

The documentation and process conversion measures necessary to comply with this revision shall be completed by 20 January 2003.

INCH POUND

MIL-PRF-19500/116L
AMENDMENT 3
13 December 2002
SUPERSEDING
AMENDMENT 2
28 June 2002

PERFORMANCE SPECIFICATION

SEMICONDUCTOR DEVICE, DIODE, SILICON, SWITCHING
TYPES 1N914, 1N914UR, 1N4148-1, 1N4148UR-1, 1N4148UB, 1N4148UB2, 1N4148UB2R, 1N4148UBCA,
1N4148UBCC, 1N4148UBCD, 1N4531, AND 1N4531UR, JAN, JANTX, JANTXV, JANHC, AND JANKC

This amendment forms a part of MIL-PRF-19500/116L, dated 13 July 2001 and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 1

- * TITLE, delete and substitute: "SEMICONDUCTOR DEVICE, DIODE, SILICON, SWITCHING TYPES 1N914, 1N914UR, 1N4148-1, 1N4148UR-1, 1N4148UB, 1N4148UB2, 1N4148UB2R, 1N4148UBCA, 1N4148UBCC, 1N4148UBD, 1N4531, AND 1N4531UR, JAN, JANTX, JANTXV, JANHC, AND JANKC".
- * 1.3, delete: type "1N4148UBCD" and substitute: "1N4148UBD".

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- * 3.4.2, delete and substitute: "3.4.2 Diode construction. All devices (except UB version) shall be metallurgically bonded, double plug construction in accordance with the requirements of MIL-PRF-19500. All glass diodes shall be designed with sufficient thermal compensation in the axial direction to optimize tensile and compressive stresses. Dimensional analysis is required of all materials used to achieve axial thermal compensation. Dimensional tolerances and corresponding Coefficient of Thermal Expansion (CTE) shall be documented on the DSCC Design and construction form and shall be approved by the qualifying activity to maintain qualification. Dimensional tolerances shall be sufficiently tight enough to prevent excessive stresses due to the inherent CTE mismatch. The UB devices shall be eutectically mounted and wire bonded."
- 3.7, delete and substitute, "3.7 Marking. Marking shall be in accordance with MIL-PRF-19500."
- * 3.7.3, delete and substitute: "3.7.3 UBR devices. The part number may be reduced to J4148R, JX4148R, or JV4148R. Manufacturers identification and date code shall be marked on the devices."
- * 3.8, delete: "UB packages do not require polarity marking."

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- * 4.3.1, delete and substitute:
"4.3.1 Screening (JANHC and JANKC). Screening of JANHC and JANKC die shall be in accordance with MIL-PRF-19500, "Discrete Semiconductor Die/Chip Lot Acceptance. Burn-in duration for the JANKC level follows JANS requirements; the JANHC follows JANTX requirements. "

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* 4.3.2 Burn-in test conditions. Burn-in conditions are as follows:

Type	T _A = room ambient as defined in MIL-STD-750 V _{RWM} = 75 V (pk), f = 50 - 60 Hz	T _A = room ambient as defined in MIL-STD-750
1N914, 1N914UR	I _O = 75 mA	I _F = 150 mA min
1N4531, 1N4531UR	I _O = 125 mA	I _F = 175 mA min
1N4148-1, 1N4148UR-1, 1N4148UB, 1N4148UB2, 1N4148UB2R, 1N4148UBCA, 1N4148UBCC, 1N4148UBD	I _O = 200 mA	I _F = 200 mA min

(This reverses a change made by amendment 1 in addition to correcting a part number.) “

* 4.4.2.1, Add subgroup B2, method 1056, conditions, “-55°C to +100°C, 10 cycles”.

* 4.4.2.1, Add subgroup B2, method 1051, conditions, “-55°C to +175°C, 20 cycles”.

* 4.4.3 Add subgroup C2, method 1056, conditions, “-55°C to +100°C, 15 cycles”.

* 4.4.3 Add subgroup C2, method 1051, conditions, “-55°C to +175°C, 20 cycles”.

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4.4.2.1, B3, conditions, delete “(see 4.5.1)” and substitute “(see 4.5.2)”.

4.4.2.1, B3, conditions, delete “1N914: I_O = 5 mA” and substitute “1N914: I_O = 75 mA”.

4.4.2.1, B5, conditions, delete, “R_{θJL} 100°C/W (UR)” and substitute “R_{θJC} = 100°C/W (UR)”.

4.4.3, C6, conditions, delete “(see 4.5.1)” and substitute “(see 4.5.2)”.

After 4.4.3, add: “4.4.4 Group E inspection. Group E inspection shall be conducted in accordance with the tests and conditions specified for subgroup testing in table IX of MIL-PRF-19500, and table II herein. Electrical measurements (end-points) shall be in accordance with table I, subgroup 2, herein.”

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4.5.6, third sentence, after “R_{θJL}” add: “and R_{θJEC}”.

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TABLE I, Inspection heading, add “2”.

TABLE I, subgroup 2, reverse current, delete “1N914, 1N4531, 1N4148-1”.

TABLE I, subgroup 2, reverse current, symbol I_{R1}, min limits column, delete “25” three places and substitute in max limits column “25” three places.

TABLE I, subgroup 2, reverse current, symbol I_{R2}, min limits column, delete “500” and substitute in max limits column “500”.

TABLE I, subgroup 2, forward voltage, inspection column, add “1N914” for the I_F = 50 mA dc.

TABLE I, subgroup 2, forward voltage, inspection column, add “For all other devices” for the I_F = 100 mA dc.

TABLE I, subgroup 2, forward voltage, symbol V_{F2}, min limits column, delete “1.2” three places and substitute in max limits column “1.2” two places.

TABLE I, subgroup 3, reverse current, I_{R3} delete “1N914, 1N4531, 1N4148-1”.

TABLE I, subgroup 3, reverse current, I_{R4} delete “1N914, 1N4531, 1N4148-1”.

TABLE I, subgroup 3, reverse current, I_{R4} limits, delete “75” two places.

TABLE I, subgroup 3, reverse current, I_{R4} units, delete “µA dc” two places.

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TABLE I, subgroup 3, reverse current, V_{F3} delete "1N914, 1N4531, 1N4148-1".

TABLE I, subgroup 3, reverse current, V_{F3} delete "0.8" two places.

TABLE I, subgroup 3, reverse current, V_{F3} units, delete "V dc" two places.

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TABLE I, Inspection heading, add "2".

TABLE I, subgroup 3, forward voltage, delete "1N914, 1N4531, 1N4148-1".

TABLE I, subgroup 3, forward voltage, inspection column, add "1N914" for the $I_F = 50$ mA dc.

TABLE I, subgroup 3, forward voltage, inspection column, add "For all other devices" for the $I_F = 100$ mA dc.

TABLE I, subgroup 4, junction capacitance, delete "1N914, 1N4531, 1N4148-1".

TABLE I, subgroup 4, junction capacitance, limits, delete "4.0" two places.

TABLE I, subgroup 4, junction capacitance, units, delete "pF" two places.

TABLE I, subgroup 4, reverse recovery time, delete "1N914, 1N4531, 1N4148-1"

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TABLE I, Inspection heading, add "2".

TABLE I, subgroup 7, delete "(see 4.5.2)" and substitute "(see 4.5.3)".

TABLE I, end of table, add "2/ UBCA, UBCC, and UBD devices are to have each diode tested individually."

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TABLE II, subgroup 4, thermal resistance leaded devices, delete " $R_{\theta JEC}$ " and substitute " $R_{\theta JL}$ ".

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6.4, delete "(MIL-S-19500/578)" and substitute "(MIL-PRF-19500/578)".

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6.5, delete "QPL" and substitute "QML".

The margins of this amendment are marked with asterisks to indicate where changes from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment.

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Preparing activity
DLA - CC

(Project 5961-2667)

Review activities:
Army - AR, MI, SM
Navy - AS, MC
Air Force - 19