Trends in Solid State Penetration of Worldwide Relay Markets

Natick, Massachusetts – August 15, 2007 – A new Venture Development Corporation (VDC) study on worldwide relay markets finds the total was approximately $4.4 billion in 2006. VDC forecasts the worldwide market will increase at a 6.2% compound annual growth rate (CAGR), reaching almost $6 billion in 2011.

The VDC market study covers electromechanical (EMR) and solid state (SSR) relays ranging up to continuous contact or load current ratings of 50 amperes. In 2006, approximately $605 million of the total was in solid state relays. Overall shipments of these are forecast to increase at a 10.8% CAGR, reaching approximately $1 billion in 2011. The following figure illustrates the penetration level of SSR in the total market.

Solid state relays in the study are classified as:

- MOSFET
- Non-MOSFET
- I/O Modules
The Non-MOSFET products are further segmented by continuous load current rating ranges. MOSFET relays account for the largest share of the worldwide SSR relay market; however, the largest growth rate is forecast for Non-MOSFET types with continuous load current ratings up to 10 amperes.

Penetration By Applications/Industries

VDC found the penetration of solid state relays into the various consuming worldwide market segments varies considerably.

- Forecast fastest-growing SSRs market – for Transportation Vehicles
- Largest market for SSRs – for Industrial Automation
- Largest SSR market penetration – for Automatic Test Equipment

The study found that by far the largest worldwide market for the relays under study was for use on transportation vehicles. However, less than 3% of these shipments in 2006 were of SSRs. This is forecast to be the fastest-growing market segments for SSRs at over a 14% CAGR through 2007. However, even at this growth rate, SSRs are only expected to account for 4.5% of this relay market in 2011. SSRs remain just too expensive for most transportation vehicle applications.

The second largest worldwide relay market was found to be for industrial automation applications. This is the largest market segment for SSRs, and these accounted for almost 27% of all relay shipments for industrial automation applications in 2006. In addition, VDC forecasts industrial automation applications will provide the largest dollar volume growth for SSRs over the next 5 years. SSRs have high reliability and long-life features that make these highly desirable for industrial use.

“Relays are not a significant expense in the manufacturing process while down time is. Consequently, higher-cost solid state relays have an advantage over lower-cost electromechanical relays in industrial automation applications due to higher reliability and longer life,” said Peter Crocker, lead analyst on the VDC study.

Although the largest worldwide market for SSRs is in industrial automation applications, this is not the segment with the largest SSR penetration. Applications in automatic test equipment was the sixth largest worldwide market for relays in 2006, and almost 57% of these shipments were of SSRs. Additional features which make these attractive for ATE applications include:

- High switching speed
- Small size
- Turn on and off at zero crossing mark on a sine wave, thus reducing surges and noise spikes
Factors Limiting Penetration

Despite some impressive gains, there remain other barriers besides price to SSR adoption. These include:

- Ability of EMR suppliers to offer ever smaller size relays, particularly for PCB mounting
- Current leakage during switching of SSRs
- EMRs able to handle higher surge voltages
- EMRs have higher isolation properties
- EMRs have low impedance path switching
- SSRs are not able to dissipate heat as effectively as EMRs and in higher amperage applications require heat sinks to manage the thermal load.

These are more important in some applications than others. Overall, along with the significant price premiums for SSRs a major limitation has been the ability of the of the EMR suppliers to offer smaller relays. This may not continue, and the premiums for SSRs will narrow. Thus, an ongoing trend to SSR adoption is expected.

At least for the forecast period of this study – VDC points out that in the long-term MEMS technology might reverse the trend.

About VDC

Venture Development Corporation (VDC) is an independent technology market research and strategy consulting firm that specializes in a number of component, embedded, industrial, and defense markets. VDC has been operating since 1971, when the firm was founded by graduates of the Harvard Business School and Massachusetts Institute of Technology. Today, we employ a talented collection of analysts and consultants who offer a rare combination of expertise in the market research process; experience in technology product and program management; and formal training in engineering and marketing. VDC’s clients include thousands of the largest and fastest-growing tech suppliers in the world and the most successful investors participating in the markets we cover.

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