

The documentation and process conversion measures necessary to comply with this revision shall be completed by 30 April 2009.

METRIC

MIL-PRF-19500/741A
30 January 2009
SUPERSEDING
MIL-PRF-19500/741
14 March 2006

PERFORMANCE SPECIFICATION SHEET

SEMICONDUCTOR DEVICE, FIELD EFFECT, RADIATION HARDENED (TOTAL DOSE AND SINGLE EVENT EFFECTS) TRANSISTOR DIE, N-CHANNEL AND P-CHANNEL, SILICON, VARIOUS TYPES, JANHC AND JANKC

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-PRF-19500.

1. SCOPE

1.1 Scope. This specification covers the performance requirements for N-channel and P-channel, enhancement-mode, MOSFET, radiation hardened (total dose and single event effects (SEE)), power transistor die. Two levels of product assurance are provided for each device type as specified in MIL-PRF-19500.

1.2 Physical dimensions. See figures 1 through 8 herein.

1.3 Maximum ratings. See the applicable performance specification sheet from table I herein.

2. APPLICABLE DOCUMENTS

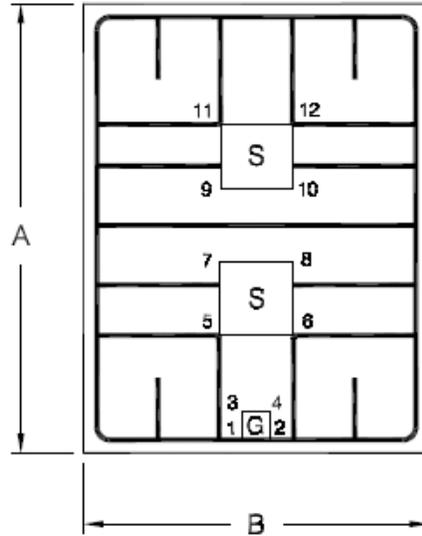
2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this specification, whether or not they are listed.

Comments, suggestions, or questions on this document should be addressed to Defense Supply Center, Columbus, ATTN: DSCC-VAC, P.O. Box 3990, Columbus, OH 43218-3990, or emailed to Semiconductor@dsc.dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <http://assist.daps.dla.mil/>.

2N7467, 2N7478, 2N7468, 2N7470

Ltr.	Dimensions		Tolerance
	Micrometers	Mils	
A	8634.0	339.9	±200 µm (7.87 mils)
B	6602.0	259.9	

Key	Die bond pad coordinates				Tolerance
	Micrometers		Mils		
	X	Y	X	Y	
1	0	0	0	0	±5 µm (0.2 mils)
2	541.00	0	21.299	0	
3	0	538.30	0	21.193	
4	541.0	538.30	21.299	21.193	
5	-424.1	2005.1	-16.7	78.941	
6	969.0	2005.1	38.15	78.941	
7	-424.1	3397.5	-16.7	133.76	
8	969.0	3397.5	38.15	133.76	
9	-424.1	4814.1	-16.7	189.53	
10	965.1	4814.1	37.996	189.53	
11	-424.1	6033.1	-16.7	237.52	
12	965.1	6033.1	37.996	237.52	



NOTES:

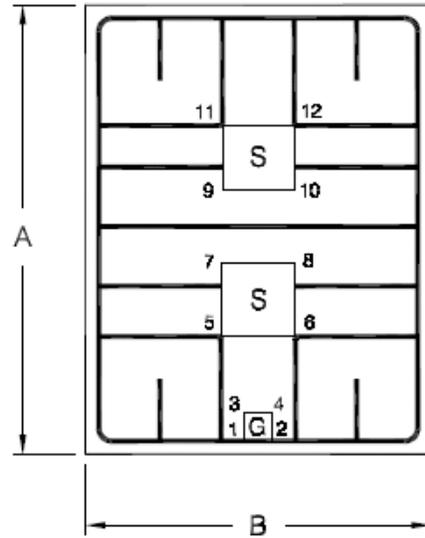
1. Dimensions are in micrometers. Mils are given for general information only.
2. Top metal: Aluminum, 8 µm (0.31 mils) thick.
3. Back metal: Titanium, nickel, silver, 0.1, 0.2, 0.25 µm thick, respectively.
4. All dimensions are valid for all radiation hardness levels specified.
5. Backside metal is the drain connection.
6. Die thickness: 330 µm (13 mils).
7. For sawn die, outline dimensions (A and B) will be reduced by 25 µm (0.98 mils), due to saw kerf.
8. Die bond pad coordinates are provided for use in automated bonding equipment. Key locations 1 through 12 refer to adjacent gate(G)/source(S) pad corners. Key 2 through 12 are relative to Key 1.
9. See 6.5 for ordering information.

FIGURE 1. JANHC and JANKC A-version die dimensions, 2N7467, 2N7478, 2N7468, and 2N7470.

2N7469, 2N7471, 2N7472, 2N7475, 2N7473, 2N7476, 2N7474, 2N7477, 2N7549, 2N7550

Ltr.	Dimensions				Tolerance
	Micrometers		Mils		
	Min	Max	Min	Max	
A	9144.0		360.0		±200 µm (7.87 mils)
B	6602.0		259.9		

Key	Die bond pad coordinates				Tolerance
	Micrometers		Mils		
	X	Y	X	Y	
1	0	0	0	0	±5 µm (0.2 mils)
2	541.0	0	21.299	0	
3	0	538.3	0	21.193	
4	541.0	538.3	21.299	21.193	
5	-424.1	2199.6	-16.7	86.598	
6	969.0	2199.6	38.150	86.598	
7	-424.1	3592.0	-16.7	141.42	
8	969.0	3592.0	38.150	141.42	
9	-424.1	5013.9	-16.7	197.40	
10	965.1	5013.9	37.996	197.40	
11	-424.1	6232.9	-16.7	245.39	
12	965.1	6232.9	37.996	245.39	



NOTES:

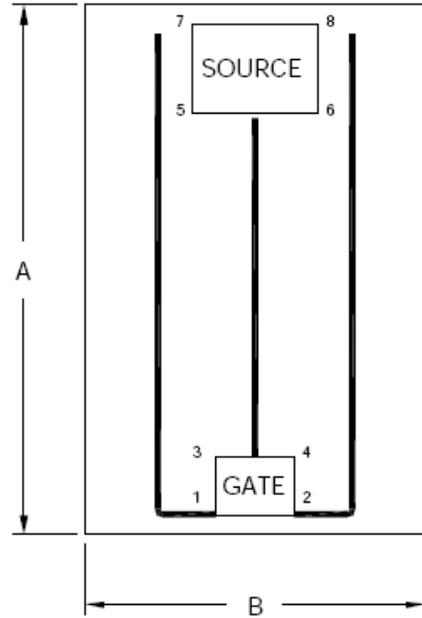
1. Dimensions are in micrometers. Mils are given for general information only.
2. Top metal: Aluminum, 8 µm (0.31 mils) thick.
3. Back metal: Titanium, nickel, silver, 0.1, 0.2, 0.25 µm thick, respectively.
4. All dimensions are valid for all radiation hardness levels specified.
5. Backside metal is the drain connection.
6. Die thickness: 330 µm (13 mils).
7. For sawn die, outline dimensions (A and B) will be reduced by 25 µm (0.98 mils), due to saw kerf.
8. Die bond pad coordinates are provided for use in automated bonding equipment. Key locations 1 through 12 refer to adjacent gate (G)/source (S) pad corners. Key 2 through 12 are relative to Key 1.
9. See 6.5 for ordering information.

FIGURE 2. JANHC and JANKC A-version die dimensions, 2N7469, 2N7471, 2N7472, 2N7475, 2N7473, 2N7476, 2N7474, 2N7477, 2N7549, 2N7550.

2N7479, 2N7482, 2N7491, 2N7494, 2N7480, 2N7483, 2N7492, 2N7495

Ltr.	Dimensions		Tolerance
	Micrometers	Mils	
A	4604.3	181.3	±200 µm (7.87 mils)
B	2946.4	116.0	

Key	Die bond pad coordinates				Tolerance
	Micrometers		Mils		
	X	Y	X	Y	
1	0	0	0	0	±5 µm (0.2 mils)
2	685.9	0	27.004	0	
3	0	509.9	0	20.075	
4	685.9	509.9	27.004	20.075	
5	-206.1	3474.3	-8.114	136.78	
6	871.9	3474.3	34.327	136.78	
7	-206.1	4235.4	-8.114	166.75	
8	871.9	4235.4	34.327	166.75	



NOTES:

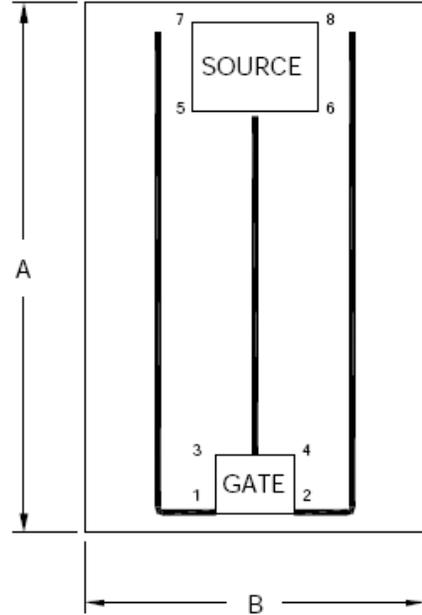
1. Dimensions are in micrometers. Mils are given for general information only.
2. Top metal: Aluminum, 8 µm (0.31 mils) thick.
3. Back metal: Titanium, nickel, silver, 0.1, 0.2, 0.25 µm thick, respectively.
4. All dimensions are valid for all radiation hardness levels specified.
5. Backside metal is the drain connection.
6. Die thickness: 330 µm (13 mils).
7. For sawn die, outline dimensions (A and B) will be reduced by 25 µm (0.98 mils), due to saw kerf.
8. Die bond pad coordinates are provided for use in automated bonding equipment. Key locations 1 through 8 refer to adjacent gate/source pad corners. Key 2 through 8 are relative to Key 1.
9. See 6.5 for ordering information.

FIGURE 3. JANHC and JANKC A-version die dimensions, 2N7479, 2N7482, 2N7491, 2N7494, 2N7480, 2N7483, 2N7492, 2N7495.

2N7481, 2N7484, 2N7493, 2N7496, 2N7545, 2N7547

Ltr	Dimensions		Tolerance
	Micrometers	Mils	
A	4604.3	181.3	±200 µm (7.87 mils)
B	2946.4	116.0	

Key	Die bond pad coordinates				Tolerance
	Micrometers		Mils		
	X	Y	X	Y	
1	0	0	0	0	±5 µm (0.2 mils)
2	685.9	0	27.004	0	
3	0	509.9	0	20.075	
4	685.9	509.9	27.004	20.075	
5	-206.1	3398.5	-8.114	133.8	
6	871.9	3398.5	34.327	133.8	
7	-206.1	4155.6	-8.114	163.61	
8	871.9	4155.6	34.327	163.61	



NOTES:

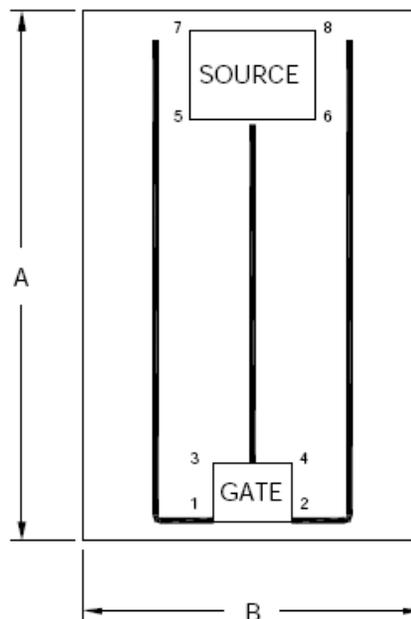
1. Dimensions are in micrometers. Mils are given for general information only.
2. Top metal: Aluminum, 8 µm (0.31 mils) thick.
3. Back metal: Titanium, nickel, silver, 0.1, 0.2, 0.25 µm thick, respectively.
4. All dimensions are valid for all radiation hardness levels specified.
5. Backside metal is the drain connection.
6. Die thickness: 330 µm (13 mils).
7. For sawn die, outline dimensions (A and B) will be reduced by 25 µm (0.98 mils), due to saw kerf.
8. Die bond pad coordinates are provided for use in automated bonding equipment. Key locations 1 through 8 refer to adjacent gate/source pad corners. Key 2 through 8 are relative to Key 1.
9. See 6.5 for ordering information.

FIGURE 4. JANHC and JANKC A-version die dimensions, 2N7481, 2N7484, 2N7493, 2N7496, 2N7545, and 2N7547.

2N7485, 2N7488, 2N7497, 2N7500, 2N7486, 2N7489, 2N7498, 2N7501, 2N7487, 2N7490, 2N7499, 2N7502, 2N7546, 2N7548

Ltr.	Dimensions		Tolerance
	Micrometers	Mils	
A	4604.3	181.3	±200 µm (7.87 mils)
B	2946.4	116.0	

Key	Die bond pad coordinates				Tolerance
	Micrometers		Mils		
	X	Y	X	Y	
1	0	0	0	0	±5 µm (0.2 mils)
2	685.9	0	27.004	0	
3	0	508.0	0	20.000	
4	685.9	508.0	27.004	20.000	
5	-206.1	3357.3	-8.114	132.18	
6	891.9	3357.3	35.114	132.18	
7	-206.1	4358.0	-8.114	171.58	
8	891.9	4358.0	35.114	171.58	



NOTES:

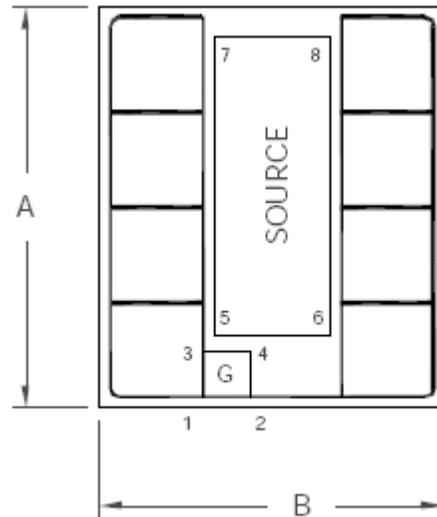
1. Dimensions are in micrometers. Mils are given for general information only.
2. Top metal: Aluminum, 8 µm (0.31 mils) thick.
3. Back metal: Titanium, nickel, silver, 0.1, 0.2, 0.25 µm thick, respectively.
4. All dimensions are valid for all radiation hardness levels specified.
5. Backside metal is the drain connection.
6. Die thickness: 203 µm (8 mils).
7. For sawn die, outline dimensions (A and B) will be reduced by 25 µm (0.98 mils), due to saw kerf.
8. Die bond pad coordinates are provided for use in automated bonding equipment. Key locations 1 through 8 refer to adjacent gate/source pad corners. Key 2 through 8 are relative to Key 1.
9. See 6.5 for ordering information.

FIGURE 5. JANHC and JANKC A-version die dimensions, 2N7485, 2N7488, 2N7497, 2N7500, 2N7486, 2N7489, 2N7498, 2N7501, 2N7487, 2N7490, 2N7499, 2N7502, 2N7546, and 2N7548.

2N7519, 2N7520

Ltr.	Dimensions		Tolerance
	Micrometers	Mils	
A	4610.8	181.5	$\pm 200 \mu\text{m}$ (7.87 mils)
B	2946.4	116.0	

Key	Die bond pad coordinates				Tolerance
	Micrometers		Mils		
	X	Y	X	Y	
1	0	0	0	0	$\pm 5 \mu\text{m}$ (0.2 mils)
2	541	0	21.299	0	
3	0	537.6	0	21.165	
4	541	537.6	21.299	21.165	
5	72	929.9	2.835	36.610	
6	1170	929.9	46.063	36.610	
7	72	4017.9	2.835	158.185	
8	1170	4017.9	46.063	158.185	



NOTES:

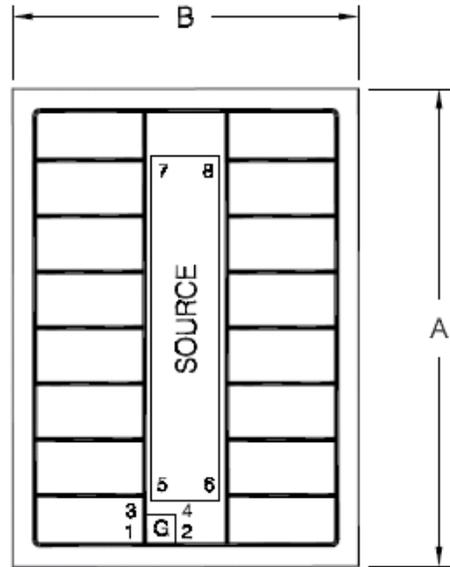
1. Dimensions are in micrometers. Mils are given for general information only.
2. Top metal: Aluminum, $8 \mu\text{m}$ (0.31 mils) thick.
3. Back metal: Titanium, nickel, silver, 0.1, 0.2, $0.25 \mu\text{m}$ thick, respectively.
4. All dimensions are valid for all radiation hardness levels specified.
5. Backside metal is the drain connection.
6. Die thickness: $203 \mu\text{m}$ (8 mils).
7. For sawn die, outline dimensions (A and B) will be reduced by $25 \mu\text{m}$ (0.98 mils), due to saw kerf.
8. Die bond pad coordinates are provided for use in automated bonding equipment. Key locations 1 through 8 refer to adjacent gate (G)/source pad corners. Key 2 through 8 are relative to Key 1.
9. See 6.5 for ordering information.

FIGURE 6. JANHC and JANKC A-version die dimensions, 2N7519 and 2N7520.

2N7523, 2N7524

Ltr.	Dimensions		Tolerance
	Micrometers	Mils	
A	9144	360.0	±200 µm (7.87 mils)
B	6604	260.0	

Key	Die bond pad coordinates				Tolerance
	Micrometers		Mils		
	X	Y	X	Y	
1	0	0	0	0	±5 µm (0.2 mils)
2	541	0	21.299	0	
3	0	538.3	0	21.193	
4	541	538.3	21.299	21.193	
5	73.7	1023	2.902	40.276	
6	1528.8	1023	60.189	40.276	
7	73.7	7737	2.902	304.606	
8	1528.8	7737	60.189	304.606	



NOTES:

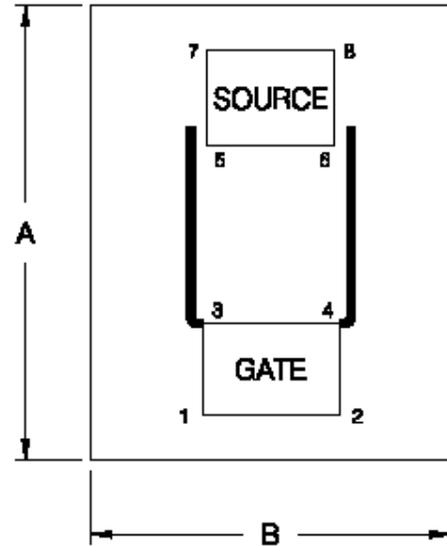
1. Dimensions are in micrometers. Mils are given for general information only.
2. Top metal: Aluminum, 8 µm (0.31 mils) thick.
3. Back metal: Titanium, nickel, silver, 0.1, 0.2, 0.25 µm thick, respectively.
4. All dimensions are valid for all radiation hardness levels specified.
5. Backside metal is the drain connection.
6. Die thickness: 203 µm (8 mils).
7. For sawn die, outline dimensions (A and B) will be reduced by 25 µm (0.98 mils), due to saw kerf.
8. Die bond pad coordinates are provided for use in automated bonding equipment. Key locations 1 through 8 refer to adjacent gate (G)/source pad corners. Key 2 through 8 are relative to Key 1.
9. See 6.5 for ordering information.

FIGURE 7. JANHC and JANKC A-version die dimensions. 2N7523 and 2N7524.

2N7503, 2N7506, 2N7518 N or P channel, 2N7521, 2N7525, 2N7522, 2N7526

Ltr.	Dimensions		Tolerance
	Micrometers	Mils	
A	2542.9	100.1	±200 µm (7.87 mils)
B	2010.0	79.1	

Key	Die bond pad coordinates				Tolerance
	Micrometers		Mils		
	X	Y	X	Y	
1	0	0	0	0	±5 µm (0.2 mils)
2	685.9	0	27.004	0	
3	0	502.0	0	19.764	
4	685.9	502.0	27.004	19.764	
5	-10.0	1560.5	-0.394	61.437	
6	695.8	1560.5	27.394	61.437	
7	-10.0	2099.9	-0.394	82.673	
8	695.8	2099.9	27.394	82.673	



NOTES:

1. Dimensions are in micrometers. Mils are given for general information only.
2. Top metal: Aluminum, 8 µm (0.31 mils) thick.
3. Back metal: Titanium, nickel, silver, 0.1, 0.2, 0.25 µm thick, respectively.
4. All dimensions are valid for all radiation hardness levels specified.
5. Backside metal is the drain connection.
6. Die thickness: 330 µm (13 mils).
7. For sawn die, outline dimensions (A and B) will be reduced by 25 µm (0.98 mils), due to saw kerf.
8. Die bond pad coordinates are provided for use in automated bonding equipment. Key locations 1 through 8 refer to adjacent gate/source pad corners. Key 2 through 8 are relative to Key 1.
9. See 6.5 for ordering information.

* FIGURE 8. JANHC and JANKC A-version die dimensions, 2N7503, 2N7506, 2N7518-N or P channel, 2N7521, 2N7525, 2N7522, and 2N7526.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-19500 - Semiconductor Devices, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-750 - Test Methods for Semiconductor Devices.

(Copies of these documents are available online at <http://assist.daps.dla.mil/quicksearch/> or <http://assist.daps.dla.mil/> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

* 2.3 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 General. The individual item requirements shall be as specified in MIL-PRF-19500 and as modified herein.

3.2 Qualification. Devices furnished under this specification shall be products that are manufactured by a manufacturer authorized by the qualifying activity for listing on the applicable qualified manufacturers list before contract award (see 4.2 and 6.3).

3.3 Abbreviations, symbols, and definitions. Abbreviations, symbols, and definitions used herein shall be as specified in MIL-PRF-19500.

3.4 Interface and physical dimensions. Interface and physical dimensions shall be as specified in MIL-PRF-19500, and on figures 1 through 8.

3.5 Marking. The individual die are not required to be marked. The die container (waffle pack) shall be marked in accordance with MIL-PRF-19500.

3.6 Electrostatic discharge protection. The devices covered by this specification require electrostatic discharge protection.

3.6.1 Handling. MOS devices must be handled with certain precautions to avoid damage due to the accumulation of static charge. However, the following handling practices are recommended (see 3.6).

- a. Devices should be handled on benches with conductive handling devices.
- b. Ground test equipment, tools, and personnel handling devices.
- c. Avoid use of plastic, rubber, or silk in MOS areas.
- d. Maintain relative humidity above 50 percent if practical.
- e. Care should be exercised during test and troubleshooting to apply not more than maximum rated voltage to any pad.
- f. Gate must be terminated to source, $R \leq 100 \text{ k}\Omega$, whenever bias voltage is to be applied drain to source.

3.7 Electrical test requirements. The electrical test requirements shall be as specified in table I.

3.8 Electrical performance characteristics. Unless otherwise specified herein, the electrical performance characteristics are as specified in the applicable specification sheet listed in table I herein.

3.9 Workmanship. Semiconductor devices shall be processed in such a manner as to be uniform in quality and shall be free from other defects that will affect life, serviceability, or appearance.

4. VERIFICATION

4.1 Classification of Inspections. The inspection requirements specified herein are classified as follows:

- a. Qualification inspection (element evaluation) (see 4.2).
- b. Screening (see 4.3).
- c. Conformance inspection (see 4.4).

4.2 Qualification inspection (element evaluation). Qualification inspection (element evaluation) shall be in accordance with appendix G of MIL-PRF-19500 and the applicable specification sheet from table I herein.

4.3 Screening (JANHC and JANKC). Screening of JANHC and JANKC die shall be in accordance with appendix G of MIL-PRF-19500 and the applicable specification sheet from table I herein, except test current shall not exceed 20 A.. Burn-in duration for the JANKC level follows JANS requirements; the JANHC follows JANTXV requirements.

4.4 Conformance inspection (group D). Conformance inspection (group D) shall be conducted in accordance with table E-VIII of MIL-PRF-19500 and the applicable performance specification sheet from table I herein.

4.5 Methods of inspection. Methods of inspection shall be as specified in the appropriate tables and as follows.

4.5.1 Pulse measurements. Conditions for pulse measurement shall be as specified in section 4 of MIL-STD-750.

MIL-PRF-19500/741A

* TABLE I. Applicable specification sheets.

Type (same exact die in:)	Specification sheet and common part number	Reference data			Figure
		Voltage (V dc)	Channel	Die size	
2N7467 or 2N7478	MIL-PRF-19500/697, 2N7478	30	N	6	1
2N7467 or 2N7478	MIL-PRF-19500/683, 2N7467	30	N	6	1
2N7468 or 2N7470	MIL-PRF-19500/698, 2N7470	60	N	6	1
2N7469 or 2N7471	MIL-PRF-19500/698, 2N7471	100	N	6	2
2N7472 or 2N7475	MIL-PRF-19500/685, 2N7475	130	N	6	2
2N7473 or 2N7476	MIL-PRF-19500/685, 2N7476	200	N	6	2
2N7474 or 2N7477	MIL-PRF-19500/685, 2N7477	250	N	6	2
2N7479 or 2N7482 or 2N7491 or 2N7494	MIL-PRF-19500/702, 2N7482	30	N	3	3
2N7480 or 2N7483 or 2N7492 or 2N7495	MIL-PRF-19500/702, 2N7483	60	N	3	3
2N7481 or 2N7484 or 2N7493 or 2N7496	MIL-PRF-19500/702, 2N7484	100	N	3	4
2N7485 or 2N7488 or 2N7497 or 2N7500	MIL-PRF-19500/705, 2N7488	130	N	3	5
2N7486 or 2N7489 or 2N7498 or 2N7501	MIL-PRF-19500/705, 2N7489	200	N	3	5
2N7487 or 2N7490 or 2N7499 or 2N7502	MIL-PRF-19500/705, 2N7490	250	N	3	5
* 2N7503 or 2N7518-Nch or 2N7521 or 2N7525	MIL-PRF-19500/740, 2N7525	100	N	1	8
2N7523	MIL-PRF-19500/733, 2N7523	-30	P	6	7
2N7524	MIL-PRF-19500/733, 2N7524	-60	P	6	7
2N7550	MIL-PRF-19500/713, 2N7550	-100	P	6	2
2N7549	MIL-PRF-19500/713, 2N7549	-200	P	6	2
2N7519	MIL-PRF-19500/732, 2N7519	-30	P	3	6
2N7520	MIL-PRF-19500/732, 2N7520	-60	P	3	6
2N7545 or 2N7547	MIL-PRF-19500/712, 2N7547	-100	P	3	4
2N7546 or 2N7548	MIL-PRF-19500/712, 2N7548	-200	P	3	5
* 2N7506 or 2N7518-Pch or 2N7522 or 2N7526	MIL-PRF-19500/740, 2N7526	-100	P	1	8

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the Military Service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

* (This section contains information of a general or explanatory nature that may be helpful, but is not mandatory. The notes specified in MIL-PRF-19500 are applicable to this specification.)

* 6.1 Intended use. Semiconductors conforming to this specification are intended for original equipment design applications and logistic support of existing equipment.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Packaging requirements (see 5.1).
- c. Product assurance level and type designator.
- d. Specify the JANHC or JANKC letter version (see 6.5 and figures 1 through 8 herein).

* 6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List (QML 19500) whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from Defense Supply Center, Columbus, ATTN: DSCC/VQE, P.O. Box 3990, Columbus, OH 43218-3990 or e-mail vqe.chief@dla.mil. An online listing of products qualified to this specification may be found in the Qualified Products Database (QPD) at <http://assist.daps.dla.mil>.

* 6.4 Cross reference list. The following information shows the generic P/N and its' associated military P/N (without the JAN or RHA prefix). Multiple military part number indicates that the same die type is used on more than one specification sheet.

For any military die-packaged basic P/N	Common military die P/N (1)	Generic die P/N (2)
2N7467 or 2N7478	JANHCAX or JANKCAX2N7478	IRHC5xZ60
2N7468 or 2N7470	JANHCAX or JANKCAX2N7470	IRHC5x064
2N7469 or 2N7471	JANHCAX or JANKCAX2N7471	IRHC5x160
2N7472 or 2N7475	JANHCAX or JANKCAX2N7475	IRHC5x163SE
2N7473 or 2N7476	JANHCAX or JANKCAX2N7476	IRHC5x260SE
2N7474 or 2N7477	JANHCAX or JANKCAX2N7477	IRHC5x264SE
2N7479 or 2N7482 or 2N7491 or 2N7494	JANHCAX or JANKCAX2N7482	IRHC5xZ30
2N7480 or 2N7483 or 2N7492 or 2N7495	JANHCAX or JANKCAX2N7483	IRHC5x034
2N7481 or 2N7484 or 2N7493 or 2N7496	JANHCAX or JANKCAX2N7484	IRHC5x130
2N7485 or 2N7488 or 2N7497 or 2N7500	JANHCAX or JANKCAX2N7488	IRHC5x133SE
2N7486 or 2N7489 or 2N7498 or 2N7501	JANHCAX or JANKCAX2N7489	IRHC5x230SE
2N7487 or 2N7490 or 2N7499 or 2N7502	JANHCAX or JANKCAX2N7490	IRHC5x234SE
2N7521 or 2N7525 or 2N7503 or 2N7518 N-channel	JANHCAX or JANKCAX2N7525	IRHC5x110
2N7523	JANHCAX or JANKCAX2N7523	IRHC59xZ60
2N7524	JANHCAX or JANKCAX2N7524	IRHC59x064
2N7550	JANHCAX or JANKCAX2N7550	IRHC59x160
2N7549	JANHCAX or JANKCAX2N7549	IRHC59x260
2N7519	JANHCAX or JANKCAX2N7519	IRHC59xZ30
2N7520	JANHCAX or JANKCAX2N7520	IRHC59x034
2N7545 or 2N7547	JANHCAX or JANKCAX2N7547	IRHC59x130
2N7546 or 2N7548	JANHCAX or JANKCAX2N7548	IRHC59x230
2N7522 or 2N7526 or 2N7506 or 2N7518 P-channel	JANHCAX or JANKCAX2N7526	IRHC59x110

- (1) These common die part numbers should be used for the same exact die used in their respective die-packaged part numbers. Replace X with letter indicating qualified rad-hardness (RHA designator) as follows:
- R = 100 K Rad (Si) (equivalent to manufacturer designator 7).
 - F = 300 K Rad (Si) (equivalent to manufacturer designator 3).
 - G = 500 K Rad (Si) (equivalent to manufacturer designator 4).
 - H = 1000 K Rad (Si) (equivalent to manufacturer designator 8).
- (2) Replace x with number indicating qualified rad-hardness as follows:
- 7 = 100 K Rad (Si) (equivalent to military RHA designator R).
 - 3 = 300 K Rad (Si) (equivalent to military RHA designator F).
 - 4 = 500 K Rad (Si) (equivalent to military RHA designator G).
 - 8 = 1000 K Rad (Si) (equivalent to military RHA designator H).

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* 6.5 Suppliers of JANHC and JANKC die. The qualified die suppliers with the applicable letter version (example, JANHCA2N7261) will be identified on the QML-19500.

JANC ordering information	
For die in type	Manufacturer CAGE 59993
	Common JANC die part numbers for ordering
2N7467 or 2N7478	JANHCAR2N7478, JANKCAR2N7478, JANHCAF2N7478, JANKCAF2N7478 JANHCAG2N7478, JANKCAG2N7478, JANHCAH2N7478, JANKCAH2N7478
2N7468 or 2N7470	JANHCAR2N72470, JANKCAR2N7470, JANHCAF2N7470, JANKCAF2N7470 JANHCAG2N72470, JANKCAG2N7470, JANHCAH2N7470, JANKCAH2N7470
2N7469 or 2N7471	JANHCAR2N7471, JANKCAR2N7471, JANHCAF2N7471, JANKCAF2N7471 JANHCAG2N7471, JANKCAG2N7471, JANHCAH2N7471, JANKCAH2N7471
2N7472 or 2N7475	JANHCAR2N7475, JANKCAR2N7475, JANHCAF2N7475, JANKCAF2N7475
2N7473 or 2N7476	JANHCAR2N7476, JANKCAR2N7476, JANHCAF2N7476, JANKCAF2N7476
2N7474 or 2N7477	JANHCAR2N7477, JANKCAR2N7477, JANHCAF2N7477, JANKCAF2N7477
2N7479 or 2N7482 or 2N7491 or 2N7494	JANHCAR2N7482, JANKCAR2N7482, JANHCAF2N7482, JANKCAF2N7482 JANHCAG2N7482, JANKCAG2N7482, JANHCAH2N7482, JANKCAH2N7482
2N7480 or 2N7483 or 2N7492 or 2N7495	JANHCAR2N7483, JANKCAR2N7483, JANHCAF2N7483, JANKCAF2N7483 JANHCAG2N7483, JANKCAG2N7483, JANHCAH2N7483, JANKCAH2N7483
2N7481 or 2N7484 or 2N7493 or 2N7496	JANHCAR2N7484, JANKCAR2N7484, JANHCAF2N7484, JANKCAF2N7484 JANHCAG2N7484, JANKCAG2N7484, JANHCAH2N7484, JANKCAH2N7484
2N7485 or 2N7488 or 2N7497 or 2N7500	JANHCAR2N7488, JANKCAR2N7488, JANHCAF2N7488, JANKCAF2N7488
2N7486 or 2N7489 or 2N7498 or 2N7501	JANHCAR2N7489, JANKCAR2N7489, JANHCAF2N7489, JANKCAF2N7489
2N7487 or 2N7490 or 2N7499 or 2N7502	JANHCAR2N7490, JANKCAR2N7490, JANHCAF2N7490, JANKCAF2N7490
2N7503 or 2N7518 N-channel or 2N7521 or 2N7525	JANHCAR2N7525, JANKCAR2N7525, JANHCAF2N7525, JANKCAF2N7525 JANHCAG2N7525, JANKCAG2N7525, JANHCAH2N7525, JANKCAH2N7525
2N7523	JANHCAR2N7523, JANKCAR2N7523, JANHCAF2N7523, JANKCAF2N7523
2N7524	JANHCAR2N7524, JANKCAR2N7524, JANHCAF2N7524, JANKCAF2N7524
2N7550	JANHCAR2N7550, JANKCAR2N7550, JANHCAF2N7550, JANKCAF2N7550
2N7549	JANHCAR2N7549, JANKCAR2N7549, JANHCAF2N7549, JANKCAF2N7549
2N7519	JANHCAR2N7519, JANKCAR2N7519, JANHCAF2N7519, JANKCAF2N7519
2N7520	JANHCAR2N7520, JANKCAR2N7520, JANHCAF2N7520, JANKCAF2N7520
2N7545 or 2N7547	JANHCAR2N7547, JANKCAR2N7547, JANHCAF2N7547, JANKCAF2N7547
2N7546 or 2N7548	JANHCAR2N7548, JANKCAR2N7548, JANHCAF2N7548, JANKCAF2N7548
2N7506 or 2N7518 P-channel or 2N7522 or 2N7526	JANHCAR2N7526, JANKCAR2N7526, JANHCAF2N7526, JANKCAF2N7526

* 6.6 Changes from previous issue. The margins of this specification are marked with asterisks to indicate where changes from the previous issue 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 issue.

Custodians:

Army - CR
Navy - EC
Air Force - 85
NASA - NA
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