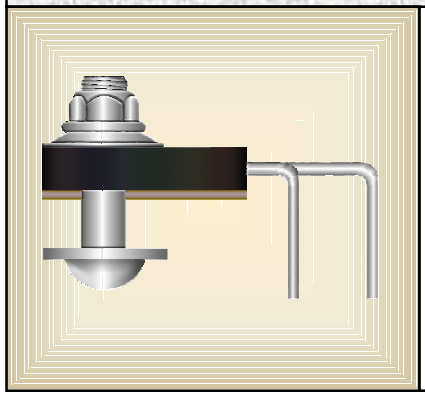
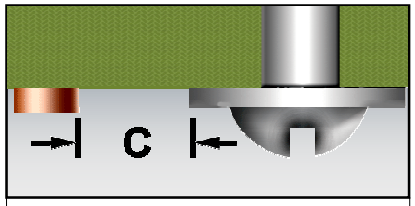


MECHANICAL ASSEMBLY
POWER SEMICONDUCTORS & HEATSINKS

Power semiconductors and heatsinks present a unique challenge to the printed wiring board (PWB) designer. Power devices are capable of producing significant amounts of heat and are typically of greater mass than other components.

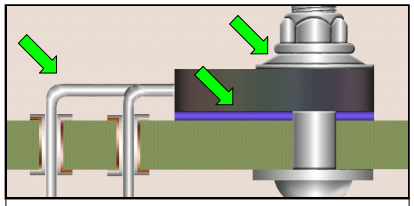
Body types vary from ceramic / epoxy / sand-cast bodied axial components requiring thermally-conductive staking and/or heatsinks; metallized housings with mounting tabs/feet; to axial, radial, and multi-conductor / flatpack components with integral heatsinks.



ACCEPTABLE
ELECTRICAL CLEARANCE (C)

The mounting of hardware shall not violate minimum electrical spacing requirements.

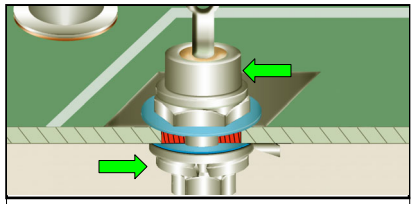
Best Workmanship Practice



ACCEPTABLE
INTEGRAL HEATSINK COMPONENTS

Component and mounting hardware are installed per engineering documentation. Heatsink body and dielectric are undamaged, and in full contact with no air gaps.

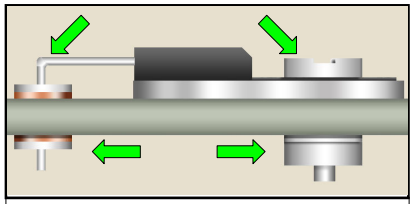
Best Workmanship Practice



ACCEPTABLE
POWER DIODE INSTALLATION

Component and mounting hardware are properly installed.

Best Workmanship Practice

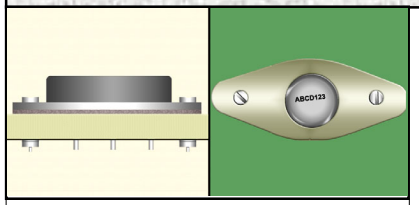


ACCEPTABLE
POWER TAB INSTALLATION

Component and mounting hardware are properly installed.

Best Workmanship Practice

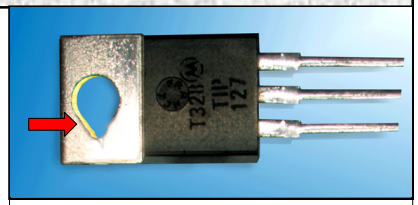
THROUGH-HOLE SOLDERING
MECHANICAL ASSEMBLY, POWER SEMICONDUCTORS & HEATSINKS (cont.)



ACCEPTABLE
POWER TRANSISTOR INSTALLATION

Component and mounting hardware are properly installed.

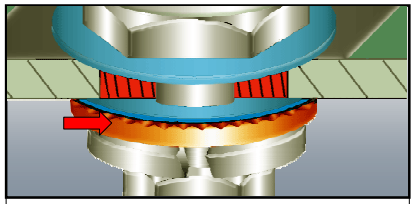
Best Workmanship Practice



UNACCEPTABLE
DAMAGED HEATSINK

Heatsink body exhibits gouging and deformation, resulting in exposed base metal. Reliability issue.

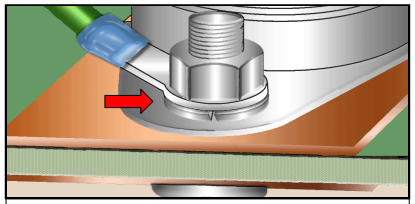
Best Workmanship Practice



UNACCEPTABLE
IMPROPER MOUNTING HARDWARE INSTALLATION SEQUENCE

Mounting hardware is improperly installed: the toothed surface of the flat washer is in contact with the insulator, which may result in insulator cut-through and reduced compression pressure.

Best Workmanship Practice



UNACCEPTABLE
IMPROPER MOUNTING HARDWARE INSTALLATION SEQUENCE

Mounting hardware is improperly installed: the lock washer is located between the terminal lug and component case, rather than between the terminal lug and the nut.

Best Workmanship Practice