



FRONTGRADE

APPLICATION NOTE

RHMSI 8-Bit and 16-Bit Logic ESD Performance

8/26/2010

Version #: 1.0.0

1.0 Overview

In order to meet size and speed requirements of today's high speed circuit designers, ESD performance has often been sacrificed by microcircuit providers. The tables 1 and 2 contain the listings of the MSI product line ESD performance.

2.0 ESD Performance Cross Reference

Table 1 lists Frontgrade RHMSI 8-Bit and 16-Bit Logic devices and their respective ESD performance. All Frontgrade Colorado Springs Logic Family devices have ESD tests performed as part of Qualification per MIL-STD-883, using the Human Body Model (HBM).

Table 1. Summary of ESD Performance for Frontgrade 16-Bit MSI Logic Devices

Part Number	SMD	Device Types	ESD Voltage	ESD Class	Description
UT54ACTQ16224	5962-06243	01	500V	1B	CMOS 16-bit Buffer/Line Driver, TTL Inputs, and Three-State Quiet Outputs
UT54ACTQ16245	5962-06244	01	500V	1B	16-bit Bidirectional Transceiver, TTL Inputs, and Three-State Quiet Outputs
UT54ACTQ16374	5962-06245	01	500V	1B	CMOS 16-bit D Flip-Flop TTL Inputs, and Three-State Quiet Outputs
UT54ACS164646S	5962-06234	01	500V	1B	Schmitt CMOS 16-bit Bidirectional MultiPurpose Registered Transceiver, with cold/warm spare
UT54ACS162245SLV	5962-02543	01	1500V	1C	Schmitt CMOS 16-bit Bidirectional MultiPurpose Low Voltage Transceiver, with cold/warm spare
UT54ACS164245S/SE	5962-98580	01, 02, 03, 04, 05	1500V	1C	CMOS 16-bit Bidirectional MultiPurpose Transceiver with cold spare
UT54ACS164245SEI	5962-98580	06, 07	1500V	1C	CMOS 16-bit Bidirectional MultiPurpose Transceiver with cold/warm spare

Table 2. Summary of ESD Performance for Frontgrade 8-Bit MSI Logic Devices

Part Number	SMD	Device Types	ESD Voltage	ESD Class	Description
UT54ACS00	5962-96512	01	500V	1B	Logic quadruple 2-input NAND gates
UT54ACTS00	5962-96513	01	500V	1B	
UT54ACTS00E*	5962-96513	02, 03	2000V	2	
UT54ACS02	5962-96514	01	500V	1B	Logic quadruple 2-input NOR gates
UT54ACS02E*	5962-96514	02, 03	500V	1B	
UT54ACTS02	5962-96515	01	500V	1B	
UT54ACTS02E*	5962-96515	02, 03	500V	1B	
UT54ACS04	5962-96516	01	500V	1B	Hex inverters
UT54ACTS04	5962-96517	01	500V	1B	
UT54ACTS04E*	5962-96517	02, 03	2000V	2	
UT54ACS08	5962-96518	01	500V	1B	Logic quadruple 2-input AND gates
UT54ACS08E*	5962-96518	02, 03	500V	1B	
UT54ACTS08	5962-96519	01	500V	1B	
UT54ACTS08E*	5962-96519	02, 03	500V	1B	
UT54ACS10	5962-96520	01	500V	1B	Logic triple 3-input NAND gates
UT54ACTS10	5962-96521	01	500V	1B	
UT54ACS11	5962-96522	01	500V	1B	Logic triple 3-input AND gates
UT54ACTS11	5962-96523	01	500V	1B	
UT54ACS14	5962-96524	01	500V	1B	Hex inverting Schmitt trigger
UT54ACS14E*	5962-96524	02, 03	1000V	1C	
UT54ACTS14	5962-96525	01	500V	1B	
UT54ACTS14E*	5962-96525	02, 03	1000V	1C	
UT54ACS20	5962-96526	01	500V	1B	Logic dual 4-input NAND gates
UT54ACTS20	5962-96527	01	500V	1B	
UT54ACS27	5962-96528	01	500V	1B	Logic triple 3-input NOR gates
UT54ACTS27	5962-96529	01	500V	1B	
UT54ACS34	5962-96530	01	500V	1B	Hex non-inverting buffers
UT54ACTS34	5962-96531	01	500V	1B	
UT54ACS54	5962-96532	01	500V	1B	Logic 4-wide AND-OR-INVERT gates
UT54ACTS54	5962-96533	01	500V	1B	
UT54ACS74	5962-96534	01	500V	1B	FLIP-FLOPs dual D with clear and preset
UT54ACTS74	5962-96535	01	500V	1B	

Part Number	SMD	Device Types	ESD Voltage	ESD Class	Description
UT54ACTS74E*	5962-96535	02, 03	1000V	1C	
UT54ACS85	5962-96536	01	500V	1B	Comparators 4-bit
UT54ACTS85	5962-96537	01	500V	1B	
UT54ACS86	5962-96538	01	500V	1B	Logic quadruple 2-input XOR gates
UT54ACTS86	5962-96539	01	500V	1B	
UT54ACS109	5962-96540	01	500V	1B	FLIP-FLOPs dual J-K
UT54ACS109E*	5962-96540	02, 03	1000V	1C	
UT54ACTS109	5962-96541	01	500V	1B	
UT54ACS132	5962-96542	01	500V	1B	Logic quadruple 2-Input NAND with Schmitt triggers
UT54ACS132E*	5962-96542	02, 03	500V	1B	
UT54ACTS132	5962-96543	01	500V	1B	
UT54ACS138	5962-96544	01	500V	1B	Decoders/demultiplexers 3line to 8-line
UT54ACS138E*	5962-96544	02, 03	2000V	2	
UT54ACTS138	5962-96545	01	500V	1B	
UT54ACS139	5962-96546	01	500V	1B	Decoders/demultiplexers dual 2-line to 4-line
UT54ACTS139	5962-96547	01	500V	1B	
UT54ACS151	5962-96548	01	500V	1B	Data selectors/multiplexers 1 to 8
UT54ACTS151	5962-96549	01	500V	1B	
UT54ACS153	5962-96550	01	500V	1B	Multiplexers 4-input dual
UT54ACTS153	5962-96551	01	500V	1B	
UT54ACTS153E*	5962-96551	02, 03	500V	1B	
UT54ACS157	5962-96552	01	500V	1B	Multiplexers quadruple 2 to 1
UT54ACTS157	5962-96553	01	500V	1B	
UT54ACTS157E*	5962-96553	02, 03	500V	1B	
UT54ACS163	5962-96554	01	500V	1B	Counters 4-bit synchronous
UT54ACTS163	5962-96555	01	500V	1B	
UT54ACS164	5962-96556	01	500V	1B	Registers 8-bit shift
UT54ACS164E*	5962-96556	02, 03	500V	1B	
UT54ACTS164	5962-96557	01	500V	1B	
UT54ACTS164E*	5962-96557	02, 03	500V	1B	
UT54ACS165	5962-96558	01	500V	1B	Registers 8-bit shift parallel
UT54ACS165E*	5962-96558	02, 03	1000V	1C	
UT54ACTS165	5962-96559	01	500V	1B	

Part Number	SMD	Device Types	ESD Voltage	ESD Class	Description
UT54ACS169	5962-96560	01	500V	1B	Counters 4-bit binary updown
UT54ACTS169	5962-96561	01	500V	1B	
UT54ACS190	5962-96562	01	500V	1B	Counters up-down BCD synchronous 4-bit
UT54ACTS190	5962-96563	01	500V	1B	
UT54ACS191	5962-96564	01	500V	1B	Counters up-down binary synchronous 4-bit
UT54ACTS191	5962-96565	01	500V	1B	
UT54ACS193	5962-96566	01	500V	1B	Clocks up-down synchronous 4-bit
UT54ACS193E*	5962-96566	02, 03	1000V	1C	
UT54ACTS193	5962-96567	01	500V	1B	
UT54ACTS220	5962-96753	01	500V	1B	Clock and wait-state generation circuit
UT54ACS240	5962-96568	01	500V	1B	Buffers octal with inverted 3state outputs
UT54ACTS240	5962-96569	01	500V	1B	
UT54ACS244	5962-96570	01	500V	1B	Buffers/line drivers octal with 3-state outputs
UT54ACTS244	5962-96571	01	500V	1B	
UT54ACS245	5962-96572	01	500V	1B	Transceivers octal bus with 3state outputs
UT54ACTS245	5962-96573	01	500V	1B	
UT54ACTS245E*	5962-96573	02, 03	500V	1B	
UT54ACS245S	5962-96572	01	500V	1B	Transceivers octal bus Schmitt trigger with 3-state outputs
UT54ACS253	5962-96574	01	500V	1B	Multiplexers 4-input dual with 3-state outputs
UT54ACTS253	5962-96575	01	500V	1B	
UT54ACS264	5962-96576	01	500V	1B	Look-ahead carry generator for counters
UT54ACTS264	5962-96577	01	500V	1B	
UT54ACS273	5962-96578	01	500V	1B	FLIP-FLOPs octal D with clear
UT54ACTS273	5962-96579	01	500V	1B	
UT54ACS279	5962-96580	01	500V	1B	Latches quadruple S-R
UT54ACTS279	5962-96581	01	500V	1B	
UT54ACS280	5962-96582	01	500V	1B	9-bit parity generators/checkers
UT54ACTS280	5962-96583	01	500V	1B	
UT54ACS283	5962-96584	01	500V	1B	Adders 4-bit parity binary full
UT54ACS283E*	5962-96584	02, 03	2000V	2	
UT54ACTS283	5962-96585	01	500V	1B	

Part Number	SMD	Device Types	ESD Voltage	ESD Class	Description
UT54ACS299E*	5962-06238	02, 03	500V	1B	Registers universal shift/storage
UT54ACS365	5962-96586	01	500V	1B	Buffers/line drivers hex with 3-state outputs
UT54ACTS365	5962-96587	01	500V	1B	
UT54ACS373	5962-96588	01	500V	1B	Latches octal transparent with 3-state outputs
UT54ACTS373	5962-96589	01	500V	1B	
UT54ACS374	5962-96590	01	500V	1B	FLIP-FLOPS octal D with 3state outputs
UT54ACTS374	5962-96591	01	500V	1B	
UT54ACS540	5962-96592	01	500V	1B	Octal Buffers and Line Drivers with inverted 3-state outputs
UT54ACTS540	5962-96593	01	500V	1B	
UT54ACS541	5962-96594	01	500V	1B	Octal Buffers and Line Drivers with 3-state outputs
UT54ACTS541	5962-96595	01	500V	1B	
UT54ACTS541E*	5962-96595	02, 03	500V	1B	
UT54ACTS630	5962-06239	01	500V	1B	EDACs
UT54ACS899*	5962-06240	01	500V	1B	Transceivers latchable with parity generator/checker
UT54ACS4002	5962-96596	01	500V	1B	Logic dual 4-input NOR gates
UT54ACTS4002	5962-96597	01	500V	1B	

* 3.0V to 5.0V Supply Range

Revision History

Date	Revision #	Author	Change Description	Page #

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