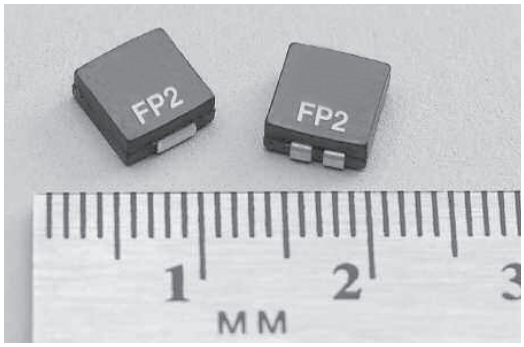
FP2

Low profile, high current power inductors



Product description

- High current carrying capacity
- Dual conductors allow for low inductance and high current or high inductance and lower current
- Inductance range from 0.047uH to 0.480uH
- Current range 9.0 to 42 Amps
- 7.2 x 6.7mm footprint surface mount package in a 3.0 or 5.0mm heights
- Ferrite core material
- Halogen free, lead free, RoHS compliant

Applications

- Servers
- Multi-phase and Vcore regulators
- Voltage Regulator Modules (VRMs)
  - Server and desktop
  - Central processing unit (CPU)
  - Graphics processing unit (GPU)
  - Application specific integrated circuit (ASIC)
  - High power density
- Notebook regulators
- Battery power systems
- Graphics cards

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-020D compliant

Powering Business Worldwide

Product specifications

Part number[5]	OCL[1] (µH) ±15%	I_{rms}[2] (amps)	I_{sat}[3] (amps)	DCR (Ω) typical @ 20°C	Height maximum	Volt-µsec[4] (V-µs)
Single conductor						
FP2-S047-R	0.047	39	42	0.00024	3	0.75
FP2-S068-R	0.068	39	32	0.00024	3	0.75
FP2-S082-R	0.082	39	26	0.00024	3	0.75
FP2-S100-R	0.100	39	22	0.00024	3	0.75
FP2-S120-R	0.120	39	18	0.00024	3	0.75
FP2-S200-R	0.200	37	19	0.00028	5	0.99
FP2-V050-R	0.050	37	70	0.00028	5	0.99
FP2-V100-R	0.100	37	40	0.00028	5	0.99
FP2-V120-R	0.120	37	33	0.00028	5	0.99
FP2-V150-R	0.150	37	25.5	0.00028	5	0.99
Double conductor						
FP2-D047-R	0.047	37	42	0.00026	3	0.75
FP2-D068-R	0.068	37	32	0.00026	3	0.75
FP2-D082-R	0.082	37	26	0.00026	3	0.75
FP2-D100-R	0.100	37	22	0.00026	3	0.75
FP2-D120-R	0.120	37	18	0.00026	3	0.75

Series mode

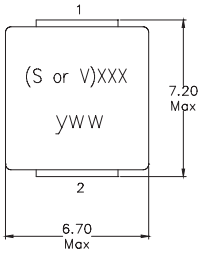
Part number[5]	OCL[1] (µH) ±15%	I_{rms}[2] (amps)	I_{sat}[3] (amps)	DCR (Ω) typical @ 20°C	Height maximum	Volt-µsec[4] (V-µs)
Double conductor						
FP2-D047-R	0.188	16	21	0.0013	3	1.5
FP2-D068-R	0.272	16	16	0.0013	3	1.5
FP2-D082-R	0.328	16	13	0.0013	3	1.5
FP2-D100-R	0.400	16	11	0.0013	3	1.5
FP2-D120-R	0.480	16	9	0.0013	3	1.5

1. Open Circuit Inductance (OCL) Test parameters: 1.0MHz, 0.25Vrms,).0Adc, +25°C
2. Irms: 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, airflow, 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.
3. Isat : Peak current for approximately 30% rolloff @ +20°C.
4. Applied Volt-Time product (V-µs) across the inductor. This value represents the applied V-µs at 500kHz necessary to generate a core loss equal to 10% of the total losses for 40°C temperature rise.
5. Part Number Definition: FP2-xyyy-R
   FP2 = Product code and size
   x = Version indicator, S = single conductor, V = single conductor, D = dual conductor
   yyy = Inductance value in uH, R = decimal point
   -R suffix = RoHS compliant

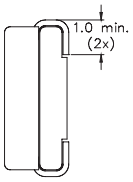
Dimensions–mm

Single conductor

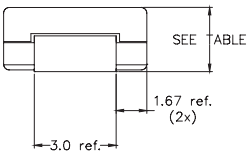
Top View



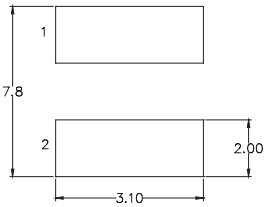
Side View



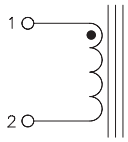
Front View



Recommended Pad Layout



Schematic

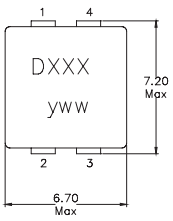


Table

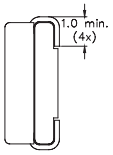
Part Number	Max Ht.
FP2–S047 FP2–S068 FP2–S082 FP2–S100 FP2–S120	3.00
FP2–S200 FP2–V050 FP2–V100 FP2–V120 FP2–V150	5.0

Dual conductor

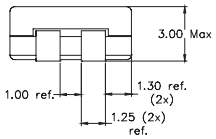
Top View



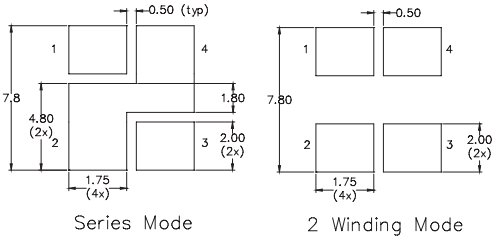
Side View



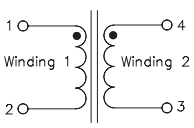
Front View

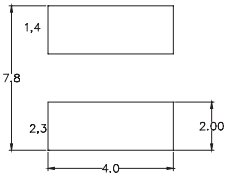


Recommended Pad Layout



Schematic





Parallel Mode

Part marking: FPS, V or D (S= single conductor, V= single conductor, D= dual conductor),

xxx (xxx= inductance value in uH, R= decimal point)

yww= date code

Tolerances are ±0.2 millimeters unless stated otherwise

All soldering surfaces to be coplanar within 0.15 millimeters

Do not route traces or vias underneath the inductor

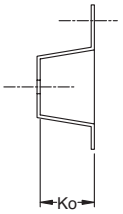
Packaging information

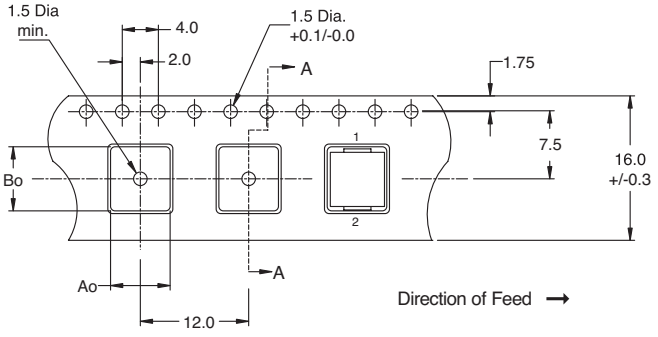
Supplied in tape and reel packaging.

FP2-S,FP2-D: 1,700 parts per 13" diameter reel.

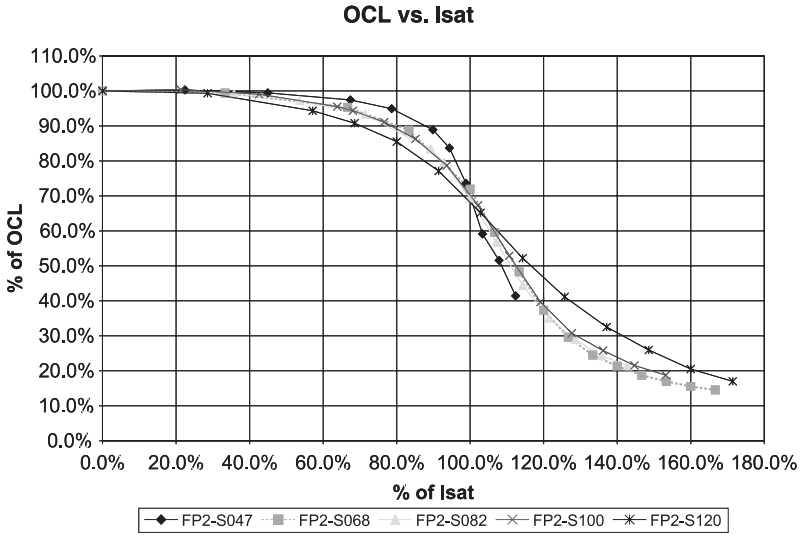
FP2-S200, FP2-V: 950 parts per 13" diameter reel.

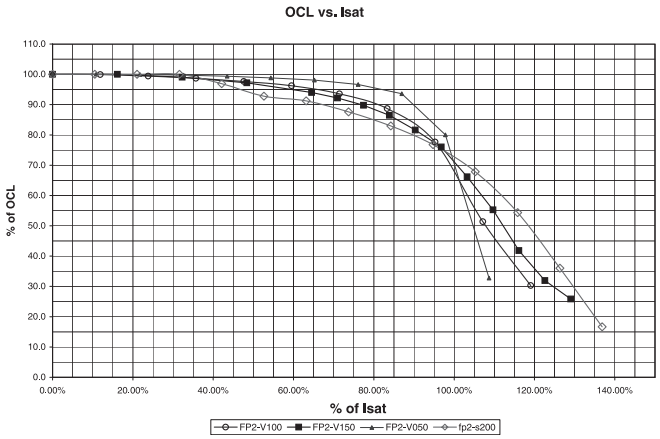
Ao=6.6mm
Bo=7.1mm
Ko=3.2mm
(FP2-S,FP2-D)
Ko=5.2mm
(FP2-S200,FP2-V)

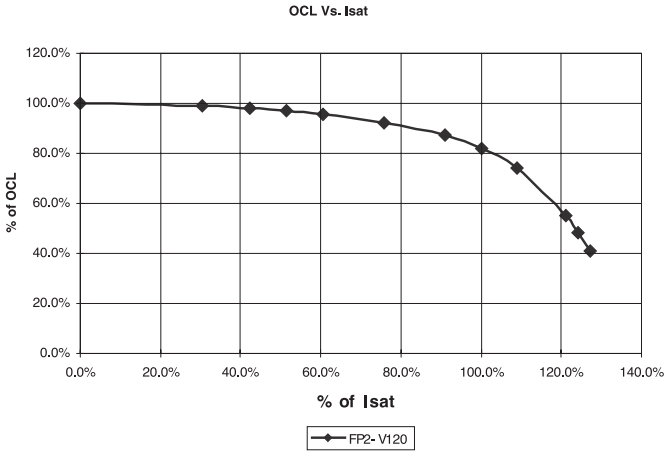




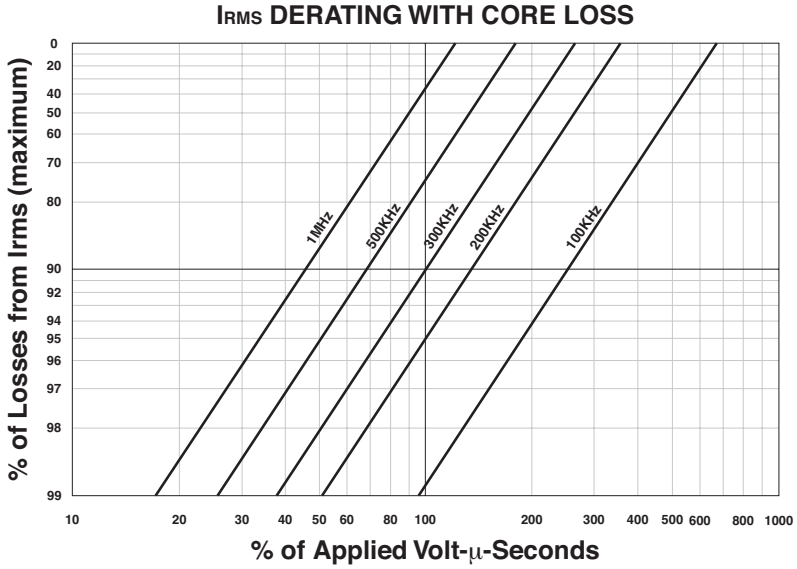
Inductance characteristics







Core loss



Solder reflow profile

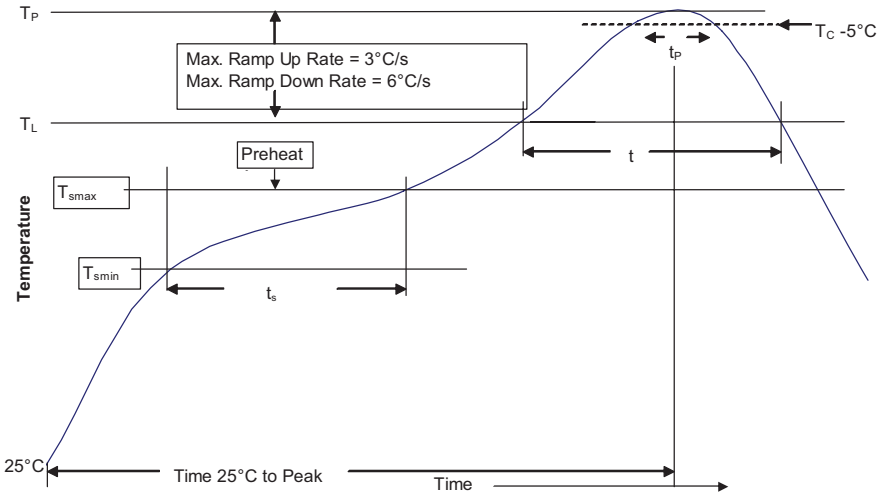


Table 1 - Standard SnPb Solder (T_C)

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 mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >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-020D

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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