

DLA Standard Microcircuit Drawings (SMD) and JAN Part Numbers Primer



ABSTRACT

Often there is confusion with SMD and military part numbers and their associated manufacturer part numbers. This application note is intended to help resolve this confusion.

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Trademarks

All other trademarks are the property of their respective owners.

1 DLA Standard Microcircuit Drawings (SMD) and JAN Part Numbers

For demonstration purposes, this application report focuses on one example of a TI parent device sold with the three part numbers shown in [Table 1-1](#).

Table 1-1. Example SMD, JAN, and Texas Instruments Part Numbering

Device Example Part Number	Device Part Number Source
SNJ54S138J	Standard TI part number
JM38510/07701BEA	JAN part number
5962-7604101QEA	DLA SMD part number

Table 1-2. Part Number Acronym Definitions

Acronym	Definition
DLA	Defense Logistics Agency Land and Maritime (previously known as the Defense Supply Center Columbus or DSCC - keepers of the mil-specs)
JAN	Joint Army Navy
SMD	Standard Microcircuit Drawing

[Table 1-3](#) defines the part number fields for a JAN slash sheet part number.

Table 1-3. Example JAN (Joint-Army-Navy) Slash Sheets

JM38510	/	077	01	B	E	X
Military designator	RHA designator	Device specification	Device type	Device class designator	Case outline	Lead finish

Table 1-4 defines the part number fields for an SMD part number.

Table 1-4. Example DLA SMD

5962	-	76041	01	Q	E	X
Federal stock class designator	RHA designator	Drawing designator	Device type	Device class designator	Case outline	Lead finish

Table 1-5 defines the part number fields for an SMD die part number.

Table 1-5. Example DLA SMD - Appendix A for Die Sales

5962	-	76041	01	Q	9	A
Federal stock class designator	RHA designator	Drawing designator	Device type	Device class designator	Die code	Die details

The die details designation is a unique letter which designates the physical dimensions of the die, bonding-pad locations and related electrical functions, interface materials, and other assembly related information, for each product and variant supplied to the SMD. Typically it will be an "A" for initial release and revised if physical changes are made to the die.

Table 1-6 defines the RHA level for the specific designator.

Table 1-6. Radiation Hardness Assured (RHA) Designator

RHA Level Designator	Radiation and Total Dose (Rads (Si))
- or /	No RHA
M	3×10^3
D	1×10^4
P	3×10^4
L	5×10^4
R	1×10^5
F	3×10^5
G	5×10^5
H	1×10^6

Table 1-7 defines the QML class types. Texas Instruments currently builds Qualified Manufacturing Line (QML) products as class Q, class V, and class N.

Table 1-7. QML Class Type Descriptions

Class Type	Description
Class M	Items which have been subjected to and passed all applicable requirements of MIL-PRF-38535 appendix A and are documented on an SMD.
Class N	Items which have been subjected to and passed all applicable requirements of MIL-PRF-38535 including qualification testing, screening testing, and TCI/QCI inspections, and are encapsulated in plastic.
Class Q	Items which have been subjected to and passed all applicable requirements of MIL-PRF-38535 including qualification testing, screening testing, and TCI/QCI inspections.
Class V	Items that meet all the class Q requirements, and have been subjected to, and passed all applicable requirements of MIL-PRF-38535 appendix B.
Class B	Items which have been subjected to and passed all applicable requirements of MIL-PRF-38535 including qualification testing, screening testing, and TCI/QCI inspections and are documented on a MIL-M-38510 slash sheet.
Class S	Items that meet all the class B requirements, and have been subjected to, and passed all applicable requirements of MIL-PRF-38535 appendix B and are documented on a MIL-M-38510 slash sheet.

Table 1-8 defines the package types from the package designator field.

Table 1-8. Package Types

Designator	Description
A	14-pin Flatpack (1/4" x 1/4")
B	14-pin Flatpack (3/16" x 1/4")
C	14-pin DIP
D	14-pin Flatpack
E	16-pin DIP
F	16-pin Flatpack
G	8-pin Can
H	10-pin Flatpack
I	10-pin Flatpack
J	24-pin DIP
K	24-pin Flatpack
L	24-pin DIP (300 mil)
M	12-pin Can
P	8-pin DIP
Q	40-pin DIP
R	20-pin DIP

Table 1-8. Package Types (continued)

Designator	Description
S	20-pin Flatpack
V	18-pin DIP
W	22-pin DIP
2	20-pad LCC
3	28-pad LCC
X	Other packages
Y	Other packages

Table 1-9 defines the lead finish designators.

Table 1-9. Lead Finish (Termination Finish)

Finish Letter	Process
A	Hot solder dip
B	Tin-lead plate
C	Gold plate
D	Palladium
E	Gold flash palladium
X	Either A, B, or C (mark on specification only)

Lead-finish options must be specified by ordering the DLA SMD or JAN slash sheet. The customer may sometimes use the designator “X” as “optional” or “don’t care”.

2 DLA One Part - One Part Number System

DLA allows marking of microcircuits under a One Part - One Part Number system. The following is an excerpt from a Standard Microcircuit Drawing (SMD):

One Part - One Part Number System: The one part - one part number system described below has been developed to allow for transitions between identical generic devices covered by the four major microcircuit requirements documents (MIL-H-38534, MIL-I-38535, and 1.2.1 of MIL-STD-883) without the necessity for the generation of unique PIN's. The three military requirements documents represent different class levels, and previously when a device manufacturer upgraded military product from one class level to another, the benefits of the upgraded product were unavailable to the Original Equipment Manufacturer (OEM), that was contractually locked into the original unique PIN. By establishing a one part number system covering all three documents, the OEM can acquire to the highest class level available for a given generic device to meet system needs without modifying the original contract parts selection criteria.

Therefore, a part previously released as Class M would now be built as Class Q without requiring a change to the orderable part number or the part marking.

3 Helpful Hints

Caveats on SMD versus JAN Slash Sheets

In some cases the JAN slash sheets have different electrical specifications than the TI data sheet parts or even the SMD. There is no way to tell without reviewing both or all three.

JAN parts are ordered under the JAN part number.

In most cases an SMD can be ordered by either the TI part number or the SMD part number, but the customer is encouraged to order the SMD to be assured of receiving the correct lead finish. In addition, by specifying the DLA SMD the part marking will definitely reflect the DLA number.

Please note that some TI QML Class Q parts do not have an associated DLA SMD. These parts have been “grandfathered” and do not require an SMD to be considered QML approved.

Special Note on JM38510 versus M38510 TI orderable part numbers

Per MIL-PRF-38535 Paragraph 3.6.3.2 “JAN” or “J” mark. The “J” marking is a legacy certification mark that was required by MIL-M-38510 device specifications and qualified on a QPL part by part basis. Since the “J” is often mistakenly considered part of the PIN, it may continue to be marked in front of the military designator portion of the device specification part number at the QML vendor’s option. This “J” was not and shall not be considered element of the official part number used to assign a national stock number.

JM38510 was the original designator used by Texas Instruments for JAN products; however, some customers prefer to order by the M38510 and do not have the flexibility to accept the JM38510 designator. Therefore TI has set up alternate part numbers so that a given JAN device can be ordered by either the JM38510 or M38510 designator. The part making itself is the same in either case.

Hints on Using the DLA Part Number Cross Reference and Drawing Library

The JAN slash sheets and DLA Standard Microcircuit Drawings are maintained by DLA. They are not available on the TI web site.

DLA refers to the JAN and SMD part numbers as the “Standard Part Number” on their cross-reference.

The search site for the cross-reference is: <https://landandmaritimeapps.dla.mil/programs/smcr/default.aspx>.

To maximize search hits when looking up JAN parts only the device specification and device type should be used. For example, to search for the JM38510/07701BEA, only enter 07701. The menu will list the supplier and available part types.

Similarly, for DLA SMD only the drawing designator and device type should be used. For example, to search for the 5962-7604101QEA, only enter 7604101.

Note that DLA considers the cross-reference to be the living document with respect to which manufacturer is qualified to supply which parts. The DLA SMD and the JAN Slash Sheet may not be revised for several months when a manufacturer is added or removed.

4 References

- [MIL-PRF-38535 General Specification for Integrated Circuits \(Microcircuits\) Manufacturing](#)
- [MIL-STD-883 Test Methods and Procedures for Microcircuits](#)

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