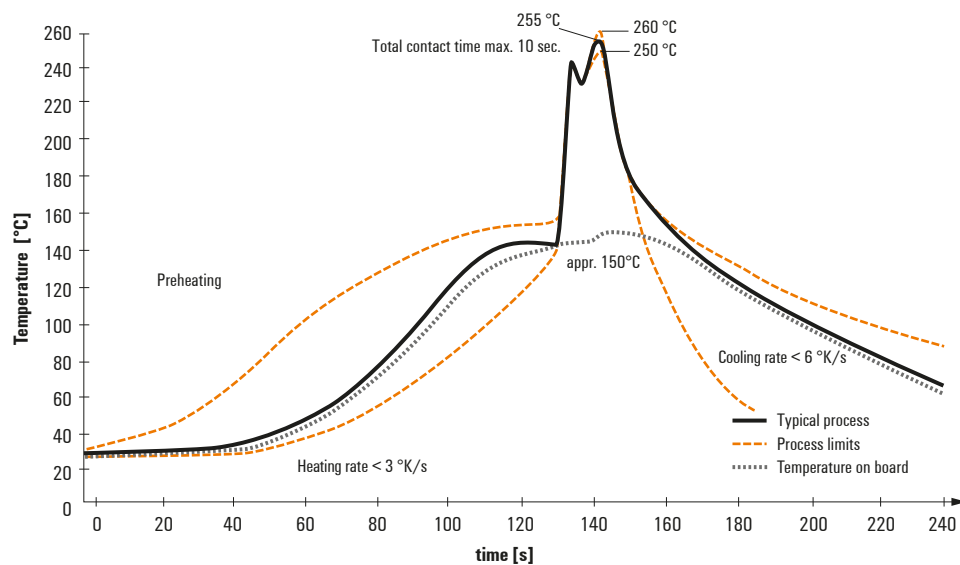
Recommended wave soldering profiles

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Single Wave:



Double Wave:



Wave soldering profiles

Wired connection elements should be processed in accordance with the DIN EN 61760-1 standard. We have included two recommendations for practical wave soldering profiles, with which Weidmüller PCB terminals and connectors are qualified.

When choosing a suitable profile for your application, the following factors also need to be considered:

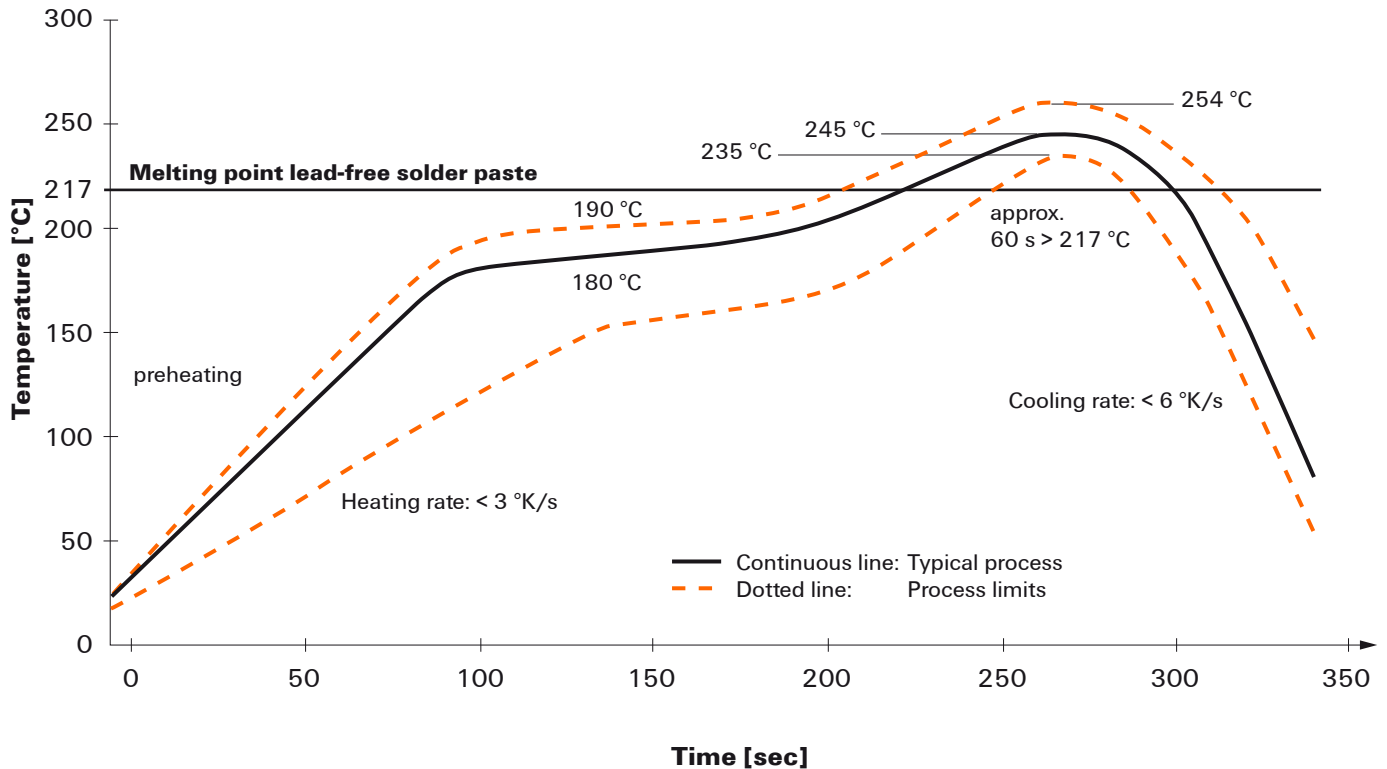
- PCB thickness
- Proportion of Cu in the layers
- Single/double-sided assembly
- Product range
- Heating and cooling rates

The single and double wave profiles each indicate the recommended operating range, including the maximum soldering temperature of 260°C. In practice, the maximum soldering temperature is quite often well below the above maximum profile.

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Recommended reflow soldering profile

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Reflow soldering profile

The perfect soldering profile for SMT Surface Mount Technology is one the most exiting question in SMT production. But there are more than one correct answer: The diagram of temperature-on-time is related to processing features of solder paste and to maximum load of components.

We have to consider the following parameters:

- Time for pre heating
- Maximum temperature
- Time above melting point
- Time for cooling
- Maximum heating rate
- Maximum cooling rate

We recommend a typical solder profile with associated process limits. With preheating components and board are prepared smoothly for the solder phase. Heating rate is typically $\leq +3\text{K/s}$. In parallel the solder paste is 'activated'. The time above melting point of 217°C the paste gets liquid and components and boards begin to connect. The maximum temperature of 245°C to 254°C should stay between 10 and 40 seconds. In the cooling phase at $\geq -6\text{K/s}$ solder is cured. Board and components cool down while avoiding cold cracks.