Innovation to Power Your Vision

Die Solutions for Space Constrained Applications

Central™ Semiconductor
An AEM Company

AEM®

Die Solutions for Space Constrained Hybrid Applications

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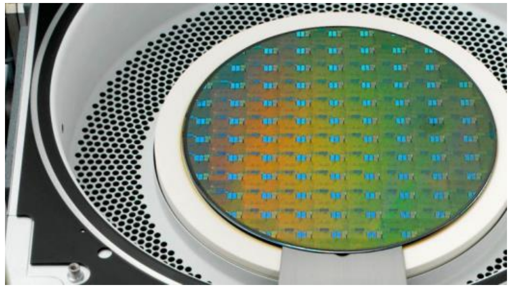
Growing Applications

End-Market Focus

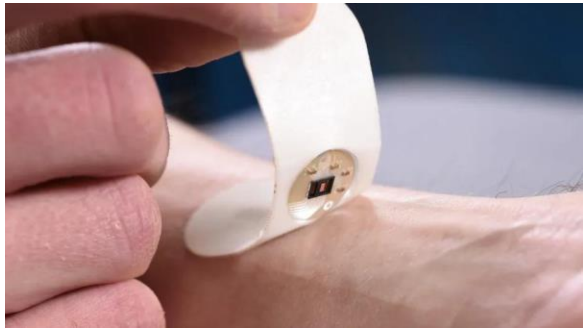
A&D … Largest number of customers in this segment

Industrial … Highest volume bare die customer



Medical … Implantable and external diagnostic applications

New Space … Custom die development is prevalent in this segment (LEO/MEO satellite)



Value Proposition

Care About …

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- **U.S. Based Supplier** … Years (legacy) serving customers that are sensitive to COO
- **Foundry Partners** … Wafers originate at “friendly” fab partners
- **Inventory** … 100% of die bank inventory held within the U.S.
- **Traceability** … 100% traceability to individual wafer level … VMI / consignment options
- **Value-add** … All value-added up-screening performed at vertically integrated U.S. facility
- **Analysis** … 100% of wafer QA/FA performed at vertically integrated U.S. facility
- **Portfolio** … Broad portfolio of products offered in wafer/die form
- **Packaging** … Numerous delivery options available: chip tray, wafer on membrane, tape and reel
- **Selection** … Ease of device selection

Bare Die Solutions by Design … not as an afterthought

PRODUCTS

Discrete Semiconductors

Broad bare die offering follows packaged portfolio

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① Diodes

- Fast Switching
- Schottky
- Low and Ultra Low Leakage
- Zener, and TC Zener
- Current Limiting
- Transient Voltage Suppressors (TVS)

② Transistors (Small signal)

- Low VCE(SAT)
- General Purpose Amplifier/Switch
- High Current/High Voltage
- Low Noise
- Darlington
- RF Oscillator

③ Small Signal MOSFETs/JFETs

- Single and Dual N-Channel & P-Channel Enhancement-mode
- MOSFET/Rectifier combinations

④ Rectifiers

- Fast, SuperFast, UltraFast, and HyperFast Recovery
- Schottky
- Bridge
- General Purpose

⑤ Bipolar Power Transistors

- Low VCE(SAT)
- General Purpose Amplifier/Switch
- High/ Extremely High Voltage
- Darlington

⑥ Wide Bandgap

- GaN FETs
- SiC MOSFETs
- Silicon Carbide (Bare Die available)
- GaAs Diodes

Aero

Medical

Industrial

TelCo

Computing

Broad Portfolio

Products and Services

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- **Standard Die**

standard bare die devices

Central Semiconductor Corp. has been in the business of manufacturing through-hole discrete semiconductors since 1974. In 1996, Central entered the hybrid market to fill the void left after the departure of several manufacturers from the bare die market.

devices include:

- diodes
- rectifiers
- transistors
- TVS diodes & ESD protection diodes
- MOSFETs/JFETs
- thyristors

packing options:

- fully probed wafers (rejects inked)
- waffle tray packs (100% accepted die)
- full wafer sawn on plastic ring (rejects inked)

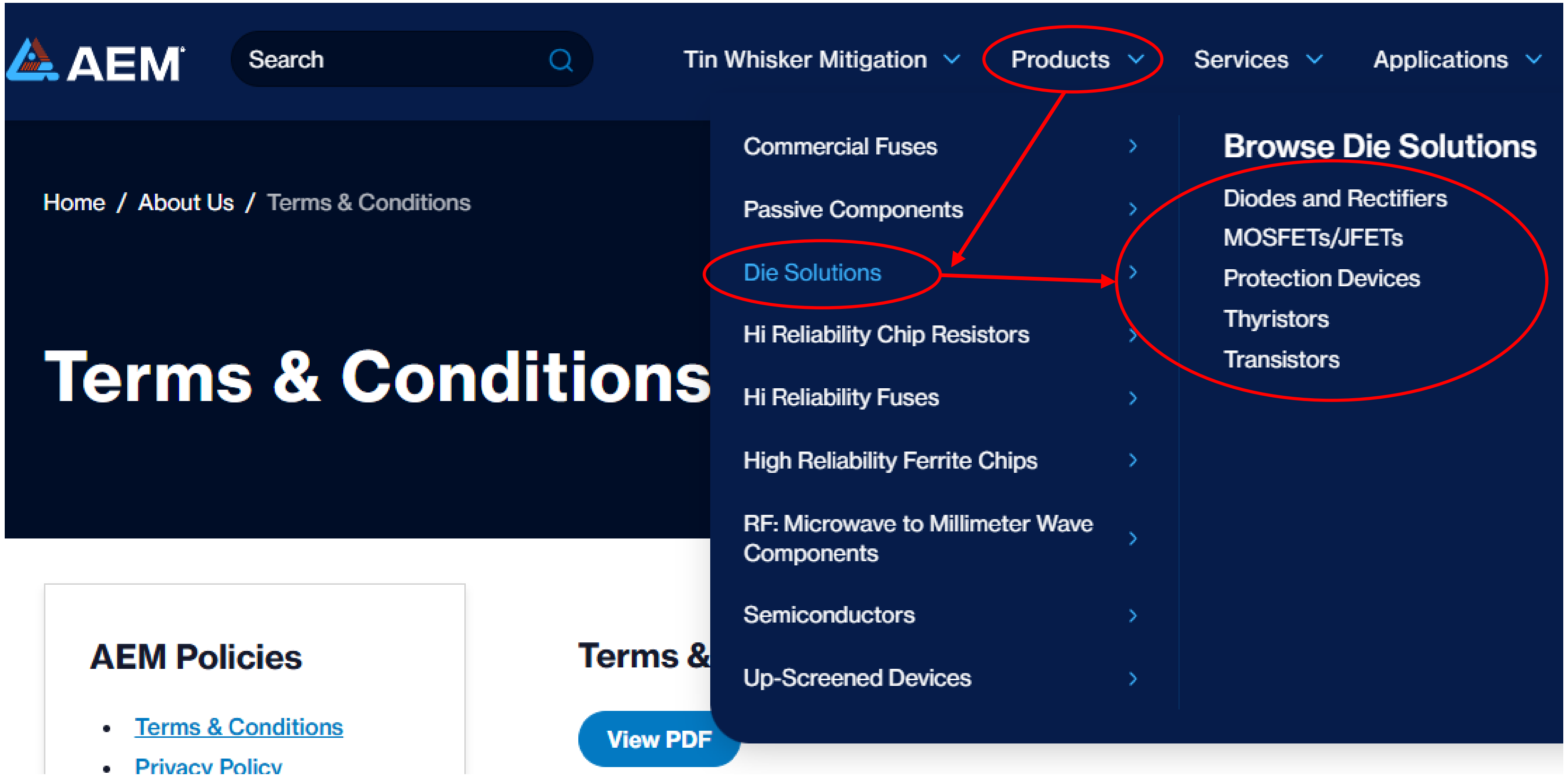
processes & facilities:

- 100% of die is probed, rejects inked
- all die inspected in accordance to MIL-STD-750 Method 2073
- probing performed in Central's Class 1000 clean room
- majority of Central's die inventory is held in the U.S. at Hauppauge, NY facility

Broad Portfolio

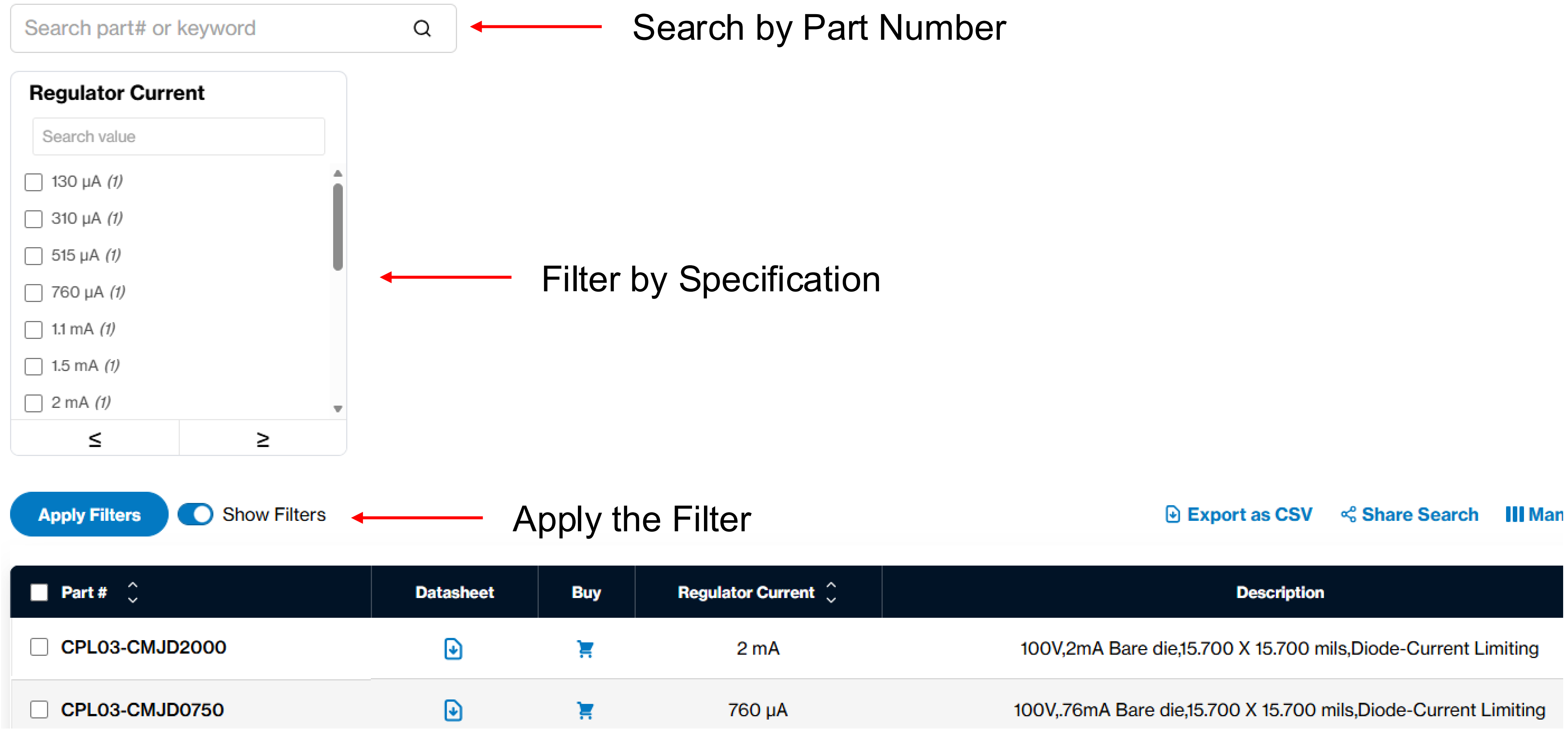
Products and Services

Search by Die Solutions



Broad Portfolio

Products and Services



Search part# or keyword

Search by Part Number

Regulator Current

Search value

- ☐ 130 µA *(1)*
- ☐ 310 µA *(1)*
- ☐ 515 µA *(1)*
- ☐ 760 µA *(1)*
- ☐ 1.1 mA *(1)*
- ☐ 1.5 mA *(1)*
- ☐ 2 mA *(1)*

≤ ≥

Filter by Specification

Apply Filters Show Filters

Apply the Filter

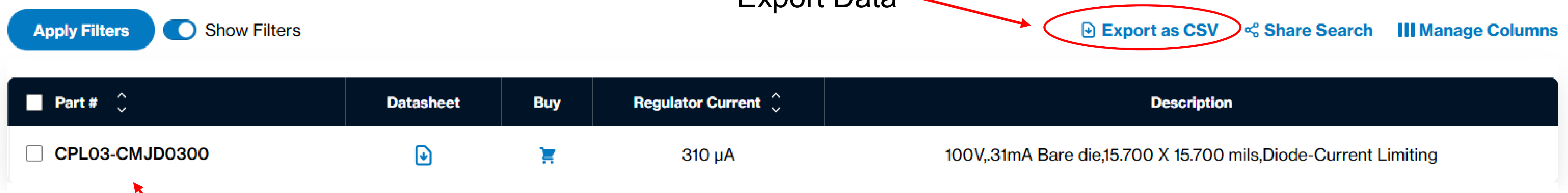
Export as CSV Share Search Man

☐ Part #	Datasheet	Buy	Regulator Current	Description
☐ **CPL03-CMJD2000**			2 mA	100V,2mA Bare die,15.700 X 15.700 mils,Diode-Current Limiting
☐ **CPL03-CMJD0750**			760 µA	100V,.76mA Bare die,15.700 X 15.700 mils,Diode-Current Limiting

Broad Portfolio

Products and Services

Export Data



☐ Part #	Datasheet	Buy	Regulator Current	Description
☐ CPL03-CMJD0300			310 µA	100V,.31mA Bare die,15.700 X 15.700 mils,Diode-Current Limiting

Purchase Online

Access Datasheet

Select Device for more detail

Broad Portfolio

Products and Services

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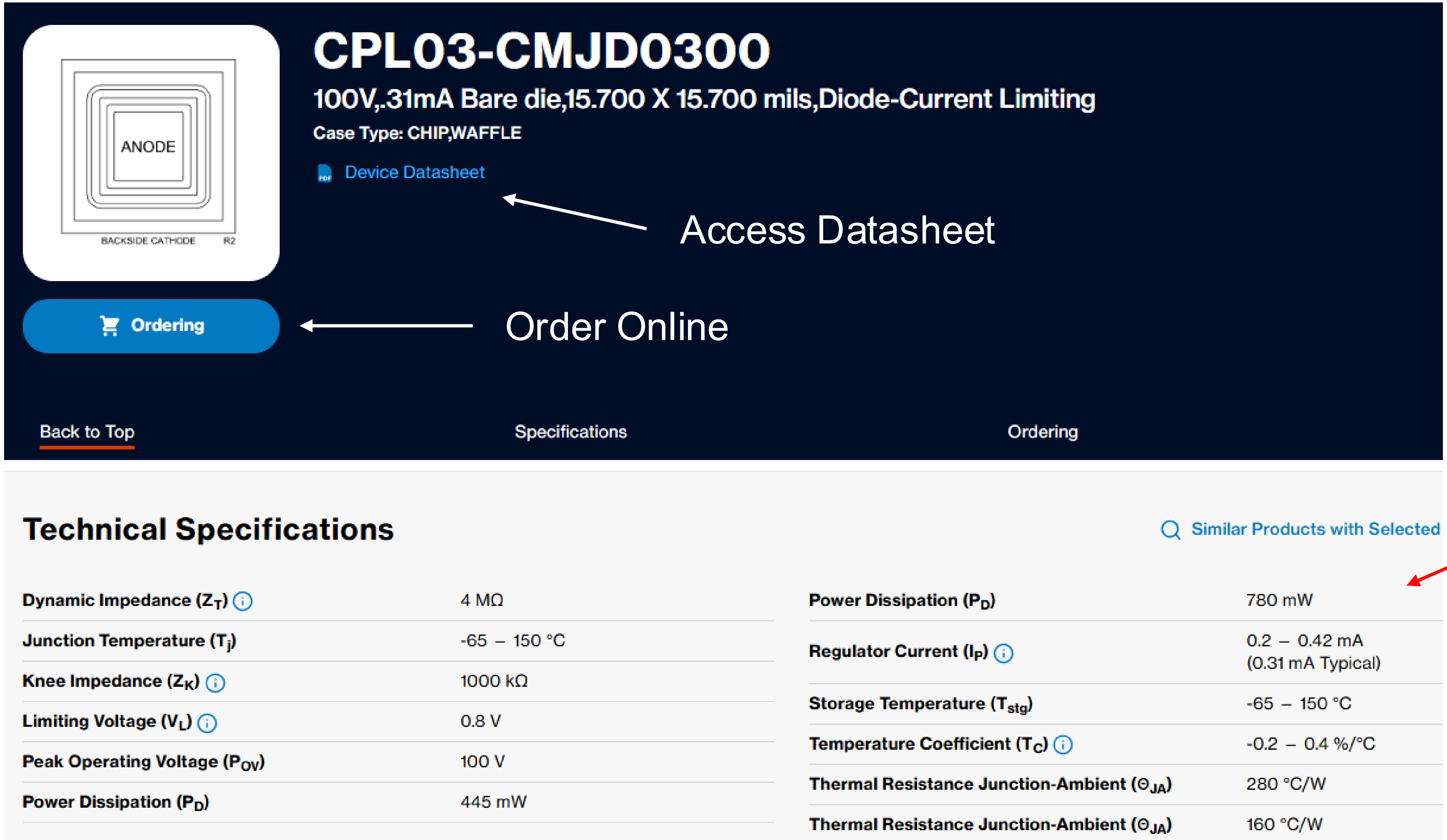

CPL03-CMJD0300

100V,.31mA Bare die,15.700 X 15.700 mils,Diode-Current Limiting

Case Type: CHIP,WAFFLE

Device Datasheet

Access Datasheet

Order Online

Technical Specifications

Similar Products with Selected

Dynamic Impedance (Z_T)	4 MΩ	**Power Dissipation (P_D)**	780 mW
Junction Temperature (T_J)	-65 – 150 °C	**Regulator Current (I_P)**	0.2 – 0.42 mA (0.31 mA Typical)
Knee Impedance (Z_K)	1000 kΩ	**Storage Temperature (T_{stg})**	-65 – 150 °C
Limiting Voltage (V_L)	0.8 V	**Temperature Coefficient (T_C)**	-0.2 – 0.4 %/°C
Peak Operating Voltage (P_{OV})	100 V	**Thermal Resistance Junction-Ambient (Θ_{JA})**	280 °C/W
Power Dissipation (P_D)	445 mW	**Thermal Resistance Junction-Ambient (Θ_{JA})**	160 °C/W

Detailed Specs

Up-Screening

Products and Services

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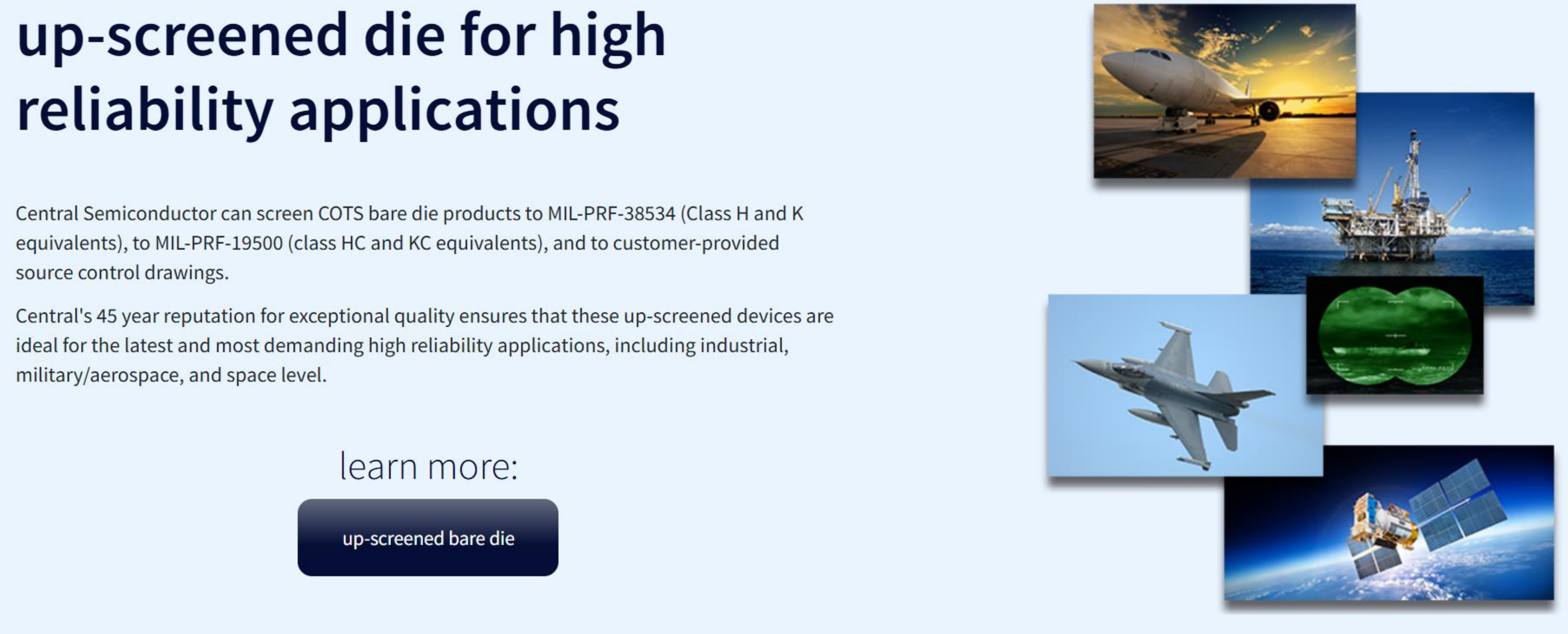
- **Standard Die …**
- **Up-Screen Equivalent Die … product with value-added testing and data**



up-screened die for high reliability applications

Central Semiconductor can screen COTS bare die products to MIL-PRF-38534 (Class H and K equivalents), to MIL-PRF-19500 (class HC and KC equivalents), and to customer-provided source control drawings.

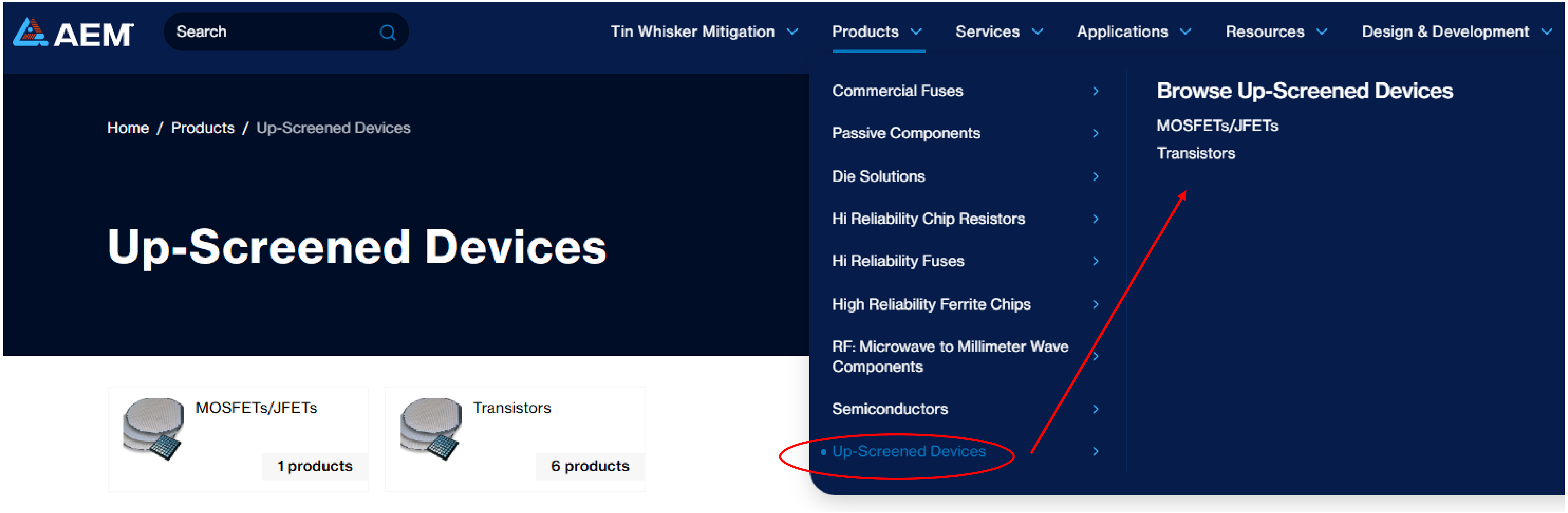
Central's 45 year reputation for exceptional quality ensures that these up-screened devices are ideal for the latest and most demanding high reliability applications, including industrial, military/aerospace, and space level.

learn more:

Up-Screening

Products and Services

Up-Screen Die



Home / Products / Up-Screened Devices

Up-Screened Devices

MOSFETs/JFETs

1 products

Transistors

6 products

Browse Up-Screened Devices

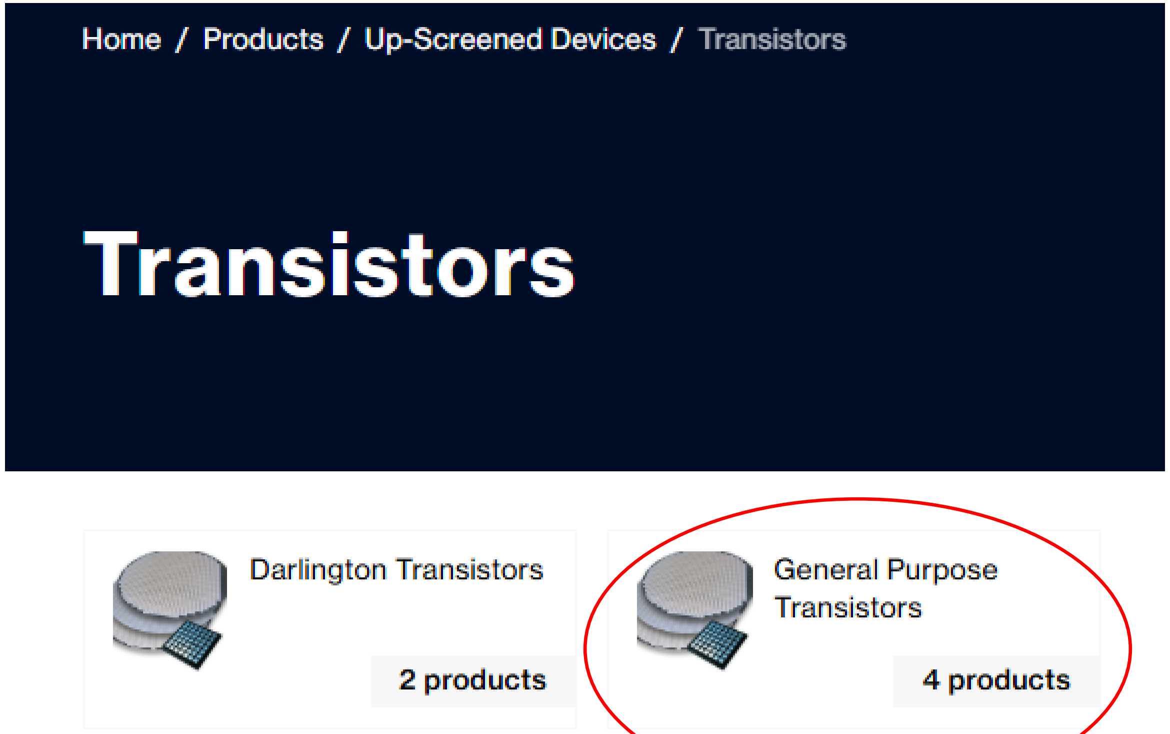
MOSFETs/JFETs

Transistors

Up-Screening

Products and Services

Up-Screen Die



Home / Products / Up-Screened Devices / Transistors

Transistors

Darlington Transistors

2 products

General Purpose Transistors

4 products

Up-Screening

Products and Services

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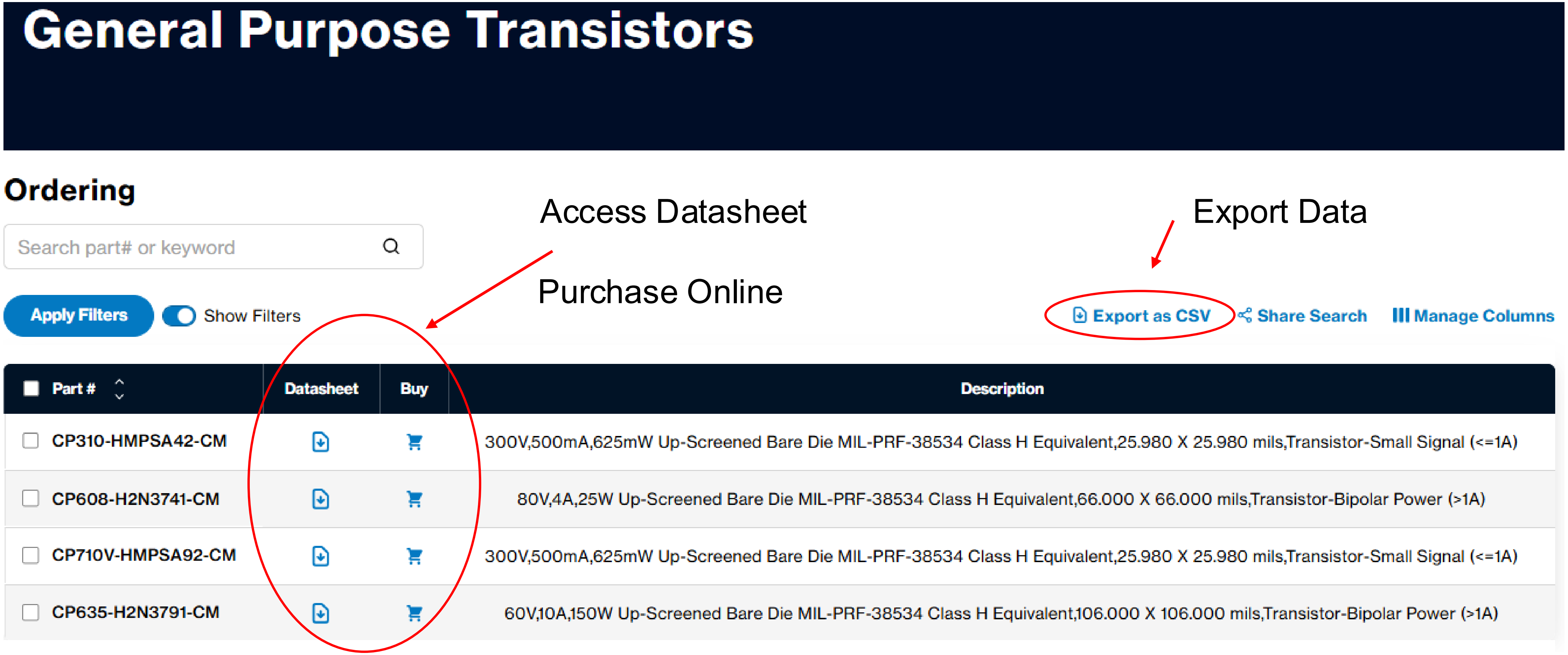
Up-Screen Die



General Purpose Transistors

Ordering

Search part# or keyword

Apply Filters Show Filters

Export as CSV Share Search Manage Columns

☐ Part #	Datasheet	Buy	Description
☐ CP310-HMPSA42-CM	📄	🛒	300V,500mA,625mW Up-Screened Bare Die MIL-PRF-38534 Class H Equivalent,25.980 X 25.980 mils,Transistor-Small Signal (<=1A)
☐ CP608-H2N3741-CM	📄	🛒	80V,4A,25W Up-Screened Bare Die MIL-PRF-38534 Class H Equivalent,66.000 X 66.000 mils,Transistor-Bipolar Power (>1A)
☐ CP710V-HMPSA92-CM	📄	🛒	300V,500mA,625mW Up-Screened Bare Die MIL-PRF-38534 Class H Equivalent,25.980 X 25.980 mils,Transistor-Small Signal (<=1A)
☐ CP635-H2N3791-CM	📄	🛒	60V,10A,150W Up-Screened Bare Die MIL-PRF-38534 Class H Equivalent,106.000 X 106.000 mils,Transistor-Bipolar Power (>1A)

Access Datasheet

Purchase Online

Export Data

Up-Screening

Products and Services

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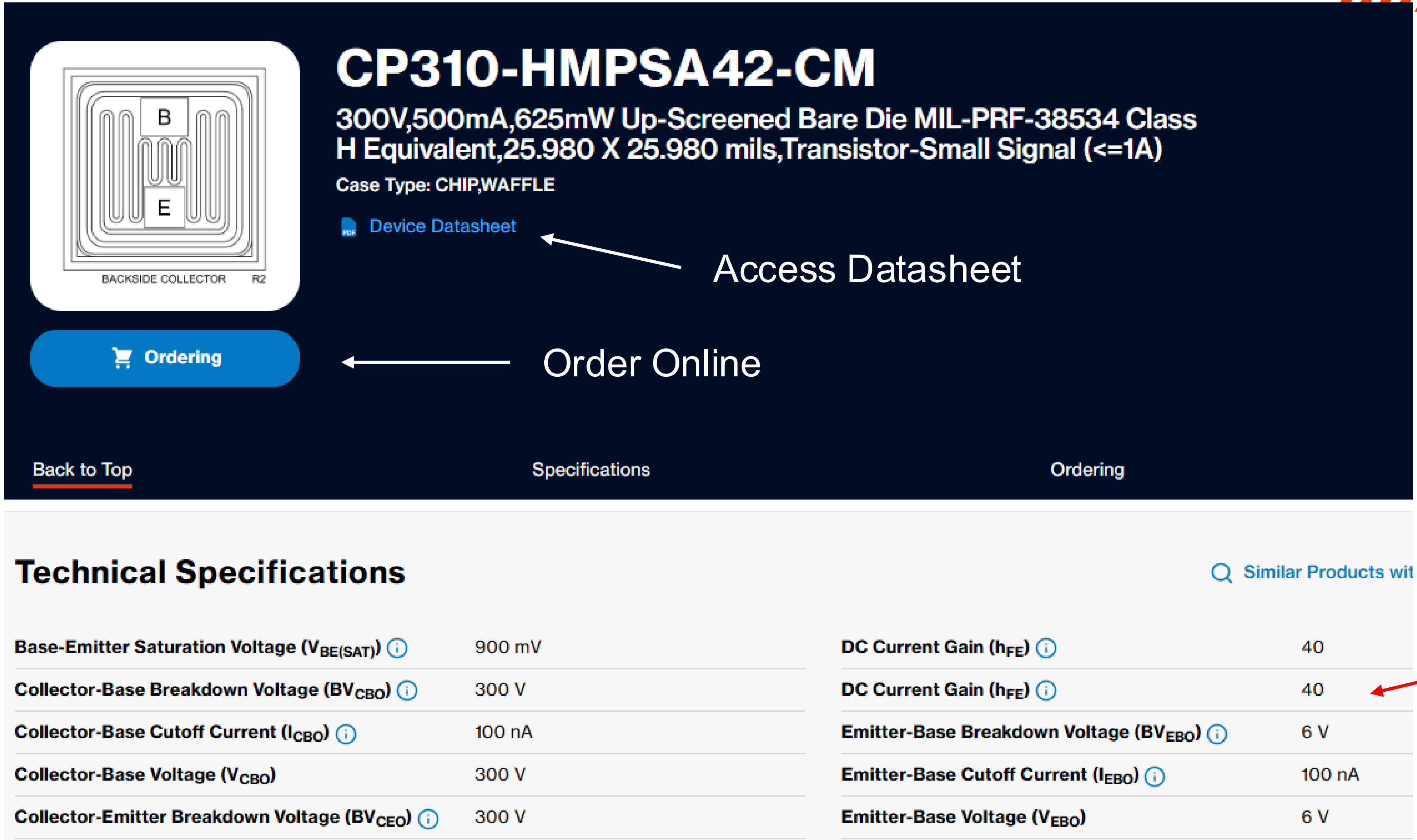
Up-Screen Die



CP310-HMPSA42-CM

300V,500mA,625mW Up-Screened Bare Die MIL-PRF-38534 Class H Equivalent,25.980 X 25.980 mils,Transistor-Small Signal (<=1A)

Case Type: CHIP,WAFFLE

Device Datasheet

Access Datasheet

Order Online

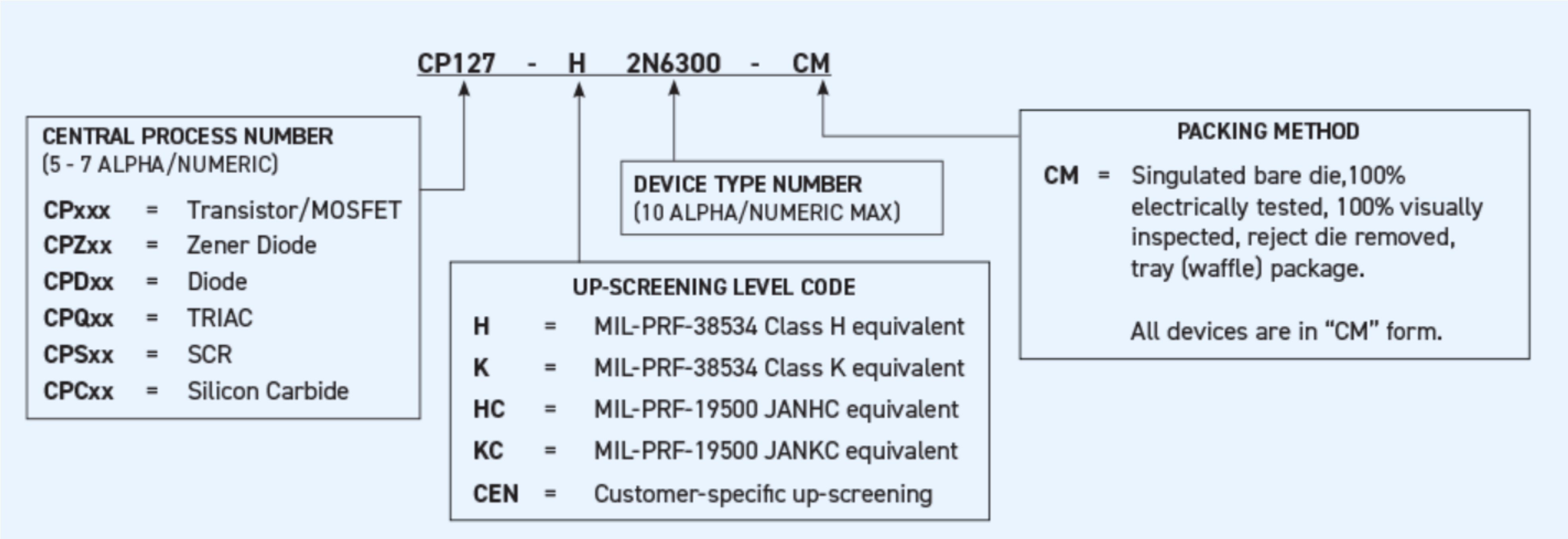
Technical Specifications

Base-Emitter Saturation Voltage ($V_{BE(SAT)}$)	900 mV	DC Current Gain (h_{FE})	40
Collector-Base Breakdown Voltage (BV_{CBO})	300 V	DC Current Gain (h_{FE})	40
Collector-Base Cutoff Current (I_{CBO})	100 nA	Emitter-Base Breakdown Voltage (BV_{EBO})	6 V
Collector-Base Voltage (V_{CBO})	300 V	Emitter-Base Cutoff Current (I_{EBO})	100 nA
Collector-Emitter Breakdown Voltage (BV_{CEO})	300 V	Emitter-Base Voltage (V_{EBO})	6 V

Detailed Specs

Up-Screening

- **Standard Die …**
- **Up-Screen Equivalent Die …**
  - **MIL-PRF-38534** (Class H and K) and **MIL-PRF-19500** (class HC and KC) … CPD48V-KCBAT54-CM
  - Customer SCD … CPD83V-HCEN2028-CM



CP127 - H 2N6300 - CM

CENTRAL PROCESS NUMBER
(5 - 7 ALPHA/NUMERIC)

CPxxx = Transistor/MOSFET
CPZxx = Zener Diode
CPDxx = Diode
CPQxx = TRIAC
CPSxx = SCR
CPCxx = Silicon Carbide

DEVICE TYPE NUMBER
(10 ALPHA/NUMERIC MAX)

UP-SCREENING LEVEL CODE

H = MIL-PRF-38534 Class H equivalent
K = MIL-PRF-38534 Class K equivalent
HC = MIL-PRF-19500 JANHC equivalent
KC = MIL-PRF-19500 JANKC equivalent
CEN = Customer-specific up-screening

PACKING METHOD

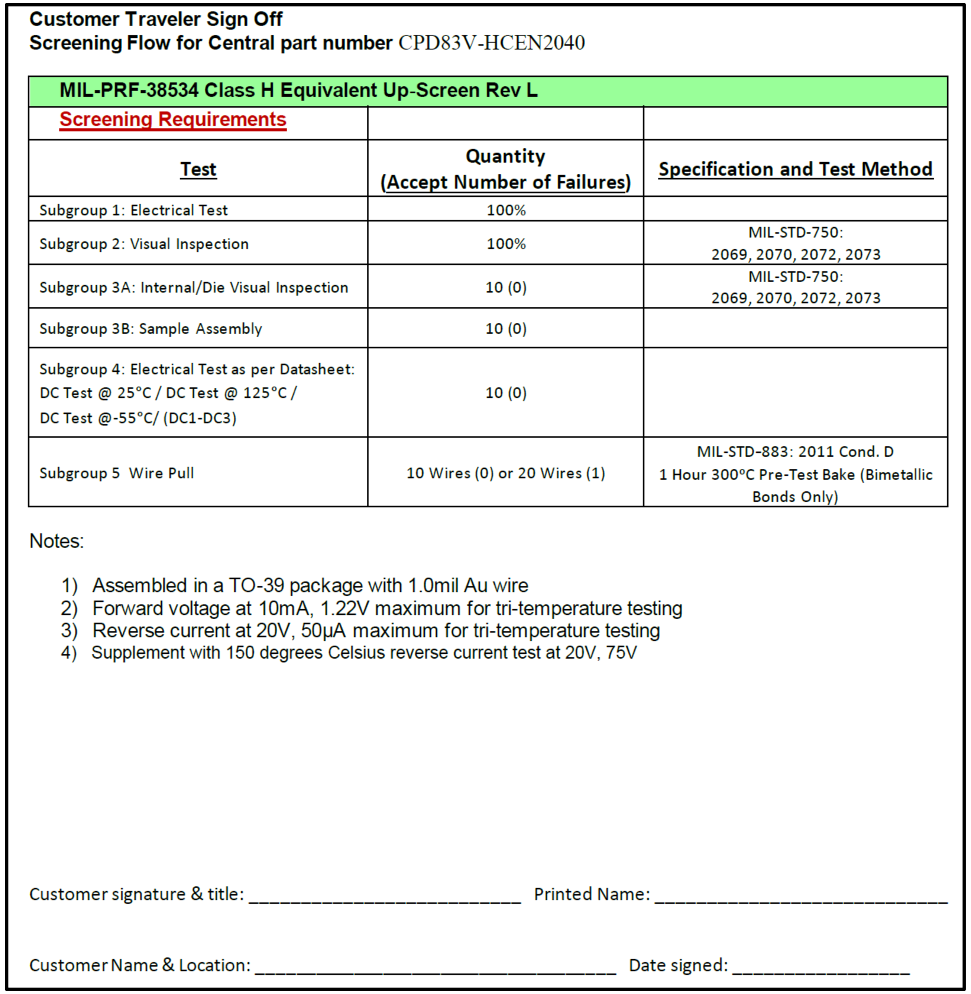
CM = Singulated bare die, 100% electrically tested, 100% visually inspected, reject die removed, tray (waffle) package.

All devices are in "CM" form.

Up-Screening

Customer Collaboration

MIL-PRF or customer specific SCD will entail a test traveler that the customer signs-off.



Customer Traveler Sign Off
Screening Flow for Central part number CPD83V-HCEN2040

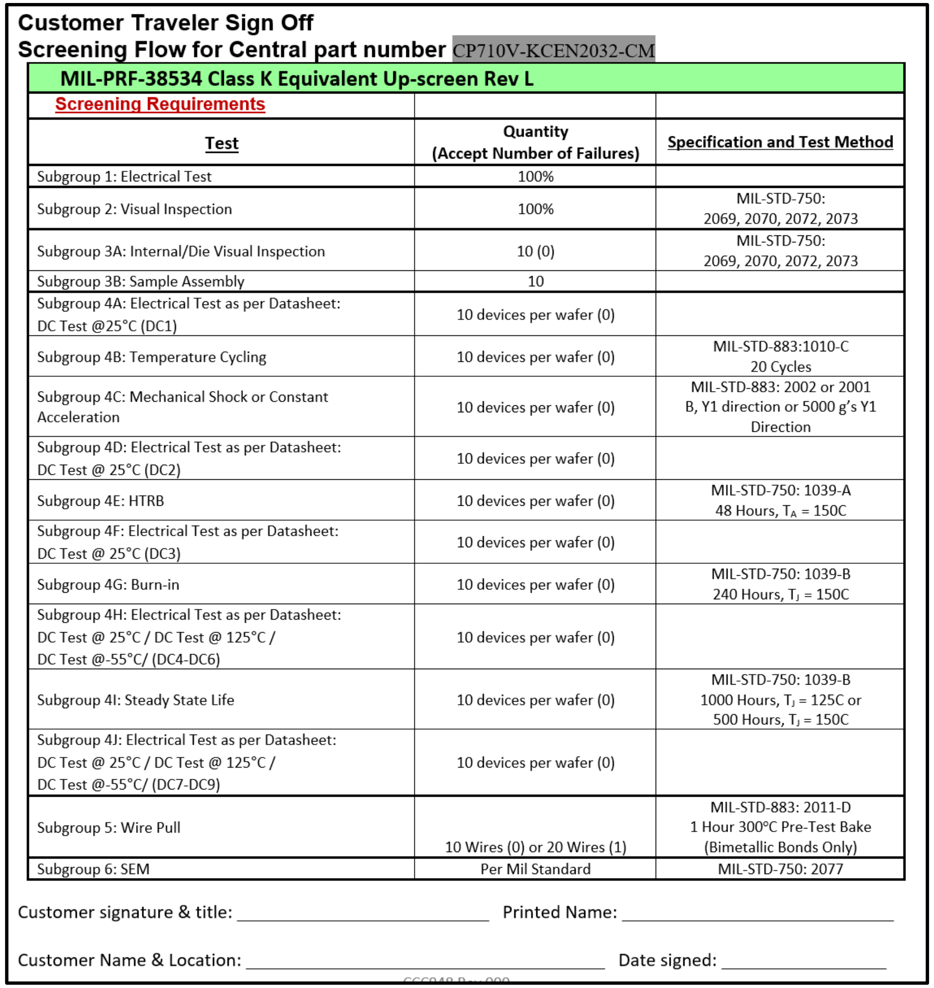
MIL-PRF-38534 Class H Equivalent Up-Screen Rev L		
Screening Requirements		
Test	**Quantity (Accept Number of Failures)**	**Specification and Test Method**
Subgroup 1: Electrical Test	100%	
Subgroup 2: Visual Inspection	100%	MIL-STD-750: 2069, 2070, 2072, 2073
Subgroup 3A: Internal/Die Visual Inspection	10 (0)	MIL-STD-750: 2069, 2070, 2072, 2073
Subgroup 3B: Sample Assembly	10 (0)	
Subgroup 4: Electrical Test as per Datasheet: DC Test @ 25°C / DC Test @ 125°C / DC Test @-55°C/ (DC1-DC3)	10 (0)	
Subgroup 5 Wire Pull	10 Wires (0) or 20 Wires (1)	MIL-STD-883: 2011 Cond. D 1 Hour 300°C Pre-Test Bake (Bimetallic Bonds Only)

Notes:

1) Assembled in a TO-39 package with 1.0mil Au wire
2) Forward voltage at 10mA, 1.22V maximum for tri-temperature testing
3) Reverse current at 20V, 50μA maximum for tri-temperature testing
4) Supplement with 150 degrees Celsius reverse current test at 20V, 75V

Customer signature & title: ___________________________ Printed Name: _____________________________

Customer Name & Location: ____________________________________ Date signed: __________________



Customer Traveler Sign Off
Screening Flow for Central part number CP710V-KCEN2032-CM

MIL-PRF-38534 Class K Equivalent Up-screen Rev L		
Screening Requirements		
Test	**Quantity (Accept Number of Failures)**	**Specification and Test Method**
Subgroup 1: Electrical Test	100%	
Subgroup 2: Visual Inspection	100%	MIL-STD-750: 2069, 2070, 2072, 2073
Subgroup 3A: Internal/Die Visual Inspection	10 (0)	MIL-STD-750: 2069, 2070, 2072, 2073
Subgroup 3B: Sample Assembly	10	
Subgroup 4A: Electrical Test as per Datasheet: DC Test @25°C (DC1)	10 devices per wafer (0)	
Subgroup 4B: Temperature Cycling	10 devices per wafer (0)	MIL-STD-883:1010-C 20 Cycles
Subgroup 4C: Mechanical Shock or Constant Acceleration	10 devices per wafer (0)	MIL-STD-883: 2002 or 2001 B, Y1 direction or 5000 g's Y1 Direction
Subgroup 4D: Electrical Test as per Datasheet: DC Test @ 25°C (DC2)	10 devices per wafer (0)	
Subgroup 4E: HTRB	10 devices per wafer (0)	MIL-STD-750: 1039-A 48 Hours, T_A = 150C
Subgroup 4F: Electrical Test as per Datasheet: DC Test @ 25°C (DC3)	10 devices per wafer (0)	
Subgroup 4G: Burn-in	10 devices per wafer (0)	MIL-STD-750: 1039-B 240 Hours, T_J = 150C
Subgroup 4H: Electrical Test as per Datasheet: DC Test @ 25°C / DC Test @ 125°C / DC Test @-55°C/ (DC4-DC6)	10 devices per wafer (0)	
Subgroup 4I: Steady State Life	10 devices per wafer (0)	MIL-STD-750: 1039-B 1000 Hours, T_J = 125C or 500 Hours, T_J = 150C
Subgroup 4J: Electrical Test as per Datasheet: DC Test @ 25°C / DC Test @ 125°C / DC Test @-55°C/ (DC7-DC9)	10 devices per wafer (0)	
Subgroup 5: Wire Pull	10 Wires (0) or 20 Wires (1)	MIL-STD-883: 2011-D 1 Hour 300°C Pre-Test Bake (Bimetallic Bonds Only)
Subgroup 6: SEM	Per Mil Standard	MIL-STD-750: 2077

Customer signature & title: ___________________________ Printed Name: ____________________________

Customer Name & Location: ______________________________________ Date signed: __________________

Custom Development

Design Services

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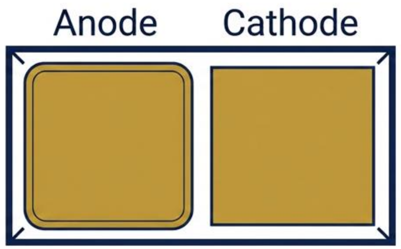
- **Standard Die …**
- **Up-Screen Equivalent Die …**
  - MIL-PRF-38534 (Class H and K) and MIL-PRF-19500 (class HC and KC) … CPD48V-KCBAT54-CM
  - Customer SCD … CPD83V-HCEN2028-CM
- **Custom Die Development** …
  - Die geometries/structures
  - Functions
  - Metallization
  - Numerous Delivery Options: Tray, Wafer, TR

Triangular Die

Lateral Die



SERVICES

Services Overview

Vertically Integrated Services

① Custom Device development

- Innovative new product
- Second Source product replacement
- Revival of older technology device

② Parametric Electrical Screening

Electrical or mechanical screening to a required specification … wafer probing at Central NY facility

③ Lead forming & custom packing

Devices can be standard or custom lead formed to me any requirement

④ Up-Screening

- MIL-PRF-19500 equivalent
- MIL-PRF-38534 equivalent
- Customer Specific to SCD

⑤ Lead plating, conversion, mitigation

- Tin or Tin/Lead dipping
- Tin Whisker Mitigation (TWM)

AEM®

● Bare Die Solutions

⑥ Hi-Rel Testing and Failure Analysis (4D & 8D)

- Environmental testing
- High temperature & humidity testing
- Digital microscopy analysis
- Real-time X-ray
- Package decapsulation
- Mechanical shock testing
- Burn-in testing
- Electrical characterization
- Thermal stream testing
- Materials analysis
- Wire pull & die shear testing
- Hermeticity testing
- Particle Impact Noise Detection (PIND)
- Highly-accelerated stress testing (HAST)

Space

Defense

Aero

Medical

Central Semiconductor Die Solutions

Bare Die Solutions by Design … not as an afterthought