

256Kx16 PLASTIC SRAM



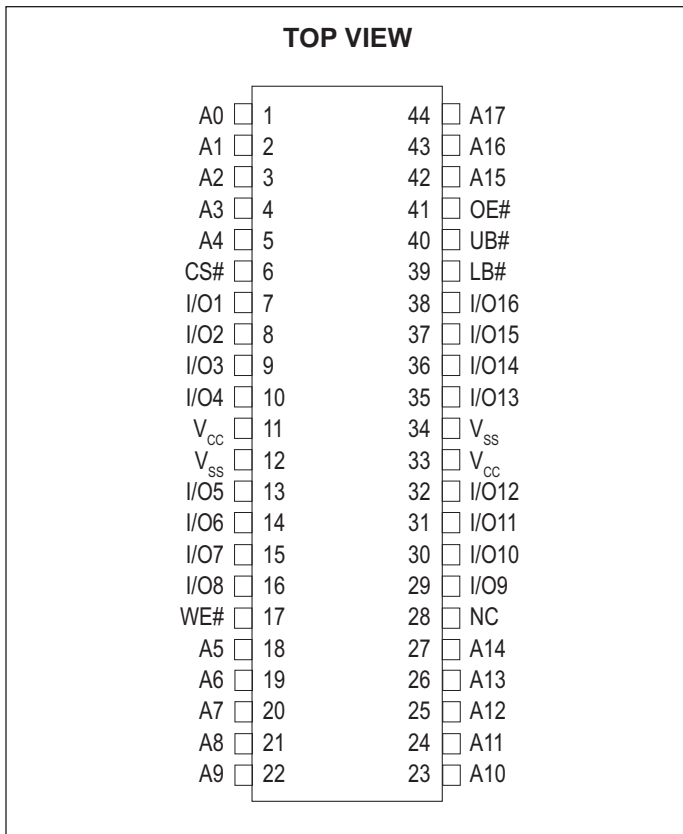
EDI816256CA-XM44XG / WPS256K16X-XLJXG

PLASTIC PLUS® FEATURES

- Access Times of 15, 17, 20, 25ns
- Standard Commercial Off-The-Shelf (COTS) Memory Devices for Extended Temperature Range
- Industry Standard 44 Lead Plastic SOJ Package
- Electrical and Speed Characteristics for:
 - Military Temperature (-55°C to +125°C)
 - Industrial Temperature (-40°C to +85°C)
 - Commercial Temperature (0°C to +70°C)
- Burn-in and Temperature Cycling Available
- Organized as 256K x 16
- Center Power/Ground Pins (Revolutionary)
- Data Byte Control:
 - Lower Byte (LB) = I/O₁₋₈
 - Upper Byte (UB) = I/O₉₋₁₆
- 5 Volt Power Supply
- Low Power Dissipation CMOS
- Battery Back-Up Operation
- Based on RoHS devices

* This product is subject to change without notice.

PIN CONFIGURATION FOR WPS256K16X-XLJXG



PIN DESCRIPTION

| | |
|----------------------|---|
| A0-17 | Address Inputs |
| LB# | Lower-Byte Control (I/O ₁₋₈) |
| UB# | Upper-Byte Control (I/O ₉₋₁₆) |
| I/OA ₁₋₁₆ | Data Input/Output |
| WE# | Chip Select |
| CS# | Output Enable |
| OE# | Write Enable |
| V _{cc} | +5.0V Power |
| V _{ss} | Ground |
| NC | Not Connected |

ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Min | Max | Unit |
|--|------------------|------|-----------------------|------|
| Operating Temperature (Mil.) | T _A | -55 | +125 | °C |
| Operating Temperature (Ind.) | T _A | -40 | +85 | °C |
| Storage Temperature | T _{STG} | -65 | +150 | °C |
| Signal Voltage Relative to V _{SS} | V _G | -0.5 | V _{CC} + 0.5 | V |
| Supply Voltage | V _{CC} | -0.5 | 7.0 | V |

NOTE:

Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a Stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

RECOMMENDED OPERATING CONDITIONS

| Parameter | Symbol | Min | Max | Unit |
|------------------------|-----------------|------|-----------------------|------|
| Supply Voltage | V _{CC} | 4.5 | 5.5 | V |
| Input High Voltage | V _{IH} | 2.2 | V _{CC} + 0.5 | V |
| Input Low Voltage | V _{IL} | -0.3 | +0.8 | V |
| Operating Temp. (Mil.) | T _A | -55 | +125 | °C |
| Operating Temp. (Ind.) | T _A | -40 | +85 | °C |

CAPACITANCE

T_A = +25°C

| Parameter | Symbol | Conditions | Max | Unit |
|--------------------|------------------|-----------------------------------|-----|------|
| Input capacitance | C _{IN} | V _{IN} = 0V, f = 1.0 MHz | 6 | pF |
| Output capacitance | C _{OUT} | V _{IN} = 0V, f = 1.0 MHz | 8 | pF |

This parameter is guaranteed by design but not tested.

TRUTH TABLE

| CS | WE# | OE# | LB# | UB# | Mode | Data I/O | | Power |
|----|-----|-----|-----|-----|-------------|--------------------|---------------------|---------|
| | | | | | | I/O ₁₋₈ | I/O ₉₋₁₆ | |
| H | X | X | X | | Not Select | High-Z | High-Z | Standby |
| L | H | H | X | | Out Disable | High-Z | High-Z | Active |
| L | H | H | H | | | | | |
| L | H | L | L | H | Read | Data Out | High Z | Active |
| | | | H | L | | High Z | Data Out | |
| | | | L | L | | Data Out | Data Out | |
| L | L | X | L | H | Write | Data In | High Z | Active |
| | | | H | L | | High Z | Data In | |
| | | | L | L | | Data In | Data In | |

DC CHARACTERISTICS

V_{CC} = 5.0V, V_{SS} = 0V, T_A = -55 +125°C

| Parameter | Symbol | Conditions | Min | Max | Unit |
|--|-----------------|---|-----|-----|------|
| Input Leakage Current | I _{LI} | V _{CC} = 5.5, V _{IN} = V _{SS} to V _{CC} | | 10 | µA |
| Output Leakage Current | I _{LO} | CS = V _{IH} , OE = V _{IH} , V _{OUT} = V _{SS} to V _{CC} | | 10 | µA |
| V _{CC} Read Current (1, 2) | I _{CC} | CS = V _{IL} , OE = V _{IH} , f = 5MHz, V _{CC} = 5.5 | | 275 | mA |
| V _{CC} Standby Current (2, 5) | I _{BS} | CS = V _{IH} , OE = V _{IH} , f = 5MHz, V _{CC} = 5.5 | | 17 | mA |
| Output Low Voltage | V _{OL} | I _{OL} = 8.0mA, V _{CC} = 4.5 | | 0.4 | V |
| Output High Voltage | V _{OH} | I _{OH} = -4.0mA, V _{CC} = 4.5 | 2.4 | | V |

NOTE: DC test conditions: V_{IL} = 0.3V, V_{IH} = V_{CC} - 0.3V

NOT RECOMMENDED FOR NEW DESIGNS

Data Retention Characteristics

(TA = -55°C TO +125°C)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|-------------------------------|-----------------|---|-----|-----|-----|------|
| Data Retention Supply Voltage | I _{LI} | V _{CC} = 5.5, V _{IN} = V _{SS} to V _{CC} | 2.0 | | 5.5 | V |
| Low Power Data Retention | I _{LO} | CS = V _{IH} , OE = V _{IH} , V _{OUT} = V _{SS} to V _{CC} | | 1 | 15 | mA |

AC CHARACTERISTICS

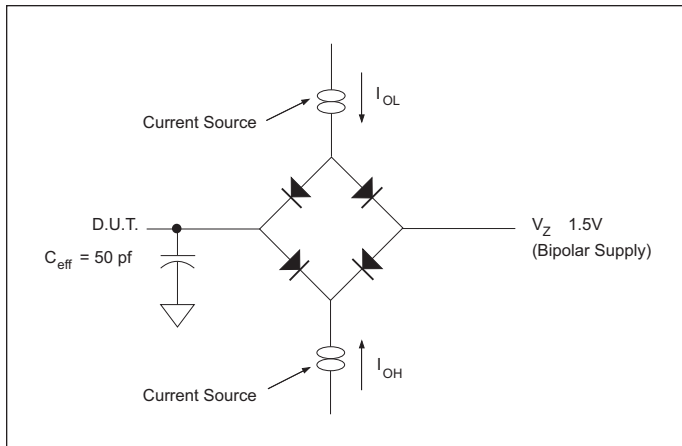
(V_{CC} = 5.0V, V_{SS} = 0V, TA = -55°C TO +125°C)

| Parameter | Symbol | -15 | | -17 | | -20 | | -25 | | Unit |
|------------------------------------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|
| | | Min | Max | Min | Max | Min | Max | Min | Max | |
| Read Cycle Time | t _{RC} | 15 | | | 17 | 20 | | 25 | | ns |
| Address Access Time | t _{AA} | | 15 | | 17 | | 20 | | 25 | ns |
| Output Hold from Address Change | t _{OH} | 0 | | 0 | | 0 | | 0 | | ns |
| Chip Select Access Time | t _{ACS} | | 15 | | 12 | | 20 | | 25 | ns |
| Output Enable to Output Valid | t _{OE} | | 10 | | 10 | | 12 | | 15 | ns |
| Chip Select to Output in Low Z | t _{CLZ} ¹ | 3 | | 3 | | 3 | | 3 | | ns |
| Output Enable to Output in Low Z | t _{OLZ} ¹ | 0 | | 0 | | 0 | | 0 | | ns |
| Chip Disable to Output in High Z | t _{CHZ} ¹ | | 8 | | 10 | | 10 | | 12 | ns |
| Output Disable to Output in High Z | t _{OHZ} ¹ | | 8 | | 12 | | 10 | | 12 | ns |
| LB#, UB# Access Time | t _{BA} | | 10 | | 12 | | 12 | | 14 | ns |
| LB#, UB# Enable to Low Z Output | t _{BLZ} ¹ | 0 | | 0 | | 0 | | 0 | | ns |
| LB#, UB# Disable to High Z Output | t _{BHZ} ¹ | | 8 | | 10 | | 10 | | 12 | ns |

NOTE:

- This parameter is guaranteed by design but not tested

AC TEST CONDITIONS



AC TEST CONDITIONS

| Parameter | Typ | Unit |
|----------------------------------|--|------|
| Input Pulse Levels | V _{IL} = 0, V _{IH} = 3.0 | V |
| Input Rise and Fall | 5 | ns |
| Input and Output Reference Level | 1.5 | V |
| Output Timing Reference Level | 1.5 | V |

NOTES:

- V_Z is programmable from -2V to +7V.
- I_{OL} & I_{OH} programmable from 0 to 16mA.
- Tester Impedance Z₀ = 75 Ω.
- V_Z is typically the midpoint of V_{OH} and V_{OL}.
- I_{OL} & I_{OH} are adjusted to simulate a typical resistive load circuit.
- ATE tester includes jig capacitance.

NOT RECOMMENDED FOR NEW DESIGNS

AC CHARACTERISTICS

V_{CC} = 5.0V, GND = 0V, -55°C ≤ T_A ≤ +125°C

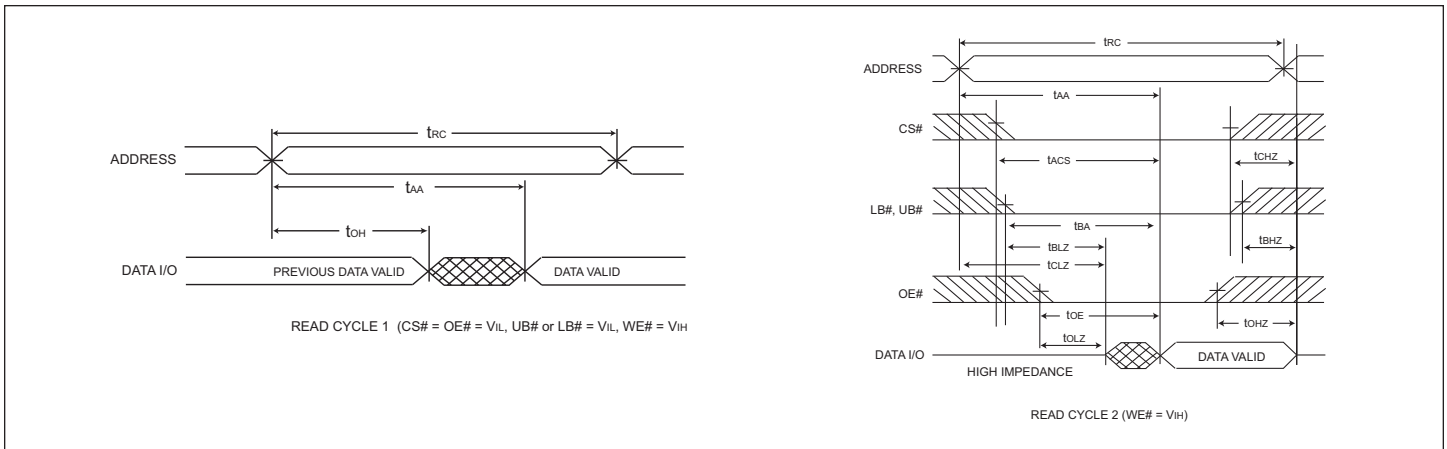
| Parameter | Symbol | -15 | | -17 | | -20 | | -25 | | Unit |
|----------------------------------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|
| | | Min | Max | Min | Max | Min | Max | Min | Max | |
| Write Cycle Time | t _{WC} | 15 | | 17 | | 20 | | 25 | | ns |
| Chip Select to End of Write | t _{CW} | 12 | | 15 | | 17 | | 20 | | ns |
| Address Valid to End of Write | t _{AW} | 12 | | 15 | | 17 | | 20 | | ns |
| Data Valid to End of Write | t _{DW} | 10 | | 12 | | 12 | | 15 | | ns |
| Write Pulse Width | t _{WP} | 12 | | 15 | | 17 | | 20 | | ns |
| Address Setup Time | t _{AS} | 0 | | 0 | | 0 | | 0 | | ns |
| Address Hold Time | t _{AH} | 0 | | 0 | | 0 | | 0 | | ns |
| Output Active from End of Write | t _{OW} ¹ | 0 | | 0 | | 0 | | 0 | | ns |
| Write Enable to Output in High Z | t _{WHZ} ¹ | | 8 | | 10 | | 10 | | 10 | ns |
| Data Hold Time | t _{DH} | 0 | | 0 | | 0 | | 0 | | ns |
| LB#, UB# Valid to End Write | t _{BW} | 12 | | 15 | | 17 | | 20 | | ns |

NOTES:

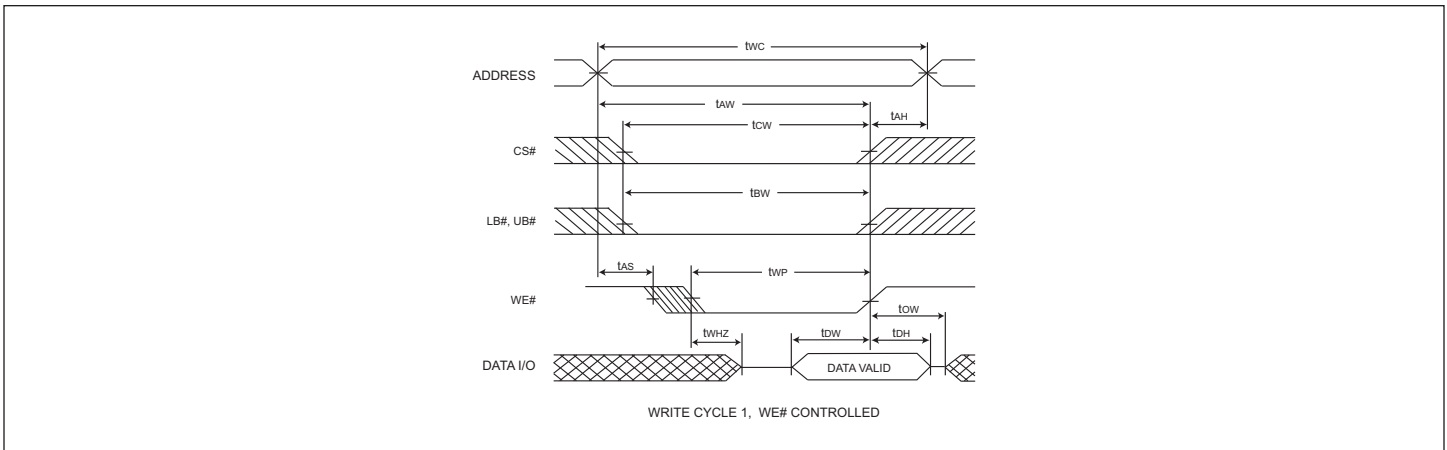
1. This parameter is guaranteed by design but not tested

NOT RECOMMENDED FOR NEW DESIGNS

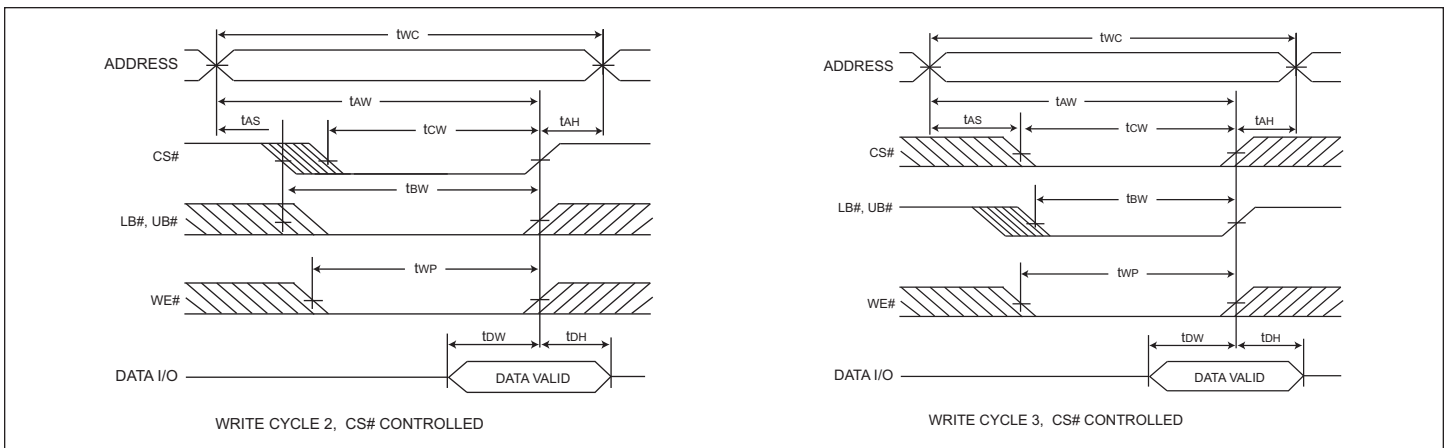
TIMING WAVEFORM – READ CYCLE



WRITE CYCLE – WE# CONTROLLED

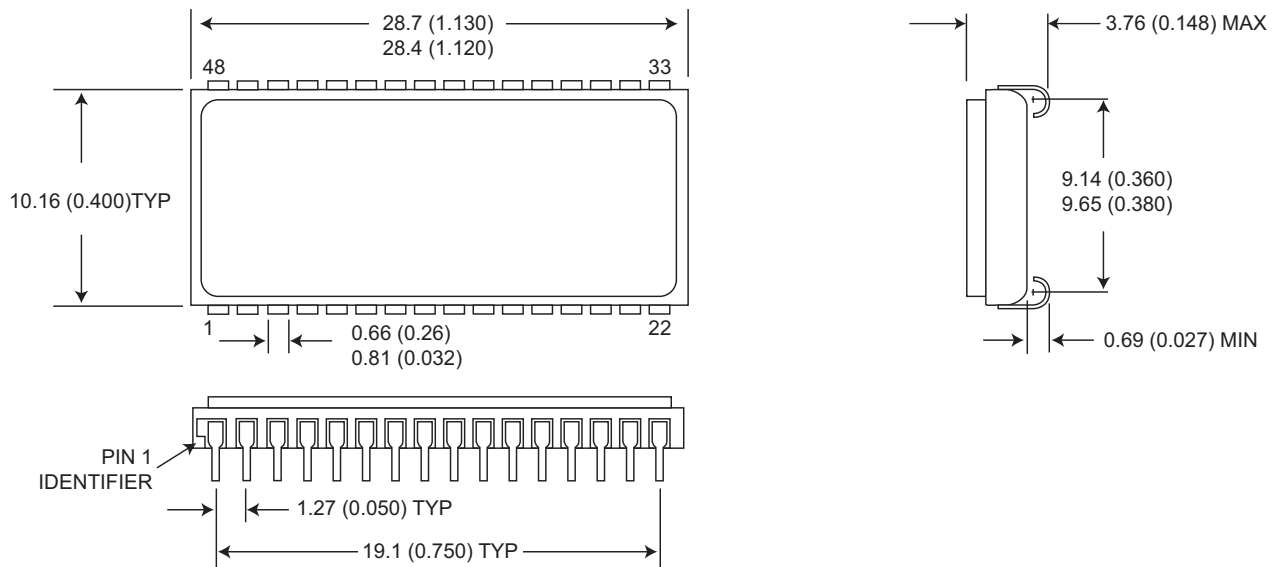


WRITE CYCLE – CS# CONTROLLED



NOT RECOMMENDED FOR NEW DESIGNS

PACKAGE 101: 44 LEAD, PLASTIC SOJ



DIMENSIONS IN MILLIMETERS AND (INCHES)

NOT RECOMMENDED FOR NEW DESIGNS

ORDERING INFORMATION

W P S 256K16 X - XXX LJ X G A

MERCURY SYSTEMS

PLASTIC PLUS®

SRAM

ORGANIZATION, 256K x 16

IMPROVEMENT MARK:

B = Burn-in

T = Temperature Cycling

C = Burn-in and Temperature Cycle

ACCESS TIME (ns):

PACKAGE:

LJ= 44 Lead Plastic SOJ

DEVICE GRADE:

M = Military Temperature -55°C to +125°C

I = Industrial Temperature -40°C to +85°C

C = Commercial Temperature 0°C to +70°C

RoHS COMPONENT:

SOLDER DIPPED:

Sn63/Pb37 (Not RoHS compliant)

NOT RECOMMENDED FOR NEW DESIGNS

ORDERING INFORMATION

EDI 8 16 256 CA X X X G A

MERCURY SYSTEMS _____

SRAM _____

ORGANIZATION, 256Kx16 _____

TECHNOLOGY: _____

CA = CMOS Standard Power
LPA = Low Power

ACCESS TIME (ns) _____

PACKAGE TYPE: _____

M44 = 44 lead Plastic SOJ

DEVICE GRADE: _____

B = Military Grade*
M = Military Screened -55°C to +125°C
I = Industrial -40°C to +85°C
C = Commercial 0°C to +70°C

RoHS COMPONENT: _____

SOLDER DIPPED: _____

Sn63/Pb37 (Not RoHS compliant)

*This product is processed the same as the 5962-XXXXMXX product but all test and mechanical requirements are per the Microsemi data sheet.

NOT RECOMMENDED FOR NEW DESIGNS

Document Title

256M x 16 Plastic SRAM

Revision History

| Rev # | History | Release Date | Status |
|-------|---|--------------|--------|
| Rev 0 | Initial Release | August 2007 | Final |
| Rev 1 | 1.1 Add EDI816256CA-XM44XG_WPS256K16X-XLJXG EDI816256CA-XM44XG 1.2 Package 101: Add "Dimensions in millimeters and (inches)" 1.3 Ordering information "Add Solder Dipped" option 1.4 Ordering information "Add EDI816256CA-XM44XG" | March 2009 | Final |
| Rev 2 | 2.1 Change document layout from White Electronic Designs to Microsemi | July 2011 | Final |
| Rev 3 | 3.1 Changed Device Grade "B" description from "MIL-STD-883 Compliant" to "Military Grade*." | May 2014 | Final |
| Rev 4 | Changes Pg. (1-9) 4.1 Mark data sheet as "Not Recommended for New Designs" | March 2015 | Final |
| Rev 5 | Changes Pg. (1, 7, 8) (ECN 9311) 5.1 Update RoHS information | May 2015 | Final |
| Rev 6 | Changes (Pg. All) (ECN 10156) 6.1 Change document layout from Microsemi to Mercury Systems | August 2016 | Final |