

The documentation and process conversion measures necessary to comply with this revision shall be completed by 29 Sep 95.

INCH-POUND

MIL-S-19500/599B
31 March 1995
SUPERSEDING
MIL-S-19500/599A
28 July 1994

MILITARY SPECIFICATION

SEMICONDUCTOR DEVICE, QUAD, FIELD EFFECT TRANSISTORS,
P-CHANNEL, SILICON TYPE 2N7335
JAN, JANTX, JANTXV, JANS, JANHC, AND JANKC

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

1. SCOPE

1.1 Scope. This specification covers the detail requirements for quad P-channel, enhancement-mode, MOSFET, power transistor intended for use in high density power switching applications. Four levels of product assurance are provided for each encapsulated device type as specified in MIL-S-19500, with avalanche energy ratings (E_{AS} and E_{AR}) and maximum avalanche current (I_{AR}). Two levels of product assurance for each unencapsulated device type die (element evaluation).

1.2 Physical dimensions. See figures 1 (MO-Q36AB) and 2 for JANHC and JANKC die dimensions.

1.3 Unless otherwise specified, maximum ratings ($T_A = +25^\circ\text{C}$).

Type	P_T 1/ $T_C = +25^\circ\text{C}$ (free air)	V_{GS}	I_{D1} 2/ $T_C = +25^\circ\text{C}$	I_{D2} 2/ $T_C = +100^\circ\text{C}$	I_S
	<u>W</u>	<u>V dc</u>	<u>A dc</u>	<u>A dc</u>	<u>A dc</u>
2N7335	1.4	± 20	-0.75	-0.50	-0.75

E_{AS}	E_{AR}	I_{AR} 2/	I_{DM} 3/	T_{op} and T_{STG}	Max $r_{DS(on)}$ 1/		$R_{\theta JA1}$ maximum (1 die)	$R_{\theta JA2}$ maximum (4 die)
					$V_{GS} = 10 \text{ V dc}, I_D = I_{D2}$ $T_J = +25^\circ\text{C}$	$T_J = +150^\circ\text{C}$		
<u>mJ</u>	<u>mJ</u>	<u>A</u>	<u>A (pk)</u>	<u>°C</u>	<u>ohms</u>	<u>ohms</u>	<u>°C/W</u>	<u>°C/W</u>
75	.14	-0.75	-3.0	-55 to +150	1.4	2.5	90	50

1/ Derate linearly W/°C for $T > +25^\circ\text{C}$.

$$P_T = \frac{T_J \text{ max} - T_C}{R_{\theta JA}}$$

$$I_D = \sqrt{\frac{T_J(\text{max}) - T_C}{R_{\theta JA} \times (R_{DS(on)} \text{ at } T_J(\text{max}))}}$$

3/ $I_{DM} = 4 I_{D1}$; I_{D1} as calculated in footnote 2.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Defense Electronics Supply Center ATTN: DESC-ELDT, 1507 Wilmington Pike, Dayton, OH 45444-5765, using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 5961

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

1.4 Primary electrical characteristics at $T_C = +25^\circ\text{C}$.

Type	Min $V_{(BR)DSS}$ $V_{GS} = 0 \text{ V dc}$ $I_D = 1 \text{ mA dc}$	$V_{GS(th)1}$ $V_{DS} \geq V_{GS}$ $I_D = 0.25 \text{ mA}$	Max I_{DSS1} $V_{GS} = 0 \text{ V dc}$ $V_{DS} = 80$ percent of rated V_{DS}	Max $r_{DS(on)1}$ 1/ $V_{GS} = 10 \text{ V dc}$ $I_D = I_{D2}$ $T_J = +25^\circ\text{C}$
	<u>V dc</u>	<u>V dc</u> Min Max	<u>μA dc</u>	<u>ohms</u>
2N7335	-100	-2.0 -4.0	-25	1.4

1/ Pulsed (see 4.5.1).

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 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 listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATION

MILITARY

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

STANDARD

MILITARY

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

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Defense Printing Service Detachment Office, Building 4D (Customer Service), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Order of precedence. 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 Associated detail specification. The individual item requirements shall be in accordance with MIL-S-19500 and as specified herein.

3.2 Abbreviations, symbols, and definitions. Abbreviations, symbols, and definitions used herein shall be as specified in MIL-S-19500 and as follows.

JANH High reliability product assurance level for unencapsulated devices.

JANK Space reliability product assurance level for unencapsulated devices.

3.3 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-S-19500 and on figure 1 herein.

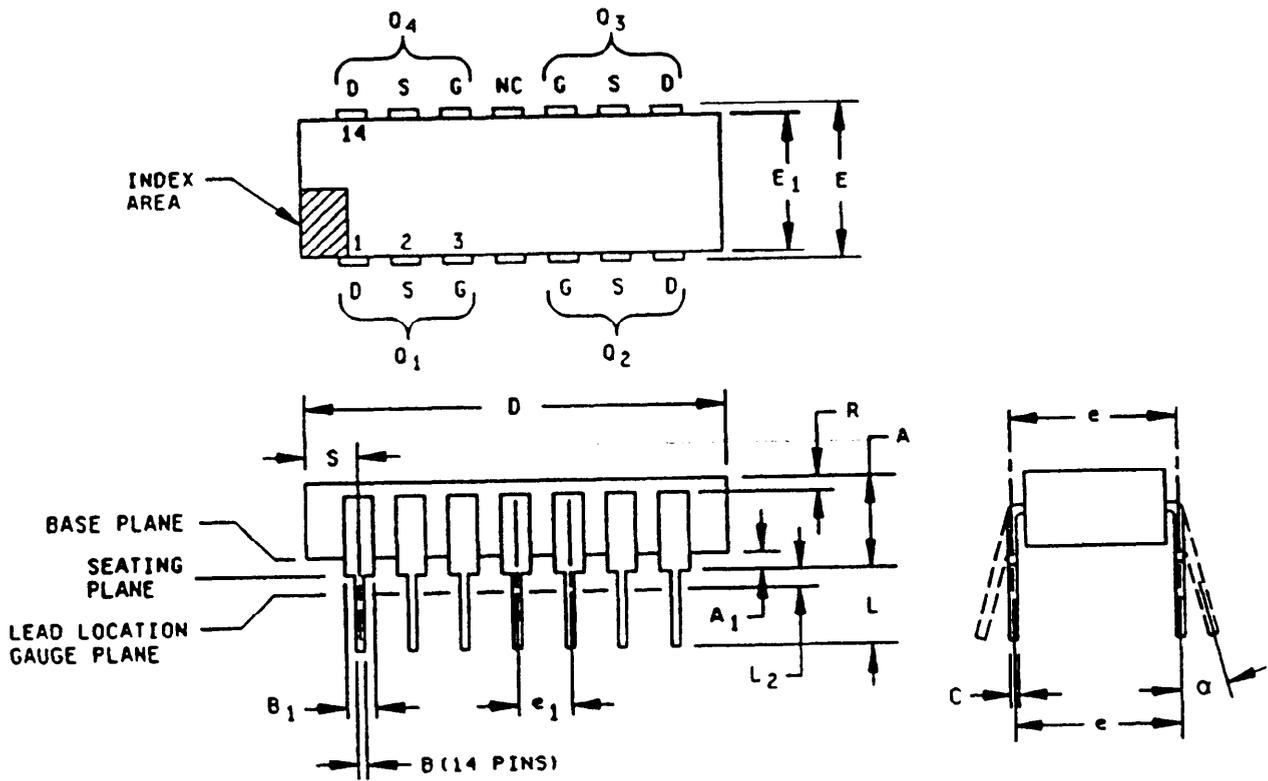


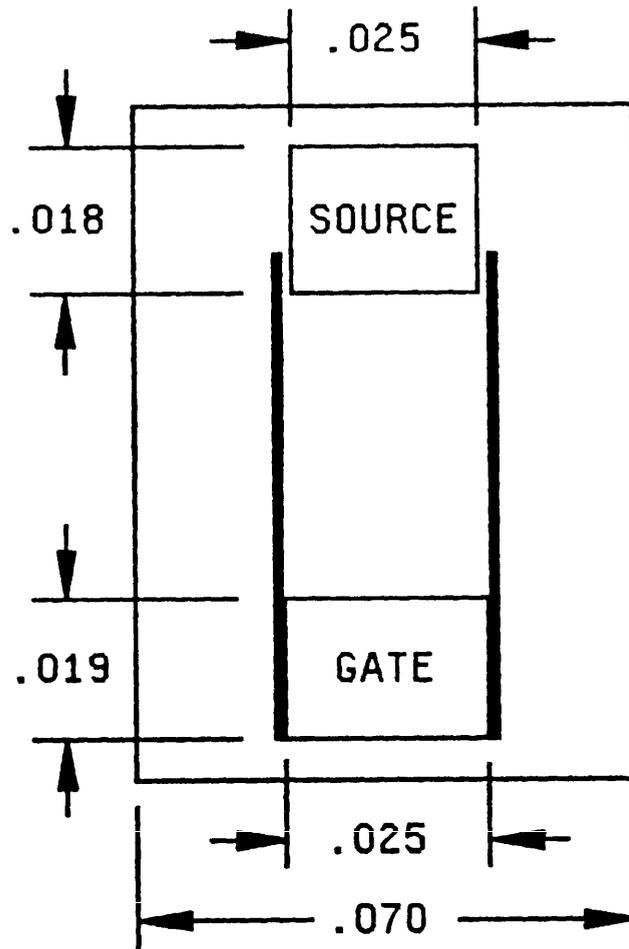
FIGURE 1. Dimensions and configuration (MO-Q36AB).

Symbol	AB				Notes
	Dimensions				
	Inches		Millimeters		
	Min	Max	Min	Max	
A	.105	.175	2.67	4.45	11
A ₁	.025	.055	.64	1.40	11
B	.015	.021	.381	.533	
B ₁	.038	.060	.97	1.52	
C	.008	.012	.203	.305	
D	.690	.770	17.53	19.56	
E	.290	.325	7.37	8.26	
E ₁	.280	.310	7.11	7.87	10
e ₁	.100 TP		2.54 TP		5, 6
e	.300 TP		7.62 TP		5, 6
L	.125	.175	3.18	4.45	11
L ₂	.000	.030	.00	.76	
α	0°	15°	0°	15°	7
N	14		14		8
R	.010		.25		
S	.030	.095	.76	2.41	

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Refer to applicable symbol list.
4. Dimensioning and tolerancing in accordance with ANSI Y14.5-1973.
5. Leads within .13 mm (.005 in.) radius of True Position (TP) at gauge plane with maximum material condition and unit installed.
6. e₁ and e applies in zone L₂ when unit installed.
7. α applies to spread leads prior to installation.
8. N is the number of terminal positions.
9. Outlines on which the seating plane is coincident with the base plane (A₁ = 0), terminals lead standoffs are not required, and B₁ may equal B along any part of the lead above the seating/base plane.
10. E₁ does not include particles of package materials.
11. This dimension shall be measured with the device seated in the seating plane gauge JEDEC Outline No. GS-3.

FIGURE 1. Dimensions and configuration (M0-Q36AB) - Continued.



HEX-1: 100V, P-CHANNEL

Inches	mm
.018	0.46
.019	0.48
.025	0.64
.070	1.78

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ± 0.005 inch (0.13 mm).
4. The physical characteristics of the die thickness are .0187 inch (0.474 mm). The back metals are chromium, nickel, and silver. The top metal is aluminum and the back contact is the drain.

FIGURE 2. JANHCA and JANKCA die dimensions.

3.3.1 Lead finish. Lead finish shall be solderable in accordance with MIL-STD-750, MIL-S-19500, and herein. Where a choice of lead finish is desired, it shall be specified in the acquisition document (see 6.2).

3.4 Marking. Marking shall be in accordance with MIL-S-19500.

3.4.1 Marking of JANHC and JANKC die. For JANHC and JANKC die container, the following marking shall be used (example):

JANHCAM2N7335
 ↑↑↑↑
 ┌───┐ RHA level (see MIL-S-19500).
 │ ├───┐ Source of manufacturer (see figure 3).
 │ └───┘ Unencapsulated.
 └───┘ Product assurance level 1/.

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

3.5.1 Handling. MOS devices must be handled with certain precautions to avoid damage due to the accumulation of electrostatic charge. The following handling practices shall be followed:

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

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection shall be in accordance with MIL-S-19500, and as specified herein.

4.2 Qualification inspection. Qualification inspection shall be in accordance with MIL-S-19500, and as specified herein. Alternate flow is allowed for qualification inspection in accordance with figure 2 of MIL-S-19500.

4.2.1 Group E inspection. Group E inspection shall be conducted in accordance with MIL-S-19500, and (see 4.4) herein.

4.3 Screening (JANS, JANTX, and JANTXV levels only). Screening shall be in accordance with table II of MIL-S-19500, and as specified herein. The following measurements shall be made in accordance with table I herein. Devices that exceed the limits of table I herein shall not be acceptable.

4.3.1 Screening (JANHC and JANKC). Screening shall be in accordance with MIL-S-19500 (see appendix H). As a minimum, die shall be 100 percent probed in accordance with group A.

^{1/} Two levels of product assurance levels are provided for unencapsulated devices, H and J (see MIL-S-19500).

Screen (see table II of MIL-S-19500)	Measurement	
	JANS level	JANTX and JANTXV levels
1/ 2/	Gate stress test (see 4.5.5)	Gate stress test (see 4.5.5)
1/	Method 3161 (see 4.5.3)	Method 3161 (see 4.5.3)
9	I_{GSS1} , I_{DSS1} , subgroup 2 of table I herein	Subgroup 2 of table I herein
10	Method 1042, test condition B	Method 1042, test condition B
11	I_{GSS1} , I_{DSS1} , $r_{DS(on)1}$, $V_{GS(th)1}$ Subgroup 2 of table I herein; $\Delta I_{GSS1} = \pm 20$ nA dc or ± 100 percent of initial value, whichever is greater $\Delta I_{DSS1} = \pm 25$ μ A dc or ± 100 percent of initial value, whichever is greater	I_{GSS1} , I_{DSS1} , $r_{DS(on)1}$, $V_{GS(th)1}$, subgroup 2 of table I herein
12	Method 1042, test condition A, $t = 240$ hours	Method 1042, test condition A
13	Subgroups 2 and 3 of table I herein; $\Delta I_{GSS1} = \pm 20$ nA dc or ± 100 percent of initial value, whichever is greater $\Delta I_{DSS1} = \pm 25$ μ A dc or ± 100 percent of initial value, whichever is greater $\Delta r_{DS(on)1} = \pm 20$ percent of initial value $\Delta V_{GS(th)1} = \pm 20$ percent of initial value	Subgroup 2 of table I herein; $\Delta I_{GSS1} = \pm 20$ nA dc or ± 100 percent of initial value, whichever is greater $\Delta I_{DSS1} = \pm 25$ μ A dc or ± 100 percent of initial value, whichever is greater $\Delta r_{DS(on)1} = \pm 20$ percent of initial value $\Delta V_{GS(th)1} = \pm 20$ percent of initial value

1/ Shall be performed anytime before screen 10.

2/ This is a stress test designed to insure a rugged product.

4.4 Quality conformance inspection. Quality conformance inspection shall be in accordance with MIL-S-19500, and as specified herein. Alternate flow is allowed for quality conformance inspection in accordance with figure 2 of MIL-S-19500.

4.4.1 Group A inspection. Group A inspection shall be conducted in accordance with MIL-S-19500, and table I herein. Electrical measurements (end-points) shall be in accordance with the applicable steps of table I, subgroup 2 herein. Delta requirements shall be in accordance with the applicable steps of table II herein.

4.4.2 Group B inspection. Group B inspection shall be conducted in accordance with the conditions specified for subgroup testing in table IVa (JANS) and table IVb (JAN, JANTX, and JANTXV) of MIL-S-19500, and as follows. Electrical measurements (end-points) shall be in accordance with the applicable steps of table I, subgroup 2 herein. Delta requirements shall be in accordance with the applicable steps of table II herein.

4.4.2.1 Group B inspection, table IVa (JANS) of MIL-S-19500.

Subgroup	Method	Conditions
B3	1051	Test condition G.
B4	1042	Not applicable.
B5	1042	Test condition A, $T_A = +175^\circ\text{C}$, $t = 120$ hours. Read and record $V_{BR(DSS)}$ (pre and post) at $I_D = 1$ mA. Read and record I_{DSS} (pre and post), in accordance with table III. Accelerated steady-state gate stress, method 1042, condition B, $T_A = +175^\circ\text{C}$, $t = 24$ hours.
B6	3161	See 4.5.2.

4.4.2.2 Group B inspection, table IVb (JAN, JANTX, and JANTXV) of MIL-S-19500.

Subgroup	Method	Conditions
B2	1051	Test condition G.
B3	1042	Test condition A, $T_A = +150^\circ\text{C}$, $t = 160$ hours.
B3	1042	Test condition B, $T_A = +150^\circ\text{C}$, $t = 24$ hours.

4.4.3 Group C inspection. Group C inspection shall be conducted in accordance with the conditions specified for subgroup testing in table V of MIL-S-19500, and as follows. Electrical measurements (end-points) shall be in accordance with the applicable steps of table I, subgroup 2 herein. Delta requirements shall be in accordance with the applicable steps of table II herein.

4.4.3.1 Group C inspection, table V of MIL-S-19500.

Subgroup	Method	Conditions
C2	2036	Test condition E.
C6	1042	Test condition A, $T_A = +150^\circ\text{C}$, $t = 340$ hours.
C6	1042	Test condition B, $T_A = +150^\circ\text{C}$, $t = 24$ hours.

4.4.4 Group E inspection (except JANHC and JANKC). Group E inspection shall be conducted in accordance with the conditions specified for subgroup testing in table VII of MIL-S-19500, and as follows. Electrical measurements (end-points) shall be in accordance with the applicable steps of table I, subgroup 2 herein. Delta requirements shall be in accordance with the applicable steps of table II herein.

4.4.4.1 Group E inspection, table VII of MIL-S-19500.

Subgroup	Method	Conditions
E1	1051	Test condition G, 500 cycles; 45 devices, $c = 0$.
E1	1071	
E2	1042	Test condition A, 1,000 hours; 45 devices, $c = 0$.
E2	1042	Test condition B, 1,000 hours; 45 devices, $c = 0$.
E4	3161	$R_{QA1} = 90^\circ\text{C/W}$ maximum (see 4.5.2), sampling plan 5 devices, $c = 0$.

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.

4.5.2 Thermal resistance. Thermal resistance measurements shall be performed in accordance with method 3161 of MIL-STD-750. $R_{\theta JA}$ maximum = 90°C/W, for each die.

- a. I_M measuring current 10 mA.
- b. I_H drain heating current 0.15 A minimum.
- c. t_H heating time Steady-state (see method 3161 of MIL-STD-750 for definition).
- d. V_H drain-source heating voltage 15 V.
- e. t_{MD} measurement time delay 30 to 60 μ s.
- f. t_{SW} sample window time 10 μ s maximum.

4.5.3 Thermal impedance ($Z_{\theta JC}$ measurements). The $Z_{\theta JC}$ measurements shall be performed in accordance with method 3161 of MIL-STD-750. The maximum limit (not to exceed figure 3, thermal impedance curves and the group A, subgroup 2 limits) for $Z_{\theta JC}$ in screening (table II of MIL-S-19500) shall be derived by each vendor by means of statistical process control. When the process has exhibited control and capability, the capability data shall be used to establish the fixed screening limit. In addition to screening, once a fixed limit has been established, monitor all future sealing lots using a random five piece sample from each lot to be plotted on the applicable X, R chart. If a lot exhibits an out of control condition, the entire lot shall be removed from the line and held for engineering evaluation and disposition. This procedure may be used in lieu of an inline process monitor.

- a. I_M measuring current 10 mA.
- b. I_H drain heating current 0.15 A minimum.
- c. t_H heating time 100 ms.
- d. V_H drain-source heating voltage 15 V minimum.
- e. t_{MD} measurement time delay 30 to 60 μ s.
- f. t_{SW} sample window time 10 μ s maximum.

4.5.4 Single pulse unclamped inductive switching.

- a. Peak current (I_{AS}) I_{D1} .
- b. Peak gate voltage (V_{GS}) -10 V.
- c. Gate to source resistor (R_{GS}) $25 \leq R_{GS} \leq 200\Omega$.
- d. Initial case temperature +25°C +10°C, -5°C.
- e. Inductance $\left[\frac{2E_{AS}}{(I_{D1})^2} \right] \left[\frac{(V_{BR} - V_{DD})}{V_{BR}} \right]$ mH minimum
- f. Number of pulses to be applied 1 pulse minimum.
- g. Supply voltage (V_{DD}) -25 V.

4.5.5 Gate stress test.

- a. $V_{GS} = \pm 30$ V minimum.
- b. $t = 250$ μ s minimum.

TABLE 1. Group A inspection.

Inspection 1/ Subgroup 1	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
Visual and mechanical inspection	2071					
Subgroup 2						
Thermal impedance 2/	3161	See 4.5.3	$Z_{\theta JC}$		10.0	$^{\circ}C/W$
Breakdown voltage, drain to source	3407	$V_{GS} = 0$ V dc, $I_D = -1$ mA dc, Condition C	$V_{(BR)DSS}$	-100		V dc
Gate to source voltage (threshold)	3404	$V_{DS} \geq V_{GS}$, $I_D = -0.25$ mA dc	$V_{GS(th)1}$	-2.0	-4.0	V dc
Gate current	3411	$V_{GS} = +20$ V dc and -20 V dc, Bias condition C, $V_{DS} = 0$	I_{GSS1}		± 100	nA dc
Drain current	3413	$V_{GS} = 0$ V dc, $V_{DS} = 80$ percent of rated V_{DS} , Bias condition C	I_{DSS1}		-25	μA dc
Static drain to source on-state resistance	3421	$V_{GS} = -10$ V dc, pulsed (see 4.5.1), Condition A, $I_D =$ rated I_{D2} (see 1.3)	$r_{DS(on)1}$		1.4	Ω
Forward voltage (source drain diode)	4011	Pulsed (see 4.5.1), $V_{GS} = 0$ V dc, $I_D = I_{D1}$	V_{SD}		5.5	V
Subgroup 3						
High temperature operation:		$T_C = T_J = +125^{\circ}C$				
Gate current	3411	Bias condition C, $V_{GS} = +20$ V dc and -20 V dc, $V_{DS} = 0$ V dc	I_{GSS2}		± 200	nA dc
Drain current	3413	Bias condition C, $V_{GS} = 0$ V dc, $V_{DS} = 80$ percent of rated V_{DS}	I_{DSS2}		-0.25	mA dc
Static drain to source on-state resistance	3421	$V_{GS} = -10$ V dc, pulsed (see 4.5.1), $I_D =$ rated I_{D2}	$r_{DS(on)3}$		2.3	Ω

See footnotes at end table.

TABLE I. Group A inspection - Continued.

Inspection 1/	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 3</u> - Continued						
Gate to source voltage (threshold)	3404	$V_{DS} \geq V_{GS}$, $I_D = -0.25$ mA dc	$V_{GS(th)2}$	-1.0		V dc
Low temperature operation:		$T_C = T_J = -55^\circ\text{C}$				
Gate to source voltage (threshold)	3403	$V_{DS} \geq V_{GS}$, $I_D = -0.25$ mA dc	$V_{GS(th)3}$		-5.0	V dc
<u>Subgroup 4</u>						
Switching time test						
Turn-on delay time	3472	$I_D = \text{rated } I_{D1}$, $V_{GS} = -10$ V dc, $R_g = 24 \Omega$, $V_{DD} = 0.5 V_{BR(DSS)}$	$t_{d(on)}$		30	ns
Rise time			t_r		60	ns
Turn-off delay time			$t_{d(off)}$		40	ns
Fall time			t_f		40	ns
<u>Subgroup 5</u>						
Single pulse unclamped inductive switching	3470	See 4.5.4 116 devices, $c = 0$				
Electrical measurements		See table 1, subgroup 2 herein				
Safe operating area test	3474	$V_{DS} = 80$ percent of rated $V_{BR(DSS)}$, $t_p = 10$ ms, $I_D = 0.5$ A				
Electrical measurements		See table 1, subgroup 2 herein				
<u>Subgroup 6</u>						
Not applicable						

See footnotes at end of table.

TABLE I. Group A inspection - Continued.

Inspection <u>1/</u>	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 7</u>						
Gate charge	3471	Condition B				
On-state gate charge			$Q_{g(on)}$		15	nC
Gate to source charge			Q_{gs}		7.0	nC
Gate to drain charge			Q_{gd}		8.0	nC
Reverse recovery time	3473	$di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq -30 \text{ V dc}$, $I_D = I_{D1}$	t_{rr}		200	ns

1/ For sampling plan, see MIL-S-19500.

2/ This test is required for the following endpoint measurements only (not intended for screen 13):

JANS - group B, subgroup 3.

JAN, JANTX and JANTXV - group B, subgroups 2 and 3.
group C, subgroup 6.
group E, subgroup 1.

TABLE II. Groups A, B, and C delta measurements. 1/

Step	Inspection	MIL-STD-750		Symbol	Limit		Unit
		Method	Conditions		Min	Max	
1.	Breakdown voltage drain to source	3407	$V_{GS} = 0$ V dc, $I_D = -1$ mA dc test condition C	$\Delta V_{(BR)DSS}$	± 10 percent		mV
2.	Drain current	3413	$V_{GS} = 0$ V dc, $V_{DS} = 80$ percent of rated V_{DS} ; bias condition C	ΔI_{DSS1}	± 25		

1/ The delta measurements for table IVa (JANS) of MIL-S-19500 are as follows: Subgroup 5, see table II herein, steps 1 and 2.

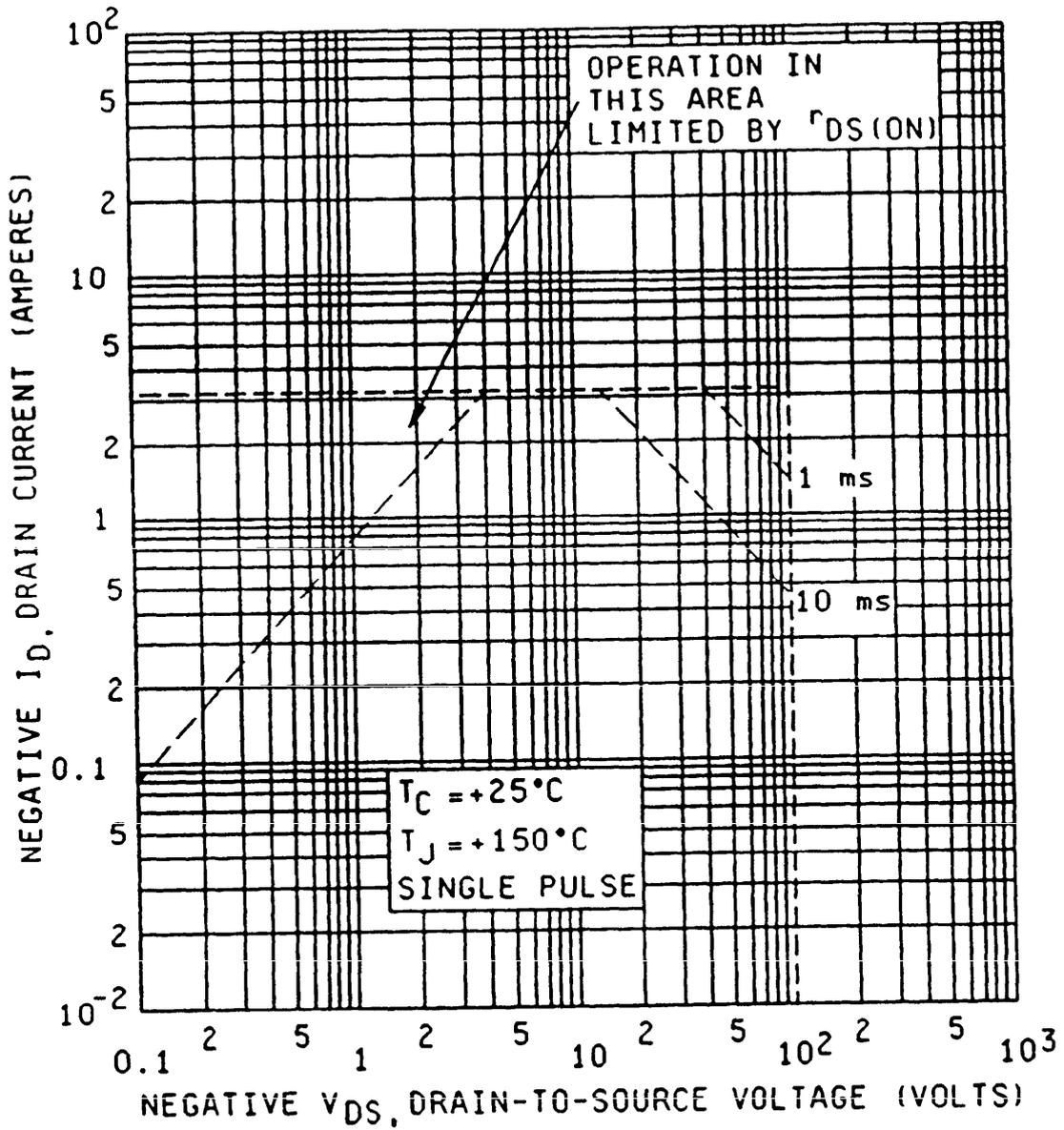


FIGURE 3. Maximum safe operating area.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-S-19500.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory).

6.1 Notes. The notes specified in MIL-S-19500 are applicable to this specification.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Issue of DODISS to be cited in the solicitation.
- b. Lead finish as specified (see 3.3.1).
- c. Product assurance level, type designation and for die acquisition, and the die identification should be specified (see figure 2).

6.3 Substitution information. Devices covered by this specification are substitutable for the manufacturers' and users' Part or Identifying Number (PIN). This information in no way implies that manufacturers' PIN's are suitable as a substitute for the military PIN.

Military PIN	Manufacturers' CAGE code	Manufacturers' and users' PIN
2N7335	59993	1RF69110

6.4 Suppliers of JANHC and JANKC die. The qualified JANHC and JANKC suppliers with the applicable letter version (example, JANHC2N7335) will be identified on the QPL.

JANHC and JANKC ordering information		
PIN	Manufacturer CAGE 59993	
2N7335	JANHC2N7335	JANKC2N7335

6.5 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

CONCLUDING MATERIAL

Custodians:

Army - ER
Navy - EC
Air Force - 17
NASA - NA

Preparing activity:
DLA - ES

(Project 5961-1766)

Review activities:

Army - AR, SM
Navy - AS, CG, MC
Air Force - 13, 19, 85, 99

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER
MIL-S-19500/599B

2. DOCUMENT DATE (YYMMDD)
95-03-31

3. DOCUMENT TITLE SEMICONDUCTOR DEVICE, QUAD, FIELD EFFECT TRANSISTOR, P-CHANNEL, SILICON, TYPE 2N7335 JAN, JANTX, JANXXV, JANS, JANHC, AND JANKC

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

d. TELEPHONE (Include Area Code)

7. DATE SUBMITTED
(YYMMDD)

(1) Commercial
(2) AUTOVON
(If applicable)

8. PREPARING ACTIVITY

a. NAME Alan Barone

b. TELEPHONE (Include Area Code)

(1) Commercial
513-296-6048

(2) AUTOVON
986-6048

c. ADDRESS (Include Zip Code)
Defense Electronics Supply Center
Attn: DESC-EQ21
Dayton, OH 45444-5765

IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:
Defense Quality and Standardization Office
5205 Leesburg Pike, Suite 3403, Falls Church, VA 22041-3466
Telephone (703) 756-2340 AUTOVON 289-2340