

# DR

## High power density, high efficiency, shielded drum core power inductors



### Product features

- Four sizes of shielded drum core inductors
- Inductance range from 0.33  $\mu$ H to 1000  $\mu$ H
- Current range up to 56 A peak
- Magnetically shielded
- Secure mounting
- Ferrite core material

### Applications

- Desktop and servers
- DVD and media players
- Portable and handheld devices
- LCD panels
- DC-DC converters
- Buck, boost, forward, and resonant converters
- Noise filtering and filter chokes

### Environmental data

- Storage temperature range (component):  
-40 °C to +125 °C
- Operating temperature range: -40 °C to +125 °C  
(ambient plus self-temperature rise)
- Solder reflow temperature:  
J-STD-020 (latest revision) compliant



**Product specifications**

Part Number	Rated Inductance (μH)	OCL <sup>1</sup> ±20% (μH)	I <sub>rms</sub> <sup>2</sup> (A)	I <sub>sat</sub> <sup>3</sup> (A) Peak	DCR <sup>4</sup> (Ω) Typ.	Volt-μsec <sup>5</sup> Typ.
DR125-R47-R	0.47	0.456	17.6	33.0	0.0018	3.17
DR125-1R0-R	1.00	0.894	15.0	23.6	0.0024	4.43
DR125-1R5-R	1.50	1.478	13.8	18.3	0.0029	5.70
DR125-2R2-R	2.20	2.208	10.9	15.0	0.0045	6.97
DR125-3R3-R	3.30	3.084	9.26	12.7	0.0063	8.23
DR125-4R7-R	4.70	5.274	7.18	9.71	0.0105	10.8
DR125-6R8-R	6.80	6.588	6.64	8.68	0.0123	12.0
DR125-8R2-R	8.20	8.048	5.54	7.86	0.0176	13.3
DR125-100-R	10.0	9.654	5.35	7.17	0.0189	14.6
DR125-150-R	15.0	15.35	4.27	5.69	0.0298	18.4
DR125-180-R	18.0	17.70	3.81	5.32	0.0377	19.6
DR125-220-R	22.0	22.36	3.70	4.71	0.0396	22.2
DR125-330-R	33.0	33.74	3.28	3.84	0.0505	27.2
DR125-470-R	47.0	47.47	2.71	3.24	0.0740	32.3
DR125-560-R	56.0	55.24	2.31	3.00	0.102	34.8
DR125-680-R	68.0	67.91	2.22	2.70	0.101	38.6
DR125-820-R	82.0	86.89	2.05	2.39	0.128	43.7
DR125-101-R	100	102.7	1.78	2.20	0.170	47.5
DR125-151-R	150	151.1	1.48	1.81	0.248	57.6
DR125-221-R	220	216.8	1.19	1.51	0.384	69.0
DR125-331-R	330	332.6	1.06	1.22	0.482	85.5
DR125-471-R	470	473.1	0.87	1.02	0.718	102
DR125-681-R	680	679.8	0.70	0.85	1.10	122
DR125-821-R	820	828.0	0.60	0.77	1.49	135
DR125-102-R	1000	1008	0.57	0.70	1.69	149
DR125-472-R	4700	4720	0.268	0.32	7.53	322.4
DR125-124-R	120000	120630	0.060	0.069	150	1521

1. Open Circuit Inductance Test Parameters: 100 kHz, 0.25 V<sub>rms</sub>, 0.0 Adc.
2. RMS current for an approximate DT of 40 °C without core loss.  
It is recommended that the temperature of the part not exceed +125 °C.
3. Peak current for approximate 30% roll off at +20 °C.
4. DCR limits @ +20 °C.
5. Applied Volt-Time product (V-μs) across the inductor. This value represent the applied V-μsec 100 kHz necessary to generate a core loss equal to 10% of the total losses for 40 °C temperature rise.

6. Part number definition: DRxxx-yyy-R  
 - DRxxx = product code and size,  
 - yyy = inductance value in μH,  
 - R = decimal point. If no R is present, third character = # of zeros  
 - "-R" suffix = RoHS compliant

Product specifications

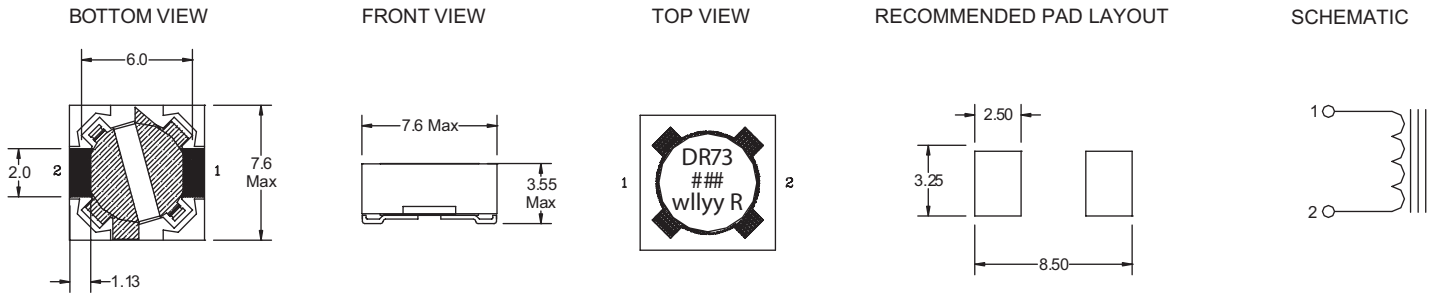
Part Number	Rated Inductance (μH)	OCL <sup>1</sup> ±20% (μH)	$I_{rms}^2$ (A)	$I_{sat}^3$ (A) Peak	DCR <sup>4</sup> (Ω) Typ.	Volt-μsec <sup>5</sup> Typ.
DR127-R47-R	0.47	0.419	17.9	56.0	0.00195	3.50
DR127-1R0-R	1.00	0.821	15.5	40.0	0.00313	4.90
DR127-1R5-R	1.50	1.357	13.5	31.1	0.00341	6.30
DR127-2R2-R	2.20	2.027	12.5	25.5	0.00402	7.70
DR127-3R3-R	3.30	2.831	10.5	21.5	0.00567	9.10
DR127-4R7-R	4.70	4.841	8.25	16.5	0.00917	11.9
DR127-6R8-R	6.80	7.387	7.34	13.3	0.0116	14.7
DR127-8R2-R	8.20	8.861	6.32	12.2	0.0157	16.1
DR127-100-R	10.0	10.47	6.04	11.2	0.0172	17.5
DR127-150-R	15.0	14.09	5.03	9.66	0.0247	20.3
DR127-220-R	22.0	22.93	4.00	7.57	0.0391	25.9
DR127-330-R	33.0	33.92	3.23	6.22	0.0600	31.5
DR127-470-R	47.0	47.05	2.95	5.28	0.0719	37.1
DR127-680-R	68.0	66.48	2.44	4.44	0.105	44.1
DR127-820-R	82.0	79.75	2.09	4.06	0.143	48.3
DR127-101-R	100	99.31	1.96	3.64	0.163	53.9
DR127-151-R	150	144.9	1.59	3.01	0.247	65.1
DR127-221-R	220	221.5	1.29	2.43	0.376	80.5
DR127-331-R	330	323.6	1.04	2.01	0.574	97.3
DR127-471-R	470	467.1	0.85	1.68	0.861	117
DR127-681-R	680	676.7	0.76	1.39	1.08	141
DR127-821-R	820	818.1	0.65	1.27	1.47	155
DR127-102-R	1000	1005	0.61	1.14	1.66	172

1. Open Circuit Inductance Test Parameters: 100 kHz, 0.25 V<sub>rms</sub>, 0.0 Adc.
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It is recommended that the temperature of the part not exceed +125 °C.
3. Peak current for approximate 30% roll off at +20 °C.
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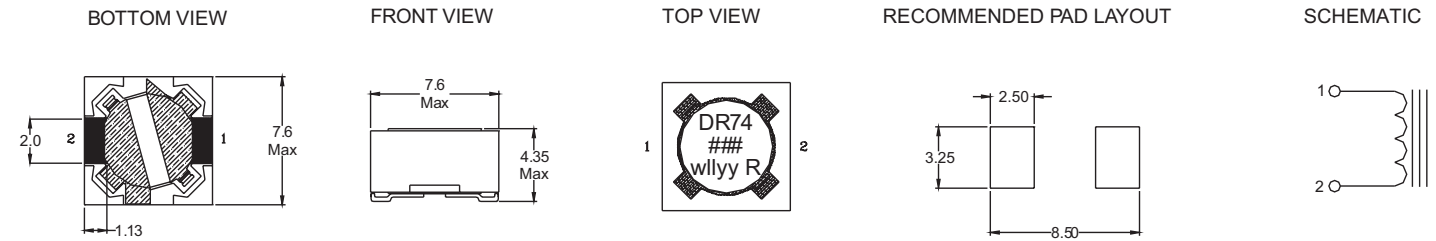
6. Part number definition: DRxxx-yyy-R  
 - DRxxx = product code and size,  
 - yyy = inductance value in μH,  
 - R = decimal point. If no R is present, third character = # of zeros  
 - "-R" suffix = RoHS compliant

**Dimensions - mm**

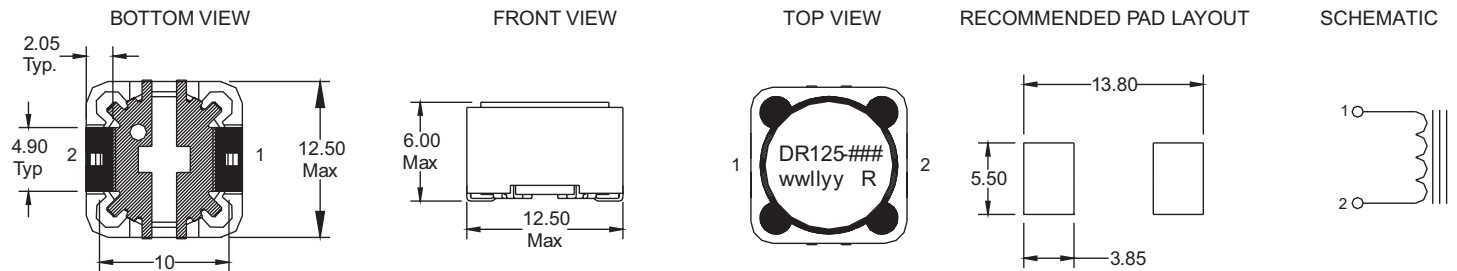
**DR73**



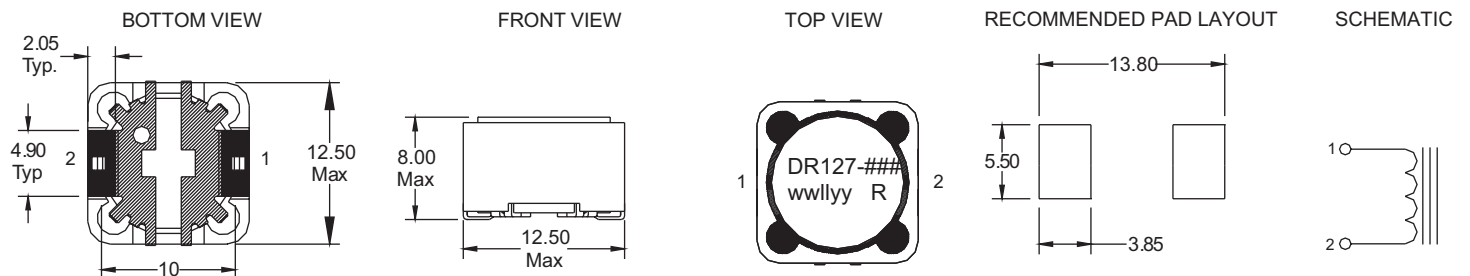
**DR74**



**DR125**



**DR127**

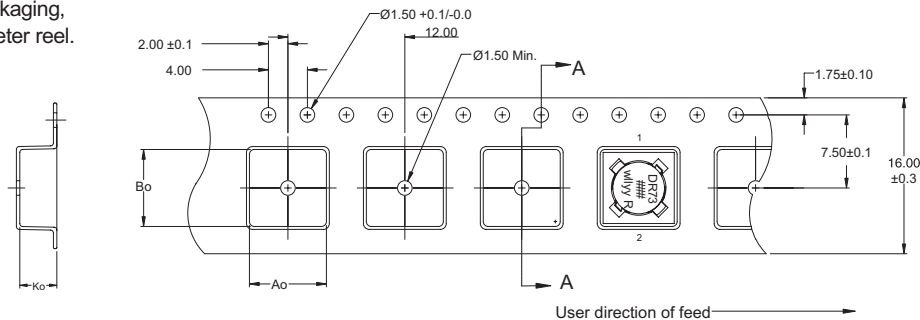


### = Inductance value per family chart  
wlyy and wwlyy = (date code) R = revision level

Packaging information - mm

DR73

Supplied in tape and reel packaging,  
1350 parts per reel, 13" diameter reel.



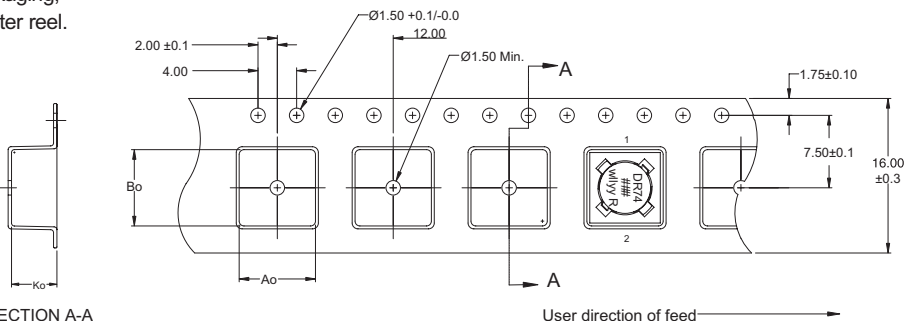
Ao=7.90mm  
Bo=7.90mm  
Ko=3.80mm

SECTION A-A



DR74

Supplied in tape and reel packaging,  
1100 parts per reel, 13" diameter reel.



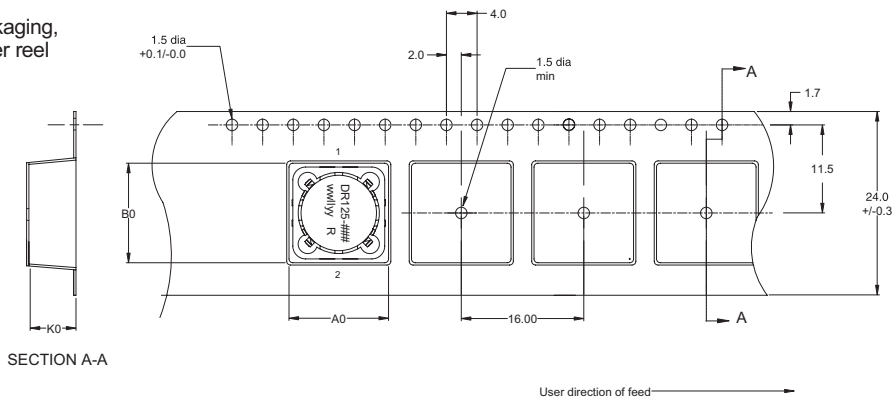
Ao=7.90mm  
Bo=7.90mm  
Ko=4.70mm

SECTION A-A



DR125

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



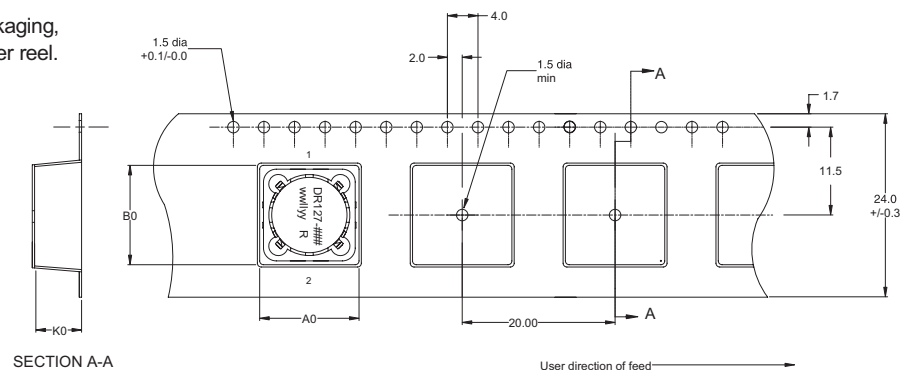
Ao=13.0mm  
Bo=13.0mm  
Ko=6.30mm

SECTION A-A



DR127

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



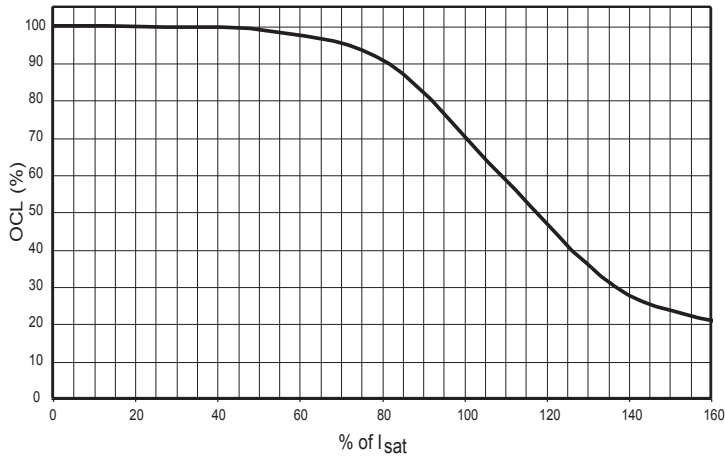
Ao=13.0mm  
Bo=13.0mm  
Ko=8.30mm

SECTION A-A

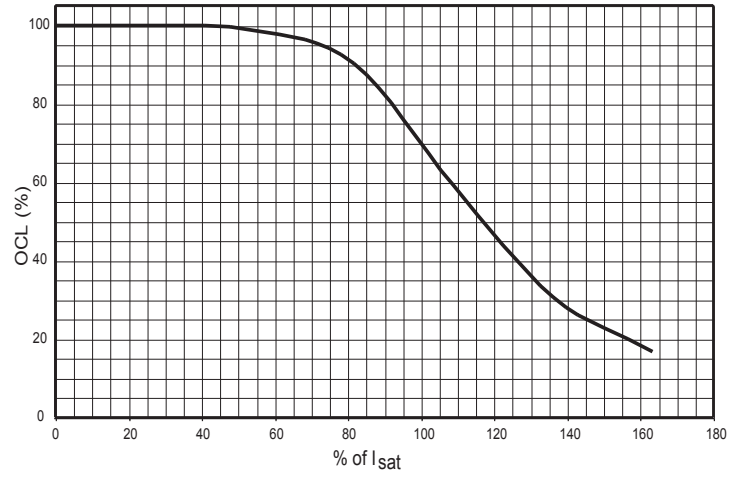


**Inductance characteristics**

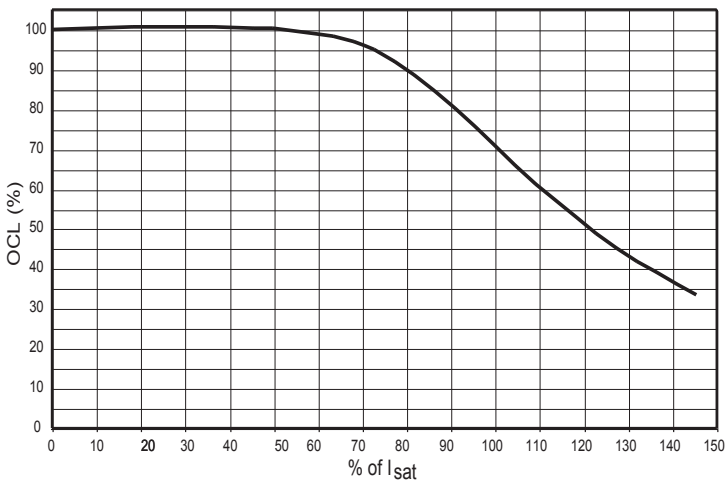
OCL vs  $I_{sat}$  DR73



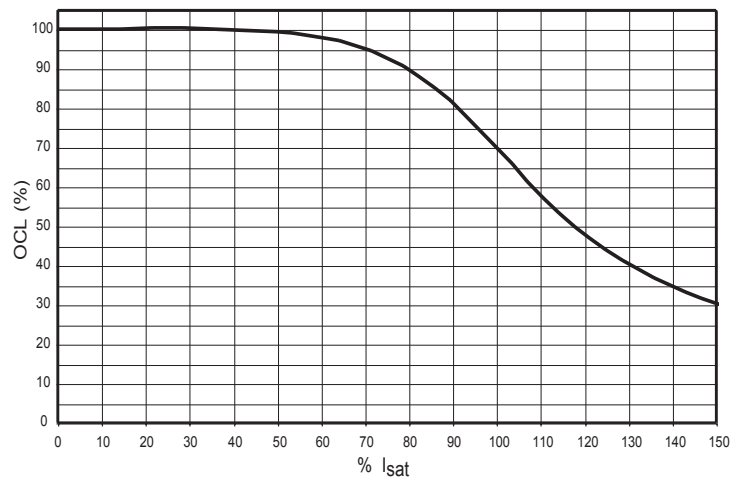
OCL vs  $I_{sat}$  DR74



OCL vs  $I_{sat}$  DR125

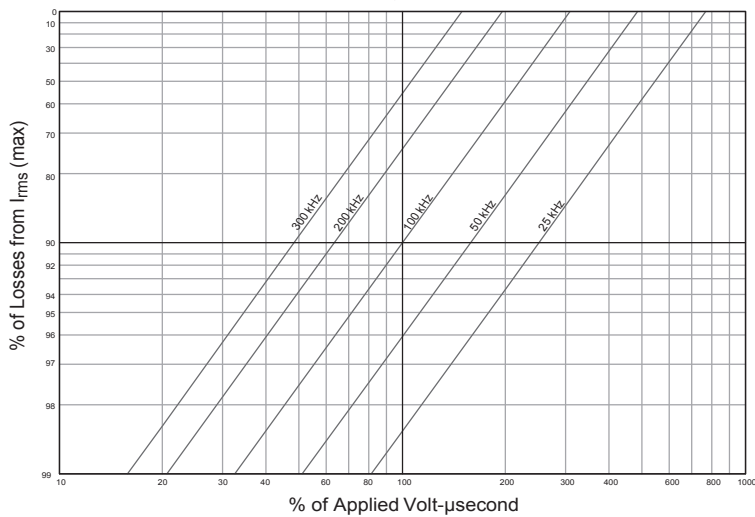


OCL vs  $I_{sat}$  DR127



**Core loss**

$I_{rms}$  Derating with Core Loss



### Solder Reflow Profile

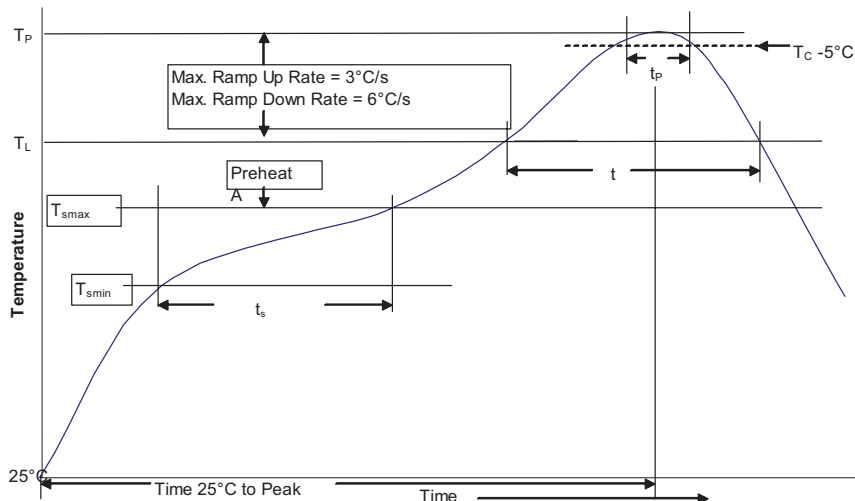


Table 1 - Standard SnPb Solder ( $T_c$ )

Package Thickness	Volume $\text{mm}^3$ <350	Volume $\text{mm}^3$ $\geq 350$
<2.5mm	235°C	220°C
$\geq 2.5\text{mm}$	220°C	220°C

Table 2 - Lead (Pb) Free Solder ( $T_c$ )

Package Thickness	Volume $\text{mm}^3$ <350	Volume $\text{mm}^3$ 350 - 2000	Volume $\text{mm}^3$ >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
	• Temperature max. ( $T_{smax}$ )	150°C
	• Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )	60-120 Seconds
Average ramp up rate $T_{smax}$ to $T_p$	3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature ( $T_L$ )	183°C	217°C
Time at liquidous ( $t_L$ )	60-150 Seconds	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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Publication No. 4315 BU-SB14112  
September 2017