Parts Research Essentials

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Agenda

- Customer Interface Requirements
- Understanding the BOM, Part Number, & Cage Codes
- Effective Methods of Parts Research
  - Focus Mainly on Electronic Components/Parts
  - Military Parts
  - Commercial Parts
  - Non-Electronic Parts
- Review of Resolution Options & Associated Cost Avoidance

Customer Interface Requirements

- Identify, Collect, & Specify Program/System Support Info
  - DMP & DMT Status
    - Critical if not mandatory
    - Never too late
  - Prime Contractor & Sub-Contractors
  - Acquisition Life Cycle Status & Roadmap
  - Planned Refresh Cycles
  - Drawings (Parts/Assemblies/Units) Availability & Access Status
    - Availability
    - Repository Access
  - Indentured BOM w Quantities per NHA & NSNs if Known
    - Preferred
    - Slice & Dice in Multiple Ways to Present Best Options at Various Levels

Customer Interface Requirements

- Define Parts/Items to be Researched & Monitored
  - Electronic
  - Passive
  - COTS
  - Critical Parts as defined by Customer
- SOM (Sponsor Owned Material) Data Availability
- Make Corrections to BOM Errors
  - Typos
  - Cage Codes
- Philosophies/Strategies
  - Lead Free
  - LTB Storage Location
  - Substitution Situations
  - New PN System
  - MFR Mergers & Acquisitions

Customer Interface Requirements

Define Parts/Items to be Researched & Monitored

- Active Electronic (high % of obsolescence)
  - Microcircuits
  - Transistors
  - Diodes
- Passive (To reduce cost, group by family/series)
  - Resistors
  - Capacitors
  - Inductors
- COTS
- Critical Parts/Items as Defined by Customer
  - Likely, a manual process

Customer Interface Requirements

SOM (Sponsor Owned Material) Data Availability

- Spreadsheet or Database
  - Practitioner Needs to either have access or know who to go to or where to go
  - Specified in DMP
- Serves as a ready-made solution to Obsolete Part Issue
  - SOM data may be enough to support the obsolete part

Customer Interface Requirements

Make Corrections to BOM Errors

- Practitioner Works w Customer POC or within the DMT
  - Most cost effective to correct BOM errors upfront
  - Helpful in correcting errors if Access to Drawings
- PN Errors
  - Missing Prefix or Suffix
  - Incomplete MIL PN
  - Legibility problems
  - Transfer from drawings to BOM
- CC Errors
  - Missing Leading 0 due to formatting error of the BOM
  - More or Less than 5 characters
  - Incorrect Cage for specified Entity

Customer Interface Requirements

Philosophies/Strategies

- Lead Free Parts
  - Case by case, possibly acceptance testing
  - Blanket statement that ALL LF parts are acceptable
- Substitution Situations
  - Inherently substitutable
  - Simple vs Complex
  - Examples
- New Part Number System
- Packaging of Part Changes
  - Tube of 50 to T/R of 2500
  - Small Reel or Large Reel
- MFR Mergers, Acquisitions, Spinoffs
  - Need to develop data repository
  - Single point to view

Customer Interface Requirements

Substitutable Situations - Acceptable

- For any given QML/QPL part commodity/type, refer to applicable MIL Performance Specification
- Product level substitution (Failure Rate Levels – FRLs)
  - Higher FRL is acceptable sub for lower FRL (0.001 sub for 0.01)
- Tolerance (e.g., capacitance, resistance, inductance)
  - Tighter tolerance may be substituted for a more relaxed tolerance
- Voltage Ratings (where applicable)
  - Substitutable going from higher to lower, provided all other parameters are equal (e.g., case size, characteristic)
- Manufacturer changes to New Global PN System
  - Same exact part with new PN
- Lead Free (LF) version of original part
  - Only if customer (program office) allows per overarching statement
- Packaging of Part changes (e.g., tube of 50 to T/R of 2500)

Customer Interface Requirements

Substitutable Situations - Acceptable

MIL-PRF-19500, Semiconductor Devices: 1.3.8 Device Subs

- Substitutable going from Higher to Lower product assur level
  - JANS, JANTXV, JANTX, JAN
- Axial leaded diodes, with & without dash 1 (metallurgical bond)
  - Dash 1 is higher assurance level & acceptable sub for non dash 1
- Voltage Tolerance (where applicable)
  - Tighter tolerance may be substituted for a more relaxed tolerance
- Voltage Ratings (where applicable)
  - Substitutable going from higher to lower, provided all other parameters are equal
- Other acceptable substitutions for 19500 devices

Customer Interface Requirements

Yet More Substitutable Situations

Original PN replaced by New Global PN System

- RH-250-130-1% => RH250130R0FJ01 (Vishay)
  - Same exact part, New PN

Cage code changes within a given MFR

- Customer's BOM: AD590MF cage 51640
  - Corrected CC: 24355
  - Some specify this as ALT, simple substitute cost associated
  - Others specify this as Approved; same part, same MFR; No cost

MFR Mergers/Acquisitions

- Can be confusing and complicated
- MFR A acquires MFR B
  - Does not mean CC for MFR A is utilized for MFR B in ALL instances
  - Yet several Predictive Tools make that assumption

Customer Interface Requirements

MFR Mergers/Acquisitions Examples

March 2018, Microchip Technology Acquired Microsemi Corp

(ALL of various Microsemi Locations)

- Purpose of Brand Recognition, Microchip preserved original MFR CCs for various Microsemi Parts
- Yet most Predictive Tools specify Microchip Tech (CC 60991)

March 2019, Renesas Acquired IDT (CC 0SP21 & 61772)

- Specified as Renesas Electronics America
- All IDT parts Acquired by Renesas Electronics America are now specified with CC 8QEK4
- Early on, Predictive Tools specified CC 0SP21
- Following Request for data correction, Predictive Tools have corrected to CC 8QEK4

Many, many more examples of each situation

Customer Interface Requirements

Single Source – Not always a bad thing

- Golden Rule: Always Try to have more than one Source
  - When Sole Source goes Obsolete, there are no other Sources
  - Sole Source Parts typically require more frequent monitoring
- GEM Parts
  - Once a Part has been GEMed, Always Available
  - Probably true for ALL Emulated Parts
- Some MFRs state the following:
  - “Please be advised that we do not obsolete any of our products. We will manufacture any part number whenever there is a customer demand.”
- Aftermarket Sources
  - Purchased original MFR die and/or packaged parts
  - Manufacturing capability
- Custom Parts

Understanding the BOM, PN, & CCs

- Good data in, typically results in good data out
- Method to correct errors
- Indentured BOM is Preferred
- **Part Number as specified on original BOM**
  - Military/QPL PN: 5962-8778201UA
  - Manufacturer PN: XQ5VFX70T-1EF1136I
  - OEM (contractor) Drawing PN: 1234567 (Require source PN)
- **Cage Code**
- Description or Nomenclature
- Qty/NHA
- NSN
- SOM Data
- Identify Parts Storage Location

Keys to Effective Parts Data Research

- Utilize more than 1 predictive electronic parts research tool
- For QPL & MIL Spec type parts, Use DLA websites for accuracy of sources
- Setup a survey for manufacturers of parts
- Utilize GIDEP
- Go to manufacturer websites & make phone calls as necessary
- Review datasheets of comparable & recommended replacement parts
- Check Aftermarket & Emulation websites
- Verify cage codes & track MFR acquisitions & mergers; Be mindful of situations where acquiring MFR still using brand & CC of acquired MFR

Example of BOM

Level	Part Number	Cage	Description or Nomenclature	NSN	Qty/ NHA	NHA Part Number
3	1234567-301	53711	Subsystem		1	Level 2
4	7893431-201	53711	Unit, Blue Box		1	1234567-301
5	3173751-103	53711	CCA, Yellow Card		2	7893431-201
6	CDR33BX104AKSR	81349	Capacitor, Ceramic, 0.1uF	5910-01-472-1664	4	3173751-103
6	3173248-102	53711	Comparator, Dual		2	3173751-103
7	LT1715HMS#PBF	64155				
5	3173752-103	53711	CCA, Purple Card		1	7893431-201
6	5962-9153001MYA	67268	Microcircuit, Digital, Translator, ECL to TTL	5962-01-489-1056	1	3173752-103
6	RCR05G104JS	81349	Resistor, Fixed, Comp, 100K	5905-00-458-9346	1	3173752-103
6	LM185BYH-2.5/883	27014	IC, Voltage Reference		3	3173752-103
5	3173753-103	53711	CCA, Red Card		2	7893431-201
6	04023C103KATA	4222	Capacitor, Ceramic, X7R, 0.01uF		7	3173753-103
6	DR-11525DX-304	19645	IC, Digital/Resolver Converter		1	3173753-103
6	JANTXV1N965B	81347	Diode, Reference/Regulator	5961-01-041-7290	1	3173753-103
6	M38510/10102BAA	81349	IC, Op Amp, Gen Purpose, Dual	5962-00-458-9346	2	3173753-103

Example of BOM

Level	Part Number	Cage	Description or Nomenclature	NSN	Qty/ NHA	NHA Part Number
5	3173754-103	53711	CCA, Blue Card		1	7893431-201
6	OP275GS	51640	Op Amp, Audio	5962-01-414-6386	1	3173754-103
5	3173755-103	53711	CCA, Orange Card		3	7893431-201
6	JANTXV1N5617	81349	Diode, Rectifier Fast Recovery	5961-01-123-2990	5	3173755-103
6	3173248-102	53711	Comparator, Dual		3	3173755-103
7	LT1715HMS#PBF	64155				
5	3173756-103	53711	CCA, Green Card		1	7893431-201
6	98020-G106	67268	Resistor, Fixed Film, 10M	5905-01-686-7153	6	3173756-103
6	JANTXV2N3251A	81349	Transistor, PNP, Low Power, HF	5961-01-023-3433	2	3173756-103
6	SN74LVC1G02DCK	33809	IC, Digital, NOR Gate		1	3173756-103
5	3173757-103	53711	CCA, Brown Card		2	7893431-201
6	NFE31PT222Z1E9L	51406	Filter, EMI, Transient Supp	5915-01-660-6258	3	3173757-103
5	3173758-103	53711	CCA, Black Card		1	7893431-201
6	BAT54XV2T1G	1MQ07	Diode, -200mA, 30V	5961-01-700-3153	21	3173758-103
6	SI7135DP-T1-GE3	18612	P-Channel MOSFET, 30V		7	3173758-103

Exercise 1

Review the BOM for Observations & Errors

Q1: What is the total Qty of LT1715HMS#PBF on Unit, Blue Box?

Q2: What cage codes are incorrectly specified on the BOM?

Q3: What cage codes do not reflect the most current MFR?

Q4: How many of the parts specified on the BOM are either QPL or MIL Spec parts? Identify these parts by PN and Cage Code

Military Sourcing

Access from DLA Land and Maritime website

- **First & Foremost place to go for most current sourcing data**
- https://landandmaritimeapps.dla.mil/programs/qmlqpl
- https://landandmaritimeapps.dla.mil/programs/smcr/default.aspx
- https://landandmaritimeapps.dla.mil/programs/milspec/DocSearch.aspx
- Various part commodity types
  - Critical to understand PN details of associated Mil Spec
  - For questions or clarifications, contact POC specified for each
  - DLA POCs are very responsive

Part Numbers

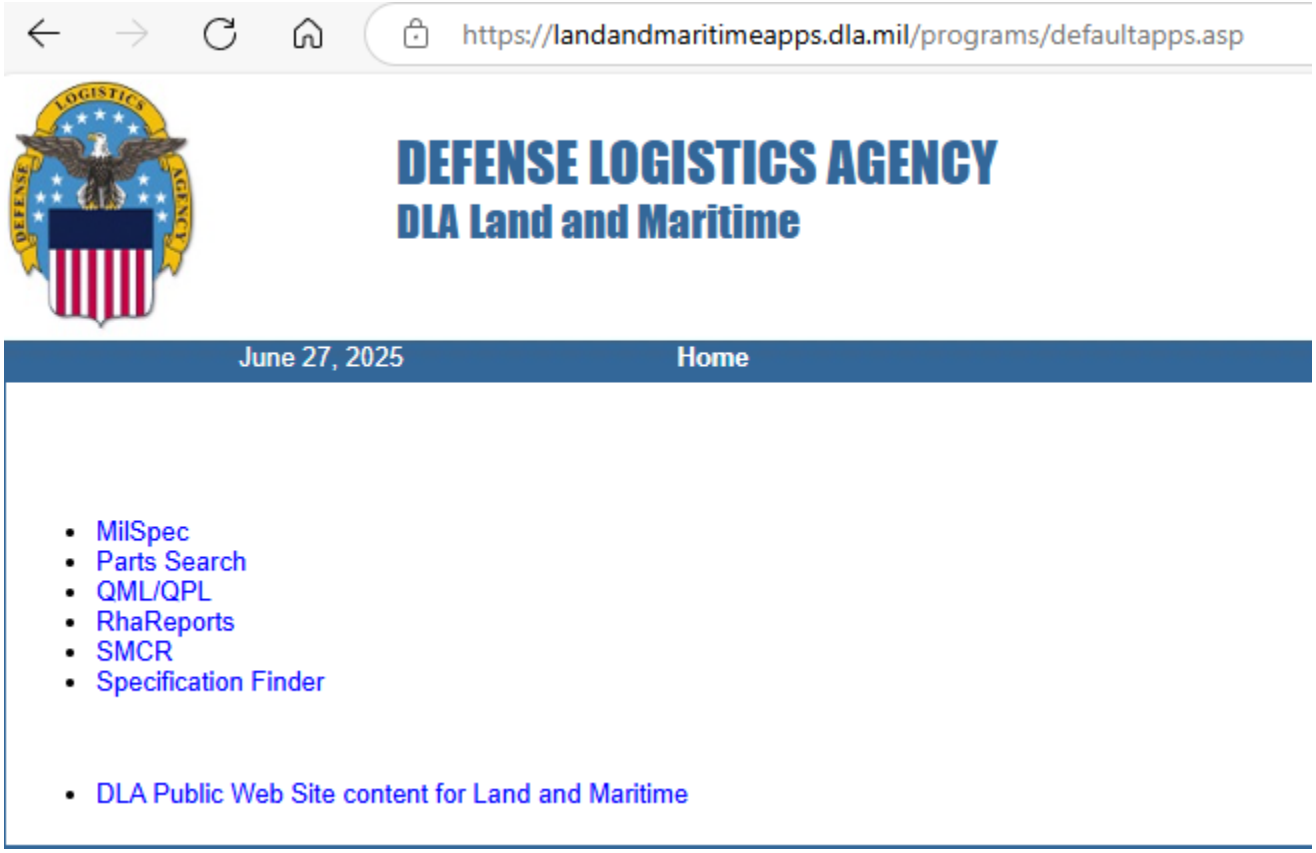
Understanding MIL Part Numbers with Examples

Part Number	Mil Spec	
CDR04BX104AKSM	Mil-Prf-55681	**CDR04** - style; **BX** – rated temp & voltage-temp limits; **104** - cap in pF (100,000pF); **A** - rated volt (50V); **K** - tolerance; **S** - termination; **M** - product level (FRL)
M38510/30107BFA	Mil-Prf-38535	**M38510** – Military designator; **/** - RHA designator; **301** – device specification; **07** – device type; **B** - device class designator; **F** – case outline; **A** – lead finish
5962-9164001M2A	SMD – Standard Microcircuit Drawing	**5962** – Fed stock class designator; **-** RHA designator; **91640** – drawing number; **01** – device type; **M** – device class designator; **2** – case outline; **A** – lead finish
98020-G126	DLA Land and Maritime Dwgs	**98020** – Drawing number; **G** – tolerance; **126** – resistance value in ohms (12M ohms)
JANTX2N2219A	Mil-Prf-19500	**JANTX** – Quality level; **2N** – component designation (**2** transistor, **1** diode); **2219** – identification number; **A** – suffix letters (A indicates modified version, subst for non-suffix device)

Military Sourcing

Access from DLA Land and Maritime website

First & Foremost place to go for most current sourcing data



Military Sourcing Example – JANTX2N5157

Access from DLA Land and Maritime website

First & Foremost place to go for most current sourcing data

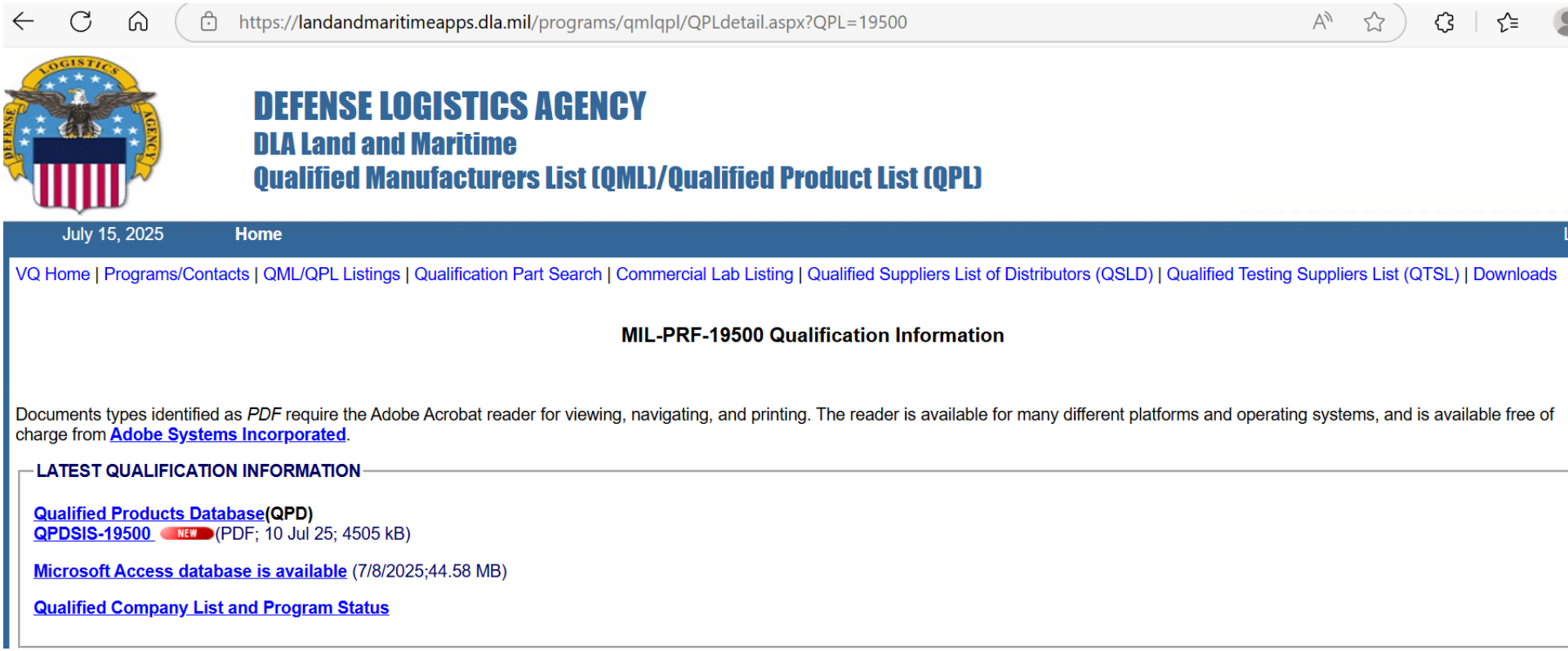
https://landandmaritimeapps.dla.mil/programs/QMLQPL/default.aspx

MIL-PRF-15160	5920	Fuse, Instrument, Power and Telephone
MIL-DTL-15291	5930	Switches, Rotary, Snap Action and Detent/Spring Return Action
MIL-PRF-15305	5950	Coils, Fixed and Variable, Radio Frequency
MIL-PRF-15733	5915	Filters and Capacitors, Radio Frequency Interference
MIL-S-16032	5930	Switches and Detectors, Shipboard Alarm Systems
MIL-PRF-18546	5905	Resistors, Fixed, Wire-Wound (Power Type, Chassis Mounted)
MIL-PRF-19207	5920	Fuseholders, Extractor Post Type, Blown Fuse Indicating and Nonindicating
MIL-PRF-19365	5905	Resistors, Adjustable, Wirewound, Power
MIL-PRF-19500 NEW	5961	Semiconductor Devices
MIL-PRF-19978	5910	Capacitor, Fixed, Plastic (or Paper-Plastic) Dielectric (Hermetically Sealed in Metal, Ceramic, or Glass Cases)
MIL-PRF-21038	5950	Transformers, Pulse, Low Power
MIL-DTL-21097	5935	Connectors, Electrical, Printed Wiring Boards, General Purpose
MIL-DTL-21604	5930	Switches, Rotary, Multipole and Selector
MIL-PRF-22097	5905	Resistor, Variable, Nonwire Wound (Adjustment Type)
MIL-PRF-22684	5905	Resistor, Fixed, Film (Insulated)
MIL-PRF-22710	5930	Switches, Code, Indicating Wheel (Printed Circuit, Thumbwheel and Pushbutton)
MIL-PRF-22885	5930	Switch, Push Button, Illuminated

Military Sourcing Example – JANTX2N5157

Access from DLA Land and Maritime website

First & Foremost place to go for most current sourcing data



Military Sourcing Example – JANTX2N5157

Access from DLA Land and Maritime website

First & Foremost place to go for most current sourcing data

Qualified Products Database

Main | Search | Reports | Help

Governing Spec: **MIL-PRF-19500N**

The Qualified Product List for the following governing specification was last updated on **11-JUL-2025**

QA	FSC	QPL Number	Governing Spec	Doc Date	Doc Status	Title	QPL Notes
CC	5961	QML-19500	MIL-PRF-19500	30-NOV-2005	Active	Semiconductor Devices, General Specification for	Preamble Footnotes

Search > QPL > Government Parts

Based on the selected QPL above,
Filter for: 2n5157 Filter by: Govt Designation Filter

Total part count = 3 Click on the appropriate link to see more. If not link, no qualified source.

Page 1 of 1 1 Go to Page

Govt Designation	NSN	Spec Sheet	CSI	Notes
JAN2N5157	5961004935251			[notes]
JANTX2N5157	5961001810662			[notes]
JANTXV2N5157				[notes]

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Military Sourcing Example – JANTX2N5157

Access from DLA Land and Maritime website

First & Foremost place to go for most current sourcing data

https://qpldocs.dla.mil/search/parts.aspx?qpl=630

QA	FSC	QPL Number	Governing Spec	Doc Date	Doc Status	Title	QPL Notes
CC	5961	QML-19500	MIL-PRF-19500	30-NOV-2005	Active	Semiconductor Devices, General Specification for	Preamble Footnotes

Search > QPL > Government Parts > Manufacturer Parts

Based on the selected QPL above,
Filter for: 2n5157 Filter by: Govt Designation Filter

Total part count = 3

Click on the appropriate link to see more. If not link, no qualified source.

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	Govt Designation	NSN	Spec Sheet	CSI	Notes
	JAN2N5157	5961004935251			[notes]
	JANTX2N5157	5961001810662			[notes]
	JANTXV2N5157				[notes]

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Based on the selected Government Part to the left,
Filter for: Filter by: --NONE-- Filter Print All

Green - Source is Certified, Yellow - Source is due for Certification, Red - Source is overdue for Certification. Contact QA for additional information.

Total part count = 2

Click on the appropriate link to see more.

Mfr Designation	Source Name	CAGE Code	Related Links
(Designation NOT Available)	SST COMPONENTS, INC. 9 HAMPSHIRE ST STE 1 LAWRENCE, MA 018401326 USA http://www.vptcomponents.com Test Reference: 19500-3610-12	52GC4 	[source POC]
(Designation NOT Available)	SOLITRON DEVICES, INC. 901 SANSBURYS WAY WEST PALM BEACH, FL 334113600 USA http://www.solitrondevices.com Test Reference: 19500-5112-18	21845 	[source POC]

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Military Sourcing Example – JANTX2N5157

Access from DLA Land and Maritime website

First & Foremost place to go for most current sourcing data

QPDSIS_19500.pdf

https://landandmaritimeapps.dla.mil/Downloads/QPLQML/19500/QPDSIS_19500.pdf

Draw | 547 of 589 | 2n5157 1/2

** 2N5154L	6/	A	3B	CEJJ	19500-195-99	/544	D	34156	Semicoa Corporation (1)
SR 2N5154L	6/	A	NS	CHRC	19500-3529-12	/544	D	52GC4	VPT Components (Lawrence) (3)
S 2N5154L	6/	C	NS	CDWR	19500-2197-08	/544	D	43611	Microsemi Lawrence (3)
SF 2N5154L	6/	C	NS	CDWR	19500-2435-09	/544	D	43611	Microsemi Lawrence (3)
S 2N5154L	6/	C	3B	CEJJ	19500-195-99	/544	D	34156	Semicoa Corporation (1)
S 2N5154L	6/	A	NS	CHRC	19500-3529-12	/544	D	52GC4	VPT Components (Lawrence) (3)
SF 2N5154L	6/	C	3B	CEJJ	19500-4633-16	/544	D	34156	Semicoa Corporation (1)
VF 2N5154L	6/	A	3B	CEJJ	19500-4633-16	/544	D	34156	Semicoa Corporation (1)
S 2N5154U3	6/	C	NS	CDWR	19500-5566-19	/544	D	43611	Microsemi Lawrence (19)
SR 2N5154U3	6/	C	NS	CDWR	19500-5566-19	/544	D	43611	Microsemi Lawrence (19)
** 2N5154U3	6/	C	NS	CDWR	19500-2197-08	/544	D	43611	Microsemi Lawrence (3)
S 2N5154U3	6/	C	NS	CDWR	19500-2197-08	/544	D	43611	Microsemi Lawrence (3)
SF 2N5154U3	6/	C	NS	CDWR	19500-2435-09	/544	D	43611	Microsemi Lawrence (3)
** 2N5154U3	6/	C	NS	CHRC	19500-4463-15	/544	D	52GC4	VPT Components (Lawrence) (3)
S 2N5154U3	6/	C	NS	CHRC	19500-4463-15	/544	D	52GC4	VPT Components (Lawrence) (3)
SR 2N5154U3	6/	C	NS	CHRC	19500-4463-15	/544	D	52GC4	VPT Components (Lawrence) (3)
** 2N5154U3	6/	C	NS	CDWR	19500-4503-15	/544	D	43611	Microsemi Lawrence (19)
** 2N5157	6/	A	NS	CDCD	19500-5112-18	/371	D	21845	Solitron Devices Incorporated (1)
** 2N5157	6/	A	NS	CHRC	19500-3610-12	/371	D	52GC4	VPT Components (Lawrence) (3)
JANKCA 2N5237			N/A	CDWR	19500-1931-07	/394	D	43611	Microsemi Lawrence (1)
** 2N5237	6/	A	NS	CDWR		/394	D	43611	
** 2N5237	6/	A	NS	CDWR	19500-1931-07	/394	D	43611	Microsemi Lawrence (1)
** 2N5237	6/	A	3B	CEJJ	19500-494-90	/394	D	34156	Semicoa Corporation (1)
S 2N5237	6/	C	NS	CDWR	19500-1931-07	/394	D	43611	Microsemi Lawrence (1)
** 2N5237	6/	A	NS	CDWR	19500-1792-06	/394	D	43611	Microsemi Lawrence (18)
** 2N5237S	6/	A	NS	CDWR	19500-1931-07	/394	D	43611	Microsemi Lawrence (1)
S 2N5237S	6/	C	NS	CDWR	19500-1931-07	/394	D	43611	Microsemi Lawrence (1)
JANKCA 2N5238			N/A	CDWR	19500-2345-08	/394	D	43611	Microsemi Lawrence (1)
** 2N5238	6/	A	NS	CDWR		/394	D	43611	

Military Sourcing Example – JANTX2N5157

Access from DLA Land and Maritime website

First & Foremost place to go for most current sourcing data

Manufacturer and Supplier Location Information

Manufacturer: VPT Components (Billerica) (CAGE Code: 9N185, Symbol: CVPT)
Location: 780 Boston Road, Billerica, MA 01821, US

Plants:

1. Plant: Same Address as Manufacturer
2. VPT Components (Billerica) (4), Vishay/Siliconix (Wafer Fab), 2201 Laurelwood Road, Santa Clara, CA 95054-1593, US (Date Code Prefix: D)
3. VPT Components (Billerica) (2), Texas Instruments, Inc. (Wafer Fab), 6412 U.S. Highway 75 South, Sherman, TX 75090, US (Date Code Prefix: A)
4. VPT Components (Billerica) (3), Bourns, LTD. (Wafer Fab), Manton Lane, MK41 7BJ, Bedford, UK (Date Code Prefix: B)
5. VPT Components (Billerica) (5), On Semiconductor ISMF (Wafer Fab), Seremban, Malaysia (Date Code Prefix: C)

Manufacturer: VPT Components (Lawrence) (CAGE Code: 52GC4, Symbol: CHRC)
Location: 9 Hampshire Street, Lawrence, MA 01840, US

Assembly Plants:

1.)

Plants:

1. Plant: Same Address as Manufacturer
2. VPT Components (Lawrence) (10), THAT Corporation, 505 Fairview Way, Milpitas, CA 95035, US (Date Code Prefix: P)
3. VPT Components (Lawrence) (11), PYNMAX Technology Co. (PANJIT), 17-2, Yonggong 1st Rd., Yong'an Dist., Kaohsiung City 82841, Taiwan (Date Code Prefix: N)
4. VPT Components (Lawrence) (12), LA Semiconductor (Wafer Fab), 2300 W. Buckskin Rd., Pocatello, ID 83201, (Date Code Prefix: T)
5. VPT Components (Lawrence) (2), 55 Grenier Field Road, Londonderry, NH 03053, US (Date Code Prefix: A)
6. VPT Components (Lawrence) (3), Bourns Ltd, Manton Lane, MK417BJ, Bedford, UK (Date Code Prefix: B)
7. VPT Components (Lawrence) (4), Texas Instruments Inc., 6412 U.S. Highway 75 South, Sherman, TX 75090, US (Date Code Prefix: D)
8. VPT Components (Lawrence) (5), MACOM Lowell, 100 Chelmsford Rd., Lowell, MA 01851, (Date Code Prefix: H)
9. VPT Components (Lawrence) (6), On Semiconductor ISMF (Wafer Fab), 70450, Seremban, Malaysia (Date Code Prefix: J)
10. VPT Components (Lawrence) (7), Vishay/Siliconix (Wafer Fab), 2201 Laurelwood Drive, Santa Clara, CA 95054-1593, (Date Code Prefix: K)
11. VPT Components (Lawrence) (8), Vishay Semiconductors, Liguria 49, 10071 Borgaro, Italy (Date Code Prefix: L)
12. VPT Components (Lawrence) (9), Microchip Technology (Thailand) Co., Ltd (Assembly), 17/2 Moo 18 Suwintawong Road, Chachoengsao THA 24000, On Semiconductor ISMF (Wafer Fab), Seremban, Malaysia, (Date Code Prefix: R)

Military Sourcing Example – JANTX2N5157

PN: JANTX2N5157 Transistor, NPN 500V 3.5A

	QPL-19500	Tool A	Tool B	Tool C	YTEOL
Solitron	21845	21845	21845	21845	
		8.00	10.30	3.20	7.17
VPT Comp *	52GC4	52GC4	9N185 **	52GC4	
Lawrence		8.00	17.30	3.20	9.50

* VPT Components is a division of SST Components. Both locations, Billerica and Lawrence will operate under the VPT Components brand name.
** Cage Codes 9N185 & 52GC4 are VPT Components with locations Billerica and Lawrence, respectively. They shall be treated as separate and unique sources of supply. In this example, Tool B incorrectly specifies CC 9N185 as a source.

Parts Research Example – 1

PN: 5962-9153001MYA

https://landandmaritimeapps.dla.mil/programs/smcr/default.aspx

5962-9153001MYA	QPL/SMCR	Tool A	Tool B	Tool C	Tool D
Source 1	**None**	0C7V7	K0442 *	0C7V7	
		Obs 3/2021	Obs	Obs 3/2021	
Source 2			01295		01295 **
			Obs		Obs 7/2005
5962-9153001VYA					
Source 1	3V146	3V146	3V146	3V146	3V146 ***
YTEOL		5.60	15.20	4.50	7.00

* Teledyne e2V as CC K0442 rather than CC 0C7V7
** Originally, PDN provided by National Semi in 2005; NSC became TI in 09/2011
*** Specified as Not Compliant

Parts Research Example – 1 continued

PN: 5962-9153001MYA

https://landandmaritimeapps.dla.mil/programs/smcr/default.aspx

- Standard Microcircuit Cross-Reference is Recommended place to start; most of tools are hit & miss on MIL Parts
- When I checked Rochester, I confirmed Availability
- Observations worth Noting:
  - Original PN specifies device class M
  - Available PN specifies device class V, which is higher class
  - Some view this as acceptable, others not
  - How does one specify this situation for this part?
  - Is it a simple substitute?
  - Is it just Available as an inherently acceptable substitute?
  - Is it simply Available or Available as Aftermarket?
  - Is this a resolution and cost avoidance situation?

Parts Research Example – 2

PN: CDR33BX104AKSR
QPL-55681/9
https://landandmaritimeapps.dla.mil/programs/qmlqpl

CDR33BX104AKSR	QPL/SMCR	Tool A	Tool B	Tool C	YTEOL
Source 1	31433	31433	31433	31433	
31433		8.00	6.80	7.20	7.33
Source 2	6KUV2	6KUV2	6KUV2	6KUV2, 04222	
6KUV2		8.00	8.70	7.20	7.97
Source 3	60212	60212	60212	60212	
60212		8.00	6.10	7.20	7.10

Parts Research Example – 2 continued

PN: CDR33BX104AKSR

https://landandmaritimeapps.dla.mil/programs/qmlqpl

- Always Good to fully understand the full PN

- Typically check the Performance Spec, like MIL-PRF-55681
  - Review next slide for details
- Cap specified in QPL-55681 in pF vs uF in Research Tools
  - Quick double check of correct capacitance
  - 100,000 pF = 0.1uF
- Please take note of the differences between QPD & QPL on following few slides

Parts Research Example – 2 continued

PN: CDR33BX104AKSR
QPL-55681/9

1.2.1 Part or Identifying Number (PIN). The PIN is in the following form, and as specified (see 3.1).

CDR01	BX	100	A	K	Z	M
Style (1.2.1.1)	Rated temperature and voltage-temperature limits (1.2.1.2)	Capacitance (1.2.1.3)	Rated voltage (1.2.1.4)	Capacitance tolerance (1.2.1.5)	Termination finish (1.2.1.6)	Product level designator (1.2.1.7)

- CDR33 – Style
- BX – Rated temp and volt-temp limits
- 104 – Capacitance Value in pF; first 2 digits represent significant figures & last digit specifies number of zeros; 100,000pF
- A – Rated Voltage; A represents 50 V
- K – Capacitance tolerance; K represents 10%
- S – Termination finish; S solder coated final min 3% Pb
- R – Product level designator; R represents 0.01 FRL

Military Sourcing – CDR33BX104AKSR

Access from DLA Land and Maritime website

First & Foremost place to go for most current sourcing data

Qualified Products Database

Main | Search | Reports | Help

Gover

The Qualified Product List for the following governing specification was last updated on **12-FEB-2025**

QA	FSC	QPL Number	Governing Spec	Doc Date	Doc Status	Title
CC	5910	QPL-55681	MIL-PRF-55681	03-SEP-2004	Active	Capacitor, Chip, Multiple Layer, Fixed Ceramic Dielectric, Established Reliability and Non-Established Reliability, General Sp

Search > QPL > Government Parts > Manufacturer Parts

Based on the selected QPL above,
Filter for: cdr33bx104aksr Filter by: Govt Designation Filter

Total part count = 1 Click on the appropriate link to see more. If not link, no qualified source.

Page 1 of 1 1 Go to Page

Govt Designation	NSN	Spec Sheet	CSI	Notes
CDR33BX104AKSR	5910014721664			

Page 1 of 1 1 Go to Page

Based on the selected Government Part to the left,
Filter for: Filter by: --NONE-- Filter Print All

Green - Source is Certified, Yellow - Source is due for Certification, Red - Source is overdue for Certification. Contact QA for additional information.
Total part count = 3 Click on the appropriate link to see more.

Mfr Designation	Source Name	CAGE Code	Related Links
C1210N	KEMET ELECTRONICS CORPORATION 2835 KEMET WAY SIMPSONVILLE, SC 296816202 USA www.kemet.com Test Reference: 55681-1990-07; 55681-347-85	31433	
CDR33-1210	KYOCERA AVX COMPONENTS CORPORATION 1 AVX BLVD FOUNTAIN INN, SC 296449039 USA https://www.kyocera-avx.com/ Test Reference: 55681-11-90	6KUV2	[source POC]
HR1209	PRESIDIO COMPONENTS, INC. PRESIDIO COMPONENTS INC 7169 CONSTRUCTION CT SAN DIEGO, CA 921212615 USA www.presidiocomponents.com Test Reference: 55681-049-00	60212	

Parts Research Example – 2 continued

PN: CDR33BX104AKSR
QPL-55681/9

https://landandmaritimeapps.dla.mil/Downloads/QPLQML/55681/QPDSIS_55681.pdf

5 of 8

1 pF thru 39000 pF; tols. F, J, K; in 50, 100 volts; BP, BX rated temp. and volt. temp. limits; term. M, S, U, Z, ; life failure rate M, P, R, S	HR1206	55681-049-00	/8	Presidio Components, Inc.
1 pF thru 39000 pF; tols. B, C, D, F, J, K, M; in 50, 100 volts; BP, BX rated temp. and volt. temp. limits; term. M, U, W, Y, Z; life failure rate M, P, R, S	VJX503	55681-2437-09	/8	Vishay Israel - Migdal Ha'Emek
CDR33 CDR33BX104AKSR				
1000 pF thru 100000 pF; tols. F, J, K, M; in 50, 100 volts; BP, BX rated temp. and volt. temp. limits; term. S, U, W, Y, Z; life failure rate M, P, R, S	C1210N	55681-1990-07; 55681-347-85	/9	Kemet Electronics Corp.
2200 pF thru 100000 pF; tols. K, M; in 50, 100 volts; BP, BX rated temp. and volt. temp. limits; term. Z; life failure rate M		55681-6698-23	/9	Knowles Precision Devices
1000 pF thru 100000 pF; tols. F, J, K, M; in 50, 100 volts; BP, BX rated temp. and volt. temp. limits; term. M, N, S, U, W, Y, Z; life failure rate M, P, R, S	CDR33-1210	55681-11-90	/9	KYOCERA AVX Components Corporation
1000 pF thru 100000 pF; tols. F, J, K, M; in 50, 100 volts; BP, BX rated temp. and volt. temp. limits; term. M, S, U, Z, ; life failure rate M, P, R, S	HR1209	55681-049-00	/9	Presidio Components, Inc.
1000 pF thru 100000 pF; tols. F, J, K, M; in 50, 100 volts; BP, BX rated temp. and volt. temp. limits; term. M, U, W, Y, Z; life failure rate M, P, R, S	VJX504	55681-2437-09	/9	Vishay Israel - Migdal Ha'Emek
CDR34				

Military Sourcing - Example

PN: 5962-9082801HXA, Hybrid, High Power Op Amp

	QPL/SMCR	Tool A	Tool B	Tool C	Tool D
Source 1	**31757***	31757	31757 OBS	31757 OBS	31757 OBS
Source 2	**60024**	60024	60024	60024	60024
Source 3	**N/A**			6Y440**	

* EOL notification issued in 2022 by Micropac Industries, CC 31757. Micropac failed to notify DLA and therefore, DLA still specified Micropac as Active source per SMCR. We notified DLA and DLA has confirmed the discontinuance of this part by Micropac. DLA will make the corrections on the SMD and SMCR. With this being a hybrid microcircuit, we are fortunate there is another source.
** Cage Code 6Y440 is NOT an Active source for this SMD.

Military Sourcing

PN: 5962-8778201UA Voltage Regulator, Fixed, Positive, 5V

- Other Interesting Notes about this Part
  - TT Electronics (U1395) acquired Semelab (U3158) in 2008
  - 2018, SMD 5962-87782 was still specifying Semelab (U3158)
  - Microchip Technology (60991) acquired Microsemi (34333) in 2018
  - DLA specifies cage 34333 as Microsemi AMSG, A Microchip Company
  - SMCR Details, Comments: Devices on SMD 5962-87782 are similar to devices on SMD 5962-98643 and vice versa
  - DLA provides this info as a courtesy to user
  - Users/practioners always encouraged to contact DLA's POC for questions and clarifications regarding military sourcing

BOM Part Research Results – 1

PN: M38510/10102BAA
QML-38535
https://landandmaritimeapps.dla.mil/programs/SMCR/

M38510/10102BAA	QPL/SMCR	Tool A	Tool B	Tool C	YTEOL
Source 1	None	Unqual	None	7D893, 07263	
None		0.00	0.00	0.00	
M38510/10102BDA*	0C7V7	0C7V7	K0442	0C7V7, K0442, F8385	
		5.00 NRND	9.10	Unconfirmed	7.05
	3V146	3V146	3V146	3V146	
		5.00 NRND	Active Unk EOL	Active No LC data	5.00

* See next slide for FLIS data
** Customer Needs to Verify Flatpack “D” replaces Flatpack “A”

FLIS Data Example

Details/Summary NSN: 5962-01-291-0880

Item Name: MICROCIRCUIT,LINEAR

Previous NSN | Next NSN

This NIIN was also found in the following databases

NSN Detail	Pricing and Procurement	Supply Chain
Technical Characteristics	Procurement History	CTG
CTDF	FedMall Sales Data	ILSMart
I & S	Government Awards	Quotes and Orders - ISO Group
MOE	Government Solicitations	Supplier Inventory
CTDF/Weapon Systems Data	GSA Advantage	DLA Stock on Hand
Freight Data	FedMall Login	SRVA/DLA Forecast
Packaging Data		
HMDF		
Cancelled NSNs		
Related NIINs		
NIIN/FLIS Images		
Next Higher Assembly		
Parts List		

FLIS Header (Segment A)

Item Name: MICROCIRCUIT,LINEAR

Assigned Date: 1988-12-22

INC	FIIG	CRIT	ISC	Status	TIIC	RPDMRC	ADP
31778	A458A0	X	1	0	1		0

Master Cross Reference List (MCRL) 1 - 15 of 17 records | Copy/Paste Help

Part No.	RNCC	RNVC	RNFC	RNJC
M38510/10102BDA	2	2		
MIL-M-38510/101	4	1		
10136491	6	9	4	
M38510-10102	C	1		
M38510/10102BAX	C	1		

BOM Part Research Results – 2

PN: JANTXV2N3251A
QPL-19500
https://landandmaritimeapps.dla.mil/programs/qmlqpl/

JANTXV2N3251A	QPL/SMCR	Tool A	Tool B	Tool C	YTEOL
Source 1	None	43611	60991	60991, FA8G0, 0HSW3, 0J420	
None		0.00	0.00	3.20*	

* Tool C incorrectly specifies as Available

Notes:

> In checking the historical QPL-19500s, the last date with CC 43611 showing as Active is March 15, 2017.

> QPL-19500, dated May 17, 2017, shows the removal of ALL active sources.

> This illustrates that there are methods to verify sourcing data information.

> NSN, 5961-01-023-3433 specifies a QTY of 12 as of June 2025 in Federal Stock.

BOM Part Research Results – 3

PN: SI7135DP-T1-GE3

	BOM	Tool A	Tool B	Tool C	YTEOL
SI7135DP-T1-GE3	18612	17856	18612	18612, 0LCA7, K4184, C2817, 09969	
		8.00	4.90	4.90	5.93

Notes:

- When downloading the datasheet, the datasheet is from Vishay Siliconix.
- The cage code for Vishay Siliconix is 17856
- Only Tool A specifies the correct cage code 17856
- Email from Vishay POC states: “I would say that the 18612 cage code is rarely used, if at all. And the 91637 cage code is still used for products that don’t have their own cage code.”

Cost Avoidance

- Reactive DMSMS Approach
  - An approach to DMSMS management that identifies DMSMS issues when there is an unfulfillable demand for an item
  - This generally occurs when no attempt was made to apply a proactive DMSMS management approach or there was missed opportunity to identify DMSMS issues, before there is an unfillable demand for an item
- Proactive DMSMS Approach
  - An approach to DMSMS management that attempts to identify DMSMS issues before there is an unfulfillable demand for the item and extend the window of opportunity for resolving the DMSMS issue before it can have a negative effect on a system's production or sustainment

Cost Avoidance

- Key Terms
  - DMSMS Resolution
    - A course of action that will bring a DMSMS case to a close
    - Resolutions fall into 3 broad categories
      - Use of existing material
      - Substitutes
      - Redesigns
  - Cost Avoidance
    - The Difference between the cost of the resolution implemented when a DMSMS issue is found proactively and the cost of the resolution had the DMSMS issue been found reactively
    - Cost Avoidance is calculated by subtracting the cost of the proactive resolution from the estimate cost of the reactive resolution
  - Best scenario: Use real cost numbers; otherwise use costs from SD22, Table with Resolution Options & Ave Costs

Resolution Options & Costs

Approved item	$1,258
LON buy	$6,399
Simple substitute	$15,379
Complex substitute	$31,068
Extension of production or support	$31,143
Repair, refurbishment, or reclamation	$79,492
Development of a new source	$322,098
Design refreshment	$938,476
Redesign—NHA	$1,336,220
Redevelop the item	$2,043,388
Redesign—complex/system replacement	$12,578,942

Resolution Category	Resolution Option	Average (FY24 Dollars)
Existing Material (Logistics)	Approved item	$1,258
Existing Material (Logistics)	LON buy	$6,399
Substitutes (Engineering)	Simple substitute	$15,379
Substitutes (Engineering)	Complex substitute	$31,068
Existing Material (Logistics)	Extension of production or support	$31.143
Existing Material (Logistics)	Repair, refurbishment, or reclamation	$79,492
Substitutes (Engineering)	Development of a new source	$322,098
Redesign (Engineering)	Design refreshment	$938,476
Redesign (Engineering)	Redesign – NHA	$1,336,220
Redesign (Engineering)	Redevelop the item	$2,043,388
Redesign (Engineering)	Redesign – complex/system replacement	$12,578,942

Cost Avoidance – Example 1

- Older version of calculating cost avoidance
  - Cost of the agreed upon DMSMS Resolution subtracted from the cost of the next DMSMS Resolution down in the table of resolutions
    - a
  - Cost Avoidance
    - a

Cost Avoidance – Example 2

- Newer version of calculating cost avoidance
  - Cost Avoidance
    - The Difference between the cost of the resolution implemented when a DMSMS issue is found proactively and the cost of the resolution had the DMSMS issue been found reactively
    - Cost Avoidance is calculated by subtracting the cost of the proactive resolution from the estimate cost of the reactive resolution
  - Example
    - Proactive Resolution = Simple Substitution > $15,379
    - Reactive Resolution = Development of a new source $322,098
    - Cost Avoidance = $322,098 - $15,379 = $306,719

End of Life (EOL) Notice

Resistors Product Change Notification

PCN Number	PCN-2025-RBU11
PCN Title	**EOL Announcement –** Plano manufactured Product Families
PCN Date	1st July 2025
Type of Change	☒ End of Life Notification ☐ Manufacturing Facility Change or Addition ☐ Datasheet Specification Change ☐ Other: ☐ Material Change ☐ Process Change ☐ Design Change
Manufacturing Location(s) Affected	TT Electronics PLANO
Date of Change Implementation	**1st of July 2025**

Products Affected
TT Series
1900, 4700, 8900, CCN, CHC, CHC-Precision, DIP-U, DIV 23, FP-U, GUB, IGN, M900, M83401, M/D55342 (Mil Chip), PFC Special, PFC-D, PFC-HTD, PFC-HT, PFC-UD, QS001, QSOP, QSOP-C, R2R, SIP-U, SOIC, SOIC-C, SON, SON-U, SOT143, SOT23, TSSOP (Note - PFC Commercial series is not affected by this PCN)

End of Life (EOL) Notice

Change Detail	
Description of Change	TT Electronics is announcing that the above stated product families are being taken End of Life, (EOL). This applies to all standard versions and custom variants of these series.
Reason for Change	TT Electronics facility in Plano will be closed by the end of October 2025.
Implementation Plan	A Last Time Buy is not available.
Customer Impact	All part numbers are EOL with immediate effect and no new orders can be accepted. TT Electronics will try to fulfil the current open order book. Orders which cannot be manufactured will be communicated to the customers under separate communication on an incident by incident basis
Recommendations	Contact your local Sales Representative for any further guidance

- **Example of Proactive Process in place**
- **NO Last Time Buy & NO New Orders**
- **If TT Electronics is the ONLY source, Potential for Real Problems**

Closing Remarks

DMSMS Research Data – Points of Emphais

- Utilize a minimum of **2**-3 Predictive Research Tools
  - Provides checks and balances
- Achieve a thorough understanding of Military Sourcing
  - QPLs and Military Performance Specs
  - Part Numbers
  - Substitutions of Mil Parts
  - Don’t hesitate to reach out to POCs at DLA
- Make sure people from your Activity/Organization are Performing & Reporting in Consistent manner
- Communicate & Share with others in Government/Industry on Best Practices