HCM1103

High current power inductors

Product features

- 11.5 x 10.3 x 3.0 mm maximum surface mount package
- Iron powder core material
- Magnetically shielded, low EMI
- High current carrying capacity, low core losses
- Inductance range from 0.12 µH to 22.0 µH
- Current range from 3.0 A to 75 A
- Halogen free, lead free, RoHS compliant

Applications

- Voltage Regulator Module (VRM)
- Multi-phase regulators
- Point-of-load modules
- Desktop and server VRMs and EVRDs
- Base station equipment
- Notebook and laptop regulators
- Battery power systems
- Graphics cards
- Data networking and storage systems

Environmental Data

- Storage temperature range (Component): -55 °C to +125 °C
- Operating temperature range: -55 °C to +125 °C (ambient plus self-temperature rise)
- Solder reflow temperature: J-STD-020 (latest revision) compliant

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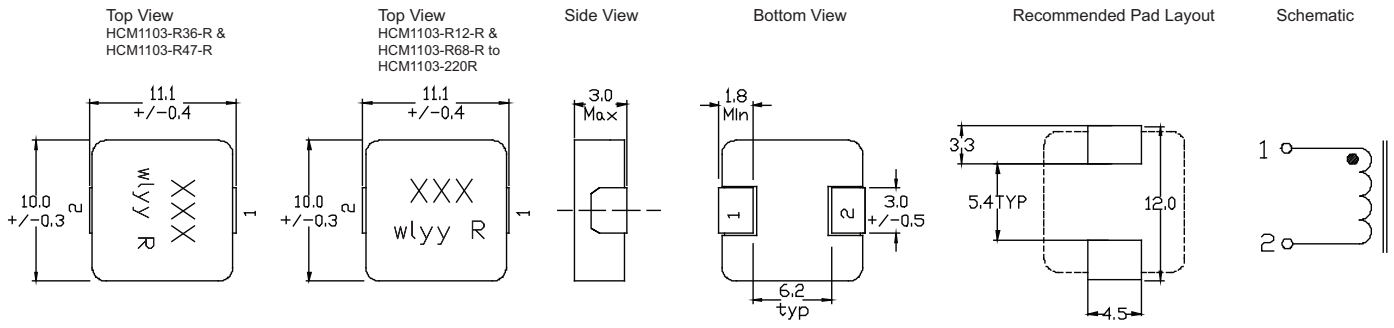
Product Specifications

Part Number[6]	OCL[1] ±20% (µH)	FLL min.[2] (µH)	I_{rms}[3] (A)	I_{sat}[4] @ +25 °C (A)	DCR (mΩ) @ +20 °C Typical	DCR (mΩ) @ +20 °C Maximum	K-Factor[5]
HCM1103-R12-R	0.12	0.07	30	75	0.55	0.61	1200
HCM1103-R36-R	0.36	0.26	23	28	1.10	1.30	711
HCM1103-R47-R	0.47	0.33	20	26	1.50	2.00	515
HCM1103-R68-R	0.68	0.38	21	23	2.90	3.40	510
HCM1103-1R0-R	1.0	0.56	15	21	5.50	6.00	377
HCM1103-2R2-R	2.2	1.2	13	16	8.40	9.00	264
HCM1103-3R3-R	3.3	1.9	9.0	14	14.5	16.0	230
HCM1103-4R7-R	4.7	2.6	7.0	13	20.5	22.5	205
HCM1103-8R2-R	8.2	4.6	5.0	8.5	35.0	38.5	153
HCM1103-100-R	10.0	5.6	5.0	7.5	40.0	44.0	141
HCM1103-150-R	15.0	8.4	4.0	6.0	59.0	65.0	114
HCM1103-220-R	22.0	12.3	3.0	5.0	90.0	99.0	91

1. Open Circuit Inductance (OCL) Test Parameters: 100 kHz, 0.25 V_{rms}, 0.0 Adc @ +25 °C
2. Full Load Inductance (FLL) Test Parameters: 100 kHz, 0.25 V_{rms}, I_{sat} @ +25 °C.
3. I_{rms}: DC current for an approximate temperature rise of 40 °C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed +125 °C under worst case operating conditions verified in the end application.
4. I_{sat}: Peak current for approximately 30% rolloff at +25 °C
5. K-factor: Used to determine B_{p-p} for core loss (see graph). B_{p-p} = K * L * ΔI. B_{p-p}:(Gauss), K: (K-factor from table), L: (Inductance in µH), ΔI (peak-to-peak ripple current in Amps).
6. Part Number Definition: HCM1103-xxx-R
   HCM1103 = Product code and size
   xxx= Inductance value in µH, R = decimal point,
   if no R is present then third character = number of zeros.
   -R suffix = RoHS compliant

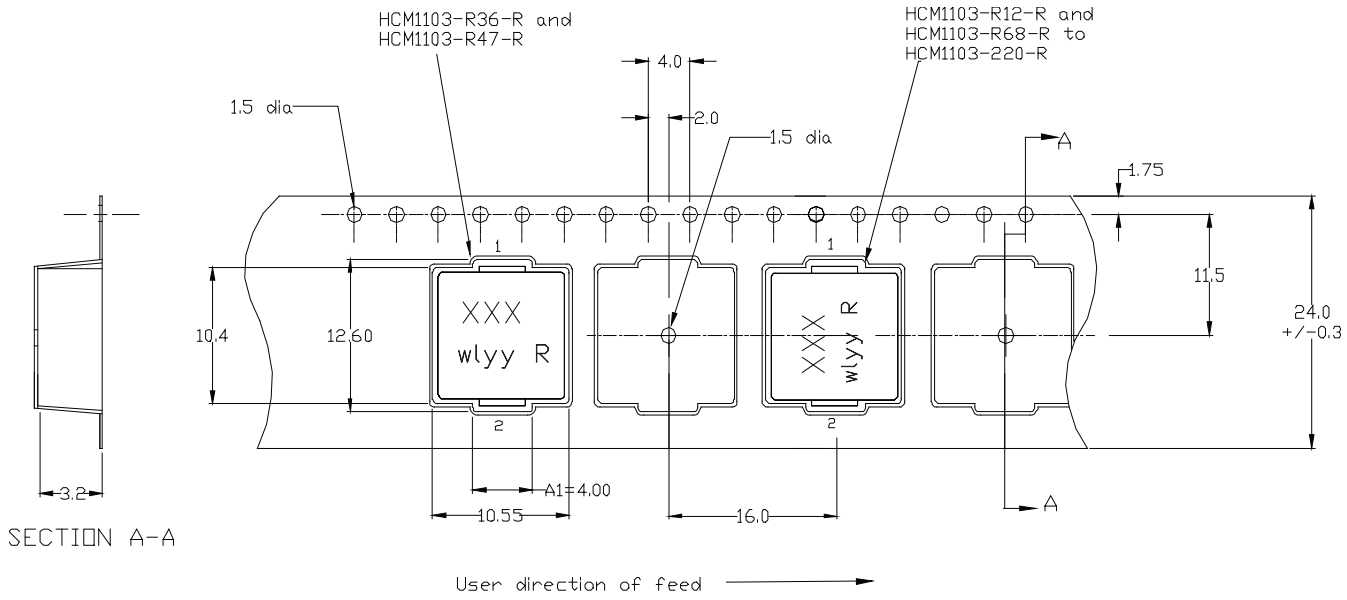
Dimensions (mm)



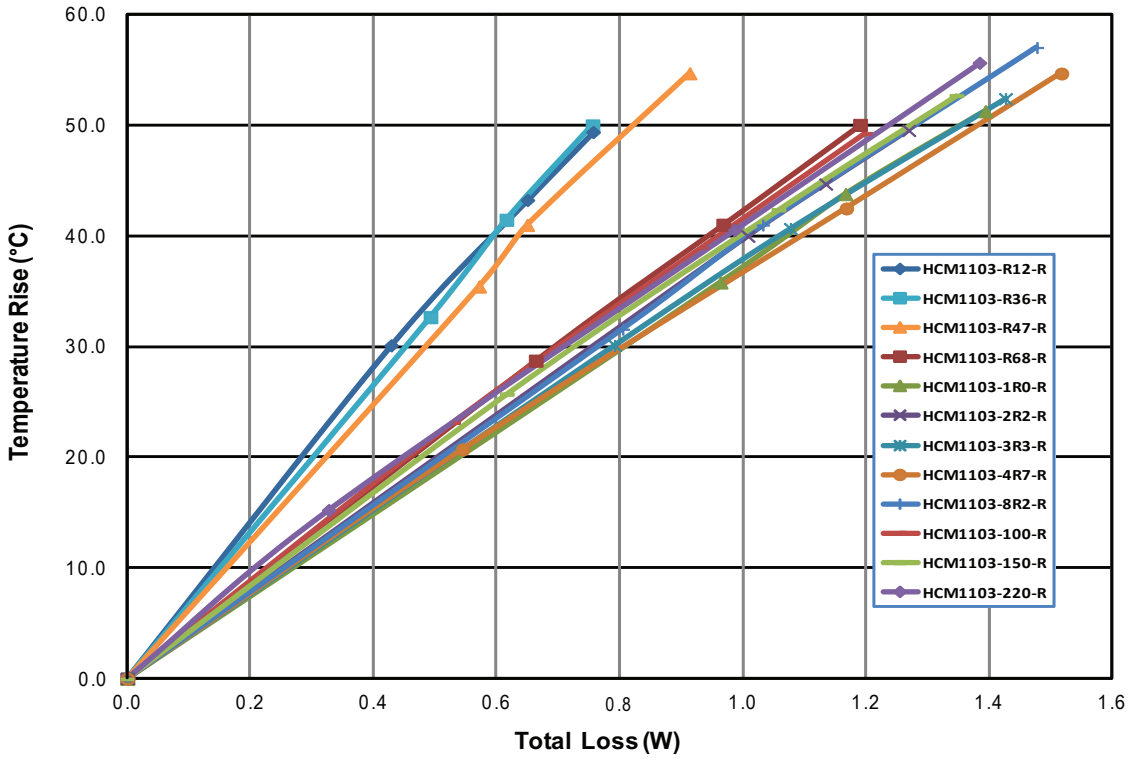
Part Marking: xxx = Inductance value in uH, R = decimal point, if no R is present then third character = # of zeros.
wlyy = (Date code), R = Revision Level
All soldering surfaces to be coplanar within 0.10 millimeters.
Tolerances are ±0.3 millimeters unless stated otherwise.
HCM1103-R36-R and HCM1103-R47-R Color: Top Grey
HCM1103-R12-R and HCM1103-R68-R to HCM1103-220-R Color : Top Grey
Do not route traces or vias underneath the inductor

Packaging information (mm)

Supplied in tape and reel packaging, 1000 parts per 13" diameter reel.

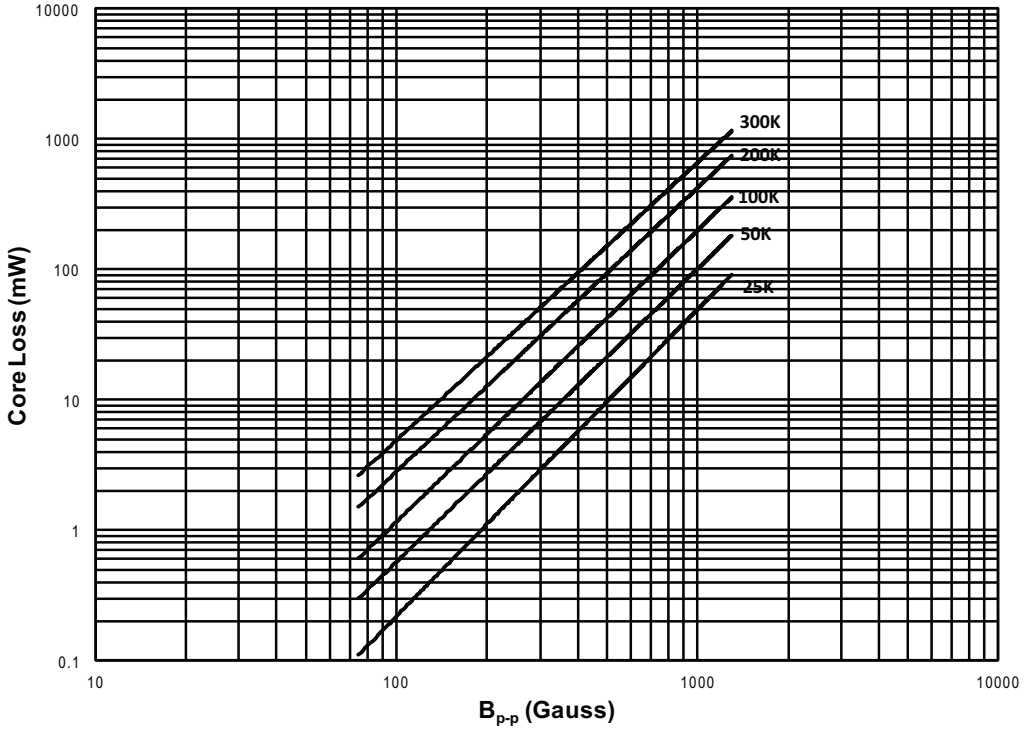


Temperature rise vs. total loss

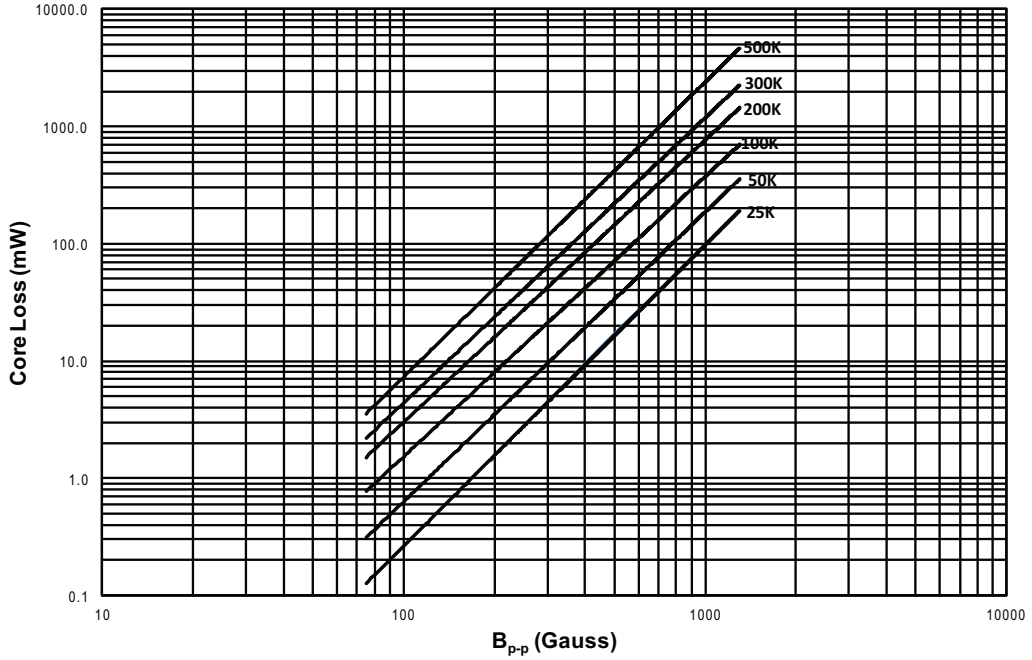


Core loss vs. B_{p-p}

HCM1103-; R36-R and R47-R

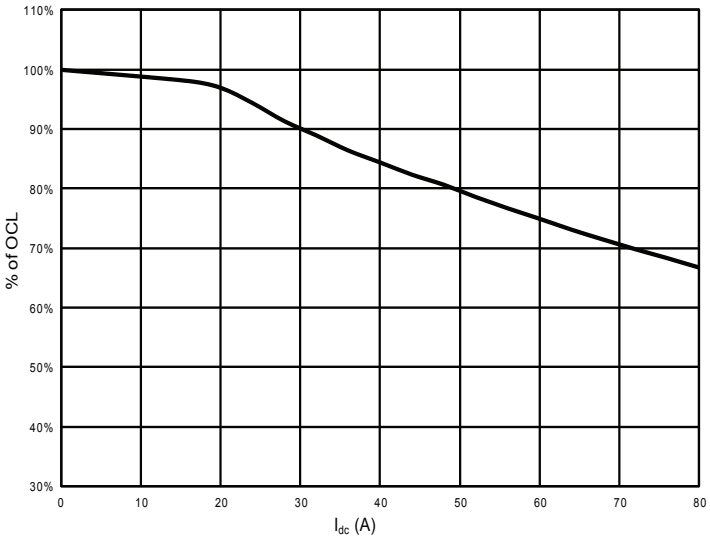


HCM1103-; R12-R, R68-R through 220-R

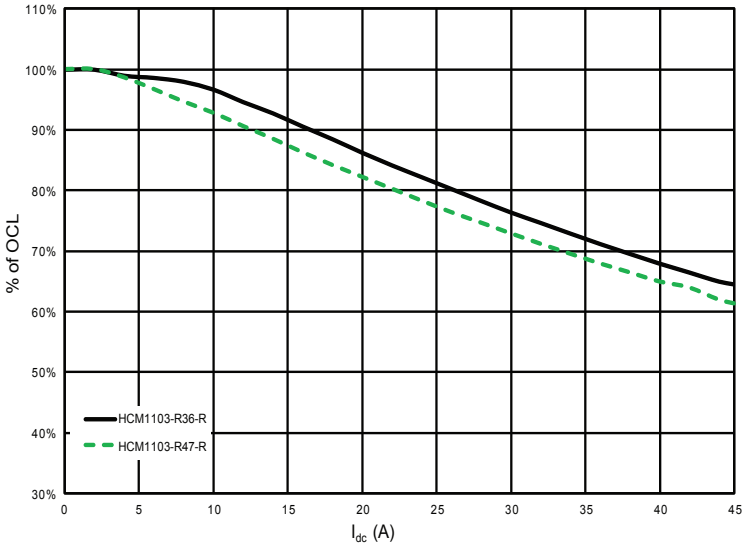


Inductance characteristics

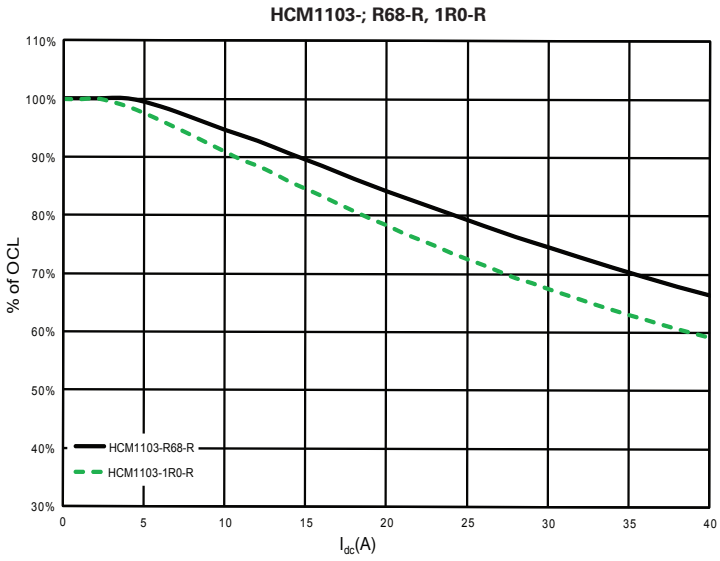
HCM1103-R12-R



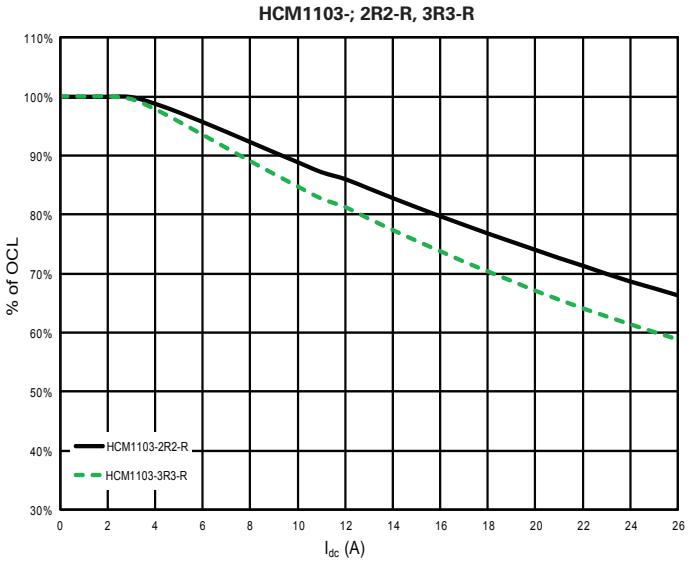
HCM1103-; R36-R, R47-R



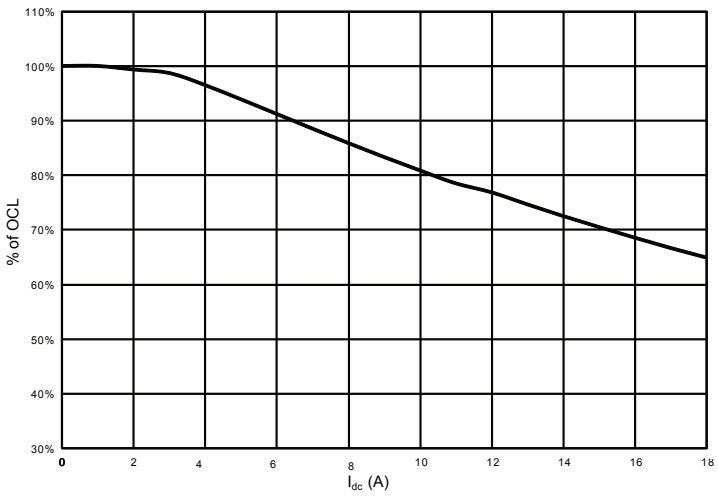
HCM1103-; R68-R, 1R0-R



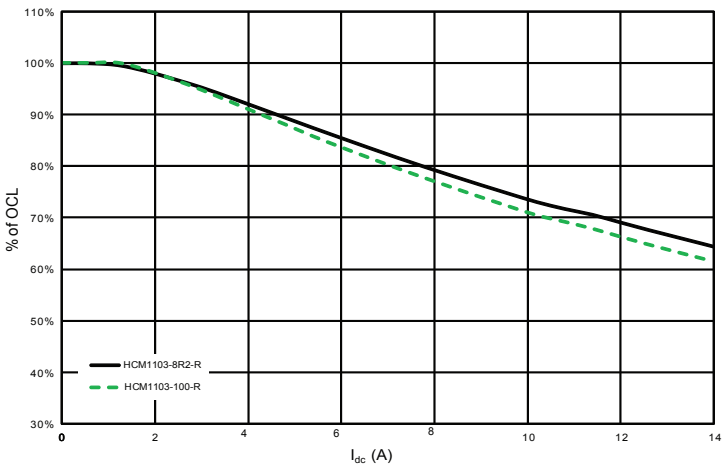
HCM1103-; 2R2-R, 3R3-R



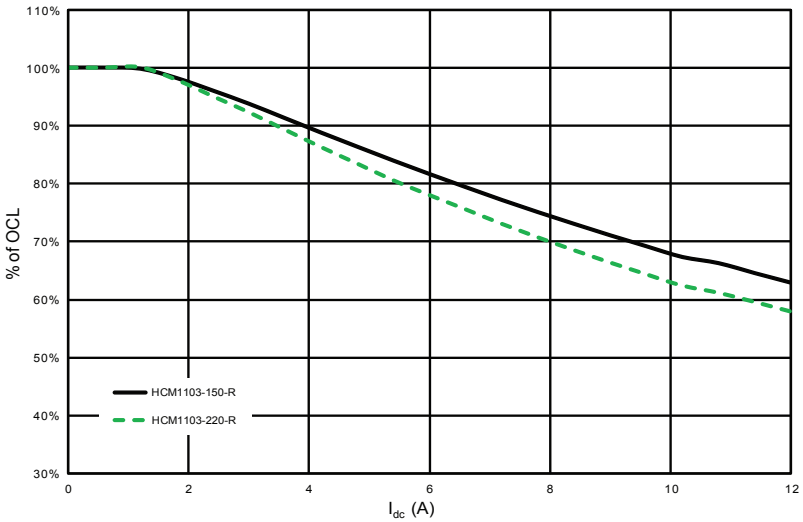
HCM1103-4R7-R



HCM1103-; 8R2-R, 100-R



Inductance characteristics



Solder reflow profile

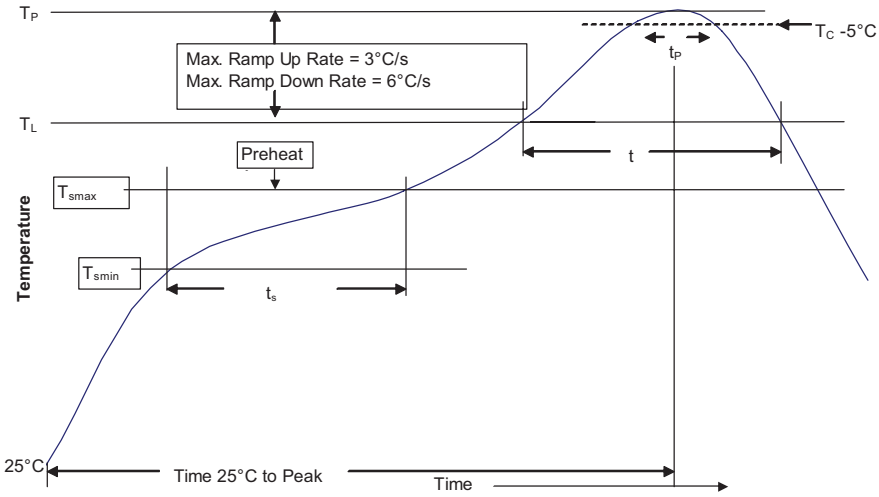


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm3 <350	Volume mm3 ≥350
<2.5mm)	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

Package Thickness	Volume mm^3 <350	Volume mm^3 350 - 2000	Volume mm^3 >2000
<1.6mm	260°C	260°C	260°C
1.6 – 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Reference JDEC J-STD-020

Profile Feature		Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak	• Temperature min. (T_{smin})	100°C	150°C
	• Temperature max. (T_{smax})	150°C	200°C
	• Time (T_{smin} to T_{smax}) (t_s)	60-120 Seconds	60-120 Seconds
Average ramp up rate T_{smax} to T_p		3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T_L) Time at liquidous (t_L)		183°C 60-150 Seconds	217°C 60-150 Seconds
Peak package body temperature (T_P)*		Table 1	Table 2
Time (t_p)** within 5 °C of the specified classification temperature (T_C)		20 Seconds**	30 Seconds**
Average ramp-down rate (T_p to T_{smax})		6°C/ Second Max.	6°C/ Second Max.
Time 25°C to Peak Temperature		6 Minutes Max.	8 Minutes Max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.
** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

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Powering Business Worldwide

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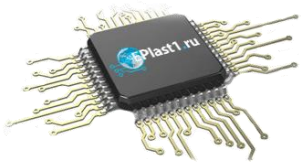
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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