SOLUTIONS

Defense & Aerospace

MIL-PRF-32535 Qualified MLCCs

Electronic Components
KEMET
CHARGED.

Why Choose KEMET

KEMET Electronics Corporation is a leading global supplier of electronic components. We offer our customers the broadest selection of capacitor technologies in the industry, along with an expanding range of electromagnetic compatibility solutions and supercapacitors. Our vision is to be the preferred supplier of electronic component solutions for customers demanding the highest standards of quality, delivery and service.

Features & Benefits

- Patented base metal electrode (BME) technology
- Qualified per MIL-PRF-32535 (QPL)
- Standard reliability (M Level)
- High reliability (T Level)
- 100% voltage conditioning
- DC voltages up to 200 V
- 0402 – 2220 case sizes
- Available capacitance tolerances of ±0.1 pF, ±0.25 pF, ±0.5 pF, ±1%, ±2%, ±5%, ±10%, ±20%
- Multiple termination options
- Non-polar device, minimizing installation concerns
- Laser marked

Product Checklist

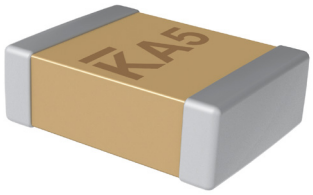
- Are you currently using MLCCs qualified to MIL-PRF-55681 or MIL-PRF-123?
- What is the maximum operating temperature?
- What are the capacitance and voltage requirements?
- Are there any size constraints?
- Are there any specific termination finish requirements?

For more information, samples and engineering kits, please visit us at www.kemet.com or call 1.877.myKEMET.

MIL-PRF-32535 is the first capacitor specification by the Defense Logistics Agency (DLA) for defense and aerospace that capitalizes on the industry's leading base metal electrode (BME) technology. KEMET's MIL-PRF-32535 utilizes BME technology to deliver up to an 18-fold increase in capacitance for C0G, BP and X7R dielectrics, as compared to the offerings in MIL-PRF-123 and MIL-PRF-55681 using precious metal electrode (PME) ceramic capacitors.

Applications

- Guidance systems
- Communications
- Targeting systems
- Early warning systems
- Filtering
- Decoupling
- Bypass
- RC timing circuits



Electrical/Physical Characteristics

Series	Grade	Case Size	Operating Temperature	Temp. Coeff.	Maximum DC Voltage	Capacitance
MIL-PRF-32535 (C0G/BP)	M Level T Level	0402 – 2220	-55°C to +125°C	0 ±30 ppm/°C	200 V	1.0 pF – 180 nF
MIL-PRF-32535 (X7R)				+/- 15%	50 V	39 pF – 10 uF

MIL-PRF-32535 Ordering Information

M32535	04	E1	Z	104	J	R	M	B
MIL Prefix	Slash Sheet	Characteristic/ Dielectric	Rated Voltage (VDC)	Capacitance Code (pF)	Capacitance Tolerance	Termination	Product Level	Electrode
	02 = 0402 03 = 0603 04 = 0805 05 = 1206 06 = 1210 07 = 1812 08 = 2220	E1 = C0G BP = BP E2 = X7R	V = 4 W = 6.3 X = 10 Y = 16 Z = 25 A = 50 B = 100 C = 200	Two significant digits + number of zeros. Use 9 for 1.0 – 9.9 pF e.g., 2.2 pF = 229	B = ±0.1 pF C = ±0.25 pF D = ±0.5 pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%	D = Sn/Pb solder dipped G = Nickel gold-plating R = Flexible termination with solder plating V = Flexible termination with nickel gold-plating Z = Solder plated	M = M Level T = T Level	B = BME

Not all tolerances and termination options available for all part numbers. See datasheet for availability.

Same Capacitance and Voltage in Smaller Case Size (C0G/BP Example)

Capacitance	PME (MIL-PRF-123 or MIL-PRF-55681)	BME (MIL-PRF-32535)
330 pF 100 V	1206	0402
3.3 nF 50 V	1210	0603
8.2 nF 50 V	2225	0805

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Performance & Reliability

Inspection	Test Method	MIL-PRF-32535 M Level	MIL-PRF-32535 T Level
In-Process Inspection			
Nondestructive internal examination (pre-termination)	MIL-PRF-32535 Method 4.6.1	Not required	Yes (100%)
Visual examination (post-termination)	MIL-PRF-32535 Method 4.6.2	Not required	Yes (100%)
Group A Inspection			
Thermal shock	MIL-PRF-32535 Method 4.6.3	Not required	Yes (100%)
Nondestructive internal examination (case sizes ≥ 0805 only)	MIL-PRF-32535 Method 4.6.1	Not required	Yes (100%)
Voltage conditioning	MIL-PRF-32535 Method 4.6.3	Yes (100%)	Yes (100%)
Visual and mechanical inspection	MIL-PRF-32535 Method 4.6.2	Yes (per inspection lot)	Yes (production lot sample)
Destructive physical analysis (DPA)	MIL-PRF-32535 Method 4.6.8	Not required	Yes (production lot sample)
Solderability (solder dipped and solder plated terminations only)	MIL-PRF-32535 Method 4.6.11	Yes (per inspection lot)	Yes (production lot sample)
Wire bond strength (gold-plated terminations only)	MIL-PRF-32535 Method 4.6.12	Yes (per inspection lot)	Yes (production lot sample)
Group B Inspection			
Thermal shock	MIL-PRF-32535 Method 4.6.3	Yes (periodic)	Yes (production lot sample)
Life	MIL-PRF-32535 Method 4.6.16	Yes (periodic)	Yes (production lot sample)
Temperature humidity bias (load humidity)	MIL-PRF-32535 Method 4.6.15	Yes (periodic)	Yes (production lot sample)
Voltage - temperature limits/temperature characteristic	MIL-PRF-32535 Method 4.6.14	Yes (periodic)	Yes (production lot sample)
Dielectric breakdown voltage (UVBD)	MIL-PRF-32535 Method 4.6.17	Yes (periodic)	Yes (production lot sample)
Group C Inspection			
Board flex	MIL-PRF-32535 Method 4.6.9	Yes (periodic)	Yes (periodic)
Shear stress	MIL-PRF-32535 Method 4.6.10	Yes (periodic)	Yes (periodic)
Resistance to soldering heat	MIL-PRF-32535 Method 4.6.13	Yes (periodic)	Yes (periodic)