Tecate Group Customer-driven power solutions







Richardson Electronics















Ultracapacitors and Modules

TPL 2.7V



- Cylindrical package
- Radial leaded
- $0.5 \sim 100F$
- **UL** recognized



PBL/PBLL 5.0/5.4V

- 0.25 ~ 15F
- Balancing option: active, passive, and NB (low leakage)
- Radial leaded with flexible lead and connector options
- Custom capacitance and voltage options
- **UL** recognized





PBLS 8.1 ~ 32.4V

- 0.41 ~ 16.66F
- Unique slim-profile design
- Wide variety of capacitance and voltage options
- Flexible lead and connector options
- Passive cell balancing and on-board thermistor



-40 ~ +65°C

TPLS 2.7V



- Cylindrical package
- Radial snap-in leads
- 100 ~ 400F
- UL recognized



PBL/PBD 16.2V

- 25F and 58F modules
- Active cell balancing
- **UL-recognized cells**
- Screw terminals
- Shrink sleeving or metal enclosure



PC 2.5V



- Hermetically sealed
- Flat prismatic package
- 5.0mm Profile
- Radial leaded
- 4F, 10F
- Custom configurations available

PC5-5 5V



- Hermetically sealed thin prismatic design
- Active cell balancing
- Flexible leads and connector

 $-40 \sim +70^{\circ}$ C

Ultracapacitors and Modules

TPLH 2.7V to 3.0V

- Extensive product offering from 0.50F to 3400F
- RoHS compliant
- UL recognized
- Superior charge/discharge capability
- Long cycle life performance
- Maintenance free
- Customized small cells
- Wide operating voltages





PBLH 10.8V, 12V

- 87F, 100F, 112F, and 150F modules available in common form factor
- Passively balanced
- **UL-recognized cells**
- Ruggedized plastic housing
- Lug connections
- Lightweight with multiple mounting orientations

PBLH 18V, 54V

- Active balancing
- Up to 1 million duty cycles or 10-year DC life
- 18V DC working voltage
- Active cell balancing
- Temperature output
- High power density
- Fully enclosed aluminum module
- **UL-recognized cells**





Specialty

- Safety certified:
 - o X2 Box film, 275 and 305VAC
 - o X2 and Y1/Y2 SMT ceramics
- High voltage
- Arc protection
- Telecom tip & ring
- Snubber capacitor
- Hybrid conductive polymer
- Flexible termination SMT large geometry

Surface Mount, Radial



- 0.1 ~ 82000µF, 4 ~ 500V
- -55 ~ +130°C
- Up to 12000-hour life
- Polar, non-polar
- General purpose
- Low leakage
- Low ESR



Surface Mount, Radial, and Snap-In

Services

Binning Capabilities

- Proprietary testing algorithms
- Multiple readings on each device to ensure no out-of-bin failures
- Bin range down to 0.1%
- Bin tolerance of ±0.05%
- Up to 100 bins



Matched Pairs

- Pairs of capacitors matched to within
- Each pair delivered in a single bag with a unique serial number and capacitance
- Original readings kept electronically

Ceramic

- $0.4pF \sim 220 \mu F, 4V \sim 6kV$
- General purpose
- Tip & ring
- Safety certified
- Arc protection
- High voltage
- RF/microwave
- Flexible termination



- 0.002 to 0.005%
- reading for each capacitor in the pair
- Matched triplets (three capacitors) available

Film

- $330pF \sim 18\mu F$, $100 \sim 3kV$
- High voltage
- High DV/DT
- Segmented
- Motor run
- Power factor correction
- PET, PPS, PEN, polypropylene film & foil metallized, and combination

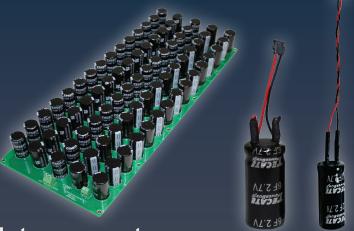
Surface Mount, Axial, and Radial

Surface Mount, Axial, Radial, and Disc

Custom Assemblies

Design

- USA-based engineering
- SolidWorks 3D modeling
- Custom PCB layouts
- Higher-level circuit integration
- UL810-recognized cells and modules
- Build to print
- Quick-turn prototyping



Interconnect

- Custom wire harnesses with customerspecified connectors
- Wire: various lengths, gauges, and colors
- Connectors or stripped and tinned leads
- Custom oversleeving for ease of wire routing
- Secondary wire harnesses for board location flexibility





- Cylindrical and prismatic
- Custom sizes and capacitances available
- 2.3V @ 85°C
- 2.7-3.0V @ 65°C
- 0.33 to 3400F
- Low ESR
- Passive & active cell voltage balancing available



Packaging

- Shrink sleeving
- Molded plastic and metal enclosures
- Epoxy potted modules
- Unique form factor for space-constrained applications

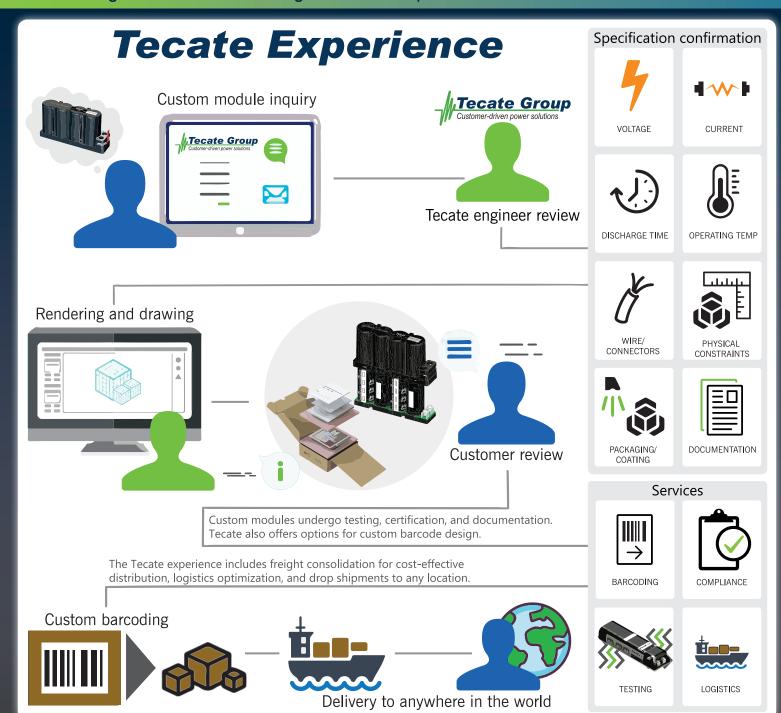
Board Level Assemblies



- Surface-mount and through-hole
- PCB sub-assemblies
- Audio crossover networks
- Speaker input assemblies
- Box build and final product assemblies



Tecate Group is based in San Diego, California and has 45 years of experience serving OEMs around the globe with capacitors and electronic assemblies.











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