

RELIABILITY DATA FOR FIXED CHIP RESISTOR PASTES ON ALUMINUM NITRIDE (AlN)

TEMPERATURE SHOCK DATA AND HIGH TEMPERATURE EXPOSURE DATA: Al₂O₃ VS AlN

Description

The below tables depict typical drift data for IMS resistors on aluminum nitride (AlN) substrates. The table specifically depicts the value drift under thermal shock conditions alongside high temperature exposure conditions as defined in MIL 55342. The tests compared resistors on Al₂O₃ substrates with those on AlN substrates both with and without glass.

NOTE: “min. drift” represents the furthest departure from nominal value observed on the low side and “max. drift” correspondingly represents the furthest departure from nominal value on the high side. Note that IMS resistors on AlN substrates performed as good as or better than those on Al₂O₃.

Summary

Test set A: PtAg on Al₂O₃, no glass		
	thermal shock	high temp.
min drift:	-0.06%	0.00%
max drift:	-0.02%	0.04%
ave:	-0.04%	0.02%

Test set A: PtAg on AlN no glass		
	thermal shock	high temp.
min drift:	-0.11%	0.02%
max drift:	-0.03%	0.11%
ave:	-0.06%	0.04%

Test set B: PtAg on Al₂O₃ with glass		
	thermal shock	high temp.
min drift:	-0.07%	0.07%
max drift:	-0.03%	0.12%
ave:	-0.05%	0.08%

Test set B: PtAg on AlN with glass		
	thermal shock	high temp.
min drift:	-0.05%	0.05%
max drift:	-0.04%	0.06%
ave:	-0.05%	0.06%

Test set A: PdAg on Al₂O₃, no glass		
	thermal shock	high temp.
min drift:	-0.04%	0.00%
max drift:	0.06%	0.06%
ave:	-0.02%	0.03%

Test set A: PdAg on AlN, no glass		
	thermal shock	high temp.
min drift:	-0.04%	-0.08%
max drift:	0.05%	0.08%
ave:	-0.01%	0.03%

Test set B: PtAg on Al₂O₃ with glass		
	thermal shock	high temp.
min drift:	0.02%	0.02%
max drift:	0.07%	0.06%
ave:	0.05%	0.04%

Test set B: PtAg on AlN with glass		
	thermal shock	high temp.
min drift:	-0.05%	0.01%
max drift:	-0.02%	0.04%
ave:	-0.04%	0.02%