217Plus Application Note 1: Importing a BOM

This Application Note describes how to use the System ***Import*** feature of **217Plus**. Companion Application Notes 2 and 3 address using the ***Import*** feature with multiple Bills of Materials (BOMs), and in preparation for a Stress Analysis.

A 217Plus reliability prediction task normally begins by entering BOM information. This can be done manually in the 217Plus application, but can be time consuming for large BOMs and systems. The ***Import*** feature allows for BOM entry directly from a data file, saving the user considerable time while also eliminating potential keying errors.

The 217Plus application is built upon a database. As with any database, key data must be of a specific form and format to ensure proper database functionality. For example, 217Plus must be able identify component type names in order to associate the component with the proper 217Plus model and parameters. If an unrecognizable name is used, an attempt to import the BOM will result in an import error.

The formats of BOMs and part descriptions vary significantly from one organization to the next. Before a BOM can be imported into 217Plus, it must be pre-conditioned to ensure that the BOM contains part name data compatible with 217Plus. The following procedure can be applied to virtually any Excel-compatible BOM.

BOM Pre-Conditioning PROCEDURE

For those who frequently work with 217Plus, a pre-formatted spreadsheet is available through RiAC. The ALLBOMS sheet in this spreadsheet assists in the selection of proper data for both **217Part** and **217PartType** through the use of pull-down lists provided in the spreadsheet. In addition, the ALLBOMS sheet supports all of the 217Plus BOM data fields. The user may rearrange their BOM to match the ALLBOMS spreadsheet, or may paste their BOM into the ALLBOMs sheet beginning at Cell D2 and rename the columns as appropriate. Any columns D through N on ALLBOMS that are not used may be deleted.

The ALLBOMS sheet in the ***217Plus_BOM_Tool-Rev2.xls*** is laid out to support all of the 217Plus BOM data fields. The user may rearrange their BOM to match the spreadsheet, or may paste their BOM into the ALLBOMs sheet beginning at Cell D2 and rename the columns as appropriate. Columns D through N on ALLBOMS that are not used should be deleted).

The forms of BOM data that can be supported by 217Plus include:

- Description
- Quantity
- Reference Designator
- OEM Part Number
- Manufacturer
- Industry Part Number
- National Stock Number
- Specification Number
- Figure Number
- Page Number

Although not supported by the 217Plus software, a BOM's **Item #** (or "find number") can be useful on the ALLBOMS sheet to facilitate sorting, and may be retained if available.

The data required for the 217Plus Part Category and 217Plus Part Type are usually not on the BOM in the correct format. The purpose of this Application Note is to show how this data needs to be added 'normal' BOM data.

The following steps can be followed whether using **217Plus_BOM_Tool-Rev2.xls** , or a user-designed spreadsheet.

1. Begin by placing the BOM into an Excel-compatible format.

   If the user is designing their own spreadsheet, insert two new columns in the BOM's worksheet. For consistency, name the two columns as follows:

   - **217Part**
   - **217PartType**

   217Plus_BOM_Tool-Rev2.xls *already has these columns.*

2. In the **217Part** column, enter the '**part category'** related to each part on the BOM. A part category is the name associated with a generic design element. The list of valid 217PLUS part category names is as follows:

   CAPACITOR
   CONNECTOR
   DIODE
   IC
   INDUCTOR
   RELAY
   RESISTOR
   SOFTWARE
   SWITCH
   THYRISTOR
   TRANSFORMER
   TRANSISTOR
   OTHER
   ASSEMBLY

   If using the **217Plus_BOM_Tool-Rev2.xls** spreadsheet, the **217Part** can be selected via a pull down list.

	A	B	C	D	E	F
1	**217Part**	**217PartType**	**ASSY**	ITEM	Mfg No	Description
2	OTHER		Power Board	1	Internal 12345	PWB, Example BOM
3	INDUCTOR		Power Board	2	2673015301	BEAD, FERRITE
4	TRANSISTOR		Power Board	3	2N2222A	TRANSISTOR, 2N2222A, NPN, 40VCEO, 800MA/IC T
5	TRANSISTOR		Power Board	4	JANTX2N6788	TRANSISTOR, N-CHANNEL, 100V DS, 20W
6	CONNECTOR		Power Board	5	90148-1110	CONNECTOR, BOARD MOUNT SOCKET, .100 SPAC
7	IC		Power Board	6	AD712SQ/833	MICROCIRCUIT, OP AMP, AD712, DUAL, 3T, INPUT I
8	CAPACITOR		Power Board	7	C1210C105K5RA CTU	CAPACITOR, SM, CERA, 1UF, 50V, 10% 1210 PKG (R
9	IC		Power Board	8	CD4049UBNSR	MICROCIRCUIT, SM, CMOS, HEX BUFFER/CONVER (ROHS COMPLIANT)
10	IC		Power Board	9	CD4060BPWR	MICROCIRCUIT, SM, CMOS 14-STAGE RIPPLE-CAR COUNTER/DIVIDER
11	CAPACITOR		Power Board	10	CDR01BP470BK US	CAPACITOR, SM, CERA, 47PF, 100V, 15% 0805 PKG COMPLIANT)
12	CAPACITOR		Power Board	11	CDR01BX102BK US	CAPACITOR, SM, CERA, 1000PF, 100V, 15% 0805 PK COMPLIANT)

Figure 1. Setting the 217Part Names

In the **217PartType** column, enter the sub-description of the part type, using the format required by 217Plus. (The "part type" defines the part according to its structure/technology. This definition is required due to the fact that devices of differing technologies –even if they provide the same general function, may have differing rates- of failure). The valid **217PartType** names are listed in *Table 1 at the end of this document, from which one can **CUT** and **PASTE** the necessary descriptions).* For **OTHER** parts, leave the**217PartType** blank if an adequate **217PartType** name is not available.

*If using **217Plus_BOM_Tool-Rev2.xls** spreadsheet, the **217PartType** can be simply be selected via a pull-down list, after selecting the **217Part**.*

	A	B	C	D	E	F
1	**217Part**	**217PartType**	**ASSY**	ITEM	Mfg No	Description
2	OTHER		Power Board	1	Internal 12345	PWB, Example BOM
3	INDUCTOR	COIL,FIXED,FERRITE BEAD	Power Board	2	2673015301	BEAD, FERRITE
4	TRANSISTOR	BIPOLAR,POWER LOW,NPN	Power Board	3	2N2222A	TRANSISTOR, 2N2222A, NPN, 40VCEO, 800MA/IC T
5	TRANSISTOR	FIELD EFFECT,MOS,N-CHANNEL	Power Board	4	JANTX2N6788	TRANSISTOR, N-CHANNEL, 100V DS, 20W
6	CONNECTOR	PWB	Power Board	5	90148-1110	CONNECTOR, BOARD MOUNT SOCKET, .100 SPAC
7	IC	LINEAR,OPERATIONAL AMPLIFIER,DUAL	Power Board	6	AD712SQ/833	MICROCIRCUIT, OP AMP, AD712, DUAL, 3T, INPUT I
8	CAPACITOR	FIXED,CERAMIC	Power Board	7	C1210C105K5RACTU	CAPACITOR, SM, CERA, 1UF, 50V, 10% 1210 PKG (R
9	IC	DIGITAL,BUFFER,INVERTER,HEX	Power Board	8	CD4049UBNSR	MICROCIRCUIT, SM, CMOS, HEX BUFFER/CONVER (ROHS COMPLIANT)
10	IC	DIGITAL,COUNTER/DIVIDER,CMOS	Power Board	9	CD4060BPWR	MICROCIRCUIT, SM, CMOS 14-STAGE RIPPLE-CAR COUNTER/DIVIDER
11	CAPACITOR	FIXED,CERAMIC	Power Board	10	CDR01BP470BKUS	CAPACITOR, SM, CERA, 47PF, 100V, 15% 0805 PKG COMPLIANT)
	CAPACITOR	FIXED,CERAMIC	Power Board	11	CDR01BX102BK	CAPACITOR, SM, CERA, 1000PF, 100V, 15% 0805 P

Figure 2. Setting the 217PartType Names

*The **ASSY** column shown is for reference only and is not used by 217Plus. It is provided identify which parts belong to which assembly, and is useful for 217Plus Application Notes 2 and 3.*

3. Once that all of the 217Plus data is entered for each BOM item, ***SAVE*** the workbook before proceeding.

4. Next, select ***SAVE AS***, and chose "**Other Format's"**. In the ***Save As Type*** box, chose "**Text (tab delimited).txt"** from the pull down list, enter the desired file name, and save the file.

5. ***CLOSE*** the workbook.

Importing to 217Plus Procedure (or follow the 217Plus Manual/HELP which provides visual aids.)

1. ***Open*** the **217Plus** application

2. Select ***File, Import*****,** chose the **"New System"** radio box, then ***Next*****.**

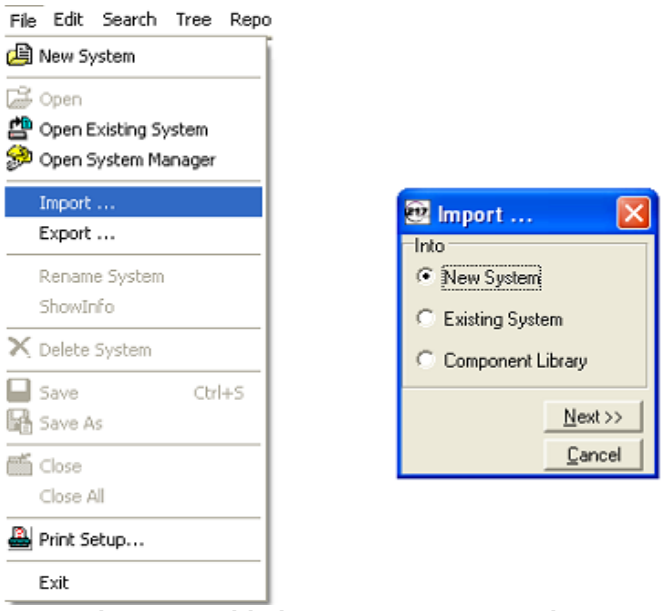

Figure 3. Initiating an Import to 217Plust

3. In the dialog box, for ***All files are*,** select "**Delimited ASCII Text File"**

4. ***Browse…*** to the recently saved text file; select ***OPEN.***

5. Set ***System file is..:*** **"New",** enter a desired ***System Name***, select **"Define New Format",** and then **NEXT.**

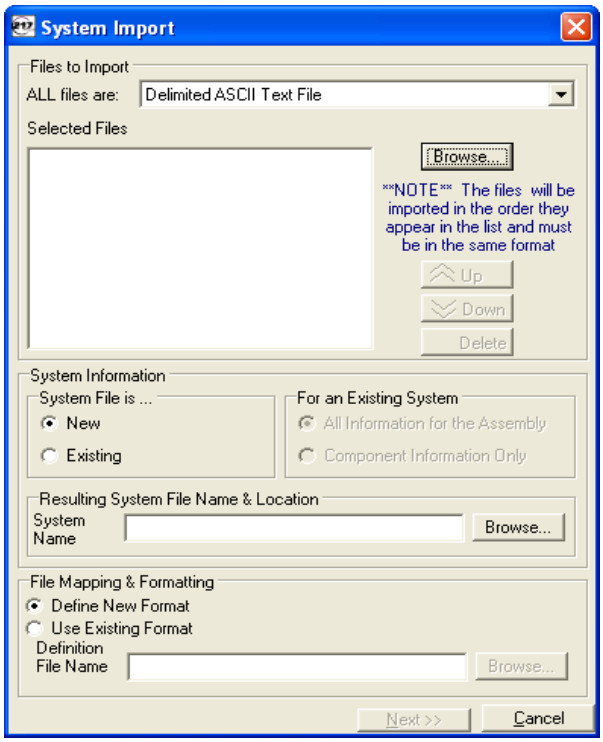

Figure 4. Selecting and Identifying the File to Import

6. The next dialog box is for File Delineation. This function allows the user to identify for the 217Plus application which characters are used in the file to segregate data fields. For data files exported from ***217Plus_Bom_Tool-REV2.xls*** (or any Excel-based spreadsheet) as a **"Tab Delimited"** text files, the File Delineation settings will always be the same. They are:

   Select ***Delimiter*** as "**Tab".** Select ***Begin at row*** as "**1**". Select ***Text Qualifier*** as " (quotation mark). Select ***NEXT***.

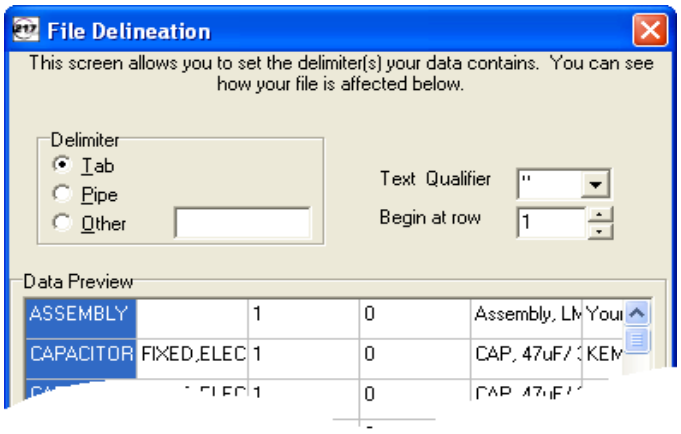

Figure 5. Selecting the Text File's Data Delineation Criteria

7. The remaining steps allow one to identify how the columns of BOM data correspond to 217Plus data fields. This is referred to as 'mapping'. The 217Plus screen will highlight the column ready for assignment.

If a BOM data column is not needed by 217Plus, check the ***Skip Column*** box.

If a BOM data column corresponds to a device model parameter to be used in a stress analysis (such as applied voltage on a capacitor; resistor power rating, etc.), check the ***Model Parameter Column*** box.

Otherwise, select the appropriate 217Plus category using the ***Column Type*** drop-down selection. After selecting a field and choosing a Category (or Skip), use the mouse to click on the next column of data to be assigned.

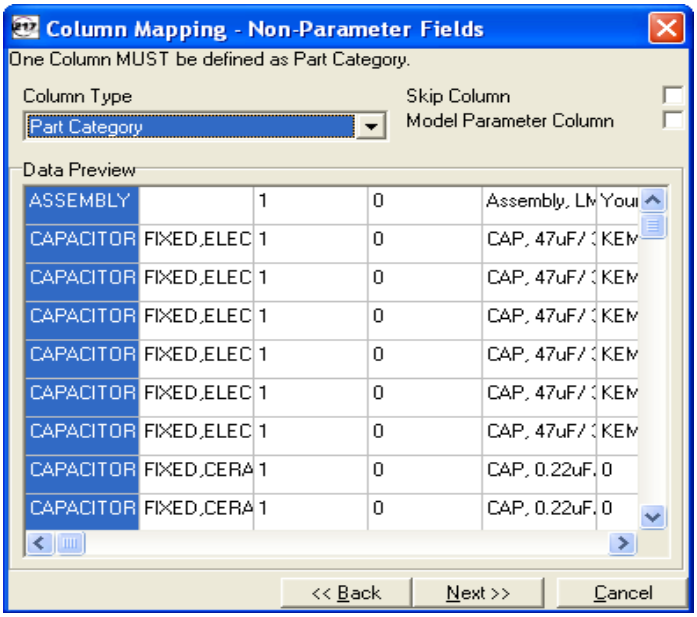

Figure 6. Mapping Text File Columns to 217Plus Data Columns

The BOM's "**217Part**" data column *must* be assigned to "**Part Category"**;

The BOM's "**217Parttype**" data column *must* be assigned to "**Part Type"**.

The "**Quantity"** field is also required.

Data such "**Reference Designator"** and "**Description"** are often useful to the user, as they help identify the parts according to the user's design descriptions. However, these fields have no affect on the 217Plus function. Fields such as "**Manufacturer"**, "**OEM Part Number"** and or others can also be selected if desired.

Be sure to view all of the columns of the BOM; use the 'slider' (scroll bar) at the bottom of the dialog box to bring into view columns that may be outside of the present Data Preview window.

Review all columns to make sure that each one has either been assigned, or **Skip**ped, or set as a **Model Parameter**

Click ***NEXT*** and then ***FINISH***. 217Plus will then Import the BOM data.

Reference Table: 217Plus Part Categories and 217Plus Part Types

One of the major keys to a successful import of data into 217Plus is the use of the proper **Part Category** and **Part Type** names. The Table that follows shows all of the currently supported 217Plus Part Category names, along with their associated 217 Part Types names. They names must be used exactly as shown, or the component will not be recognized.

*Again, the **217Plus_BOM_Tool-REV2.xls** is pre-formatted with the valid Part Category and Part Types in pull-down menus, eliminating the need to refer to Table 1.*

Reference Table 1: 217Plus Part Categories and 217Plus Part Types

217Part (Category)	217 PART TYPE
ASSEMBLY	
CAPACITOR	FIXED,CERAMIC
CAPACITOR	FIXED,CERAMIC,DISC
CAPACITOR	FIXED,CERAMIC,FEED THRU
CAPACITOR	FIXED,CERAMIC,MULTILAYER CHIP
CAPACITOR	FIXED,CHIP
CAPACITOR	FIXED,ELECTROLYTIC
CAPACITOR	FIXED,ELECTROLYTIC,ALUMINUM
CAPACITOR	FIXED,ELECTROLYTIC,TANTALUM
CAPACITOR	FIXED,ELECTROLYTIC,TANTALUM,FOIL
CAPACITOR	FIXED,ELECTROLYTIC,TANTALUM,SOLID
CAPACITOR	FIXED,ELECTROLYTIC,TANTALUM,WET SLUG
CAPACITOR	FIXED,GLASS
CAPACITOR	FIXED,MICA
CAPACITOR	FIXED,MICA,BUTTON
CAPACITOR	FIXED,MICA,DIPPED
CAPACITOR	FIXED,MICA,FOIL
CAPACITOR	FIXED,MICA,METALLIZED
CAPACITOR	FIXED,MICA,RECONSTITUTED
CAPACITOR	FIXED,MICA,SILVER
CAPACITOR	FIXED,NETWORK
CAPACITOR	FIXED,NYLON
CAPACITOR	FIXED,OIL FILLED
CAPACITOR	FIXED,PAPER
CAPACITOR	FIXED,PAPER,FOIL
CAPACITOR	FIXED,PAPER,METALLIZED
CAPACITOR	FIXED,PAPER/PLASTIC
CAPACITOR	FIXED,PAPER/PLASTIC,FOIL
CAPACITOR	FIXED,PAPER/PLASTIC,METALLIZED
CAPACITOR	FIXED,PLASTIC
CAPACITOR	FIXED,PLASTIC,FOIL
CAPACITOR	FIXED,POLYCARBONATE
CAPACITOR	FIXED,POLYCARBONATE,FOIL
CAPACITOR	FIXED,POLYCARBONATE,METALLIZED
CAPACITOR	FIXED,POLYESTER
CAPACITOR	FIXED,POLYESTER,FOIL
CAPACITOR	FIXED,POLYESTER,METALLIZED
CAPACITOR	FIXED,POLYPROPYLENE
CAPACITOR	FIXED,POLYPROPYLENE,FOIL
CAPACITOR	FIXED,POLYPROPYLENE,METALLIZED
CAPACITOR	FIXED,POLYSTYRENE
CAPACITOR	FIXED,POLYSTYRENE,FOIL
CAPACITOR	FIXED,POLYSTYRENE,METALLIZED

217Part (Category)	217 PART TYPE
CAPACITOR	FIXED,PORCELAIN
CAPACITOR	FIXED,TEFLON
CAPACITOR	FIXED,TI DIOX
CAPACITOR	VARIABLE,AIR
CAPACITOR	VARIABLE,CERAMIC
CAPACITOR	VARIABLE,FEP
CAPACITOR	VARIABLE,GLASS
CAPACITOR	VARIABLE,MICA
CAPACITOR	VARIABLE,PISTON
CAPACITOR	VARIABLE,PISTON,TRIMMER
CAPACITOR	VARIABLE,POLYCARBONATE
CAPACITOR	VARIABLE,POLYCARBONATE,FOIL
CAPACITOR	VARIABLE,POLYIMID-FL
CAPACITOR	VARIABLE,POLYPHE-FL
CAPACITOR	VARIABLE,POLYPROPYLENE
CAPACITOR	VARIABLE,POLYPROPYLENE,METAL
CAPACITOR	VARIABLE,POLYSTYRENE
CAPACITOR	VARIABLE,POLYSTYRENE,METALLIZED
CAPACITOR	VARIABLE,TEFLON
CONNECTOR	CIRCULAR
CONNECTOR	CIRCULAR,AUDIO
CONNECTOR	COAXIAL
CONNECTOR	COAXIAL,ASSEMBLY
CONNECTOR	COAXIAL,CAP
CONNECTOR	COAXIAL,RACK AND PANEL
CONNECTOR	COAXIAL,TAP
CONNECTOR	COAXIAL,TERMINATION
CONNECTOR	CYLINDER
CONNECTOR	DIN
CONNECTOR	EDGE CARD
CONNECTOR	ELASTOMERIC
CONNECTOR	FLAT CABLE
CONNECTOR	FLEXIBLE
CONNECTOR	FLEXIBLE CABLE
CONNECTOR	HEXAGON
CONNECTOR	PC
CONNECTOR	PC,EDGE
CONNECTOR	PWB
CONNECTOR	PHONE
CONNECTOR	PHONE,JACK
CONNECTOR	RF
CONNECTOR	RF STRIP FINGER
CONNECTOR	RF,BNC
CONNECTOR	RF,OPEN TERMINATION

217Part (Category)	217 PART TYPE
CONNECTOR	RF,SUBMINIATURE
CONNECTOR	RACK AND PANEL
CONNECTOR	RECEPTACLE,MODULAR PHONE
CONNECTOR	RECTANGULAR
CONNECTOR	RECTANGULAR,MULTI-CONTACT
CONNECTOR	ROUND
CONNECTOR	TELEPHONE
CONNECTOR	TELEPHONE ACCESSORY
DIODE	CURRENT REGULATOR
DIODE	DETECTOR/MIXER
DIODE	DIODE ARRAY
DIODE	DOUBLER
DIODE	DOUBLER,VOLTAGE
DIODE	DUAL
DIODE	GENERAL PURPOSE
DIODE	GERMANIUM
DIODE	LIGHT EMITTING
DIODE	LIGHT EMITTING,ARRAY
DIODE	LIGHT EMITTING,ARRAY,INFRARED
DIODE	LIGHT EMITTING,ASSEMBLY
DIODE	LIGHT EMITTING,INFRARED
DIODE	LIGHT EMITTING,LAMP
DIODE	LIGHT EMITTING,LAMP,ARRAY
DIODE	LIGHT EMITTING,LASER
DIODE	LIGHT EMITTING,LIGHT BAR
DIODE	LIGHT EMITTING,SET
DIODE	MATCHED PAIR
DIODE	MICROWAVE
DIODE	MICROWAVE,PIN
DIODE	MICROWAVE,SCHOTTKY BARRIER
DIODE	MICROWAVE,STEP RECOVERY
DIODE	MICROWAVE,TUNNEL
DIODE	MICROWAVE,VARACTOR
DIODE	NOISE GENERATING
DIODE	PIN
DIODE	PHOTODIODE
DIODE	PHOTOASSEMBLY
DIODE	POWER HIGH
DIODE	POWER LOW
DIODE	POWER MEDIUM
DIODE	POWER MODULE
DIODE	QUAD
DIODE	RECTIFIER
DIODE	RECTIFIER,BRIDGE

217Part (Category)	217 PART TYPE
DIODE	RECTIFIER,BRIDGE,FULL WAVE
DIODE	RECTIFIER,CENTER TAP
DIODE	RECTIFIER,FAST RECOVERY
DIODE	RECTIFIER,HIGH POWER
DIODE	RECTIFIER,HIGH VOLTAGE
DIODE	RECTIFIER,POWER SCHOTTKY
DIODE	RECTIFIER,SILICON
DIODE	SAMPLER
DIODE	SCHOTTKY
DIODE	SELENIUM
DIODE	SILICON
DIODE	SILICON CARBIDE
DIODE	SMALL SIGNAL
DIODE	SMALL SIGNAL,SCHOTTKY
DIODE	SMALL SIGNAL,SWITCH
DIODE	STABISTOR
DIODE	STEP RECOVERY
DIODE	SUPPRESSOR
DIODE	SUPPRESSOR,TRANSIENT
DIODE	SUPPRESSOR,VOLTAGE
DIODE	SURGE
DIODE	SURGE,LEG STAND OFF
DIODE	SWITCHING
DIODE	TUNNEL
DIODE	VARACTOR
DIODE	ZENER
DIODE	ZENER,AVALANCHE
DIODE	ZENER,TRANSIENT SUPPRESSOR
DIODE	ZENER,VOLTAGE REFERENCE
DIODE	ZENER,VOLTAGE REGULATOR
DIODE	DISPLAY,LED
DIODE	DISPLAY,LED,ALPHA-NUMERIC
DIODE	DISPLAY,LED,ALPHA-NUMERIC,DOT TYPE
DIODE	DISPLAY,LED,ALPHA-NUMERIC,SEGMENT TYPE
DIODE	DISPLAY,LED,NUMERIC
DIODE	DISPLAY,LED,NUMERIC,DOT TYPE
DIODE	DISPLAY,LED,NUMERIC,SEGMENT TYPE
IC	DIGITAL,ARITHMETIC
IC	DIGITAL,ARITHMETADDER
IC	DIGITAL,ARITHMETADDER,FULL
IC	DIGITAL,ARITHMETCOMPARATOR
IC	DIGITAL,ARITHMETFUNCTION GENERATOR
IC	DIGITAL,ARITHMETFUNCTION GENERATOR,ALU
IC	DIGITAL,ARITHMETLOGIC UNIT

217Part (Category)	217 PART TYPE
IC	DIGITAL,ARITHMETMAGNITUDE COMPARATOR
IC	DIGITAL,ARITHMETMULTIPLIER
IC	DIGITAL,ARITHMETMULTIPLIER/DIVIDER
IC	DIGITAL,ARITHMETPARITY GENERATOR
IC	DIGITAL,ARRAY
IC	DIGITAL,ARRAY,FIELD PROGRAMMABLE
IC	DIGITAL,ARRAY,GATE
IC	DIGITAL,ARRAY,HARD LOGIC
IC	DIGITAL,ARRAY,PAL
IC	DIGITAL,ARRAY,PGA
IC	DIGITAL,ARRAY,PLA
IC	DIGITAL,ARRAY,PLD
IC	DIGITAL,ARRAY,PLD,ERASABLE
IC	DIGITAL,ARRAY,PLS
IC	DIGITAL,BUFFER
IC	DIGITAL,BUFFER,DRIVER
IC	DIGITAL,BUFFER,DUAL
IC	DIGITAL,BUFFER,DUAL,NAND
IC	DIGITAL,BUFFER,EXPANDABLE
IC	DIGITAL,BUFFER,HEX
IC	DIGITAL,BUFFER,INVERTER
IC	DIGITAL,BUFFER,INVERTER,HEX
IC	DIGITAL,BUFFER,NAND
IC	DIGITAL,BUFFER,NAND,QUAD
IC	DIGITAL,BUFFER,NONINVERTING
IC	DIGITAL,BUFFER,NONINVERTING,HEX
IC	DIGITAL,BUFFER,OCTAL
IC	DIGITAL,BUFFER/DRIVER
IC	DIGITAL,BUFFER/DRIVER,3 STATE
IC	DIGITAL,BUFFER/DRIVER,AND
IC	DIGITAL,BUFFER/DRIVER,HEX
IC	DIGITAL,BUFFER/DRIVER,INVERTING
IC	DIGITAL,BUFFER/DRIVER,OCTAL
IC	DIGITAL,BUFFER/DRIVER,OCTAL,INVERTING
IC	DIGITAL,BUFFER/DRIVER,OCTAL,INVERTING,3 STATE
IC	DIGITAL,BUFFER/DRIVER,OCTAL,NONINVERTING
IC	DIGITAL,BUFFER/DRIVER,OCTAL,NONINVERTING,3 STATE
IC	DIGITAL,BUFFER/DRIVER,OPEN COLLECTOR
IC	DIGITAL,CHIPSET
IC	DIGITAL,CHIPSET,MODEM
IC	DIGITAL,CLOCK GENERATOR
IC	DIGITAL,COMMUNICATION
IC	DIGITAL,COMMUNICATION,ASYNCHRONOUS ADAPTER
IC	DIGITAL,COMMUNICATION,ASYNCHRONOUS ADAPTER,INTERFACE

217Part (Category)	217 PART TYPE
IC	DIGITAL,COMPARATOR
IC	DIGITAL,COMPARATOR,4 BIT
IC	DIGITAL,COMPARATOR,8 BIT
IC	DIGITAL,CONTROL
IC	DIGITAL,CONTROL,ASYNCHRONOUS
IC	DIGITAL,CONTROL,ASYNCHRONOUS,BINARY
IC	DIGITAL,CONTROL,COMMUNICATION
IC	DIGITAL,CONTROL,DISK DRIVE DATA
IC	DIGITAL,CONTROL,DRIVER
IC	DIGITAL,CONTROL,FLOPPY DISK
IC	DIGITAL,CONTROL,INTERFACE
IC	DIGITAL,CONTROL,PERIPHERAL INTERFACE
IC	DIGITAL,CONTROL,PERIPHERAL INTERFACE,PROGRAMMABLE
IC	DIGITAL,CONTROL,PROGRAMMABLE
IC	DIGITAL,CONTROL,SERIAL
IC	DIGITAL,CONTROL,SERIAL COMMUNICATION
IC	DIGITAL,CONTROL,SYNCHRONIZER
IC	DIGITAL,CONTROL,SYNCHRONIZER,EDGE TRIGGER
IC	DIGITAL,CONTROL,VIDEO
IC	DIGITAL,CONTROL,VIDEO,DISPLAY
IC	DIGITAL,CONVERTER/TRANSLATOR
IC	DIGITAL,COUNTER/DIVIDER
IC	DIGITAL,COUNTER/DIVIDER,4 BIT
IC	DIGITAL,COUNTER/DIVIDER,BCD
IC	DIGITAL,COUNTER/DIVIDER,BINARY
IC	DIGITAL,COUNTER/DIVIDER,BINARY,4 BIT
IC	DIGITAL,COUNTER/DIVIDER,BINARY,UP/DOWN
IC	DIGITAL,COUNTER/DIVIDER,CMOS
IC	DIGITAL,COUNTER/DIVIDER,DECADE
IC	DIGITAL,COUNTER/DIVIDER,DECADE,UP/DOWN
IC	DIGITAL,DECODER
IC	DIGITAL,DECODER,BCD/BINARY
IC	DIGITAL,DECODER,BCD/DECIMAL
IC	DIGITAL,DECODER,BINARY/BCD
IC	DIGITAL,DECODER,BINARY/OCTAL
IC	DIGITAL,DECODER,DEMULTIPLEXER
IC	DIGITAL,DECODER,DEMULTIPLEXER,1 TO 8 LINE
IC	DIGITAL,DECODER/DRIVER
IC	DIGITAL,DECODER/DRIVER,BCD/7 SEGMENT
IC	DIGITAL,DECODER/DRIVER,DISPLAY
IC	DIGITAL,DRIVER
IC	DIGITAL,DRIVER,BUS
IC	DIGITAL,DRIVER,DUAL
IC	DIGITAL,DRIVER,HEX

217Part (Category)	217 PART TYPE
IC	DIGITAL,DRIVER,HEX,2 INPUT
IC	DIGITAL,DRIVER,HEX,2 INPUT,NAND
IC	DIGITAL,DRIVER,INTERFACE
IC	DIGITAL,DRIVER,INTERFACE,DISPLAY
IC	DIGITAL,DRIVER,INTERFACE,LINE
IC	DIGITAL,DRIVER,LINE
IC	DIGITAL,DRIVER,NOR
IC	DIGITAL,DRIVER,NOR,HEX
IC	DIGITAL,DRIVER,NOR,HEX,2 INPUT
IC	DIGITAL,DRIVER,OR
IC	DIGITAL,DRIVER,OR,HEX
IC	DIGITAL,DRIVER,OR,HEX,2 INPUT
IC	DIGITAL,DRIVER,OCTAL
IC	DIGITAL,DRIVER,QUAD
IC	DIGITAL,DRIVER,RECEIVER
IC	DIGITAL,ENCODER
IC	DIGITAL,ENCODER,PRIORITY
IC	DIGITAL,ERROR DETECTION/CORRECTION
IC	DIGITAL,ERROR DETECTION/CORRECTION,GENERATOR/CHECKER
IC	DIGITAL,ERROR DETECTION/CORRECTION,GENERATOR/CHECKER,CRC
IC	DIGITAL,ERROR DETECTION/CORRECTION,PARITY/CARRY
IC	DIGITAL,ERROR DETECTION/CORRECTION,PARITY/CARRY,GENERATOR
IC	DIGITAL,EXPANDER
IC	DIGITAL,FLIP-FLOP
IC	DIGITAL,FLIP-FLOP,D-TYPE
IC	DIGITAL,FLIP-FLOP,D-TYPE,DUAL
IC	DIGITAL,FLIP-FLOP,D-TYPE,HEX
IC	DIGITAL,FLIP-FLOP,D-TYPE,HEX
IC	DIGITAL,FLIP-FLOP,D-TYPE,OCTAL
IC	DIGITAL,FLIP-FLOP,D-TYPE,QUAD
IC	DIGITAL,FLIP-FLOP,JK-TYPE
IC	DIGITAL,FLIP-FLOP,JK-TYPE,DUAL
IC	DIGITAL,FLIP-FLOP,RS-TYPE
IC	DIGITAL,GATE
IC	DIGITAL,GATE,AND
IC	DIGITAL,GATE,AND,DUAL
IC	DIGITAL,GATE,AND,DUAL,4 INPUT
IC	DIGITAL,GATE,AND,QUAD
IC	DIGITAL,GATE,AND,QUAD,2 INPUT
IC	DIGITAL,GATE,AND,TRIPLE
IC	DIGITAL,GATE,AND,TRIPLE,3 INPUT
IC	DIGITAL,GATE,AND-OR
IC	DIGITAL,GATE,AND-OR,INVERTER
IC	DIGITAL,GATE,ENOR

217Part (Category)	217 PART TYPE
IC	DIGITAL,GATE,EOR
IC	DIGITAL,GATE,EXPANDABLE
IC	DIGITAL,GATE,NAND
IC	DIGITAL,GATE,NAND,13 INPUT
IC	DIGITAL,GATE,NAND,8 INPUT
IC	DIGITAL,GATE,NAND,DUAL
IC	DIGITAL,GATE,NAND,DUAL,4 INPUT
IC	DIGITAL,GATE,NAND,QUAD
IC	DIGITAL,GATE,NAND,QUAD,2 INPUT
IC	DIGITAL,GATE,NAND,SCHMITT TRIGGER
IC	DIGITAL,GATE,NAND,TRIPLE
IC	DIGITAL,GATE,NAND,TRIPLE,3 INPUT
IC	DIGITAL,GATE,NOR
IC	DIGITAL,GATE,NOR,DUAL
IC	DIGITAL,GATE,NOR,DUAL,4 INPUT
IC	DIGITAL,GATE,NOR,DUAL,5 INPUT
IC	DIGITAL,GATE,NOR,QUAD
IC	DIGITAL,GATE,NOR,QUAD,2 INPUT
IC	DIGITAL,GATE,NOR,TRIPLE
IC	DIGITAL,GATE,NOR,TRIPLE,3 INPUT
IC	DIGITAL,GATE,OR
IC	DIGITAL,GATE,OR,QUAD
IC	DIGITAL,GATE,OR,QUAD,2 INPUT
IC	DIGITAL,GATE,OR/NOR
IC	DIGITAL,GATE,POWER
IC	DIGITAL,GATE,SCHMITT TRIGGER
IC	DIGITAL,GENERATOR
IC	DIGITAL,GENERATOR,CLOCK
IC	DIGITAL,GRAPHICS PROCESSOR
IC	DIGITAL,INTERFACE
IC	DIGITAL,INTERFACE,COMMUNICATION
IC	DIGITAL,INTERFACE,PROGRAMMABLE
IC	DIGITAL,INVERTER
IC	DIGITAL,INVERTER,BUFFER
IC	DIGITAL,INVERTER,BUFFER,HEX
IC	DIGITAL,INVERTER,BUFFER/DRIVER
IC	DIGITAL,INVERTER,HEX
IC	DIGITAL,INVERTER,SCHMITT TRIGGER
IC	DIGITAL,INVERTER,SCHMITT TRIGGER,HEX
IC	DIGITAL,LATCH
IC	DIGITAL,LATCH,ADDRESSABLE
IC	DIGITAL,LATCH,BISTABLE
IC	DIGITAL,LATCH,D-TYPE
IC	DIGITAL,LATCH,D-TYPE,OCTAL

217Part (Category)	217 PART TYPE
IC	DIGITAL,LATCH,OCTAL
IC	DIGITAL,LATCH,RS-TYPE
IC	DIGITAL,LATCH,TRANSPARENT
IC	DIGITAL,LATCH,TRANSPARENT,OCTAL
IC	DIGITAL,LATCH,TRANSPARENT,OCTAL,D-TYPE
IC	DIGITAL,LATCH,TRANSPARENT,OCTAL,D-TYPE,3 STATE
IC	DIGITAL,LINE/BUS DRIVER
IC	DIGITAL,LINE/BUS DRIVER,BUFFER
IC	DIGITAL,LINE/BUS RECEIVER
IC	DIGITAL,MSI/LSI
IC	DIGITAL,MEMORY
IC	DIGITAL,MEMORY,BUBBLE
IC	DIGITAL,MEMORY,EEPROM
IC	DIGITAL,MEMORY,EPROM
IC	DIGITAL,MEMORY,FIFO
IC	DIGITAL,MEMORY,NOVRAM
IC	DIGITAL,MEMORY,PROM
IC	DIGITAL,MEMORY,RAM
IC	DIGITAL,MEMORY,RAM,DYNAMIC
IC	DIGITAL,MEMORY,RAM,MULTIPORT
IC	DIGITAL,MEMORY,RAM,STATIC
IC	DIGITAL,MEMORY,ROM
IC	DIGITAL,MEMORY,UV EPROM
IC	DIGITAL,MICRO COMPUTER
IC	DIGITAL,MICROCONTROLLER
IC	DIGITAL,MICROCONTROLLER,TIMER
IC	DIGITAL,MICROCONTROLLER,UART
IC	DIGITAL,MICROPROCESSOR
IC	DIGITAL,MICROPROCESSOR,16 BIT
IC	DIGITAL,MICROPROCESSOR,4 BIT
IC	DIGITAL,MICROPROCESSOR,4 BIT,CLOCK
IC	DIGITAL,MICROPROCESSOR,8 BIT
IC	DIGITAL,MICROPROCESSOR,8 BIT,CLOCK
IC	DIGITAL,MONITOR
IC	DIGITAL,MONITOR,MPU
IC	DIGITAL,MULTIFUNCTION
IC	DIGITAL,MULTIFUNCTION,PERIPHERAL
IC	DIGITAL,MULTIPLEXER
IC	DIGITAL,MULTIPLEXER,8 CHANNEL
IC	DIGITAL,MULTIPLEXER,8 CHANNEL,3 STATE OUTPUT
IC	DIGITAL,MULTIPLEXER,ANALOG
IC	DIGITAL,MULTIPLEXER,ANALOG,8 CHANNEL
IC	DIGITAL,MULTIPLEXER,DATA SELECTOR
IC	DIGITAL,MULTIPLEXER,DEMULTIPLEXER

217Part (Category)	217 PART TYPE
IC	DIGITAL,MULTIVIBRATOR
IC	DIGITAL,MULTIVIBRATOR,ONE SHOT
IC	DIGITAL,MULTIVIBRATOR,RETRIGGERABLE
IC	DIGITAL,MULTIVIBRATOR,RETRIGGERABLE,DUAL
IC	DIGITAL,OSCILLATOR
IC	DIGITAL,PMOS
IC	DIGITAL,PERIPHERAL DRIVER
IC	DIGITAL,PERIPHERAL DRIVER,CLOCK
IC	DIGITAL,PRESCALER
IC	DIGITAL,PRESCALER,DIVIDE BY 2
IC	DIGITAL,PRESCALER,DIVIDE BY 4
IC	DIGITAL,PROCESSING UNIT
IC	DIGITAL,PROCESSING UNIT,CENTRAL
IC	DIGITAL,PROCESSING UNIT,COPROCESSOR
IC	DIGITAL,PROCESSING UNIT,COPROCESSOR,FLOATING POINT
IC	DIGITAL,PROCESSING UNIT,LOGICAL
IC	DIGITAL,PROCESSING UNIT,SIGNAL
IC	DIGITAL,RECEIVER
IC	DIGITAL,RECEIVER,INTERFACE
IC	DIGITAL,RECEIVER,INTERFACE,LINE
IC	DIGITAL,RECEIVER,LINE
IC	DIGITAL,RECEIVER,LINE,DIFFERENTIAL
IC	DIGITAL,RECEIVER,LINE,DIFFERENTIAL QUAD
IC	DIGITAL,RECEIVER/TRANSMITTER
IC	DIGITAL,RECEIVER/TRANSMITTER,DUART
IC	DIGITAL,RECEIVER/TRANSMITTER,UART
IC	DIGITAL,REGISTER
IC	DIGITAL,REGISTER,COUNTER
IC	DIGITAL,REGISTER,COUNTER,SHIFT
IC	DIGITAL,REGISTER,DIAGNOSTIC
IC	DIGITAL,REGISTER,DIAGNOSTOCTAL
IC	DIGITAL,REGISTER,EDGE TRIGGER
IC	DIGITAL,REGISTER,EDGE TRIGGER,POSITIVE
IC	DIGITAL,REGISTER,FIFO
IC	DIGITAL,REGISTER,INTERFACE
IC	DIGITAL,REGISTER,INTERFACE,BUS
IC	DIGITAL,REGISTER,PIPELINE
IC	DIGITAL,REGISTER,SHIFT
IC	DIGITAL,REGISTER,SHIFT,8 BIT
IC	DIGITAL,REGISTER,SHIFT,BIDIRECTIONAL
IC	DIGITAL,REGISTER,SHIFT,PARALLEL INPUT/PARALLEL OUTPUT
IC	DIGITAL,REGISTER,SHIFT,PARALLEL INPUT/SERIAL OUTPUT
IC	DIGITAL,REGISTER,SHIFT,SERIAL INPUT/PARALLEL OUTPUT
IC	DIGITAL,REGISTER,SHIFT,SERIAL/PAR. INPUT/SER. OUTPUT

217Part (Category)	217 PART TYPE
IC	DIGITAL,REGISTER,STORAGE
IC	DIGITAL,SEQUENCER
IC	DIGITAL,SEQUENCER,MICROPROGRAM
IC	DIGITAL,TIMER
IC	DIGITAL,TIMER,PROGRAMMABLE
IC	DIGITAL,TRANSCEIVER
IC	DIGITAL,TRANSCEIVER,BUS
IC	DIGITAL,TRANSCEIVER,BUS,BUFFER
IC	DIGITAL,TRANSCEIVER,BUS,OCTAL
IC	DIGITAL,TRANSCEIVER,BUS,QUAD
IC	DIGITAL,TRANSCEIVER,LINE
IC	DIGITAL,TRANSLATOR
IC	DIGITAL,TRANSLATOR,ECL TO TTL
IC	DIGITAL,TRANSLATOR,TTL TO ECL
IC	DIGITAL,TRANSLATOR,TTL TO ECL,QUAD
IC	DIGITAL,TRUE COMPLEMENT
IC	LINEAR
IC	LINEAR,AMPLIFIER
IC	LINEAR,AMPLIFIER,AUDIO
IC	LINEAR,AMPLIFIER,DIFFERENTIAL
IC	LINEAR,AMPLIFIER,DIFFERENTIAL,DUAL
IC	LINEAR,AMPLIFIER,GAIN PHASE METER
IC	LINEAR,AMPLIFIER,INSTRUMENTATION
IC	LINEAR,AMPLIFIER,MICROWAVE
IC	LINEAR,AMPLIFIER,PREAMPLIFIER
IC	LINEAR,AMPLIFIER,RF
IC	LINEAR,AMPLIFIER,VIDEO
IC	LINEAR,AMPLIFIER,WIDE BAND
IC	LINEAR,ARRAY
IC	LINEAR,ARRAY,DIODE
IC	LINEAR,ARRAY,TRANSISTOR
IC	LINEAR,COLOR ENCODER
IC	LINEAR,COMPARATOR
IC	LINEAR,COMPARATOR,DUAL
IC	LINEAR,COMPARATOR,QUAD
IC	LINEAR,COMPARATOR,VOLTAGE
IC	LINEAR,COMPARATOR,VOLTAGE,DUAL
IC	LINEAR,CONTROL
IC	LINEAR,CONTROL,DUAL
IC	LINEAR,CONVERTER
IC	LINEAR,CONVERTER,A/D
IC	LINEAR,CONVERTER,A/D,10 BIT
IC	LINEAR,CONVERTER,A/D,12 1/2 BIT
IC	LINEAR,CONVERTER,A/D,12 BIT

217Part (Category)	217 PART TYPE
IC	LINEAR,CONVERTER,A/D,14 BIT
IC	LINEAR,CONVERTER,A/D,16 BIT
IC	LINEAR,CONVERTER,A/D,4 1/2 BIT
IC	LINEAR,CONVERTER,A/D,4 BIT
IC	LINEAR,CONVERTER,A/D,6 1/2 BIT
IC	LINEAR,CONVERTER,A/D,6 BIT
IC	LINEAR,CONVERTER,A/D,8 1/2 BIT
IC	LINEAR,CONVERTER,A/D,8 3/4 BIT
IC	LINEAR,CONVERTER,A/D,8 BIT
IC	LINEAR,CONVERTER,CODE
IC	LINEAR,CONVERTER,D/A
IC	LINEAR,CONVERTER,D/A,1 1/2 BIT
IC	LINEAR,CONVERTER,D/A,10 BIT
IC	LINEAR,CONVERTER,D/A,11 BIT
IC	LINEAR,CONVERTER,D/A,12 1/2 BIT
IC	LINEAR,CONVERTER,D/A,12 BIT
IC	LINEAR,CONVERTER,D/A,14 BIT
IC	LINEAR,CONVERTER,D/A,16 BIT
IC	LINEAR,CONVERTER,D/A,2 BIT
IC	LINEAR,CONVERTER,D/A,3 1/2 BIT
IC	LINEAR,CONVERTER,D/A,4 BIT
IC	LINEAR,CONVERTER,D/A,6 BIT
IC	LINEAR,CONVERTER,D/A,8 1/2 BIT
IC	LINEAR,CONVERTER,D/A,8 BIT
IC	LINEAR,CONVERTER,DC TO DC
IC	LINEAR,CONVERTER,FREQUENCY TO VOLTAGE
IC	LINEAR,CONVERTER,RMS TO DC
IC	LINEAR,CONVERTER,SIGNAL/LOGIC LEVEL
IC	LINEAR,CONVERTER,VOLTAGE TO FREQUENCY
IC	LINEAR,DELAY LINE
IC	LINEAR,DETECTOR
IC	LINEAR,DETECTOR,PEAK
IC	LINEAR,DIFFERENTIAL
IC	LINEAR,DIFFERENTIAL,AMPLIFIER
IC	LINEAR,DISK CHAN QUALIFIER
IC	LINEAR,DRIVER
IC	LINEAR,FILTER
IC	LINEAR,FILTER,PCM CODEC
IC	LINEAR,FUNCTION GENERATOR
IC	LINEAR,LINEAR
IC	LINEAR,LINEAR,INTERPOLATION
IC	LINEAR,MODULATOR
IC	LINEAR,MODULATOR,DEMODULATOR
IC	LINEAR,MULTIPLEXER

217Part (Category)	217 PART TYPE
IC	LINEAR,MULTIPLEXER,ANALOG
IC	LINEAR,MULTIPLEXER,ANALOG,16 CHANNEL
IC	LINEAR,MULTIPLEXER,ANALOG,4 CHANNEL
IC	LINEAR,MULTIPLEXER,ANALOG,6 CHANNEL
IC	LINEAR,MULTIPLEXER,ANALOG,8 CHANNEL
IC	LINEAR,MULTIPLEXER,DEMULTIPLEXER
IC	LINEAR,MULTIPLIER
IC	LINEAR,OPERATIONAL AMPLIFIER
IC	LINEAR,OPERATIONAL AMPLIFIER,COMPENSATED
IC	LINEAR,OPERATIONAL AMPLIFIER,COMPENSATED,HIGH SPEED
IC	LINEAR,OPERATIONAL AMPLIFIER,COMPENSATED,HIGH SPEED,LOW POWER
IC	LINEAR,OPERATIONAL AMPLIFIER,COMPENSATED,LOW BIAS
IC	LINEAR,OPERATIONAL AMPLIFIER,COMPENSATED,LOW OFFSET
IC	LINEAR,OPERATIONAL AMPLIFIER,DUAL
IC	LINEAR,OPERATIONAL AMPLIFIER,HIGH OUTPUT CURRENT
IC	LINEAR,OPERATIONAL AMPLIFIER,LOW DRIFT
IC	LINEAR,OPERATIONAL AMPLIFIER,POWER
IC	LINEAR,OPERATIONAL AMPLIFIER,PREAMPLIFIER
IC	LINEAR,OPERATIONAL AMPLIFIER,QUAD
IC	LINEAR,OPERATIONAL AMPLIFIER,SAMPLE AND HOLD
IC	LINEAR,OPERATIONAL AMPLIFIER,VOLTAGE FOLLOWER
IC	LINEAR,OPERATIONAL AMPLIFIER,WIDE BAND
IC	LINEAR,OPERATIONAL AMPLIFIER,WIDE BAND,HIGH FREQUENCY
IC	LINEAR,OSCILLATOR
IC	LINEAR,OSCILLATOR,BAUD RATE GENERATOR
IC	LINEAR,OSCILLATOR,CLOCK
IC	LINEAR,OSCILLATOR,CLOCK GENERATOR
IC	LINEAR,OSCILLATOR,CRYSTAL
IC	LINEAR,OSCILLATOR,FREQUENCY COMPENSATION
IC	LINEAR,OSCILLATOR,VOLTAGE CONTROL
IC	LINEAR,PHASE LOCK LOOP
IC	LINEAR,RECEIVER
IC	LINEAR,RECEIVER/TRANSMITTER
IC	LINEAR,SWITCH
IC	LINEAR,SWITCH,2 CHANNEL
IC	LINEAR,SWITCH,2 CHANNEL,DPDT
IC	LINEAR,SWITCH,2 CHANNEL,SPDT
IC	LINEAR,SWITCH,2 CHANNEL,SPST
IC	LINEAR,SWITCH,4 CHANNEL
IC	LINEAR,SWITCH,4 CHANNEL,SPST
IC	LINEAR,SWITCH,ANALOG
IC	LINEAR,SWITCH,ANALOG,2 CHANNEL
IC	LINEAR,SWITCH,ANALOG,FET
IC	LINEAR,SWITCH,ANALOG,PIN

217Part (Category)	217 PART TYPE
IC	LINEAR,SWITCH,ANALOG,SPDT
IC	LINEAR,SWITCH,BILATERAL
IC	LINEAR,SWITCH,BILATERAL,QUAD
IC	LINEAR,TIMER
IC	LINEAR,TIMER,DUAL
IC	LINEAR,TRANSDUCER
IC	LINEAR,TRANSDUCER,TEMPERATURE
IC	LINEAR,VOLTAGE FOLLOWER
IC	LINEAR,VOLTAGE REFERENCE
IC	LINEAR,VOLTAGE REFERENCE,ADJUSTABLE
IC	LINEAR,VOLTAGE REFERENCE,FIXED
IC	LINEAR,VOLTAGE REFERENCE,FIXED,1.8 VOLTS
IC	LINEAR,VOLTAGE REGULATOR
IC	LINEAR,VOLTAGE REGULATOR,ADJUSTABLE
IC	LINEAR,VOLTAGE REGULATOR,ADJUSTABLE,NEGATIVE
IC	LINEAR,VOLTAGE REGULATOR,FIXED
IC	LINEAR,VOLTAGE REGULATOR,FIXED,POSITIVE
IC	LINEAR,VOLTAGE REGULATOR,SWITCH
IC	LINEAR,VOLTAGE SENSOR
IC	OPTOELECTRONPHOTO/OPTOCOUPLER
IC	OPTOELECTRONPHOTO/OPTOCOUPLER,PHOTODARLINGTON OUTPUT
IC	OPTOELECTRONPHOTO/OPTOCOUPLER,PHOTOTRANSISTOR OUTPUT
IC	OPTOISOLATOR
IC	OPTOISOLATOR,LED
IC	OPTOISOLATOR,LED,IC GATE
IC	OPTOISOLATOR,LED,PHOTO SCR
IC	OPTOISOLATOR,LED,PHOTOCONDUCTOR
IC	OPTOISOLATOR,LED,PHOTOTRANSISTOR
IC	OPTOISOLATOR,LED,PHOTOTRANSISTOR,DIODE
IC	PHOTO/OPTOCOUPLER
INDUCTOR	CHOKE,RF
INDUCTOR	INDUCTOR
INDUCTOR	CHOKE
INDUCTOR	CHOKE,FILTER
INDUCTOR	CHOKE,PLATE
INDUCTOR	COIL
INDUCTOR	COIL,FIXED
INDUCTOR	COIL,FIXED,CORE
INDUCTOR	COIL,FIXED,DEFLECTION YOKE
INDUCTOR	COIL,FIXED,ELECTRICAL
INDUCTOR	COIL,FIXED,FERRITE BEAD
INDUCTOR	COIL,FIXED,FOCUS
INDUCTOR	COIL,FIXED,M.V. CIRCUIT
INDUCTOR	COIL,FIXED,PICK OFFS

217Part (Category)	217 PART TYPE
INDUCTOR	COIL,FIXED,POWER FILTER
INDUCTOR	COIL,FIXED,PULSE
INDUCTOR	COIL,FIXED,RF
INDUCTOR	COIL,FIXED,RADIO FREQUENCY
INDUCTOR	COIL,FIXED,REACTOR
INDUCTOR	COIL,FIXED,REPEATER
INDUCTOR	COIL,FIXED,SOLENOID
INDUCTOR	COIL,FIXED,TUNING
INDUCTOR	COIL,VARIABLE
INDUCTOR	COIL,VARIABLE,RF
INDUCTOR	FIXED,BOBBIN
INDUCTOR	VARIABLE
RELAY	RELAY
RELAY	COAXIAL
RELAY	CONTACT,THERMAL
RELAY	DRY REED
RELAY	ELECTROMAGNETIC
RELAY	ELECTROMECHANICAL
RELAY	ELECTROMECHANICAL,GENERAL PURPOSE
RELAY	ELECTROMECHANICAL,REED
RELAY	ELECTROMECHANICAL,REED,COIL MAGNETIC
RELAY	ELECTRONIC
RELAY	SOLID STATE
RELAY	THERMAL
RELAY	TIME DELAY
RELAY	TIME DELAY,HYDRAULIC/PNEUMATIC
RELAY	TIME DELAY,MAGNETIC/ELECTRIC
RELAY	TIME DELAY,THERMAL
RESISTOR	FIXED,CARBON
RESISTOR	FIXED,CARBON COMPOSITION
RESISTOR	FIXED,COMPOSITION
RESISTOR	FIXED,FILM
RESISTOR	FIXED,FILM,CARBON
RESISTOR	FIXED,FILM,METAL
RESISTOR	FIXED,FILM,PRECISION
RESISTOR	FIXED,FILM,THICK
RESISTOR	FIXED,FILM,THIN
RESISTOR	FIXED,FUSE
RESISTOR	FIXED,METAL FOIL
RESISTOR	FIXED,METAL OXIDE
RESISTOR	FIXED,MULTIPLE
RESISTOR	FIXED,MULTIPLE,MATCHED SET
RESISTOR	FIXED,NETWORK
RESISTOR	FIXED,NETWORK,FILM

217Part (Category)	217 PART TYPE
RESISTOR	FIXED,NETWORK,SHUNT
RESISTOR	FIXED,NICHROME
RESISTOR	FIXED,PRECISION
RESISTOR	FIXED,PRECISION,TAPPED
RESISTOR	FIXED,SINGLE
RESISTOR	FIXED,THERMAL
RESISTOR	FIXED,THERMISTOR
RESISTOR	FIXED,THERMISTOR,BEAD
RESISTOR	FIXED,THERMISTOR,BEAD,DUAL
RESISTOR	FIXED,THERMISTOR,DISC
RESISTOR	FIXED,THERMISTOR,PTC
RESISTOR	FIXED,THERMISTOR,PROBE
RESISTOR	FIXED,THERMISTOR,ROD
RESISTOR	FIXED,THERMISTOR,SURGE PROTECTOR
RESISTOR	FIXED,THERMISTOR,TUB
RESISTOR	FIXED,THERMISTOR,WAFER
RESISTOR	FIXED,THYRITE
RESISTOR	FIXED,TIN OXIDE
RESISTOR	FIXED,VITREOUS ENAMEL
RESISTOR	FIXED,VOLTAGE SENSITIVE
RESISTOR	FIXED,VOLTAGE SENSITIVE,ALUMINUM OXIDE
RESISTOR	FIXED,VOLTAGE SENSITIVE,BERYLLIUM COPPER
RESISTOR	FIXED,VOLTAGE SENSITIVE,METAL
RESISTOR	FIXED,VOLTAGE SENSITIVE,SUPPRESSOR
RESISTOR	FIXED,VOLTAGE SENSITIVE,SUPPRESSOR,METAL
RESISTOR	FIXED,WIREWOUND
RESISTOR	FIXED,WIREWOUND,ACTUATOR
RESISTOR	FIXED,WIREWOUND,HEATER ELEMENT
RESISTOR	FIXED,WIREWOUND,HIGH POWER
RESISTOR	FIXED,WIREWOUND,POWER
RESISTOR	FIXED,WIREWOUND,PRECISION
RESISTOR	VARIABLE,CARBON COMPOSITION
RESISTOR	VARIABLE,CARBON COMPOSITION,TRIMMER
RESISTOR	VARIABLE,CARBON FILM
RESISTOR	VARIABLE,CARBON FILM,TRIMMER
RESISTOR	VARIABLE,CERMET
RESISTOR	VARIABLE,CERMET,TRIMMER
RESISTOR	VARIABLE,COMPOSITION
RESISTOR	VARIABLE,CONDUCTIVE PLASTIC
RESISTOR	VARIABLE,CONDUCTIVE PLASTIC,TRIMMER
RESISTOR	VARIABLE,FILM
RESISTOR	VARIABLE,METAL FILM
RESISTOR	VARIABLE,METAL GLASS
RESISTOR	VARIABLE,METAL GLASS,TRIMMER

217Part (Category)	217 PART TYPE
RESISTOR	VARIABLE,METAL OXIDE
RESISTOR	VARIABLE,MOTOR DRIVEN
RESISTOR	VARIABLE,MULTIPLE
RESISTOR	VARIABLE,PLASTIC
RESISTOR	VARIABLE,POTENTIOMETER
RESISTOR	VARIABLE,POTENTIOMETER,CARBON DEPOSIT
RESISTOR	VARIABLE,POTENTIOMETER,COMPOSITION
RESISTOR	VARIABLE,POTENTIOMETER,COMPUTING
RESISTOR	VARIABLE,POTENTIOMETER,LINEAR PLASTIC
RESISTOR	VARIABLE,POTENTIOMETER,MOLDED
RESISTOR	VARIABLE,POTENTIOMETER,MOTOR DRIVEN
RESISTOR	VARIABLE,POTENTIOMETER,WIREWOUND
RESISTOR	VARIABLE,SINGLE
RESISTOR	VARIABLE,THICK FILM
RESISTOR	VARIABLE,THICK FILM,TRIMMER
RESISTOR	VARIABLE,THIN FILM
RESISTOR	VARIABLE,THIN FILM,TRIMMER
RESISTOR	VARIABLE,TRIMMER
RESISTOR	VARIABLE,WIREWOUND
RESISTOR	VARIABLE,WIREWOUND,PRECISION
RESISTOR	VARIABLE,WIREWOUND,TRIMMER
RESISTOR	VARISTOR
THYRISTOR	THYRISTOR
THYRISTOR	SCR
THYRISTOR	THYRISTOR
THYRISTOR	TRIAC
TRANSFORMER	AUDIO
TRANSFORMER	AUDIO,FREQUENCY
TRANSFORMER	FLYBACK
TRANSFORMER	ISOLATOR
TRANSFORMER	ISOLATOR,DELTA WYE
TRANSFORMER	POWER
TRANSFORMER	POWER,RADAR
TRANSFORMER	POWER,SINGLE PHASE
TRANSFORMER	PULSE
TRANSFORMER	PULSE,MAGNETRON
TRANSFORMER	PULSE,RADAR
TRANSFORMER	RADIO
TRANSFORMER	RADIO,FREQUENCY
TRANSISTOR	TRANSISTOR
TRANSISTOR	BIPOLAR
TRANSISTOR	BIPOLAR,ARRAY
TRANSISTOR	BIPOLAR,ARRAY,CHIP
TRANSISTOR	BIPOLAR,DARLINGTON

217Part (Category)	217 PART TYPE
TRANSISTOR	BIPOLAR,DARLINGTON,POWER
TRANSISTOR	BIPOLAR,DARLINGTON,POWER,NPN
TRANSISTOR	BIPOLAR,GERMANIUM
TRANSISTOR	BIPOLAR,GERMANIUM,MESA
TRANSISTOR	BIPOLAR,GERMANIUM,POWER
TRANSISTOR	BIPOLAR,HIGH FREQUENCY
TRANSISTOR	BIPOLAR,HIGH FREQUENCY,MICROWAVE
TRANSISTOR	BIPOLAR,MULTIPLE
TRANSISTOR	BIPOLAR,MULTIPLE,COMPLEMENTARY PAIR
TRANSISTOR	BIPOLAR,MULTIPLE,DARLINGTON
TRANSISTOR	BIPOLAR,MULTIPLE,DARLINGTON,MATCHED
TRANSISTOR	BIPOLAR,MULTIPLE,DARLINGTON,NPN
TRANSISTOR	BIPOLAR,MULTIPLE,DARLINGTON,PNP
TRANSISTOR	BIPOLAR,MULTIPLE,DUAL
TRANSISTOR	BIPOLAR,MULTIPLE,DUAL,NPN
TRANSISTOR	BIPOLAR,MULTIPLE,DUAL,PNP
TRANSISTOR	BIPOLAR,NPN
TRANSISTOR	BIPOLAR,NPN,SWITCHING
TRANSISTOR	BIPOLAR,PNP
TRANSISTOR	BIPOLAR,PNP,SWITCHING
TRANSISTOR	BIPOLAR,PHOTOTRANSISTOR
TRANSISTOR	BIPOLAR,POWER
TRANSISTOR	BIPOLAR,POWER HIGH
TRANSISTOR	BIPOLAR,POWER HIGH,NPN
TRANSISTOR	BIPOLAR,POWER HIGH,PNP
TRANSISTOR	BIPOLAR,POWER LOW
TRANSISTOR	BIPOLAR,POWER LOW,NPN
TRANSISTOR	BIPOLAR,POWER LOW,PNP
TRANSISTOR	BIPOLAR,POWER MEDIUM
TRANSISTOR	BIPOLAR,POWER MEDIUM,NPN
TRANSISTOR	BIPOLAR,POWER MEDIUM,PNP
TRANSISTOR	BIPOLAR,POWER,PNP
TRANSISTOR	BIPOLAR,SILICON
TRANSISTOR	BIPOLAR,SMALL SIGNAL
TRANSISTOR	BIPOLAR,SMALL SIGNAL,NPN
TRANSISTOR	BIPOLAR,SMALL SIGNAL,PNP
TRANSISTOR	BIPOLAR,SPECIAL FUNCTION
TRANSISTOR	BIPOLAR,SURFACE BARRIER
TRANSISTOR	BIPOLAR,SWITCHING
TRANSISTOR	FIELD EFFECT
TRANSISTOR	FIELD EFFECT,CHIP
TRANSISTOR	FIELD EFFECT,CHIP,N-CHANNEL
TRANSISTOR	FIELD EFFECT,GAAS
TRANSISTOR	FIELD EFFECT,GAAS,CHIP

217Part (Category)	217 PART TYPE
TRANSISTOR	FIELD EFFECT,GAAS,CHIP,N-CHANNEL
TRANSISTOR	FIELD EFFECT,GAAS,N-CHANNEL
TRANSISTOR	FIELD EFFECT,JUNCTION
TRANSISTOR	FIELD EFFECT,JUNCTION,CHIP
TRANSISTOR	FIELD EFFECT,JUNCTION,CHIP,N OR P-CHANNEL
TRANSISTOR	FIELD EFFECT,JUNCTION,DUAL
TRANSISTOR	FIELD EFFECT,JUNCTION,DUAL,N-CHANNEL
TRANSISTOR	FIELD EFFECT,JUNCTION,MATCHED PAIR
TRANSISTOR	FIELD EFFECT,JUNCTION,MATCHED PAIR,N-CHANNEL
TRANSISTOR	FIELD EFFECT,JUNCTION,MATCHED PAIR,P-CHANNEL
TRANSISTOR	FIELD EFFECT,JUNCTION,N-CHANNEL
TRANSISTOR	FIELD EFFECT,JUNCTION,P-CHANNEL
TRANSISTOR	FIELD EFFECT,MOS
TRANSISTOR	FIELD EFFECT,MOS,N-CHANNEL
TRANSISTOR	FIELD EFFECT,MOS,P-CHANNEL
TRANSISTOR	FIELD EFFECT,N-CHANNEL
TRANSISTOR	FIELD EFFECT,P-CHANNEL
TRANSISTOR	FIELD EFFECT,RF
TRANSISTOR	FIELD EFFECT,RF,MICROWAVE
TRANSISTOR	FIELD EFFECT,SMALL SIGNAL
TRANSISTOR	FIELD EFFECT,SMALL SIGNAL,P-CHANNEL
TRANSISTOR	FIELD EFFECT,UNIJUNCTION
OTHER	SENSOR,REFLECTOR/TRANSDUCER,LED
OTHER	SENSOR,REFLECTOR/TRANSDUCER,LED,PHOTOTRANSISTOR
OTHER	SENSOR,SOURCE/SENSOR,LED
OTHER	SENSOR
OTHER	SOURCE/SENSOR
OTHER	LED
OTHER	PHOTOTRANSISTOR
OTHER	
SOFTWARE	SOFTWARE
SWITCH	SWITCH
SWITCH	CENTRIFUGAL
SWITCH	COAXIAL
SWITCH	COAXIAL,ELECTROMECHANICAL
SWITCH	CONTACT,FLOW
SWITCH	CONTACT,PRESSURE
SWITCH	CONTACT,PUSH BUTTON
SWITCH	CONTACT,ROTARY
SWITCH	CONTACT,ROTARY,MOTOR DRIVE
SWITCH	CONTACT,SENSITIVE
SWITCH	CONTACT,SENSITIVE,LARGE
SWITCH	CONTACT,SENSITIVE,SMALL
SWITCH	CONTACT,SLIDE PLUNGER

217Part (Category)	217 PART TYPE
SWITCH	CONTACT,TEMPERATURE
SWITCH	CONTACT,THERMAL
SWITCH	CONTACT,TOGGLE
SWITCH	CONTACT,WAVEGUIDE
SWITCH	DIP
SWITCH	DIP,ROCKER
SWITCH	DIP,ROTARY
SWITCH	DIP,SLIDE
SWITCH	DIP,SURFACE MOUNT
SWITCH	DIP,SURFACE MOUNT,SLIDE
SWITCH	DIP,TOGGLE
SWITCH	ELECTRIC
SWITCH	ELECTRONIC
SWITCH	FLOAT
SWITCH	FLOAT,ELECTRIC
SWITCH	FLOAT,LIQUID LEVEL
SWITCH	FLOAT,LIQUID LEVEL,INDICATOR
SWITCH	FLOW
SWITCH	FLOW,LIQUID
SWITCH	FLOW,PADDLE TYPE
SWITCH	HUMIDITY
SWITCH	HUMIDITY,CONTROL
SWITCH	LIMIT
SWITCH	LIQUID LEVEL
SWITCH	MICROWAVE
SWITCH	PHOTOSWITCH
SWITCH	PRESSURE
SWITCH	PRESSURE,AIR FLOW
SWITCH	PRESSURE,DIAPHRAGM
SWITCH	PRESSURE,FLUID
SWITCH	PRESSURE,FUEL
SWITCH	PRESSURE,HYDRAULIC
SWITCH	PRESSURE,REFRIGERATOR
SWITCH	PUSH BUTTON
SWITCH	PUSH BUTTON,ASSEMBLY
SWITCH	PUSH BUTTON,BOOT
SWITCH	PUSH BUTTON,CAP
SWITCH	PUSH BUTTON,HEADLIGHT
SWITCH	PUSH BUTTON,HEADLIGHT,BEAM SELECTOR
SWITCH	PUSH BUTTON,ILLUMINATED
SWITCH	PUSH BUTTON,PENDANT HOIST KEY
SWITCH	PUSH BUTTON,SENSITIVE
SWITCH	PUSH BUTTON,SWITCH EXTENDER
SWITCH	PUSHWHEEL

217Part (Category)	217 PART TYPE
SWITCH	REED
SWITCH	ROCKER
SWITCH	ROCKER,ACTUATOR
SWITCH	ROTARY
SWITCH	ROTARY,CODE INDICATOR WHEEL
SWITCH	ROTARY,LEVER
SWITCH	ROTARY,MAKE BEFORE BRAKE
SWITCH	ROTARY,MANUAL
SWITCH	ROTARY,SHIELD
SWITCH	ROTARY,STEPPING
SWITCH	ROTARY,THUMBWHEEL
SWITCH	SENSITIVE
SWITCH	SENSITIVE MICRO
SWITCH	SLIDE
SWITCH	THERMAL
SWITCH	THERMAL,FIXED
SWITCH	THERMAL,HIGH TEMPERATURE
SWITCH	THERMAL,VARIABLE
SWITCH	THERMOSTATIC
SWITCH	THERMOSTATIC,BIMETAL
SWITCH	THERMOSTATIC,REMOTE BULB
SWITCH	THUMBWHEEL
SWITCH	TOGGLE
SWITCH	TOGGLE,ALARM
SWITCH	TOGGLE,SENSITIVE
SWITCH	WAVE GUIDE

Other 217Plus Application Notes

217Plus Application Note 2. Working with Multiple Bills of Material

To Import Multiple BOMs in one operation, one can either:

1. Develop individual BOM files as above, and then when Importing to 217Plus, use the 217Plus interface to select all of the BOMs one wishes to import into their 'system'.
2. Combine multiple BOMs in one spreadsheet file, such as ***217Plus_BOM_Tool-REV2.xls***. For instructions on several BOMs into one spreadsheet file, refer to **217Plus Application Note 2**.

Both of the methods 1 and 2 *should* produce the same end result, although method 2 could save time and help eliminate the potential for errors by ensuring BOM data is of a common format, and by ensuring that 'like' components are assigned in a consistent manner from BOM to BOM.

217Plus Application Note 3 Preparing Bills of Materials for Stress Analysis

A 217Plus Reliability Prediction using the Stress Analysis method requires the entry of specific component parameters in order to determine the electrical and thermal stresses on the components Naturally, the 217Plus graphical user interface allows the user to enter such data. However, one could also **import** the component stress parameters when the BOM is imported, which can save time and reduce transcription errors.

217Plus Application Note 4 Importing Component Data into 217Plus

The 217Plus software application can maintain a library, or database, of components. Along with basic component information (part numbers, description, manufacturer), the library can also maintain the component rating information used in Stress analyses. While components could be added to the library one at a time, or on a BOM-by-BOM basis, one could **import** their entire listing of electronic components and the component data to the 217Plus library, which has the potential to save labor time.