

## ***NEW GENERATION OF Add-A-Pak (TO240) MODULES***



## **WHAT**

The Generation VII of Diode and Thyristor Modules in TO240 package style (Add-A-Pak) has been designed and qualified.

### Major Highlights:

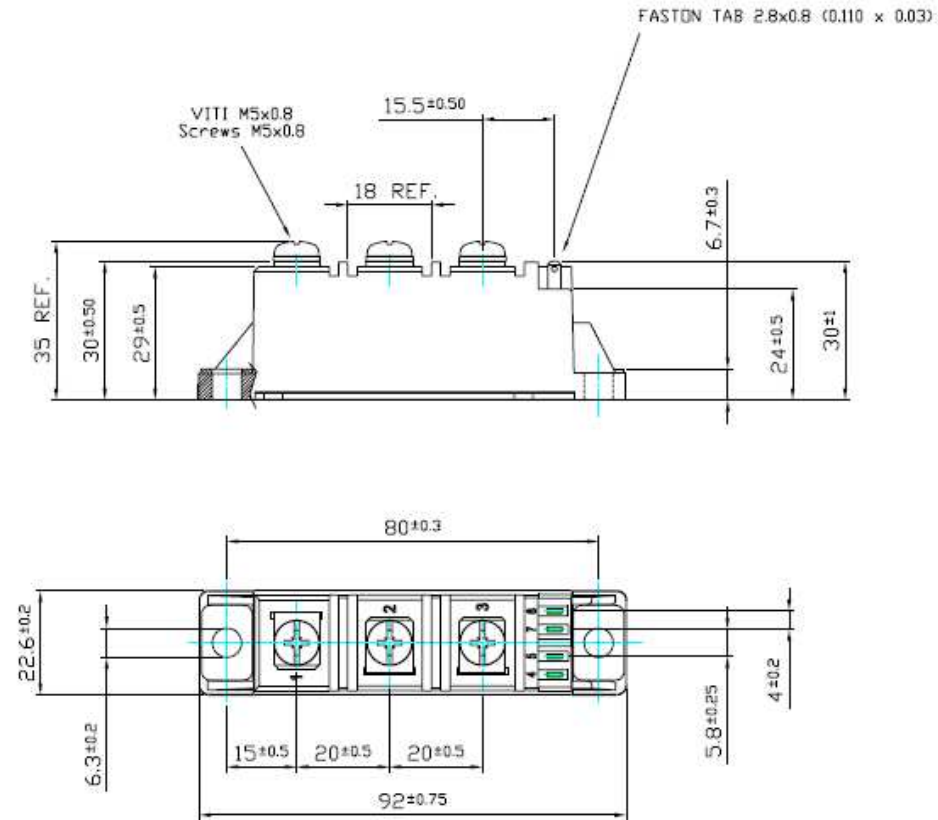
- Package Outline Dimensions Conforms to JEDEC outline TO240
- Piece Parts and Process Automated on key steps
- Better Thermal Dissipation Performance than Current Design
- Improved life at Thermal Fatigue (IOL)
- Excellent Mechanical Characteristics
- Totally Lead Free and RoHS Compliant



## ***Technical Assessment – Key Features***

- High Blocking Voltage → up to 1600V
- High DV/dt →  $DV/dt > 1000 \text{ V/usec}$
- High Isolation Capability → 3500 Volt rms
- High Surge Capability → Ifsm up to 3000 A
- No toxic material → Totally Lead Free, RoHS and UL Compliant
- Elimination of Copper base plate → Light devices; weight 75 grams
- Elimination of process steps requiring usage of chemicals and related waste treatment → Environmental friendly manufacturing process

# Outline

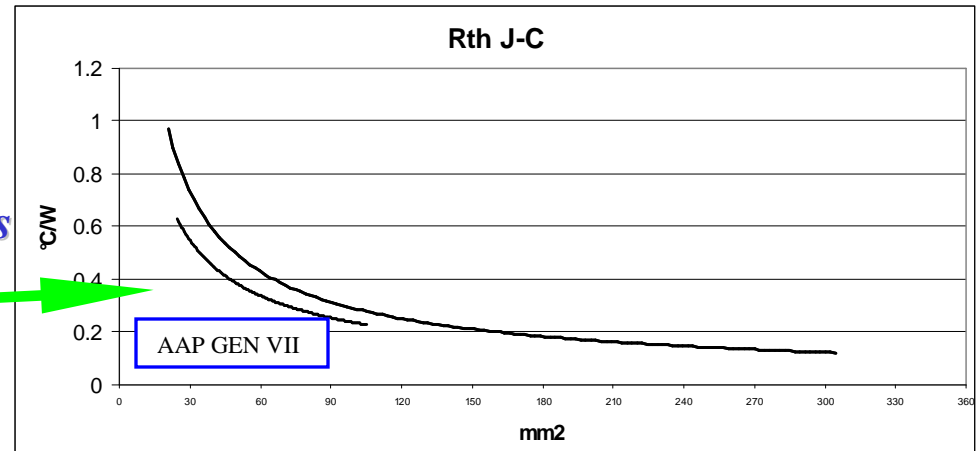


# Benefits to the Customer

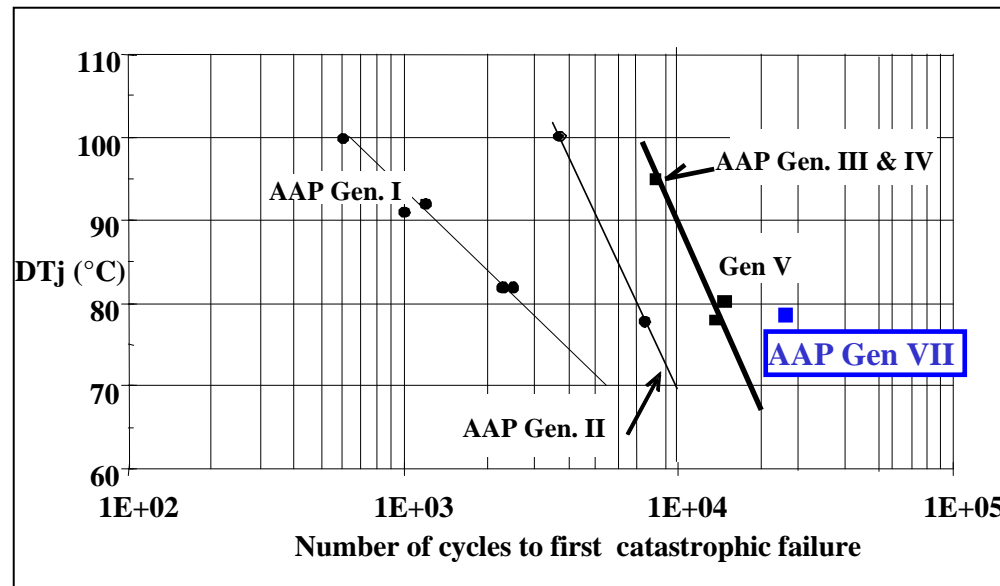
## Quality Improvements with AAP GEN VII:

*Lower Thermal Resistance*

*Improved thermal dissipation performances*



*Longer Life at Power Cycling*



## ***Technical Assessment – Process Description***

The AAP Gen VII modules are designed with an exposed DBC  $\text{Al}_2\text{O}_3$  substrate.

This is used to optimize the thermal behaviour of the module. To reduce the risk of damage during mounting, the ceramic has been given additional mechanical ruggedness in the form of two separate 15.8-mm by 21.1-mm (0.62-in. by 0.83-in.) pieces of DBC substrate, as it could be clearly seen in the picture below





## ***Mechanical Performance***

AAP GEN VII have leads not directly soldered to the die

### TORQUE TEST

#### **RESULTS :**

Torque on heatsink: Screw breakage after **9 Nm (79.6 Lbf in)** Die still OK  
Data sheet: **4 Nm**

Torque on Busbar: Screw breakage after **10 Nm (88.5 Lbf in)** Die still OK  
Data sheet: **3 Nm**