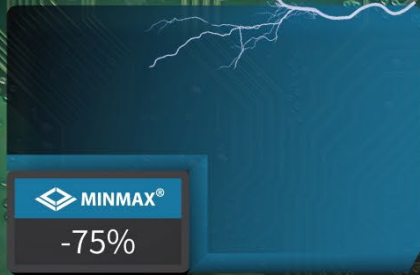


Smaller than the rest. Mightier than the most.



BACKGROUND - OVERVIEW



ESTABLISHED

Since 1990

MONTHLY PRODUCTIVITY

1000K+

HEADQUARTER & INTEL. MFG CENTER

Located in Tainan, Taiwan

EMPLOYEE

277 (2018) → 400 Employees

R&D OFFICE

Taichung City (Set up in 2021)
Tainan City

SALES QUANTITY

8,984K+ (2022)
6,000K+ (2023)
6,000K+ (2024)

FACTORY SIZE (Taiwan)

6,900 Square Meter (2005) →
16,600 Square Meter
(2 factories/ old + new / 2023)

PRODUCT LINES

Isolated DC-DC & AC-DC
Power Supplies

BACKGROUND - COMPANY EXPANSION

Old HQ



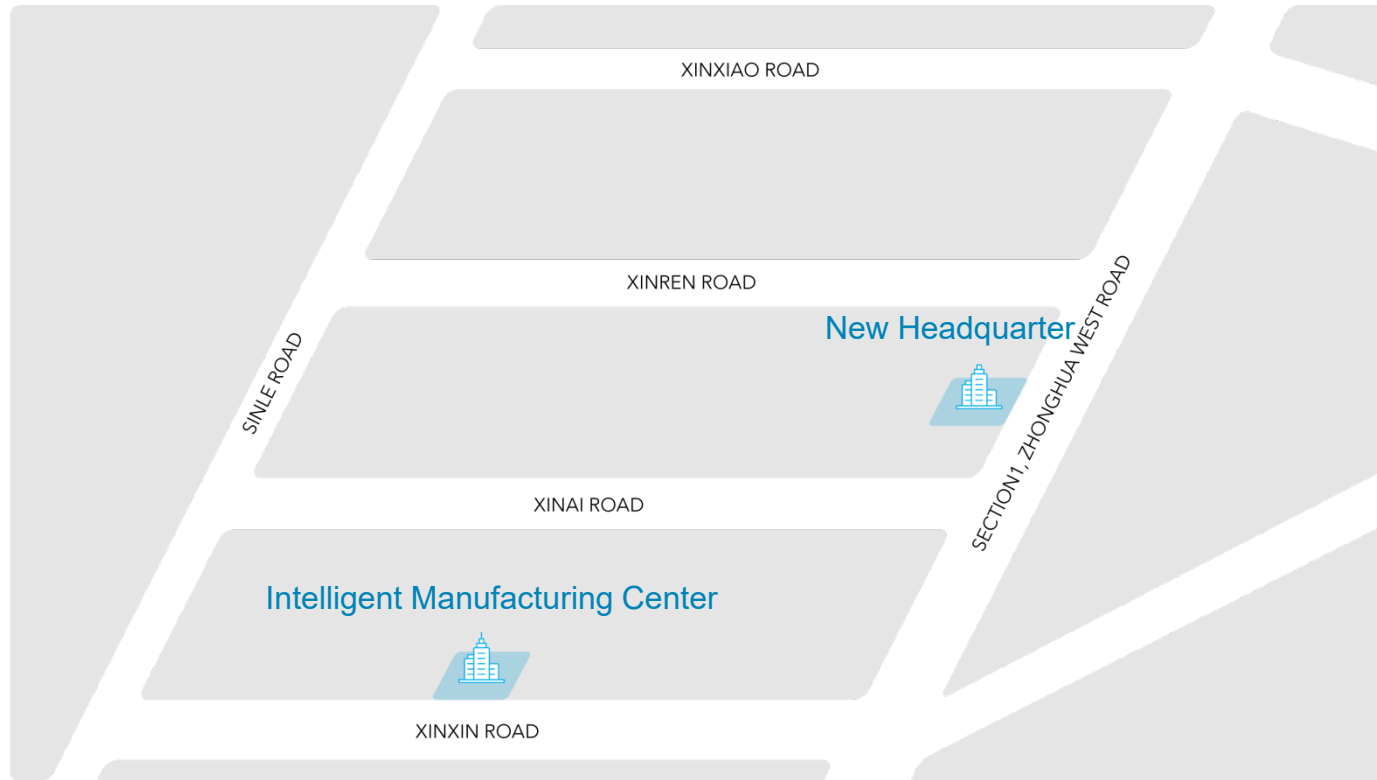
New HQ



Factory Comparison

Old HQ (B1 + 4Fs) Started operation in 2005	New HQ (B1 + 4Fs) Started operation in 2023	TOTAL	Capacity Comparison (%) (New + Old) vs. Old
Land Size → 2,551 (m ²)	Land Size → 3,184 (m ²)	5735 (m ²)	+225%
Building Size → 6,936 (m ²)	Building Size → 9,687 (m ²)	16623 (m ²)	+240%

MANAGEMENT ASPECTS - COMPANY EXPANSION



MANAGEMENT ASPECTS - GLOBAL PRESENCE



2024
Japan
Subsidiary



2021
Taichung
R&D Center



2023
Tainan
Global Headquarter



2024
Philippines
Manufacturing Facility



2004
Tainan
Smart Manufacturing Facility



MANAGEMENT ASPECTS - PHILIPPINES MANUFACTURING FACILITY



ESTABLISHED:
2024

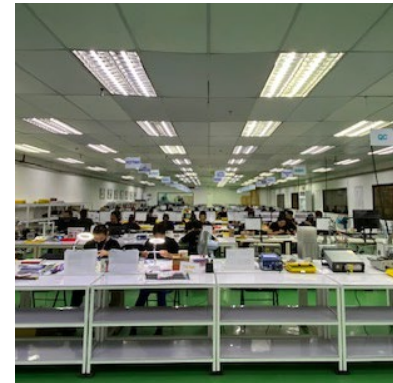
MANUFACTURING FACILITY:
Manila, Philippines

EMPLOYEES
115 Staff

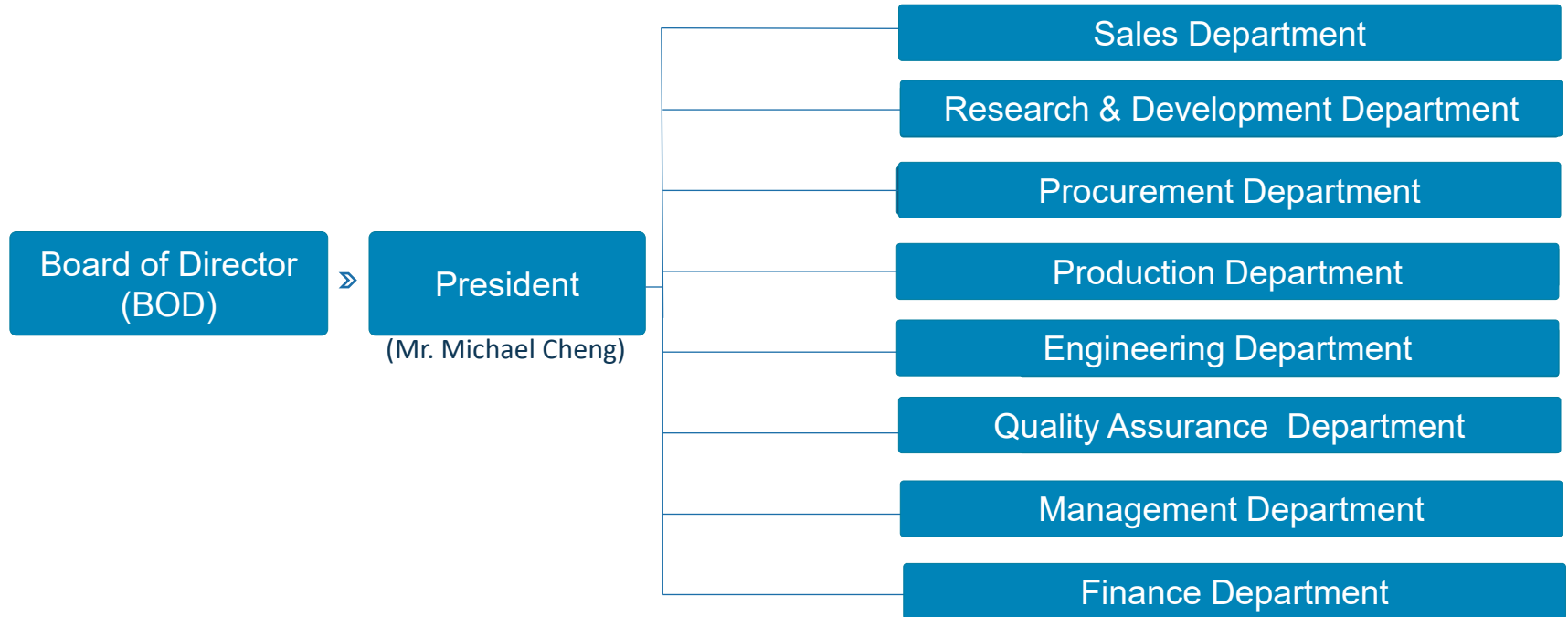
FACTORY AREA
Total area : 6,105 Square Meter
Building area : 7,068 Square Meter

MAIN PRODUCTS

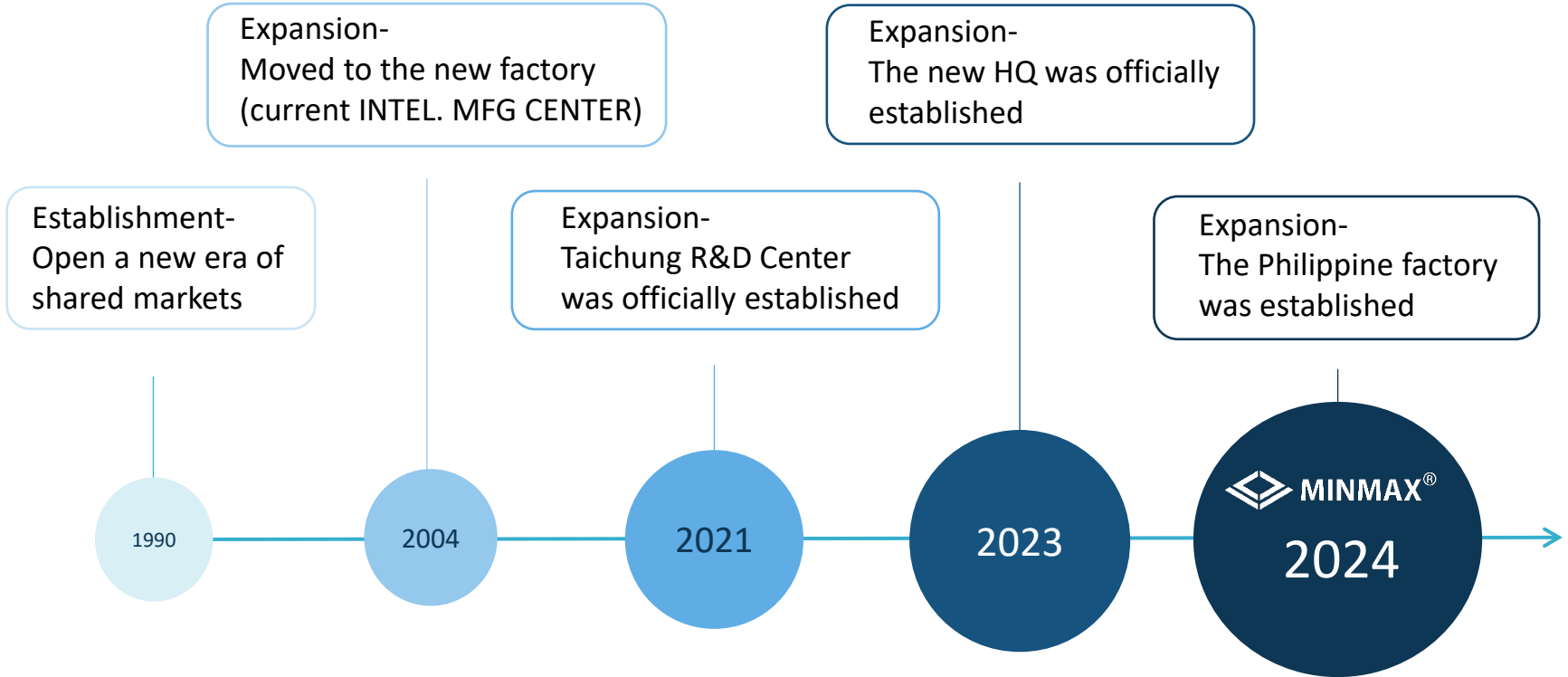
- Transformers
- SIP DC-DC Converters



BACKGROUND - ORGANIZATION



BACKGROUND - HISTORY



HIGHLIGHTS & ORIENTATION

⊕ Business Aspects

- Industry Ratio
- Success Customers
- Product Line Portfolio
- Products Orientation

⊕ Technical Aspects

- R&D and TAS Overview
- Research Equipment

⊕ Quality Assurance Aspects

- Overview
- Reliability Screening Standards
- Company & Safety & Environment Certifications



⊕ Mass Production & Manufacturing Aspects

- Auto. Manufacturing Equipment
- Yield Rate

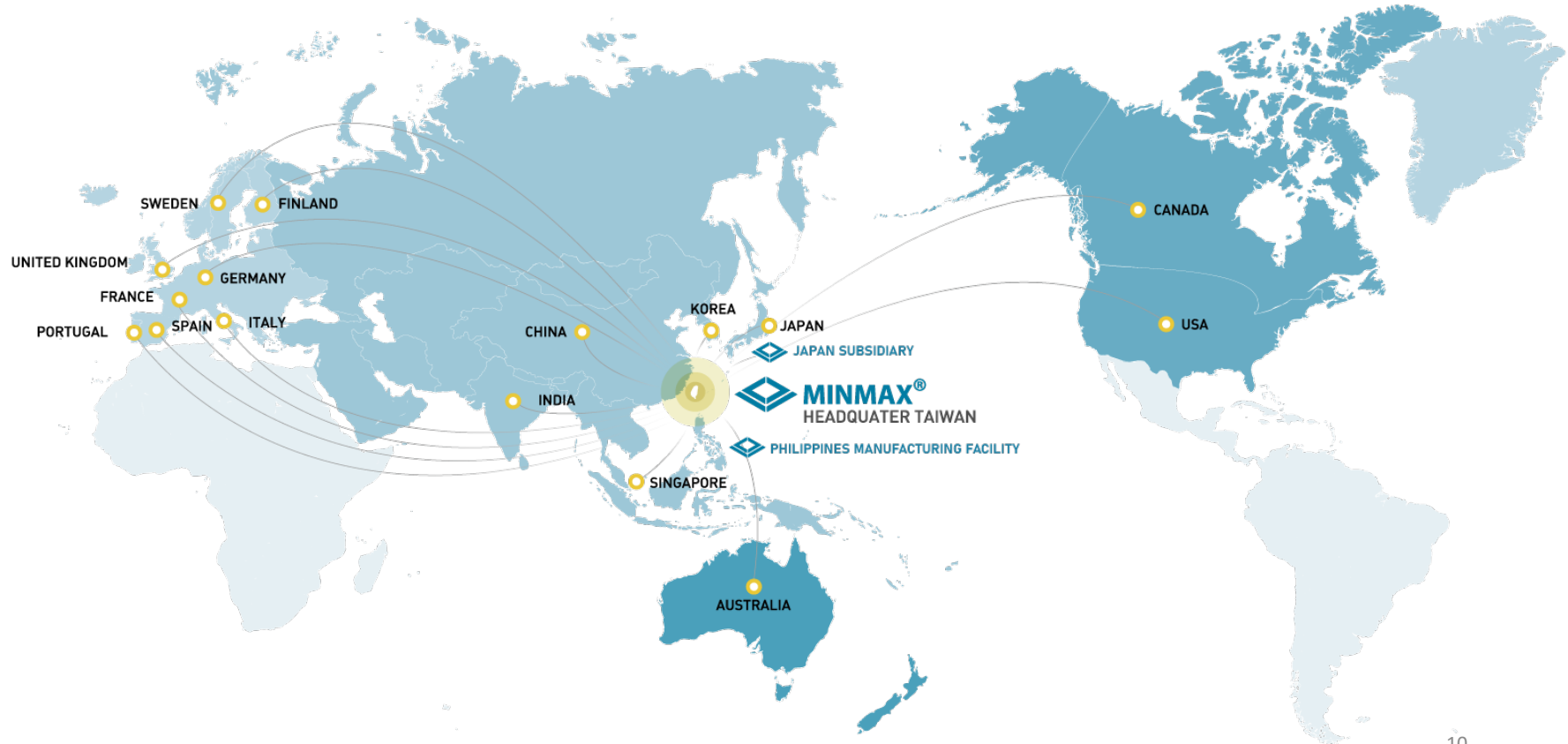
⊕ Materials Procurement Aspects

- Components Material Vendors
- Components Material Management

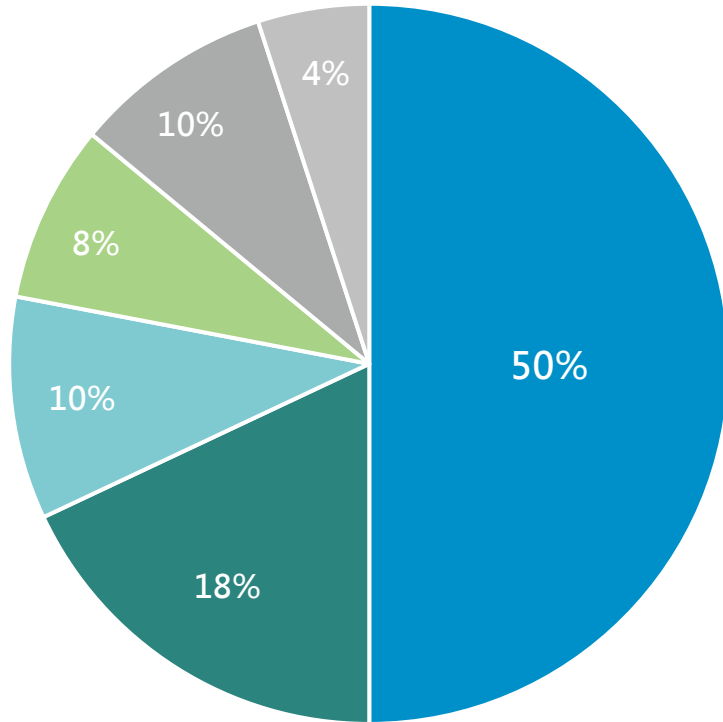
⊕ Management Aspects

- Company Expansion

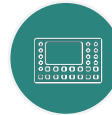
WORLDWIDE DISTRIBUTOR



BUSINESS ASPECTS – INDUSTRIAL RATIO



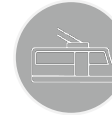
50% | Industrial Control



18% | Test & Measuring Instruments



10% | Medical & Healthcare



10% | Railway & Railroad



8% | Electricity & Renewable Energy



4% | Others

BUSINESS ASPECTS - SUCCESS CUSTOMERS



BUSINESS ASPECTS - PRODUCT LINE PORTFOLIO

Railway Applications



Industrial Applications



Medical Applications

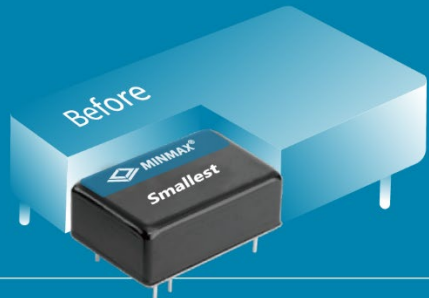


Renewable Energy Applications



BUSINESS ASPECTS - PRODUCT LINE PORTFOLIO

75% Size Smaller



- 400% ----- Power Density increased
- 75% ----- Smaller Module Size
- 75% ----- PCB Space Saving
- 79% ----- Weight Saving

GENERAL INDUSTRIAL

Power Solution
DC-DC Converters
AC-DC Power Supplies



SIP Package

DC-DC Converter, 1-10 Watt
416 models



DIP Package

DC-DC Converter, 1-15 Watt
461 models



SMD Package

DC-DC Converter, 1-6 Watt
200 models



1" x 1" Package

DC-DC Converter, 10-40 Watt
151 models



2" x 1" Package

DC-DC Converter, 40-80 Watt
76 models



Chassis & Din-Rail Mounting

DC-DC Converter, 6-60 Watt
60 models



Switching Regulator

0.5-1 Amp
15 models



Encapsulated Module

AC-DC Power Supplies, 3-60 Watt
57 models

BUSINESS ASPECTS - PRODUCT LINE PORTFOLIO

STRONGER



Reliability — Roughness — Durability

Railway Certified EN 50155
Fire Protection EN 45545-2

RAILWAY CERTIFIED

Power Solution
DC-DC Converters



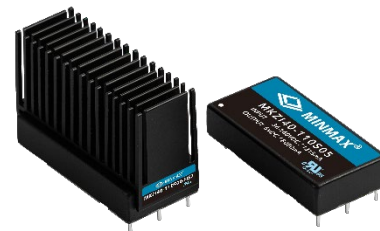

MINMAX®



DIP Package

DC-DC Converter, 3 Watt

15 model



2"x1" Package

DC-DC Converter, 10-40 Watt

43 models



Quarter Brick Package

DC-DC Converter, 50-150 Watt

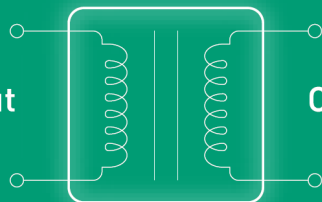
23 models

BUSINESS ASPECTS - PRODUCT LINE PORTFOLIO

MORE STABLE



Input



Output

5000 VAC I/O Isolation
Reinforced Insulation

8mm Creepage & Clearance
1000 Vrms Working Voltage

ULTRA-HIGH ISOLATION

Power Solution
DC-DC Converters



SIP Package

DC-DC Converter, 1-2 Watt

89 models



SMD Package

DC-DC Converter, 1 Watt

15 models



DIP Package

DC-DC Converter, 2-10 Watt

108 models



2"x1" Package

DC-DC Converter, 15-20 Watt

42 models



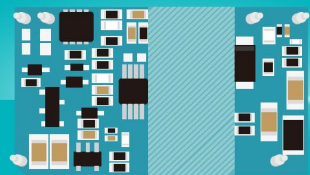
Chassis & DIN-Rail Mounting

DC-DC Converter, 6-60 Watt

45 models

BUSINESS ASPECTS - PRODUCT LINE PORTFOLIO

SAFER



Primary

Secondary

Medical Safety with 2xMOPP
IEC & ANSI/AAMI ES 60601-1

MEDICAL SAFETY

Power Solution
DC-DC Converters



IEC 60601-1

MINMAX®



SIP Package

DC-DC Converter, 1 Watt

21 models



SMD Package

DC-DC Converter, 1-2 Watt

30 models



DIP Package

DC-DC Converter, 2-10 Watt

87 models



2"x1" Package

DC-DC Converter, 15-20 Watt

42 models

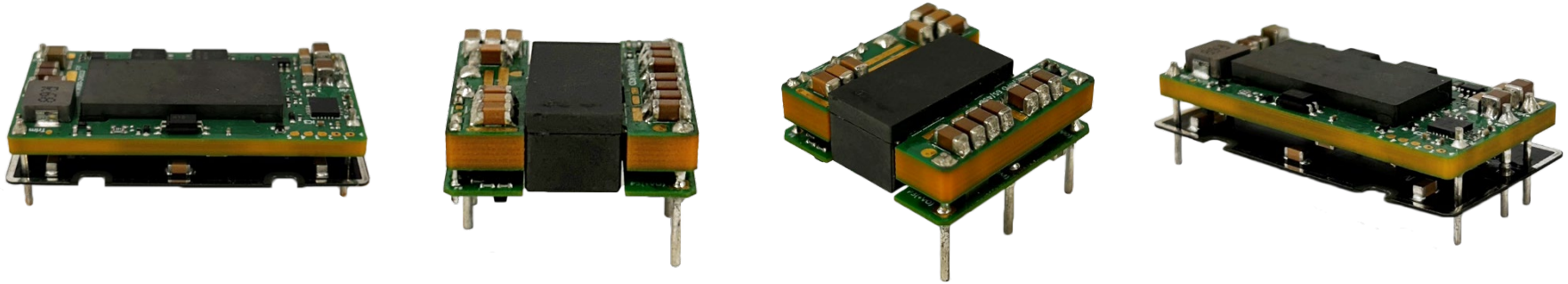


Encapsulated Module

AC-DC Power Supplies, 24-60 Watt

36 models

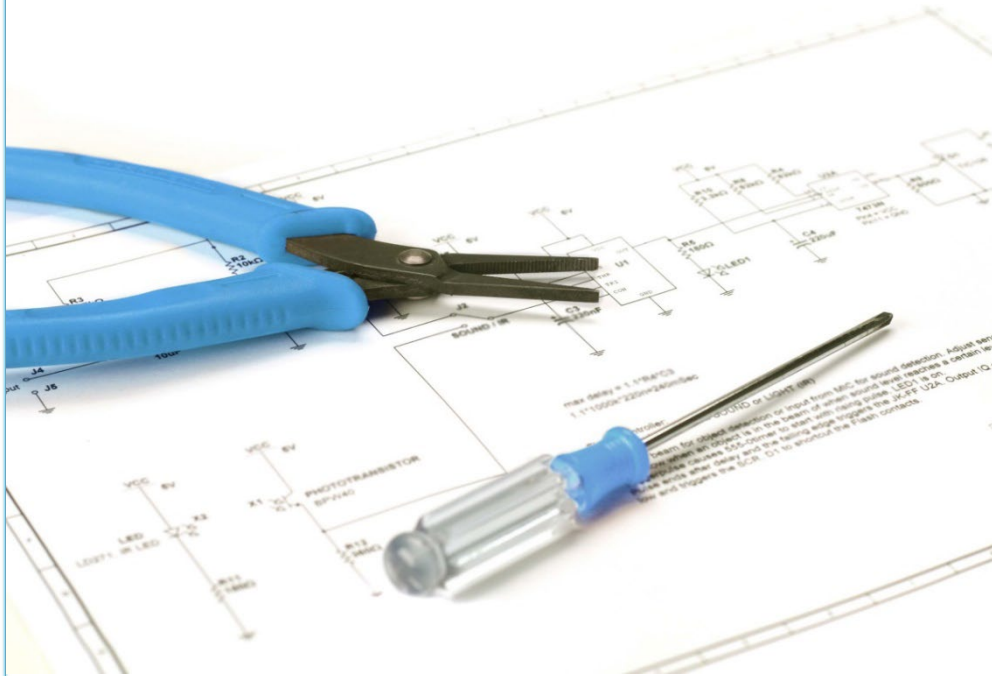
BUSINESS ASPECTS - PRODUCT DESIGN ORIENTATION



Products Orientation

- ⊕ New Generation of Smaller/Compact Size in Different Power Range
- ⊕ Strength and Complete the Industrial & Railway Certified Product Line Solutions
 - ⊕ Economic Products to Replace Exist/Old Products
 - ⊕ Reliability & Durability & Robustness

TECHNICAL ASPECTS - R&D AND TAS OVERVIEW



⊕ Own R&D Ability for High-Rel Specification Performance

- Multi-Location R&D Center across Tainan(HQ) / Taichung / Kaohsiung
- 60+ Engineers
- Multiple New Series Annually



⊕ Technical Applications Support

- Technical Applications Support Team
- Electronic & Thermal Engineering Orientation



⊕ Customization Services

- Economic Scale
- Target Cost Evaluation

TECHNICAL ASPECTS - R&D TEAM



R&D Department



Technical Support Team



Technical Discussion

TECHNICAL ASPECTS - R&D EQUIPMENT



Natural Convection & Constant Temperature Chamber

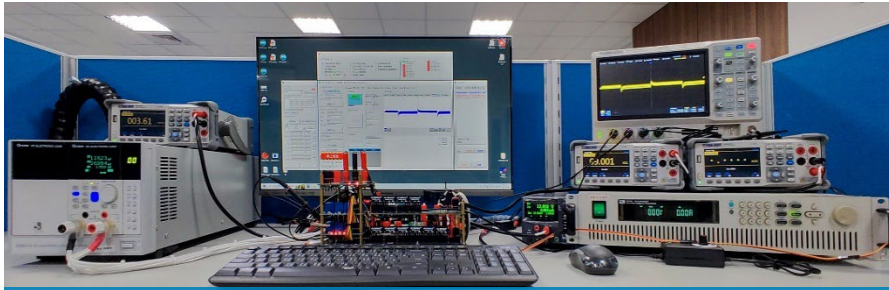


Constant Temperature and Humidity Machine



Vertical Closed Loop Wind Tunnel Machine

TECHNICAL ASPECTS - R&D EQUIPMENT



【In-house Technology】 Automatic Testing Equipment



【In-house Technology】
Automatic Testing Chamber Station



Oven



Thermal Shock Tester



Thermal Cycling Tests (TCT)
Machine

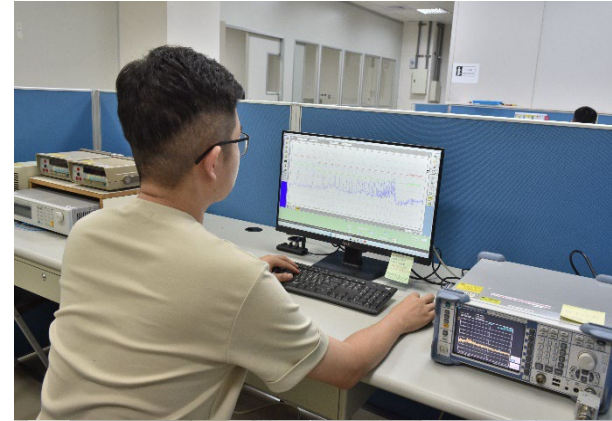
TECHNICAL ASPECTS - R&D EQUIPMENT



ESD Immunity Test Station



Radiated Emission Test Station

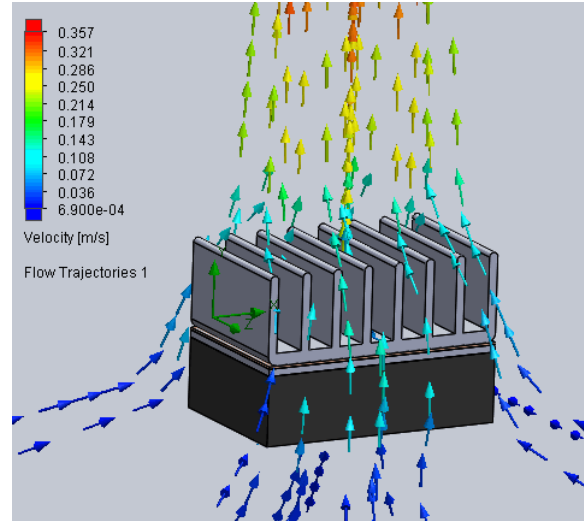
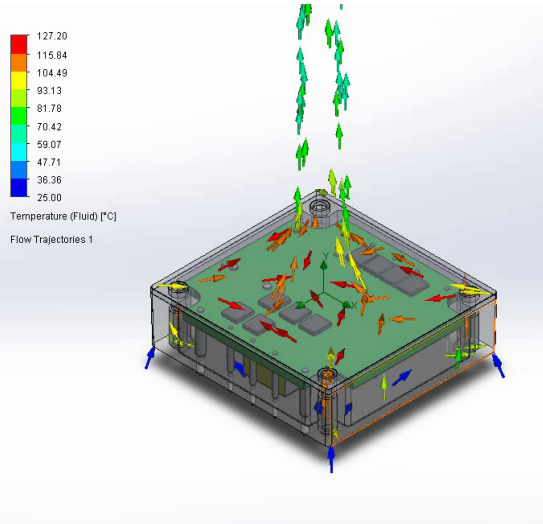


Conducted Emission Test Station

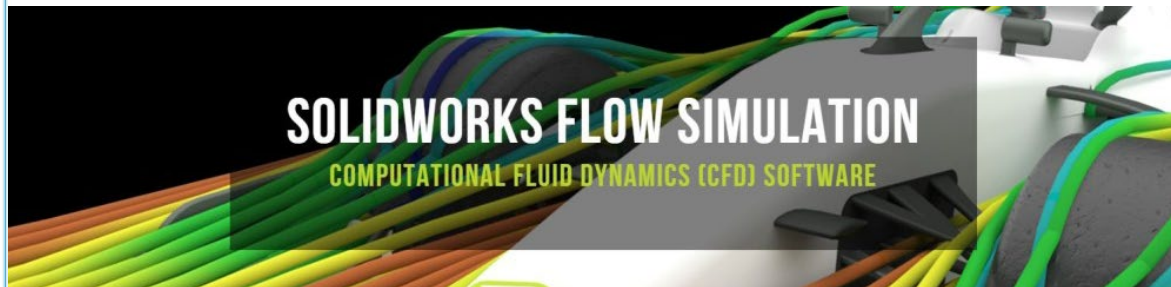


EFT & Surge Immunity Test Station

TECHNICAL ASPECTS - R&D EQUIPMENT



High Resolution IR Thermal Tester



MANUFACTURING - AUTO. MANUFACTURING EQUIPMENT

Auto. Surface Mount Technology Line



Pick-and-place Machine



MANUFACTURING - AUTO. MANUFACTURING EQUIPMENT

Auto. Optical Inspector (AOI)



Auto. Cutting Equipment



MANUFACTURING - AUTO. MANUFACTURING EQUIPMENT

Auto. Production Line



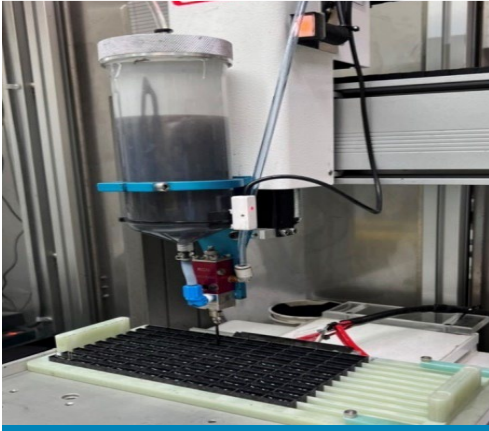
Auto. Production Line



【In-house Technology】 Auto. Production Line:
Pin Insertion → Soldering → Testing → Work stocker

MANUFACTURING - AUTO. MANUFACTURING EQUIPMENT

Auto. Potting / Pouring Equipment



I/O's HI-POT & IR Tester



【In-house Technology】

Auto. Positioning & Testing & Packaging Equipment



Laser Marking Equipment



MANUFACTURING - AUTO. BURN-IN EQUIPMENT

Auto. Burn-in Equipment



Auto. Burn-in Equipment



MASS PRODUCTION & MANUFACTURING ASPECTS - YIELD RATE

Finished Units  99.82%

Semi-finished Units  97.62%

Year : 2022

Production Quantity : 9,276,169 Pcs

Finished Units  99.83%

Semi-finished Units  98.07%

Year : 2023

Production Quantity : 5,950,960 Pcs

Finished Units  99.83%

Semi-finished Units  98.66%

Year : 2024

Production Quantity : 5,712,030 Pcs

YIELD RATE

QUALITY ASSURANCE ASPECTS - OVERVIEW



QUALITY ASSURANCE ASPECTS - RELIABILITY SCREENING STANDARDS

MINMAX Reliability Test	
Testing Characteristics	
New Product Reliability Test	
Burn-in	High Temperature Test (In Operation)
Highly Accelerated Life Test (HALT)	Vibration Test(Non-Operation)
Temperature Cycling Test (TCT)	Shock Test(Operation)
Temperature & Humidity Storage Cycling Test (Non-Operation)	ESD Test
Power and Temperature Cycling Test (PTCT) (In Operation)	Soldering Heat Test
Temperature, Humidity and Bias Test (THB) (In Operation)	RoHS
Low Temperature Test (In Operation)	

MINMAX Reliability Test	
Testing Characteristics	
On-going Reliability Test	
Temperature Cycling Test	Burn-in
Additional Test	
Drop Test	

QUALITY ASSURANCE ASPECTS - COMPANY & SAFETY & ENVIRONMENT CERTIFICATIONS



SAFETY & CERTIFICATIONS

- ⊕ UL/cUL/IEC/EN 62368-1(60950-1) Approved
- ⊕ Household Safety TUV/IEC/EN 60335-1 Approved
- ⊕ Railway Certified EN 50155(IEC 60571) Approved
- ⊕ Fire Protection Test EN 45545-2 Approved
- ⊕ Medical Safety IEC/EN 60601-1 & ANSI/AAMI ES 60601-1 3rd Approved
- ⊕ CE Marking
- ⊕ Protection Class II as per IEC/EN 60536



CORPORATE ISO CERTIFICATIONS

- ⊕ ISO 9001:2015 — Quality Management System
- ⊕ ISO 14001:2015 — Environmental Management System
- ⊕ ISO 14064-1:2018 — GHG Inventory
- ⊕ ISO 14067:2018 — Product Carbon Footprint (planned for 2027)
- ⊕ ISO 45001:2018 — Occupational Health & Safety



Management System (planned for 2026)

QUALITY ASSURANCE ASPECTS - QA EQUIPMENT



X-Ray Fluorescence Analyzer



Thermal Cycling Tests
(TCT) Machine



Multi-sensor Measurement System

MATERIALS PROCUREMENT ASPECTS - COMPONENTS MATERIAL VENDORS

Components Material Management

- ⊕ Components Material Storage
- ⊕ Long-term & Strategic Relationship with Materials Vendors
- ⊕ Willing to Place Long-term Materials Purchase Orders

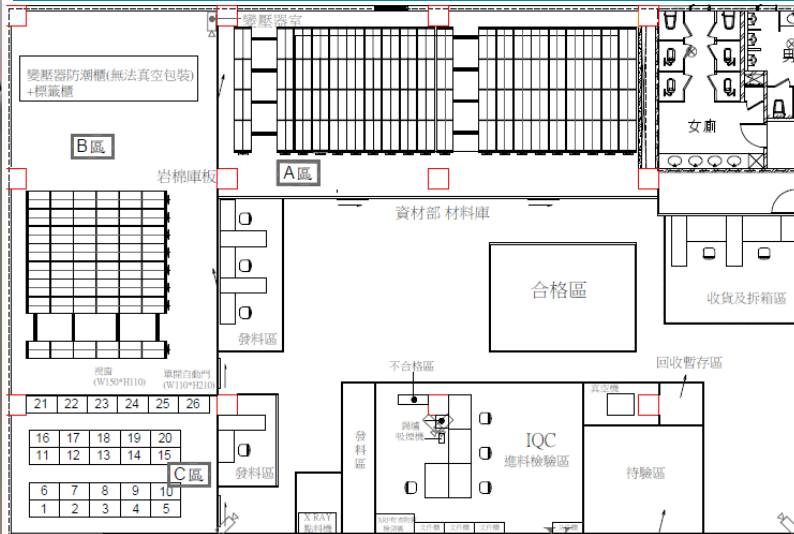
Components Material Vendors

- ⊕ ON Semi → PWM IC, MOSFET
- ⊕ VISHAY → MOSFET, Diode
- ⊕ TI → PWM IC, Gate Driver
- ⊕ SHARP → Photo-coupler
- ⊕ TDK → Capacitor, Inductor
- ⊕ Murata → Capacitor, Inductor
- ⊕ ROHM → MOSFET, Transistor, Diode
- ⊕ Infineon → MOSFET
- ⊕ Nexperia → Transistor, Diode

onsemi



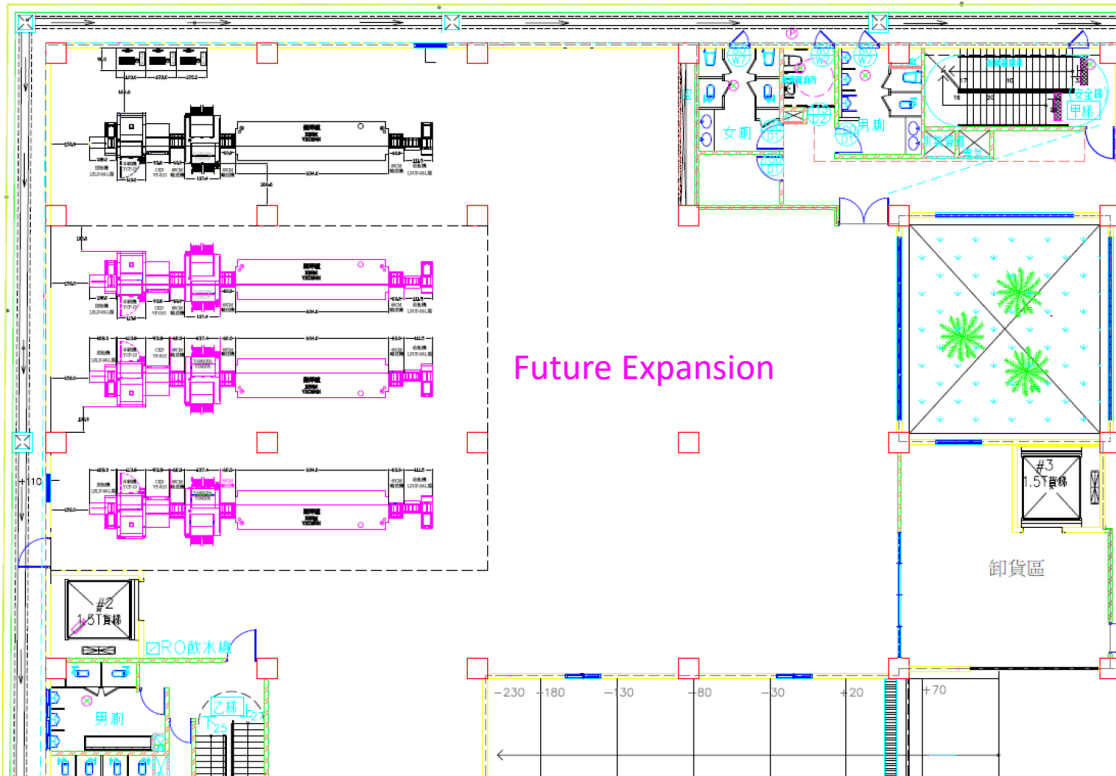
COMPONENTS MANAGEMENT – TEMPERATURE & HUMIDITY CONTROL



THANK YOU

MANAGEMENT ASPECTS - COMPANY EXPANSION (Additional)

Mass Production Capacity Expansion (Own High-end SMT Production Line Established)



⊕ Solder Paste Printer

- Auto. Solder Paste Printing
- Ensure High Solder Paste Printing Quality
- Famous Brand from YAMAHA

⊕ Solder Paste Inspector

- Auto. Solder Paste Inspection
- Ensure High Solder Paste Printing Quality
- Famous Brand from CKD

⊕ Pack & Place Mounting Machine

- 120 Fits for High Quantity Surface Mount Devices
- High Speed and High Precision of Mounting & Delivering
- Famous Brand from YAMAHA

⊕ Reflow Machine

- Heating by 10 Sections
- Cooling by 3 Sections
- Decrease Temperature Stress on Components
- Famous Brand from REHM

QUALITY ASSURANCE ASPECTS - RELIABILITY SCREENING STANDARDS (ADDITIONAL)

Reliability Screening - Reliability Screening Standard

MINMAX Reliability Test		
Testing Characteristics	Testing Condition	
New Product Reliability Test		
Burn-in	Input Line	Nom. Line
	Output Load	Full Load
	Temperature	Room Temperature
	Duration	1032 HRs
Highly Accelerated Life Test (HALT)	Thermal Step Stress Test	
	Rapid Thermal Stress Test	
	Vibration Step Stress Test	
	Combined Environmental Stress Test	
Temperature Shock Cycling Test (TSCT)	Temperature Change	-40°C ~ +125°C
	Steady State Duration	30min
	Ramp Rate	20°C /min
	Number of Cycles	100+

QUALITY ASSURANCE ASPECTS - RELIABILITY SCREENING STANDARDS (ADDITIONAL)

Testing Characteristics	Testing Condition	
New Product Reliability Test		
Temperature & Humidity Storage Cycling Test (Non-Operation)	Temperature Change	Low to High Temperature
	Ramp Rate	1-3°C/min
	Relative Humidity	+95% RH.
	Steady State Duration	1 HR
	Number of Cycles	5 Cycles
Power and Temperature Cycling Test (PTCT) (In Operation)	Input Line Change	Low/Nom./High Line
	Output Load Change	No or Min./Full Load
	Temperature Change	Low to High Temperature
	Relative Humidity	+95% RH.
	Duration for ON/OFF	3 Sec
	Number of Cycles	300 Cycles

QUALITY ASSURANCE ASPECTS - RELIABILITY SCREENING STANDARDS (ADDITIONAL)

Testing Characteristics		Testing Condition
New Product Reliability Test		
Temperature, Humidity and Bias Test (THB) (In Operation)	Input Line	High Line
	Output Load	No or Min. Load
	Temperature	+85°C
	Relative Humidity	+85% RH.
	Operating Duration	1000 HRs
Low Temperature Test (In Operation)	Input Line	Nom. Line
	Output Load	Full Load
	Temperature	Low Temperature
	Duration	Achieve Thermal Equilibrium
High Temperature Test (In Operation)	Input Line	Nom. Line
	Output Load	Full Load
	Temperature	High Temperature
	Duration	Achieve Thermal Equilibrium

QUALITY ASSURANCE ASPECTS - RELIABILITY SCREENING STANDARDS (ADDITIONAL)

Testing Characteristics		Testing Condition
New Product Reliability Test		
Vibration Test(Non-Operation)	Waveform	Random
	P.S.D Level	10 Hz · 1.04×10 ⁻³ g ² /Hz 30 to 200Hz · 20.8×10 ⁻³ g ² /Hz 500 Hz · 2.08×10 ⁻³ g ² /Hz
	Duration	30 minutes
	Directions	X, Y and Z
Shock Test(Operation)	Waveform	Half-sine
	Acceleration	30 g
	Duration	11 ms
	Number of Shocks	3 shocks for each ±axis
ESD Test	Contact Discharge	±4KV
	Air Discharge	±2/4/8KV
Soldering Heat Test	MIL-STD-202F Method 210E	
RoHS	RoHS Directive 2011/65/EU	

QUALITY ASSURANCE ASPECTS - RELIABILITY SCREENING STANDARDS (ADDITIONAL)

Testing Characteristics		Testing Condition
On-going Reliability Test		
Temperature Cycling Test	Input Line	Nom. Line
	Output Load	Full Load
	Temperature Change	Low to High Temperature
	Ramp Rate	60min
	Steady State Duration	120min
	Number of Cycles	6 Cycles
Periodical Burn-in	Input Line	Nom. Line
	Output Load	Full Load
	Temperature	Room Temperature
	Duration	72 HRs
	Period	Every Month for Random Series
Additional Test		
Drop Test	Drop Height	66 cm
	Drop Sequence	1 corner, 3 edges and 6 faces