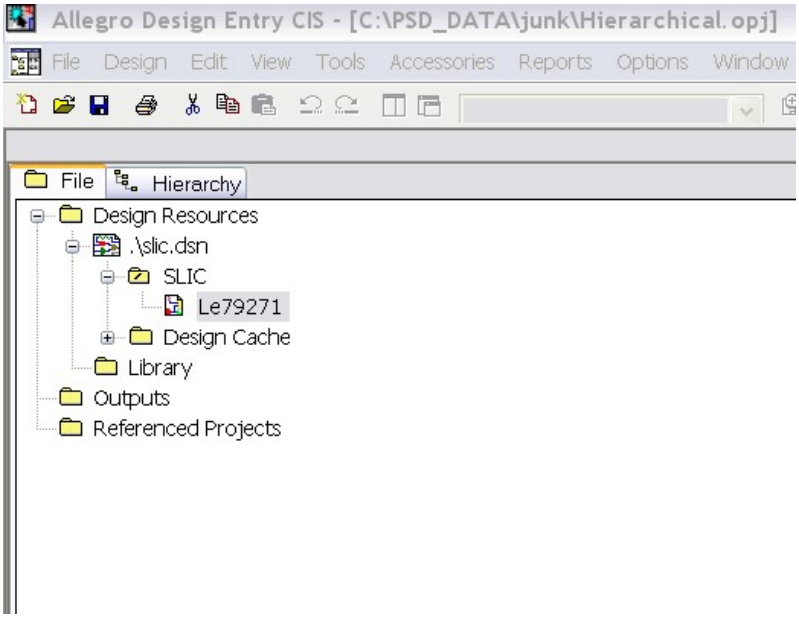
Hierarchical Design Example for Design Reuse

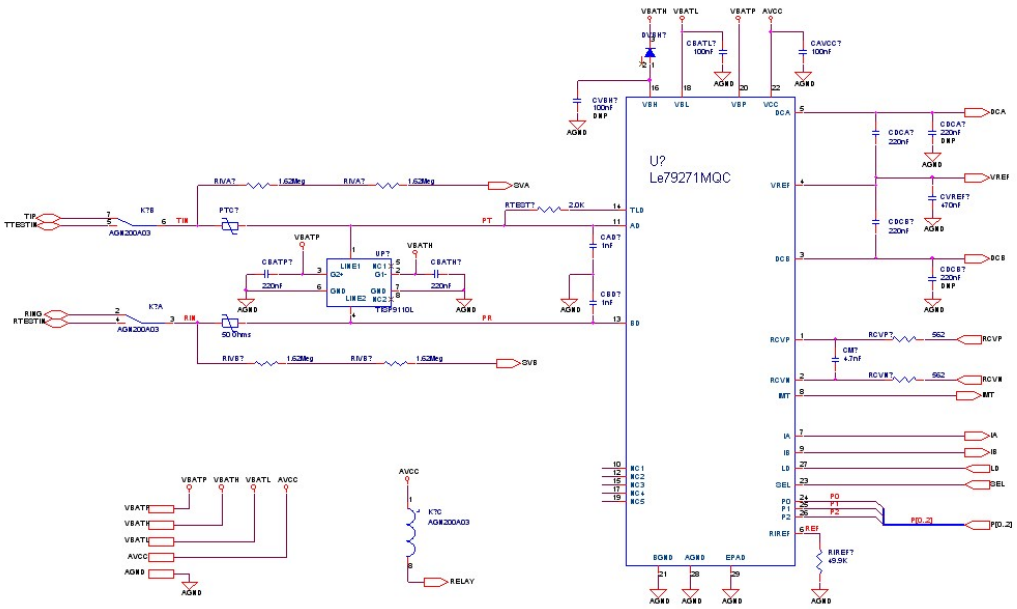
The use of reuse modules allows the designer to create a schematic and layout of a circuit 1 time and use this as a “part” in any design. This leads to reduced design cycle and improved quality buy using a “proved in” design.

The process flow starts with creating a sub-circuit schematic design. In this example I will create a Ve792 SLIC circuit.

1. Create a design:



2. Create a schematic. Note that the schematic is not annotated and uses a heterogonous part, the relay. Before you annotate the schematic it’s important to group the heterogonous parts so these parts will annotate correctly.

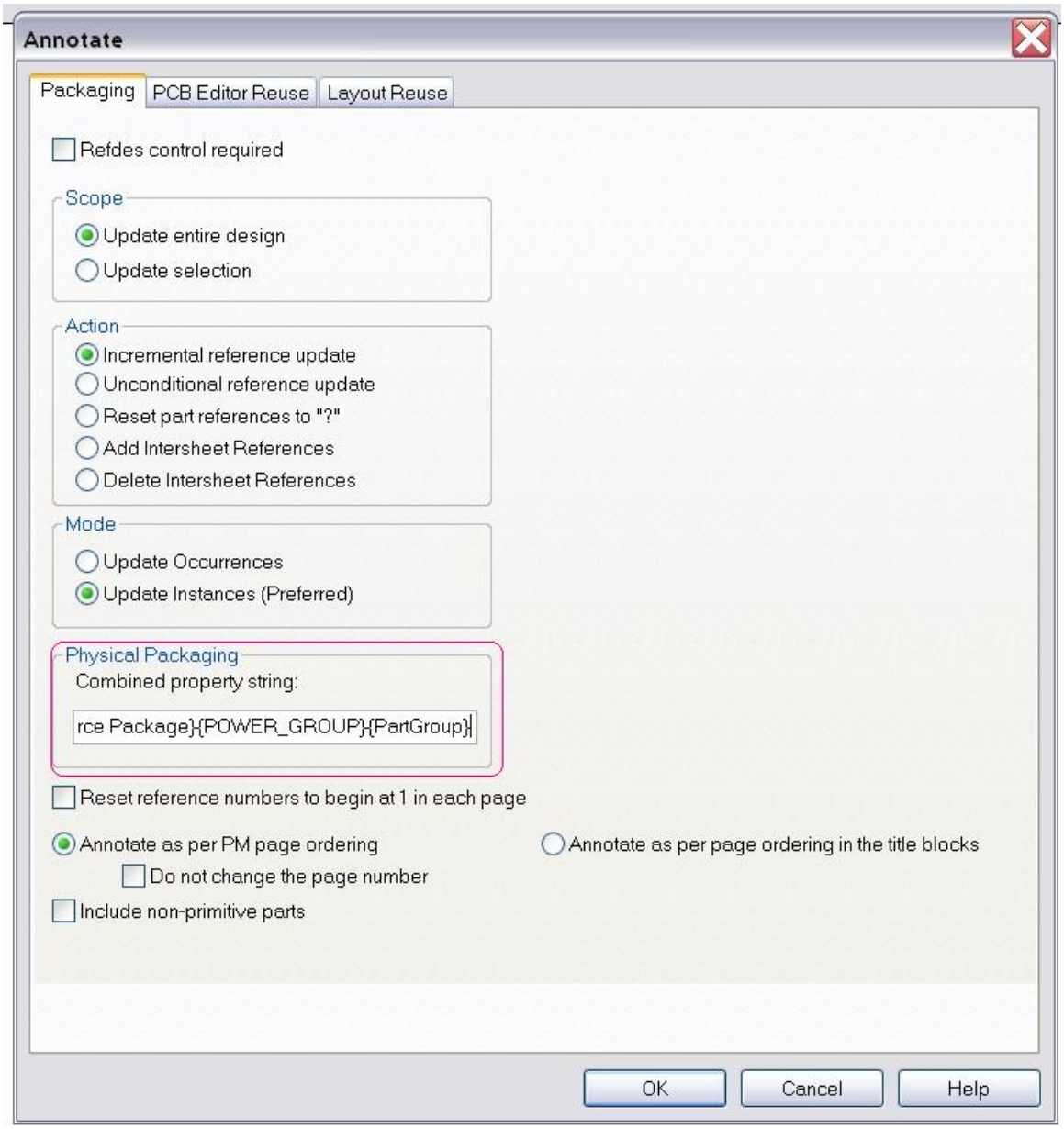


3. Grouping heterogeneous parts: Add a field the part (I prefer to use the field name PartGroup). Make sure that the part has a unique grouping and each instance has a unique grouping.

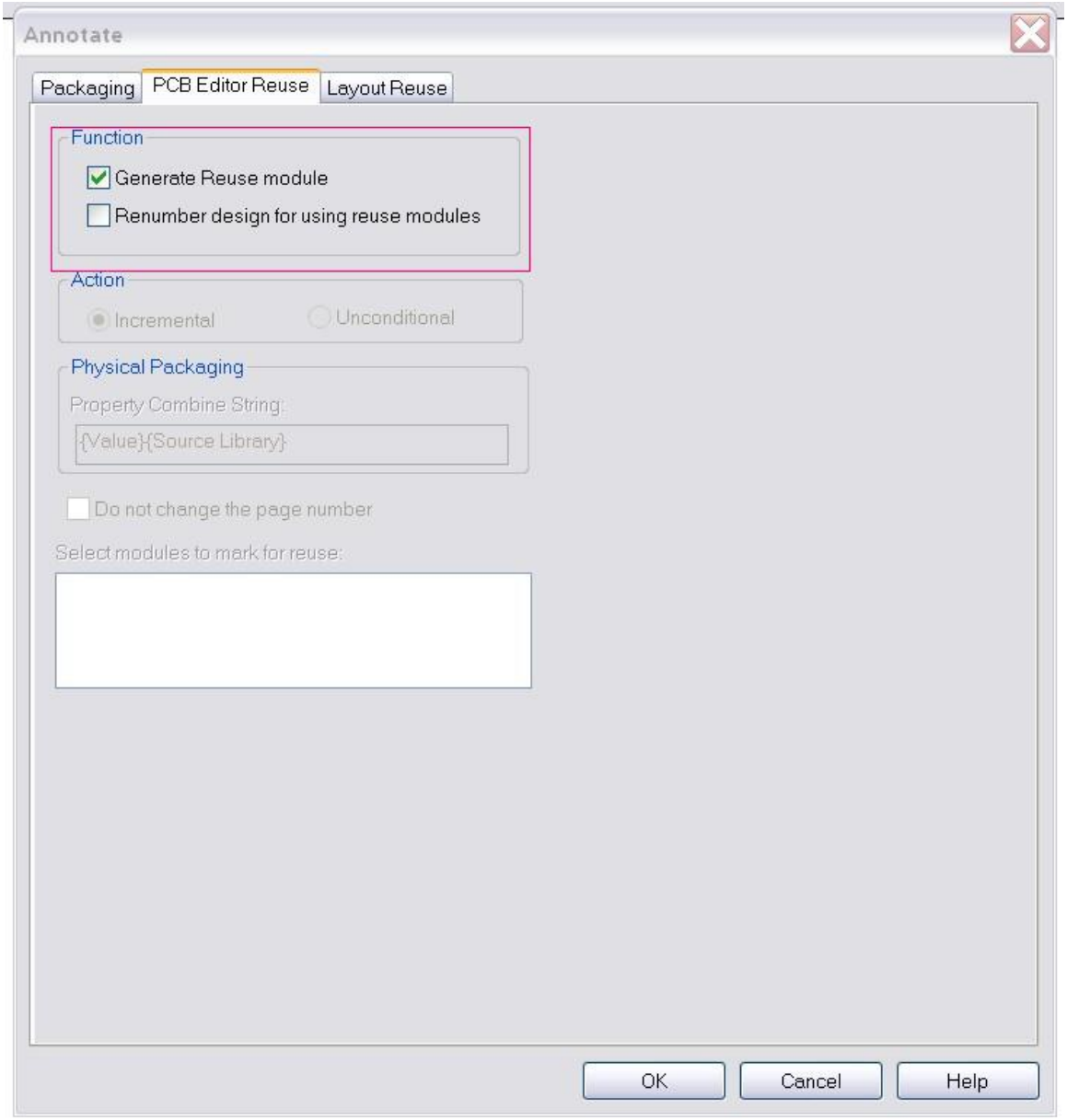
New Row... | Apply | Display... | Delete Property | Filter by: < Current properties > | Help

	A	B	C	D	E	F
	SLIC : Le79271 : K	/K?	SLIC : Le79271 : K	/K?	SLIC : Le79271 : K	/K?
Color	Default	Default	Default	Default	Default	Default
Designator	A	A	C	C	B	B
Dist Part Number	255-1504-5-ND	255-1504-5-ND	255-1504-5-ND	255-1504-5-ND	255-1504-5-ND	255-1504-5-ND
Distributor	Digikey	Digikey	Digikey	Digikey	Digikey	Digikey
Graphic	AGN200A03H_SMD_S	AGN200A03H_SMD_S	AGN200A03H_SMD_S	AGN200A03H_SMD_S	AGN200A03H_SMD_S	AGN200A03H_SMD_S
ID		94		98		90
Implementation						
Implementation Path						
Implementation Type	<none>	<none>	<none>	<none>	<none>	<none>
Location X-Coordinate	300	300	650	650	290	290
Location Y-Coordinate	490	490	730	730	370	370
Manufacturer	Aromat	Aromat	Aromat	Aromat	Aromat	Aromat
Name	INS16778055	INS16778055	INS16778064	INS16778064	INS16778046	INS16778046
Part Number	AGN200A03	AGN200A03	AGN200A03	AGN200A03	AGN200A03	AGN200A03
Part Reference	K?A	K?A	K?C	K?C	K?B	K?B
PartGroup	1	1	1	1	1	1
PCB Footprint	REL_SMD10	REL_SMD10	REL_SMD10	REL_SMD10	REL_SMD10	REL_SMD10
Power Pins Visible	☐	☐	☐	☐	☐	☐
Primitive	DEFAULT	DEFAULT	DEFAULT	DEFAULT	DEFAULT	DEFAULT
Reference	K?	K?	K?	K?	K?	K?
RoHS	Yes	Yes	Yes	Yes	Yes	Yes
Source Library	C:\DOCUMENTS A ...	C:\DOCUMENTS A ...	C:\DOCUMENTS A ...	C:\DOCUMENTS A ...	C:\DOCUMENTS A ...	C:\DOCUMENTS A ...
Source Package	AGN200A03H_SMD_S	AGN200A03H_SMD_S	AGN200A03H_SMD_S	AGN200A03H_SMD_S	AGN200A03H_SMD_S	AGN200A03H_SMD_S
Source Part	AGN200A03H_SMD_S	AGN200A03H_SMD_S	AGN200A03H_SMD_S	AGN200A03H_SMD_S	AGN200A03H_SMD_S	AGN200A03H_SMD_S
Value	AGN200A03	AGN200A03	AGN200A03	AGN200A03	AGN200A03	AGN200A03
Voltage	3V	3V	3V	3V	3V	3V

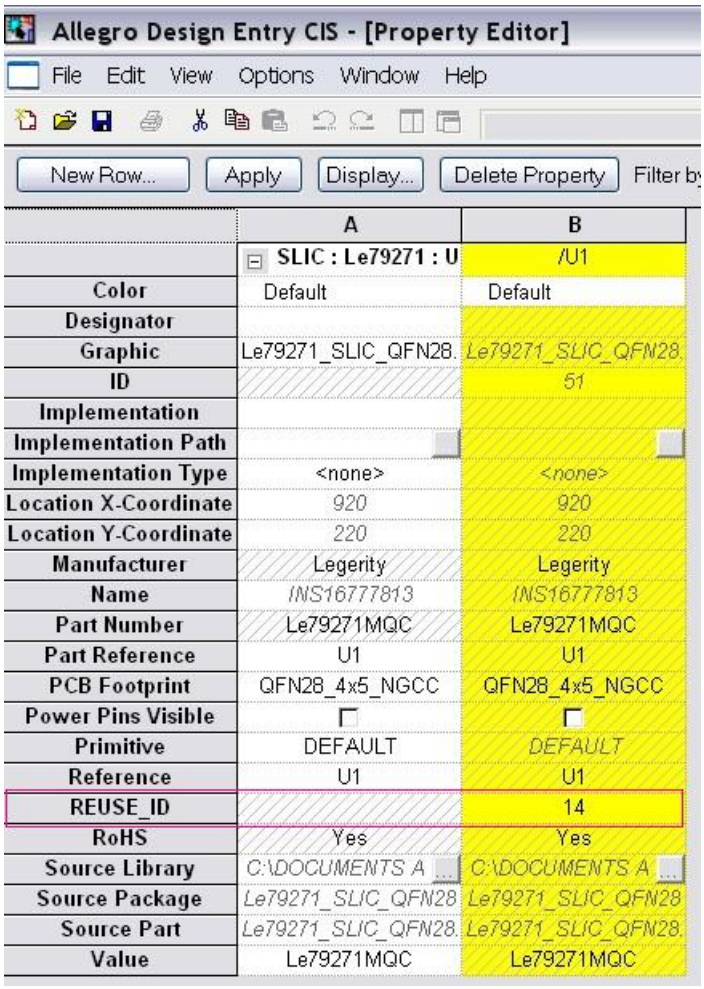
4. Now annotate the design, and in the Physical Packaging add the part field name you created for grouping with { } in the Combined property string field, i.e. {PartGroup}.



5 Now annotate the design, then annotate the design again, however this time you will use the PCB Editor Reuse Tab and select th Generate Reuse module in the Function Box.



This function creates a field named REUSE_ID in the parts properties and each instance will have a unique number



	A	B
	SLIC : Le79271 : U	/U1
Color	Default	Default
Designator		
Graphic	Le79271_SLIC_QFN28.	Le79271_SLIC_QFN28.
ID		51
Implementation		
Implementation Path		
Implementation Type	<none>	<none>
Location X-Coordinate	920	920
Location Y-Coordinate	220	220
Manufacturer	Legerity	Legerity
Name	INS16777813	INS16777813
Part Number	Le79271MQC	Le79271MQC
Part Reference	U1	U1
PCB Footprint	QFN28_4x5_NGCC	QFN28_4x5_NGCC
Power Pins Visible	☐	☐
Primitive	DEFAULT	DEFAULT
Reference	U1	U1
REUSE_ID		14
RoHS	Yes	Yes
Source Library	C:\DOCUMENTS A ...	C:\DOCUMENTS A ...
Source Package	Le79271_SLIC_QFN28	Le79271_SLIC_QFN28
Source Part	Le79271_SLIC_QFN28.	Le79271_SLIC_QFN28.
Value	Le79271MQC	Le79271MQC