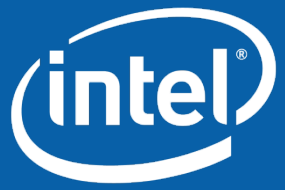


How to Select a Discrete Inductor for the Intel® 82579 1.05 Vdc iSVR

Rev 1.51

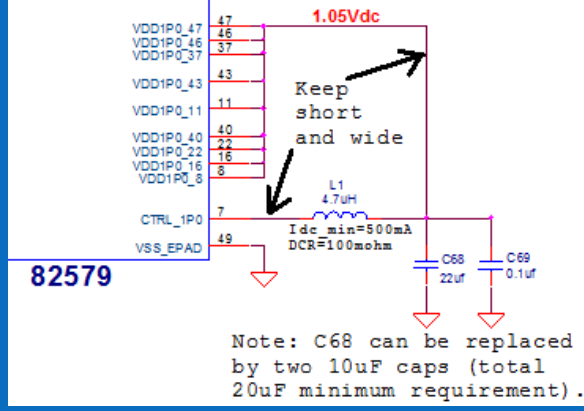
September, 2011

82579 iSVR 1.05 Vdc specification

Parameter	Specifications			Units	Comments
	Min	Typ	Max		
Regulator Output Voltage	0.8		1.2	V dc	The 82579 default voltage is set to 1.05 Vdc
Output Voltage Accuracy	-3		+3	%	Not including line and load regulation errors.
Input Voltage Range	2.9	3.3	3.7	Vdc	Supply voltage range.
Load Current	0.01	0.3	0.5	A	Average value.
Output Voltage Under/Over Shoot	-10		+10	%	For min-to-max average load current change.
Transient Settling Time		100		µs	Duration of overshoot or undershoot.
Conversion Efficiency	80	85	90	%	
Switching Frequency		1.5625		MHz	
Output Filter Inductor	3.9	4.7		µH	
Output Filter Inductor DCR		0.100	0.318	Ω	+/-20%, values higher than the typical DCR value will lower the SVR conversion efficiency.
Output Filter Capacitor	20			µF	
Output Filter Capacitor ESR		5	50	mΩ	
Input Capacitor	22			µF	

*Note: This specification table can be found in 82579 datasheet

Things Need to Check



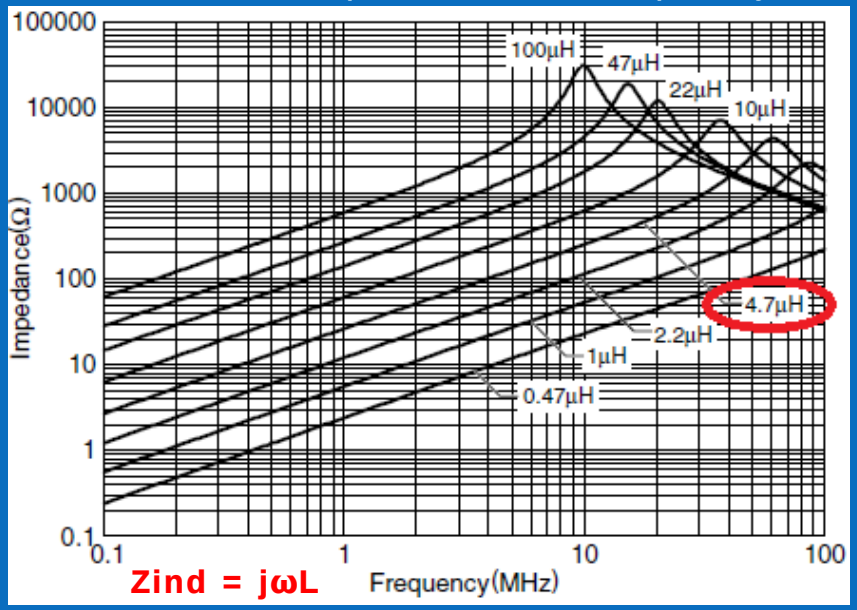
- ✓ **Type:** Select the power type inductor.
- ✓ **Idc_max:** Both inductor rating of Inductance Change and Temperature Change ≥500 mA (this is a good margin). 82579 silicon consumes up to Idc_max=~300 mA. If inductor rating is less than the 500 mA recommendation, all other parameters of inductor must be reviewed carefully.
- ✓ **DCR (Rdc):** Highly recommend to select DCR=~100 mohm (Higher DCR will effect the overall SVR efficiency. 318 mohm is maximum.).
- ✓ **Tolerance, L%:** At 82579 Idc_max=~300 mA loading, the inductance should NOT drop less than 3.9 uH. Most inductors with +/-20% or +/-30% tolerance meet this requirement.
- ✓ **Test Frequency:** 82579's iSVR will operate at ~1.5 MHz. Most inductors are tested/specified at 1MHz which is acceptable. Do not use the inductor tested too far away from 1.5 MHz switching operation.

EXAMPLE FROM INDUCTOR DATASHEET

Summary Table

Inductance (μH)	Inductance tolerance	Q ref.	Test frequency L,Q (MHz)	Self-resonant frequency (MHz)min.	DC resistance (Ω)±20%	Rated current*(mA)max. Based on inductance change	Rated current*(mA)max. Based on temperature rise	Part No.
0.47	±30%	30	1	200	0.021	2800	2800	FLF3215T-R47N
1	±30%	30	1	100	0.03	2000	2350	FLF3215T-1R0N
2.2	±20%	20	1	60	0.05	1400	1800	FLF3215T-2R2M
4.7	±20%	20	1	40	0.09	1000	1360	FLF3215T-4R7M
10	±20%	25	1	25	0.20	700	900	FLF3215T-100M
22	±20%	30	1	14	0.45	450	600	FLF3215T-220M
47	±20%	35	1	9	0.90	280	430	FLF3215T-470M
100	±20%	40	1	6	2.00	200	280	FLF3215T-101M

Inductor Impedance vs. Frequency



Inductance vs. DC Current Loading