

JOURNAL OF ELECTRONIC TESTING:  
Theory and Applications  
(JETTA)

JOURNAL OF  
ELECTRONIC  
TESTING  
Theory and Applications (JETTA)

Editor in Chief: Vishwani Agrawal

JOURNAL OF ELECTRONIC TESTING

Volume 39, Number 4, August 2023

Editorial

V.D. Agrawal 403

Test Technology Newsletter 405

SINGLE EVENT UPSET (SEU)

Evaluating the Reliability of Different Voting Schemes for Fault Tolerant Approximate Systems  
T.R. Balen · C.J. González · I.F.V. Oliveira · L.S. da Rosa Jr · R.I. Soares · R.B. Schvitz · N. Added · E.L.A. Macchione · V.A.P. Aguiar · M.A. Guazzelli · N.H. Medina · P.F. Butzen 409

FAULT DIAGNOSIS

Diagnosis of Analog and Digital Circuit Faults Using Exponential Deep Learning Neural Network  
R.S. Ram · M.L.C. Prabhaker 421

HARDWARE SECURITY

New Second-order Threshold Implementation of Sm4 Block Cipher  
T. Shao · B. Wei · Y. Ou · Y. Wei · X. Wu 435

Threshold Analysis Using Probabilistic Xgboost Classifier for Hardware Trojan Detection  
T. Dhar · R. Das · C. Giri · S.K. Roy 447

Structural and SCOAP Features Based Approach for Hardware Trojan Detection Using SHAP and Light Gradient Boosting Model  
R. Sharma · G.K. Sharma · M. Pattanaik · V.S.S. Prashant 465

MEMORY YIELD AND RELIABILITY

E<sup>2</sup>C Techniques for Protecting NAND Flash Memories  
S.-K. Lu · Z.-L. Tsai 487

ANALOG AND RF CIRCUIT TESTING

Efficient Test and Characterization of Space Transmit-Receive Modules Using Scalable and Multipurpose Automated Test System  
V.S. Chippalkatti · R.C. Biradar · V. Shenoy · P. Udayakumar 501

DIAGNOSIS OF BIOCHIPS

Online Diagnosis and Self-Recovery of Faulty Cells in Daisy-Chained MEDA Biochips Using Functional Actuation Patterns  
L. Zhang 521

Further articles can be found at [link.springer.com](http://link.springer.com)

Indexed/abstracted in ACM Digital Library, BFI List, Baidu, CLOCKSS, CNKI, CNPIEC, Current Contents Collections / Electronics & Telecommunications Collection, Current Contents/Engineering, Computing and Technology, DBLP, Dimensions, EBSCO Academic Search, EBSCO Discovery Service, EBSCO STM Source, EI Compendex, Google Scholar, INIS Atomindex, INSPEC, Japanese Science and Technology Agency (JST), Journal Citation Reports/ Science Edition, Naver, Norwegian Register for Scientific Journals and Series, OCLC WorldCat Discovery Service, Portico, ProQuest Abstracts in New Technologies and Engineering (ANTE), ProQuest Advanced Technologies & Aerospace Database, ProQuest Aluminium Industry Abstracts, ProQuest-ExLibris Primo, ProQuest-ExLibris Summon, SCImago, SCOPUS, Science Citation Index Expanded (SCIE), TD Net Discovery Service, UGC-CARE List (India), Wanfang

Instructions for Authors for J Electron Test are available at [www.springer.com/10836](http://www.springer.com/10836).

Volume 39, Number 4, August 2023 403-534

A journal serving electronic test professionals  
in concurrence with the Test Technology Technical Council  
(TTTC) of the IEEE Computer Society



Springer



ISSN: 0923-8174