The documentation and process conversion measures necessary to comply with this revision shall be completed by 17 November 2005.

INCH - POUND

MIL-PRF-19500/570C
17 August 2005
SUPERSEDING
MIL-PRF-19500/570B
16 February 1999

PERFORMANCE SPECIFICATION SHEET

SEMICONDUCTOR DEVICE, TRANSISTOR, FIELD EFFECT,
N-CHANNEL, SILICON LOGIC-LEVEL, TYPES 2N6901 AND 2N6903,
JAN, JANTX, JANTXV, AND JANS

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 a logic-level N-channel, enhancement-mode, MOSFET, power transistor. Four levels of product assurance are provided for each device type as specified in MIL-PRF-19500.

1.2 Physical dimensions. See figure 1, TO-205AF (formerly TO-39).

* 1.3 Maximum ratings. Unless otherwise specified, T_A = +25°C.

Type	P_T (1) T_C = +25°C	P_T T_A = +25°C	$R_{\theta JC}$	V_{DS}	V_{DG}	V_{GS}	I_{D1} (2) T_C = +25°C	I_{D2} (2) T_C = +100°C	I_S	I_{DM}	T_J and T_{STG}
	W	W	°C /W	V dc	V dc	V dc	A dc	A dc	A dc	A(pk)	°C
2N6901	8.33	0.6	15.0	100	100	± 10	1.69	1.07	1.69	5	-55 to +150
2N6903	8.33	0.6	15.0	200	200	± 10	0.98	0.62	0.98	4	

(1) Derated linearly by 0.067 W/°C for T_C > +25°C.
(2) The following formula derives the maximum theoretical I_D limit. I_D is limited by internal construction and may be limited by pin diameter:

$$I_D = \sqrt{\frac{T_{JM} - T_C}{(R_{\theta JC}) \times (R_{DS}(on) \text{ at } T_{JM})}}$$

* 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@dscc.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 .

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1.4 Primary electrical characteristics. Unless otherwise specified, at T_C = +25°C.

Type	Min $V_{(BR)DSS}$ V_{GS} = 0 V I_D = 1 mA	$V_{GS(th)1}$ $V_{DS} \geq V_{GS}$ I_D = 1 mA	Max I_{DSS1} V_{GS} = 0 V_{DS} = 80 percent of rated V_{DS}	Max $r_{DS(on)}$ (1) V_{GS} = 5 V dc	
				T_J = +25°C at I_{D1}	T_J = +150°C at I_D2
	V dc	V dc	µA dc	Ohms	Ohms
		Min Max			
2N6901	100	1.0 2.0	1.0	1.4	2.9
2N6903	200	1.0 2.0		3.65	8.65

(1) Pulsed (see 4.5.1).

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.

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. 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.

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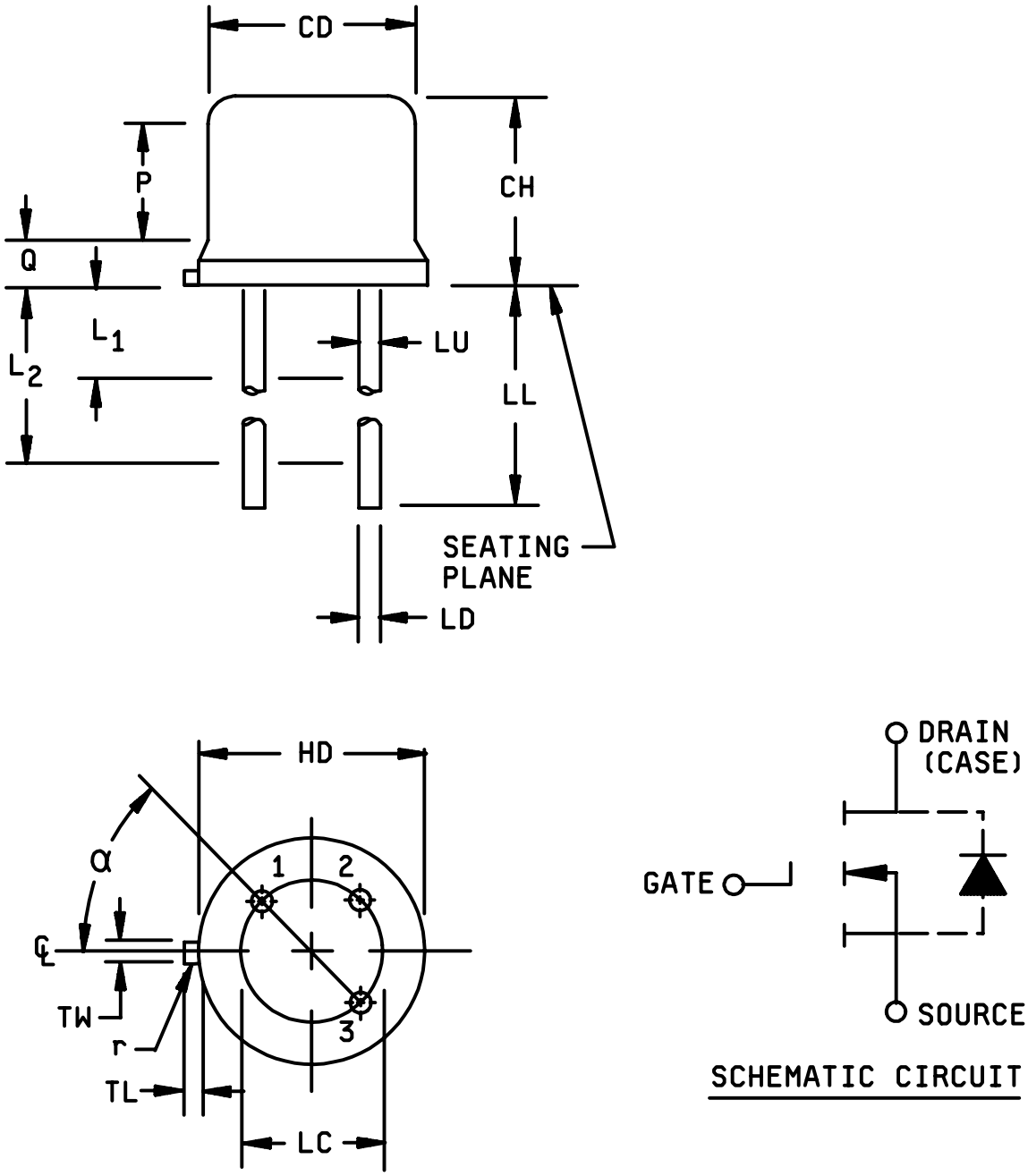

FIGURE 1. Physical dimensions for TO-205 AF.

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Dimensions					
Ltr	Inches		Millimeters		Notes
	Min	Max	Min	Max	
CD	.305	.335	7.75	8.51	
CH	.160	.180	4.07	4.57	
HD	.335	.370	8.51	9.40	
LC	.200 TP		5.08 TP		
LD	.016	.021	0.41	0.53	8,9
LL	.500	.750	12.70	19.05	8,9
LU	.016	.019	0.41	0.48	8,9
L_1		.050		1.27	8,9
L_2	.250		6.35		8,9
P	.100		2.54		6
Q		.050		1.27	5
TL	.029	.045	0.74	1.14	4
TW	.028	.034	0.71	0.86	3
r		.010		0.25	10
α	45° TP		45° TP		6

NOTES:

1. Dimensions are in inches.
* 2. Millimeters are given for general information only.
3. Beyond radius(r) maximum, TW shall be held for a minimum length of .011 (0.28 mm).
4. Dimension TL measured from maximum HD.
5. Outline in this zone is not controlled.
6. Dimension CD shall not vary more than .010 (0.25 mm) in zone P. This zone is controlled for automatic handling.
* 7. Leads at gauge plane .054 +.001, -.000 (1.37 +0.03, -0.00 mm) below seating plane shall be within .007 (0.18 mm) radius of true position (TP) at maximum material condition (MMC) relative to tab at MMC.
8. LU applies between L_1 and L_2. LD applies between L_2 and LL minimum. Diameter is uncontrolled in L_1 and beyond LL minimum.
9. All three leads.
10. Radius(r) applies to both inside corners of tab.
11. Drain is electrically connected to the case.
12. Pin out: 1- source, 2 - gate, 3 - drain (case).
* 13. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.

* FIGURE 1. Physical dimensions for TO-205 AF - Continued.

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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 and as follows:

nC .....nano Coulomb

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

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

3.5 Marking. Marking shall be in accordance with MIL-PRF-19500.

3.6 Electrical performance characteristics. Unless otherwise specified herein, the electrical performance characteristics are as specified in 1.3, 1.4, and table I herein.

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

* 3.8 Electrostatic discharge (ESD) protection. The devices covered by this specification require electrostatic discharge protection (see 3.8.1).

* 3.8.1 Handling. Metal oxide semiconductor (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 3.8).

a. Devices should 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 should 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 $\leq$ or 100 kΩ, whenever bias voltage is applied drain to source.

* 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.

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4. VERIFICATION

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

a. Qualification inspection (see 4.2).

b. Screening (see 4.3).

* c. Conformance inspection (see 4.4 and tables I and II).

4.2 Qualification inspection. Qualification inspection shall be in accordance with MIL-PRF-19500 and as specified herein.

* 4.2.1 Group E qualification. Group E inspection shall be performed for qualification or re-qualification only. In case qualification was awarded to a prior revision of the specification sheet that did not request the performance of table II tests, the tests specified in table II herein that were not performed in the prior revision shall be performed on the first inspection lot of this revision to maintain qualification.

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* 4.3 Screening (JANS, JANTX, and JANTXV levels only). Screening shall be in accordance with table IV of MIL-PRF-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.

Screen (see, table IV of MIL-PRF-19500) (1) (2)	Measurement	
	JANS level	JANTX and JANTXV levels
(3)	Gate stress test (see 4.3.1)	Gate stress test (see 4.3.1)
(3)	Method 3470, (see 4.3.2) optional	Method 3470, (see 4.3.2) optional
(3) 3c	Method 3161, (see 4.3.3)	Method 3161, (see 4.3.3)
7	Optional.	Optional.
9	I_{GSSF1}, I_{GSSR1}, 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	Subgroup 2 of table I herein; I_{GSSF1}, I_{GSSR1}, I_{DSS1}, $r_{DS(on)1}$, $V_{GS(th)1}$ ΔI_{GSSF1} = ± 20 nA dc or ± 100 percent of initial value, whichever is greater. ΔI_{GSSR1} = ± 20 nA dc or ± 100 percent of initial value, whichever is greater. ΔI_{DSS1} = ±0.2 μA dc or ± 100 percent of initial value, whichever is greater.	Subgroup 2 of table I herein I_{GSSF1}, I_{GSSR1}, I_{DSS1}, $r_{DS(on)1}$, $V_{GS(th)1}$
12	Method 1042, test condition A, t = 240 hours	Method 1042, test condition A or t = 48 hours minimum at+175°C minimum.
13	Subgroups 2 and 3 of table I herein; ΔI_{GSSF1} = ± 20 nA dc or ± 100 percent of initial value, whichever is greater. ΔI_{GSSR1} = ± 20 nA dc or ± 100 percent of initial value, whichever is greater. ΔI_{DSS1} = ±0.2 μA dc or ± 100 percent of initial value, whichever is greater $\Delta r_{DS(on)1}$ = ± 20 percent of initial value. $\Delta V_{GS(th)1}$ = ± 20 percent of initial value.	Subgroup 2 of table I herein; ΔI_{GSSF1} = ± 20 nA dc or ± 100 percent of initial value, whichever is greater. ΔI_{GSSR1} = ± 20 nA dc or ± 100 percent of initial value, whichever is greater. ΔI_{DSS1} = ±0.2 μA dc or ± 100 percent of initial value, whichever is greater. $\Delta r_{DS(on)1}$ = ± 20 percent of initial value. $\Delta V_{GS(th)1}$ = ± 20 percent of initial value.
14	Required.	Required.

(1) At the end of the test program, I_{GSSF1}, I_{GSSR1}, and I_{DSS1} are measured.
(2) An out-of-family program to characterize I_{GSSF1}, I_{GSSR1}, I_{DSS1}, and $V_{GS(th)1}$ shall be invoked.
(3) Shall be performed anytime after temperature cycling, screen 3a; and does not need to be repeated in screening requirements.

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* 4.3.1 Gate stress test. Apply V_{GS} = 15 V min. for t = 250 μs min.

* 4.3.2 Unclamped inductive switching.

a. Peak current, I_D .....rated I_{D1}.

b. Peak gate voltage, V_{GS} .....10 V.

c. Gate to source resistor, R_{GS} .....25W < R_{GS} < 200W

d. Initial case temperature .....+25°C, +10°C -5°C.

e. Inductance .....100 μH ±10 percent.

f. Number of pulses to be applied .....1 pulse.

* 4.3.3 Thermal impedance (ΔV_{SD} measurements). The ΔV_{SD} measurements shall be performed in accordance with method 3161 of MIL-STD-750. The ΔV_{SD} conditions (I_H and V_H) and maximum V_{SD} limit shall be derived by each vendor from the thermal response curves (see figure 2). The chosen ΔV_{SD} measurement and conditions for each device in the qualification lot shall be submitted in the qualification report. The chosen ΔV_{SD} shall be considered final after the manufacturer has had the opportunity to test five consecutive lots.

a. I_M measuring current.....10 mA.

b. I_H drain heating current.....5 (min) A.

c. t_H heating time .....10 ms.

d. V_H drain-source heating voltage .....12 (min) V.

e. t_{MD} measurement time delay .....10 to 80 μs.

f. t_{SW} sample window time .....10 (max) μs.

* 4.4 Conformance inspection. Conformance inspection shall be in accordance with MIL-PRF-19500, and as specified herein.

* 4.4.1 Group A inspection. Group A inspection shall be conducted in accordance with table V of MIL-PRF-19500, and table I herein. Electrical measurements (end-points) shall be in accordance with table I, subgroup 2 herein.

* 4.4.2 Group B inspection. Group B inspection shall be conducted in accordance with the conditions specified for subgroup testing in appendix E, table VIa (JANS) and table VIb (JAN, JANTX, and JANTXV) of MIL-PRF-19500, and as follows. Electrical measurements (end-points) shall be in accordance with table I, subgroup 2 herein.

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4.4.2.1 Group B inspection, appendix E, table VIa (JANS) of MIL-PRF-19500.

	Subgroup	Method	Conditions
*	B3	1051	Test condition G, except T_{Low} = - 55°C.
*	B3	2077	SEM.
	B4	1042	Test condition D: 2,000 cycles. The heating cycle shall be 1 minute minimum.
*	B5	1042	Test condition A, V_{DS} = rated, T_A = +175°C, t = 120 hours.
	B5	1042	Test condition B, V_{GS} = rated, T_A = +175°C, t = 24 hours.
	B5	2037	Test condition A.

* 4.4.2.2 Group B inspection, appendix E, table VIb (JAN, JANTX, and JANTXV) of MIL-PRF-19500.

Subgroup	Method	Conditions
B2	1051	Test condition G.
B3	1042	Test condition D: 2,000 cycles. The heating cycle shall be 30 seconds minimum.

* 4.4.3 Group C inspection. Group C inspection shall be conducted in accordance with the conditions specified for subgroup testing in appendix E, table VII of MIL-PRF-19500, and as follows. Electrical measurements (end-points) shall be in accordance with table I, subgroup 2 herein.

Subgroup	Method	Conditions
C2	2036	Test condition E.
C6	1042	Test condition D: 6,000 cycles. The heating cycle shall be 30 seconds minimum.

* 4.4.4 Group E inspection. Group E inspection shall be conducted in accordance with the conditions specified for subgroup testing in appendix E, table IX of MIL-PRF-19500, and table II herein. Electrical measurements (end-points) shall be in accordance with table I, subgroup 2 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 measurements 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. $R_{\theta JC}$(max) = 15°C /W.

a. I_M measuring current .....10 mA.

b. I_H drain heating current.....5 A.

c. t_H heating time .....Steady-state (see method 3161 of MIL-STD-750 for definition).

d. V_H drain-source heating voltage .....12 V.

e. t_{MD} measurement time delay .....10 to 80 μs.

f. t_{SW} sample window time .....10 (max) μs.

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* TABLE I. Group A inspection.

	Inspection 1/	MIL-STD-750		Symbol	Limits		Unit
		Method	Conditions		Min	Max	
	Subgroup 1						
	Visual and mechanical inspection	2071					
	Subgroup 2						
*	Thermal impedance 2/	3161	See 4.3.3	ΔV_{SD}			
	Breakdown voltage drain to source	3407	I_D = 1.0 mA dc, bias condition C, V_{GS} = 0	$V_{(BR)DSS}$			
	2N6901 2N6903				100 200		V dc V dc
	Gate to source voltage (threshold)	3403	$V_{DS} \geq V_{GS}$, I_D = 1.0 mA dc	$V_{GS(th)1}$	1.0	2.0	V dc
*	Gate current	3411	V_{GS} = +10 V dc, bias condition C, V_{DS} = 0	I_{GSSF1}		+100	nA dc
*	Gate current	3411	V_{GS} = -10 V dc, bias condition C, V_{DS} = 0	I_{GSSR1}		-100	nA dc
	Drain current 2N6901 2N6903	3413	Bias condition C, V_{GS} = 0 V_{DS} = 80 V dc V_{DS} = 160 V dc	I_{DSS1}		 1.0 1.0	 µA dc µA dc
	Static drain to source on-state resistance 2N6901 2N6903	3421	V_{GS} = 5 V dc, bias condition A, pulsed (see 4.5.1) I_D = 1.07 A dc I_D = 0.62 A dc	$r_{DS(on)1}$		 1.4 3.65	 Ω Ω
	Drain to source on-state voltage 2N6901 2N6903	3405	V_{GS} = 5 V dc, bias condition A, pulsed (see 4.5.1) I_D = 1.69 A dc I_D = 0.98 A dc	$V_{DS(on)}$		 2.4 6.0	 V V
	Forward voltage (source drain diode) 2N6901 2N6903	4011	Pulsed (see 4.5.1), V_{GS} = 0 I_S = 1.69 A dc I_S = .98 A dc	V_{SD}	0.8	1.6	V
	Forward transconductance	3475	I_D = rated I_{D2} (see 1.3), pulsed (see 4.5.1)	g_{FS}	0.5	2.0	S

See footnote at end of table.

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* TABLE I. Group A inspection - Continued.

Inspection 1/	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
Subgroup 3						
High temperature operation:		$T_C = T_J = +125°C$				
Gate to source voltage (threshold)	3403	$V_{DS} \geq V_{GS}$, $I_D = 1.0$ mA dc	$V_{GS(th)2}$	0.5		V dc
Gate current	3411	$V_{GS} = +10$ V dc and -10 V dc; $V_{DS} = 0$; bias condition C	I_{GSS2}		± 200	nA dc
Drain current	3413	Bias condition C, $V_{GS} = 0$ V	I_{DSS2}		50	µA dc
2N6901 2N6903		$V_{DS} = 80$ V dc $V_{DS} = 160$ V dc				
Static drain to source on-state resistance	3421	$V_{GS} = 5$ V dc, pulsed (see 4.5.1)	$r_{DS(on)2}$			
2N6901 2N6903		$I_D = 1.07$ A dc $I_D = 0.62$ A dc			2.6 7.7	Ω Ω
Low temperature operation:		$T_C = T_J = -55°C$				
Gate to source voltage (threshold)	3403	$V_{DS} \geq V_{GS}$; $I_D = 1.0$ mA dc	$V_{GS(th)3}$		3.0	V dc
Subgroup 4						
Switching time test	3472	I_D = rated I_{D2}, (see 1.3); $V_{GS} = 5$ V dc, gate drive impedance = 25Ω				
Turn-on delay time			$t_{d(on)}$		25	ns
2N6901 2N6903		$V_{DD} = 50$ V dc $V_{DD} = 100$ V dc				
Rise time			t_r		80	ns
2N6901 2N6903		$V_{DD} = 50$ V dc $V_{DD} = 100$ V dc				

See footnote at end of table.

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* TABLE I. Group A inspection - Continued.

Inspection 1/	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
Subgroup 4 - Continued						
Turn-off delay time			$t_{d(off)}$			
		V_{DD} = 50 V dc				
2N6901		V_{DD} = 100 V dc			45	ns
2N6903					40	ns
Fall time			t_f		80	ns
		V_{DD} = 50 V dc				
2N6901		V_{DD} = 100 V dc				
2N6903						
Subgroup 5						
Safe operating area (SOA) test	3474	See figure 3 V_{DS} = 80 percent of rated V_{DS} and $V_{DS} \leq$ 200 V max				
* High voltage dc SOA		t_p = 1 ms				
Electrical measurements		See table I, subgroup 2				
Single pulse unclamped inductive switching	3470	See 4.3.2; c = 0, 116 devices				
Electrical measurements		See table I, subgroup 2				
Subgroups 6						
Not applicable						
Subgroup 7						
Gate charge	3471	Condition A or B				
On-state gate charge			$Q_{g(on)}$			
2N6901				1.3	3.5	nC
2N6903				1.5	3.5	nC

See footnote at end of table.

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* TABLE I. Group A inspection - Continued.

Inspection 1/	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
Subgroup 7 - Continued						
Gate to source charge			Q_{gs}			
2N6901				0.3	1.0	nC
2N6903				0.2	0.8	nC
Gate to drain charge			Q_{gd}			
2N6901				1.0	2.9	nC
2N6903				0.8	2.7	nC
Reverse recovery time	3473	$V_{DD} \leq 30$ V; di/dt = 100 A/μs I_F = 1 A	t_{rr}			
2N6901					250	ns
2N6903					500	ns

1/ For sampling plan, see MIL-PRF-19500.
2/ This test required for the following end-point measurements only:
Group B, subgroups 3 and 4 (JANS).
Group B, subgroups 2 and 3 (JAN, JANTX, and JANTXV).
Group C, subgroup 2 and 6.
Group E, subgroup 1.

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* TABLE II. Group E inspection (all quality levels) for qualification or re-qualification only.

Inspection	MIL-STD-750		Qualification and large lot quality conformance inspection
	Method	Conditions	
Subgroup 1			45 devices c = 0
Temperature cycling	1051	Test condition G, 500 cycles	
Hermetic seal Fine leak Gross leak	1071	 Test conditions G or H Test conditions C or D	
Electrical measurements		See table I, subgroup 2.	
Subgroup 2 1/			45 devices c = 0
Steady-state reverse bias	1042	Condition A, 1,000 hours.	
Electrical measurements		See table I, subgroup 2.	
Steady-state gate bias	1042	Condition B, 1,000 hours.	
Electrical measurements		See table I, subgroup 2.	
Subgroup 4			Sample size N/A
Thermal impedance curves		Each supplier shall submit their qual-lot average and design maximum thermal impedance curves to the qualifying activity. In addition, the optimal test conditions and thermal impedance limit shall be provided to the qualifying activity in the qualification report.	
Subgroup 5			
Not applicable			
Subgroup 6			3 devices
ESD	1020	Not required for devices classified as ESD class 1.	
Subgroup 8			22 devices c = 0
Commutating diode for safe operating area test procedure for measuring dv/dt during reverse recovery of power MOSFET transistors or insulated gate bipolar transistors	3476	Test conditions shall be derived by the manufacturer	

1/ A separate sample for each test shall be pulled.

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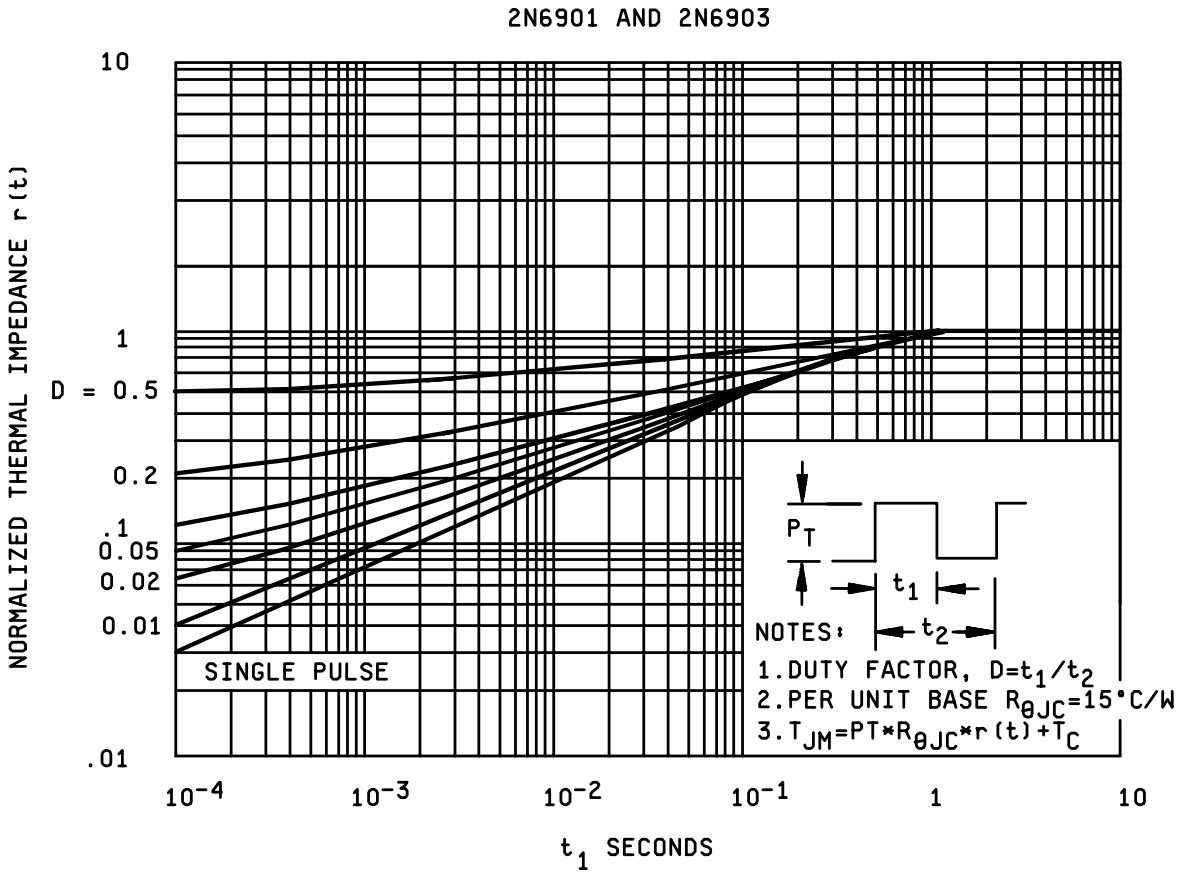

FIGURE 2. Transient thermal response.

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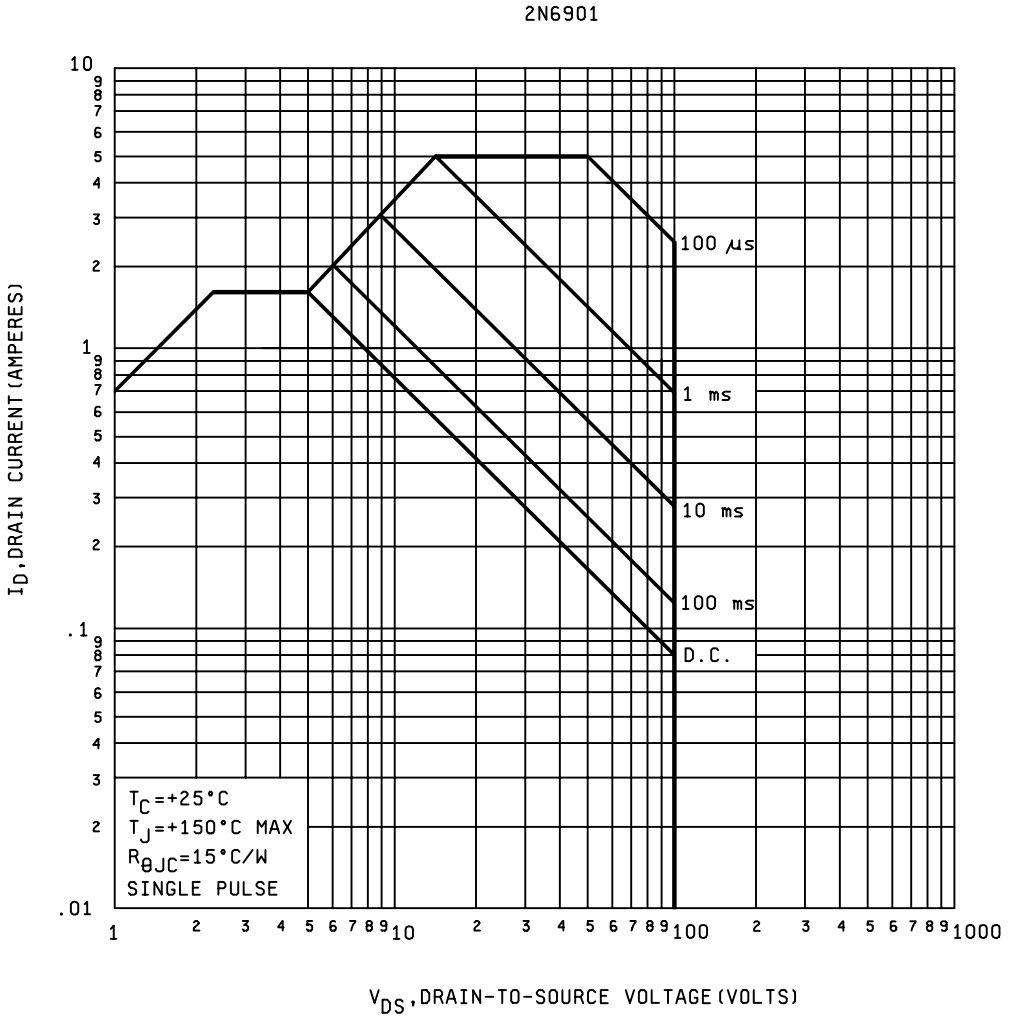

FIGURE 3. Maximum safe operating area.

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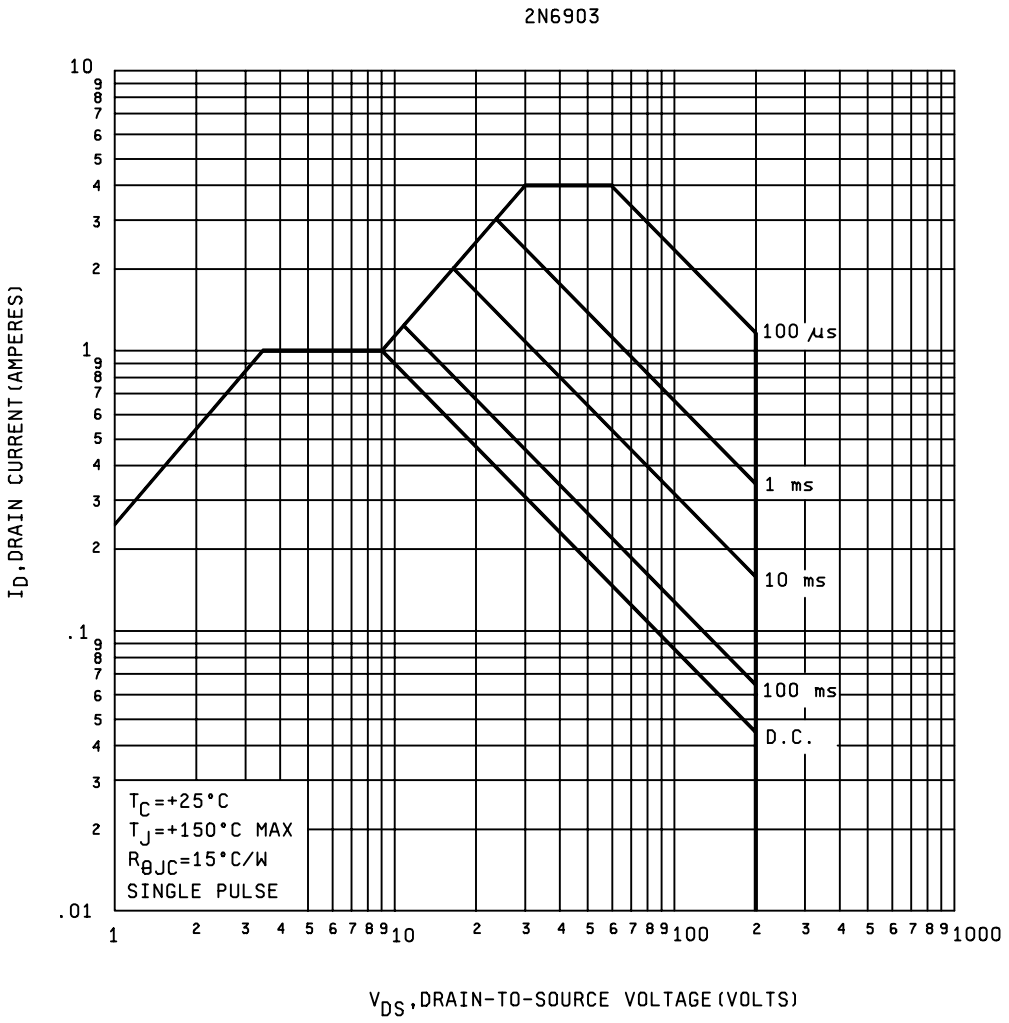

FIGURE 3. Maximum safe operating area - Continued.

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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.)

6.1 Intended use. The notes specified in MIL-PRF-19500 are applicable to this specification.

* 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. Lead finish (see 3.4.1).

d. Product assurance level and type designator.

* 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.

6.4 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 - 11
DLA - CC

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

Preparing activity:
DLA - CC

(Project 5961-2933)

* NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at http://assist.daps.dla.mil.

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