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JOINT AND COALITION OBSOLESCENCE MANAGEMENT MODERNIZATION SYSTEM (JCOMMS)

The electronics industry moves quickly, leading to the production of critical electronic parts being discontinued due to obsolescence each year. In addition, supporting a weapon system for 30-40 years is a major challenge in the defense community. Whether the problem is that the manufacturer no longer produces the components necessary to maintain these systems or materials are no longer available, innovative solutions are required to increase the effectiveness for both industry and defense organizations to meet this and other Diminishing Manufacturing Sources and Material Shortages (DMSMS) challenges.

The Rising Threat of Parts Obsolescence

Manufacturers in both the commercial and government sectors face many challenges. Whether it's developing a competitive product, controlling production costs, or meeting time-to-market demands, manufacturers must deal with several issues during the development cycle that ultimately determine whether the product will succeed or fail. Compounding these issues is a growing industry challenge that affects products throughout the entire life cycle – this challenge is parts obsolescence.

A serious concern to all manufacturers, parts obsolescence is the loss or impending loss of the components that make up the end product. The causes of parts obsolescence are many. To keep up with continuing technological advances, parts manufacturers phase out products that use yesterday's technology. A shortage in the raw materials for the part or component can also contribute to its untimely obsolescence, unless another comparable source can be substituted.

As a manufacturer tweaks a component's design while it's on the production line to minimize costs and maximize yields, the part's form, fit and function can become altered to the point of being unusable in certain applications. But the most prominent reason for parts obsolescence is the financial bottom line. As soon as it becomes cost prohibitive to produce a part, manufacturers often cease production to concentrate on more profitable lines of business.

In today's marketplace, especially electronics, development and sales are driven by consumer applications. These applications (e.g., cell phones, computers, digital gadgets) are notorious for having short product life cycles to meet consumer demand for faster, cheaper, smaller technology. But for items intended to last longer than a few years, the problem of parts obsolescence can severely impact product supportability and life cycle costs. Items such as airplanes, automobiles, and military

weapons often have life expectancies ranging from 20 to 30 years and are nearly guaranteed to outlive most of the internal components that make up the final product.

In reality, the threat of parts obsolescence for built-to-last products can occur before the item ever leaves the assembly line. In the automotive industry, manufacturers typically invest three to five years for product development and once the model is launched, it is often in the market for another 20 years. In order to secure both production demands as well as meet the needs of in-the-market repairs, the goal of automotive manufacturers is to maintain enough spare parts for at least 25 years per model. And with the life span of typical electronics components peaking at 12 months, finding the parts to meet this 25-year commitment is becoming more and more difficult.

Methods of Managing Parts Obsolescence

Because of the disconnect between the life cycles of parts and the equipment they go into, manufacturers must consider parts obsolescence strategies throughout the product development cycle. This is especially true for products with long development cycles where parts need to be available for a longer period of time, as well as for government applications where product certification costs are high. In most scenarios, a solution for an obsolete part must be found quickly, particularly if the part is critical to the functionality of the system.

When confronted with the situation of a non-procurable part, manufacturers have four main methods of resolution.

- **Substitution** - Use a different part with the same or similar form, fit and function. Manufacturers can find comparable substitute parts from different vendors or at times, the same manufacturer will emulate a new component identical to the original using fabricated materials or newer technologies.

- **Lifetime Buy** - Purchase and store enough parts from the original manufacturer or an aftermarket vendor to meet the predicted need of the product's production and repair life span. With this option, companies assume extensive costs up front and incur ongoing storage fees. Additionally, manufacturers run the risk of not redeeming the value from a long-term purchase in the event that they buy too many supplies, lose the parts over time, or decide to halt production prematurely. Moreover, there's the chance that the electronic part may become unusable with prolonged storage. The quality of a part can deteriorate with oxidation, dust, dried compounds, and discoloration over time.

- **Reclaim** - Salvage the part from other products using the same original component. Again, this option could involve significant cost, time and risk. Manufacturers must locate a product in which the part was used, determine whether there is a substantial supply of these salvaged items, remove the needed components, and, if needed, refurbish the part so it meets all quality criteria.

- **Redesign** - Remove all obsolete parts from the product design and begin manufacturing a new replacement. This is, by far, the most costly alternative

for parts obsolescence. Whenever a product redesign occurs, manufacturers must factor in non-recurring engineering expense as well as the cost of re-qualifying the product for government, consumer or industry quality standards.

Manufacturers typically develop short- and long-term strategies for replacing obsolete components to avoid costly production downtime and uphold repair commitments to end-users. Some strategies are used in conjunction with each other. For example, an aircraft manufacturer may opt to secure a “bridge buy” to keep existing planes flying until an upgrade for the entire fleet can be designed and manufactured.

For many, the substitution method is the first step toward parts obsolescence management. This option often saves considerable expense by avoiding a costly redesign or worse, announcing the product as unsupportable. However, finding the appropriate substitution across the thousands of applicable parts manufacturers can be a daunting task. Engineering and procurement organizations need seamless and timely access to obsolescence data such as end-of-life (EOL) notices, predictive lifecycle information, Diminishing Manufacturing Sources & Material Shortages (DMSMS) data, and related supply chain data.

But this critical obsolescence data is typically not readily available or, at best, scattered across multiple internal and external data sources. Obsolescence information may reside in external reference databases, supplier web sites, and published notices. Critical Supply Chain information resides in ERP/MRP systems as well as various, often disparate, AVLs and AMLs. Important end-of-life notices for design components may slip through the cracks or never be delivered to the engineer responsible.

Compounding the problem is the fact that these data are rarely ‘connected,’ cross-referenced, or standardized. Therefore, it becomes extremely cumbersome to search for parts across multiple data sources. For each resource, the engineer must contact the company, gain access to the database, determine the appropriate search criteria, retrieve a list of pertinent data - and then repeat this process for the thousands of other available resources.

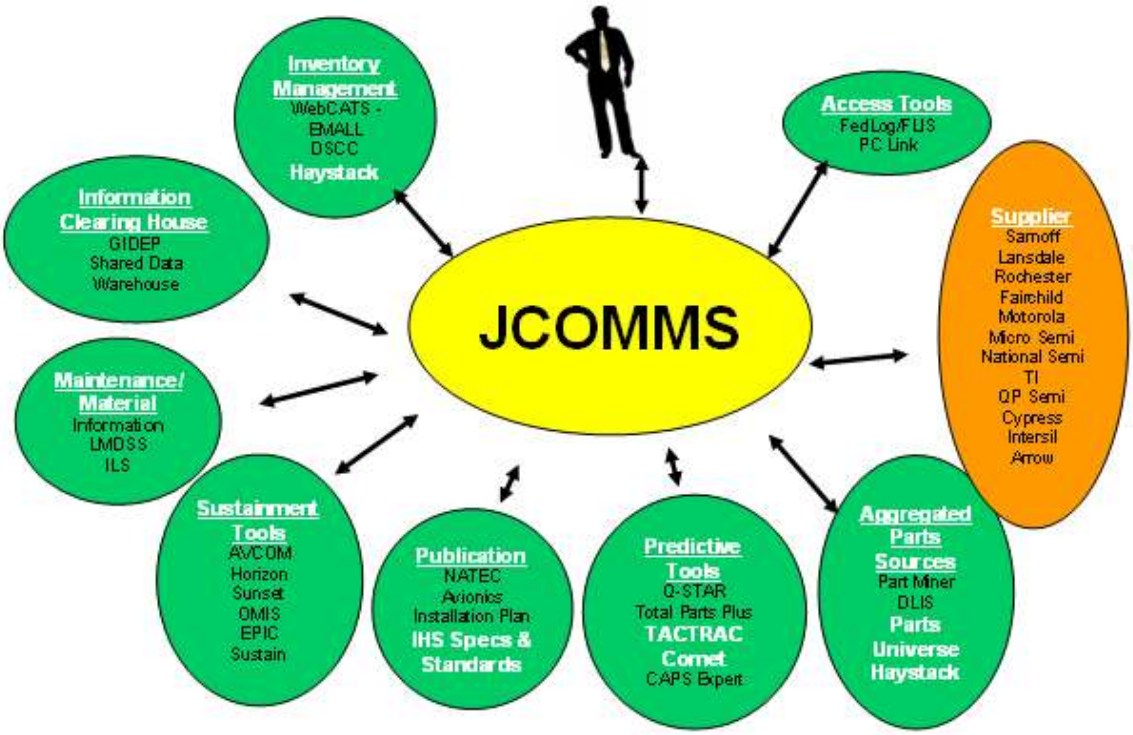
Because of the shear volume of information available, it is nearly impossible for the user to complete an exhaustive search to find the best alternative. This can lead to unnecessary cost when a more expensive or less than- adequate solution is selected, or a re-design is mandated because the perfect fit was never found.

Because of the current, cumbersome task for conducting an exhaustive search across heterogeneous data sources, manufacturers often only conduct parts research when it’s a critical situation and they need the part…immediately. This reactive versus proactive response can wreak havoc for manufacturers - causing them to miss critical product development milestones, extend launch dates, halt production lines, ground unusable equipment, and ultimately incur extensive cost.

Joint and Coalition Obsolescence Management Modernization System (JCOMMS)

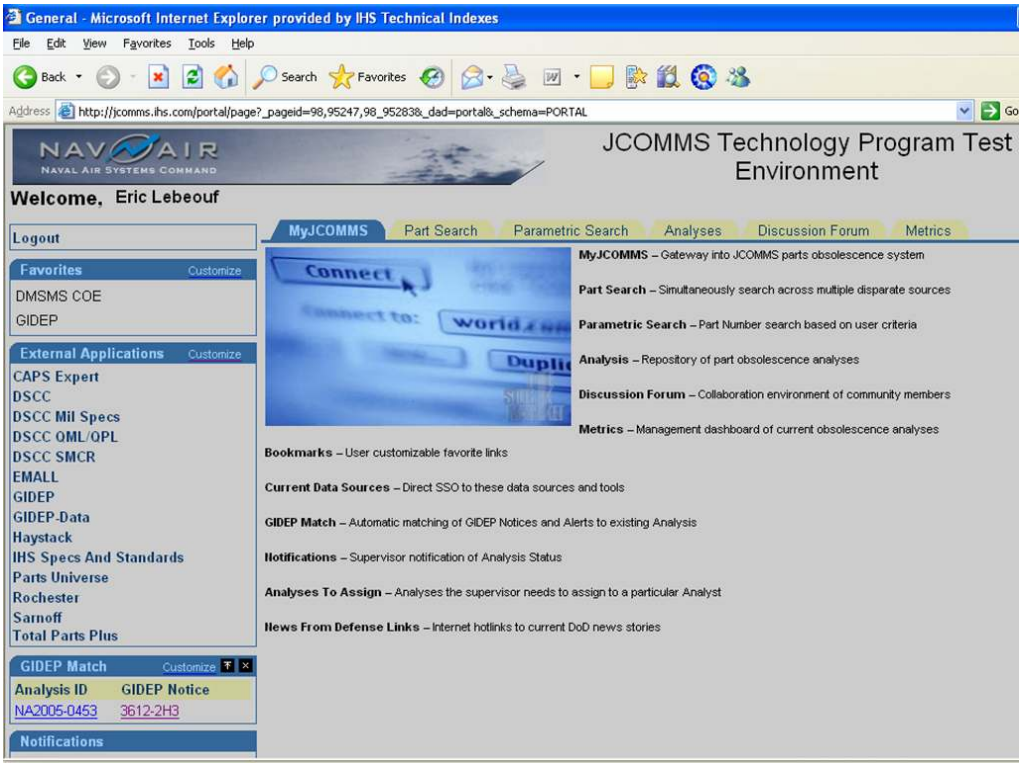
Naval Air Systems Command (NAVAIR), Patuxent River, MD, the Joint Council on Aging Aircraft, the Defense Sustainment Consortium (DSC) and IHS, working closely together have embraced the responsibility of solving obsolescence and DMSMS related parts issues. JCOMMS provides a mechanism for linking various

supply-related parts databases and tools. Because no one system has all of the necessary information, users must search a number of sources to find potential solutions and need a high degree of knowledge about the part, resulting in a significant amount of time lost spent looking for resolutions one site at a time. With such fragmented information, JCOMMS is designed to interface to a variety of obsolescence and DMSMS sources – based on the user's requirements - allowing for quicker and easier access to more than one source at the same time.



When electronic parts become obsolete, JCOMMS helps to find solutions. By searching multiple sources simultaneously, JCOMMS provides the user with numerous, often less expensive replacement options than originally anticipated for parts undergoing analysis; thereby uncovering potential component alternatives, such as life of type buy, alternate vendor, reverse engineering, emulation, etc. JCOMMS not only allows organizations to more quickly resolve existing obsolescence issues; it can be used proactively to avoid issues before they result in system downtime. By integrating highly fragmented solutions teams, data sources, obsolescence tools, and processes into a single portal system, JCOMMS offers:

- Efficient search tool that adapts to user and/or community
- Single entry point and sign-on provides consistent interface
- Simultaneous searching across multiple disparate sources
- Parametric search capability
- Adaptable to multiple data sources
- User-customizable links to related services and tools
- Collaborative environment that facilitates lateral asset and knowledge transfer to other users/systems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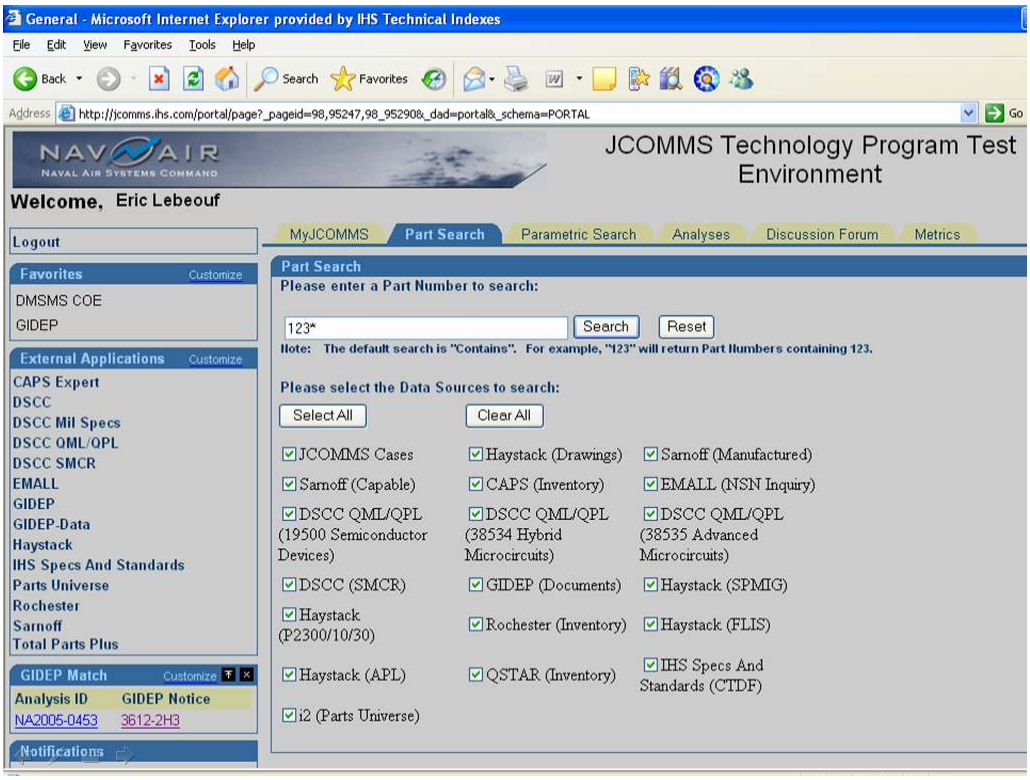
GIDEP-Data
Haystack
IHS Specs And Standards
Parts Universe
Rochester
Sarnoff
Total Parts Plus
GIDEP Match Customize
Analysis ID GIDEP Notice
NA2005-0453 3612-2H3
Notifications
MyJCOMMS Part Search Parametric Search Analyses Discussion Forum Metrics
MyJCOMMS – Gateway into JCOMMS parts obsolescence system
Part Search – Simultaneously search across multiple disparate sources
Parametric Search – Part Number search based on user criteria
Analysis – Repository of part obsolescence analyses
Discussion Forum – Collaboration environment of community members
Metrics – Management dashboard of current obsolescence analyses
Bookmarks – User customizable favorite links
Current Data Sources – Direct SSO to these data sources and tools
GIDEP Match – Automatic matching of GIDEP Notices and Alerts to existing Analysis
Notifications – Supervisor notification of Analysis Status
Analyses To Assign – Analyses the supervisor needs to assign to a particular Analyst
News From Defense Links – Internet hotlinks to current DoD news stories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DSCC QML/QPL
DSCC SMCR
EMALL
GIDEP
GIDEP-Data
Haystack
IHS Specs And Standards
Parts Universe
Rochester
Sarnoff
Total Parts Plus
GIDEP Match Customize
Analysis ID GIDEP Notice
NA2005-0453 3612-2H3
Notifications
MyJCOMMS Part Search Parametric Search Analyses Discussion Forum Metrics
Part Search
Please enter a Part Number to search:
123*
Search
Reset
Note: The default search is "Contains". For example, "123" will return Part Numbers containing 123.
Please select the Data Sources to search:
Select All
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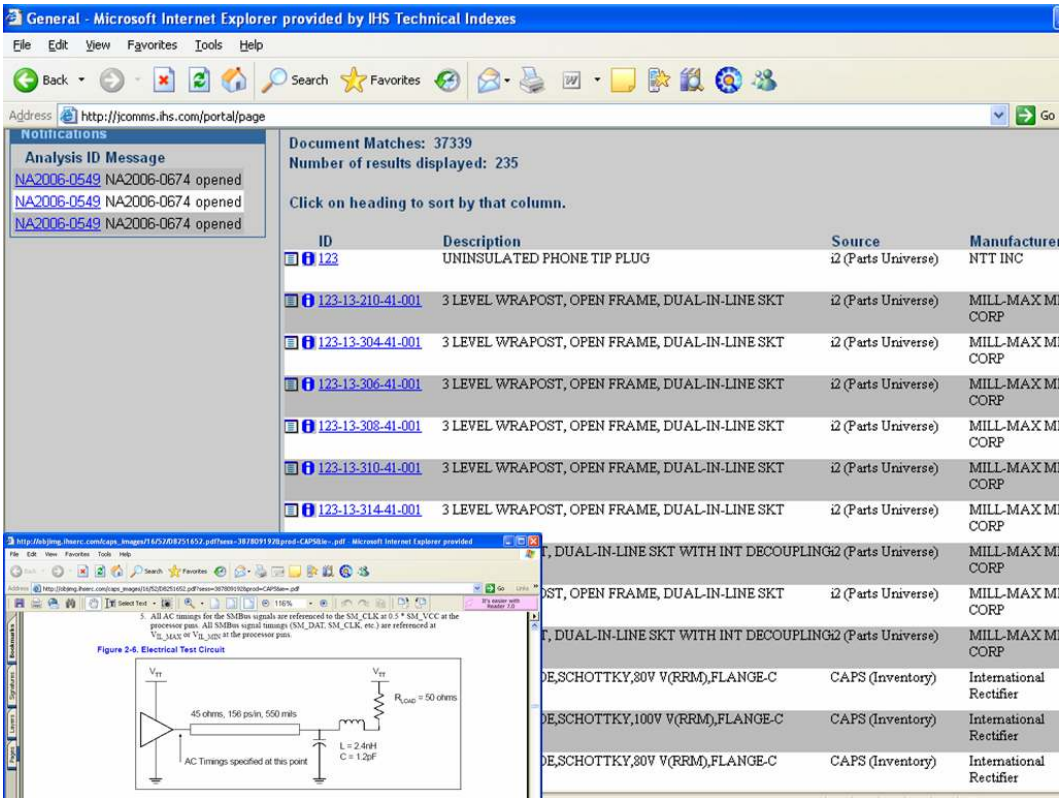
JCOMMS Cases
Haystack (Drawings)
Sarnoff (Manufactured)
Sarnoff (Capable)
CAPS (Inventory)
EMALL (NSN Inquiry)
DSCC QML/QPL (19500 Semiconductor Devices)
DSCC QML/QPL (38534 Hybrid Microcircuits)
DSCC QML/QPL (38535 Advanced Microcircuits)
DSCC (SMCR)
GIDEP (Documents)
Haystack (SPMIG)
Haystack (P2300/10/30)
Rochester (Inventory)
Haystack (FLIS)
Haystack (APL)
QSTAR (Inventory)
IHS Specs And Standards (CTDF)
i2 (Parts Universe)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123
UNINSULATED PHONE TIP PLUG
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NTT INC
123-13-210-41-001
3 LEVEL WRAPOST, OPEN FRAME, DUAL-IN-LINE SKT
i2 (Parts Universe)
MILL-MAX MI CORP
123-13-304-41-001
3 LEVEL WRAPOST, OPEN FRAME, DUAL-IN-LINE SKT
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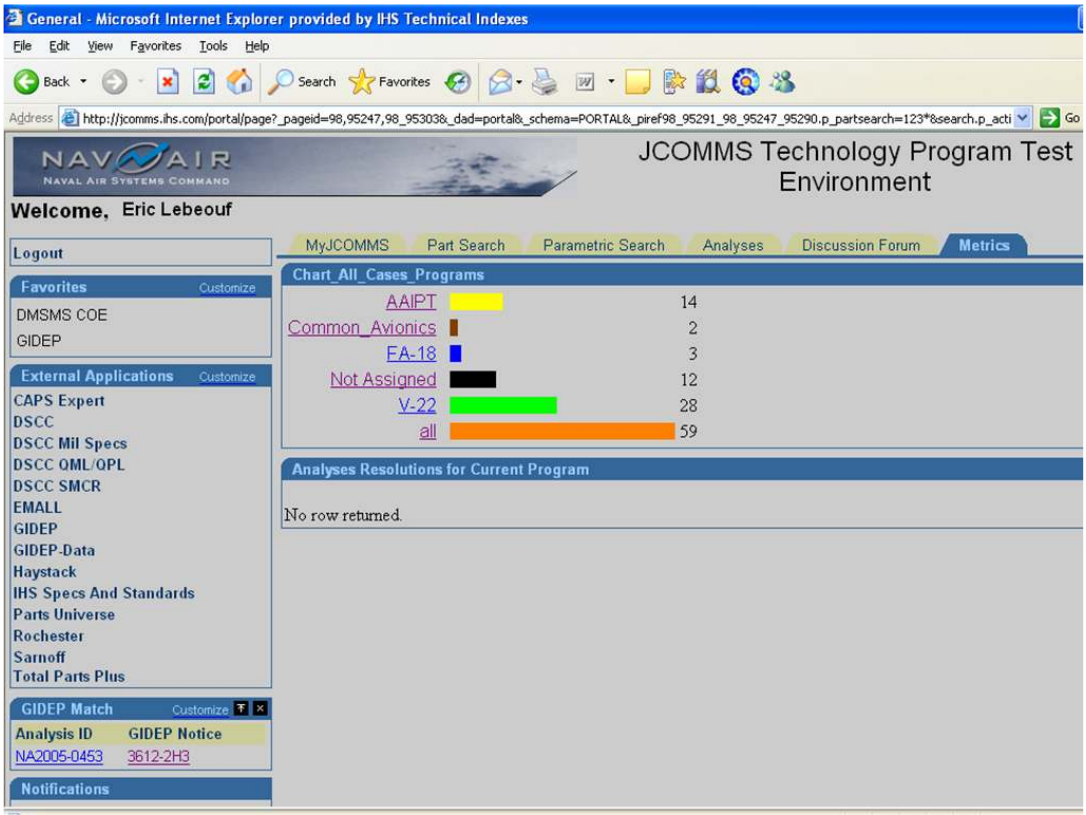
i2 (Parts Universe)
MILL-MAX MI CORP
DE,SCHOTTKY,80V V(RRM),FLANGE-C
CAPS (Inventory)
International Rectifier
DE,SCHOTTKY,100V V(RRM),FLANGE-C
CAPS (Inventory)
International Rectifier
DE,SCHOTTKY,80V V(RRM),FLANGE-C
CAPS (Inventory)
International Rectifier
Figure 2-6. Electrical Test Circuit
45 ohms, 156 ps/in, 550 mils
AC Timings specified at this point
L = 2.4nH
C = 1.2pF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