

PERFORMANCE SPECIFICATION SHEET

SEMICONDUCTOR DEVICE, FIELD EFFECT TRANSISTOR, ENCAPSULATED PLASTIC,
N-CHANNEL, SILICON, TYPE 2N7563, 2N764, 2N7565,
JAN, JANTX, AND JANTXV

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 plastic, N-channel, enhancement-mode, MOSFET, power transistors. Three levels of product assurance are provided for each device type as specified in MIL-PRF-19500.

1.2 Physical dimensions. See figure 1, TO-247AC.

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

Types	P_T (1) $T_C = +25^\circ\text{C}$	$R_{\theta JC}$ (2)	V_{DS}	V_{DG}	V_{GS}	I_{D1} $T_C = +25^\circ\text{C}$ (3)	I_{D2} $T_C = +100^\circ\text{C}$ (3)	I_S	I_{DM} (4)	T_J and T_{STG}	V_{ISO} 70,000 ft. altitude
	<u>W</u>	<u>°C/W</u>	<u>V dc</u>	<u>V dc</u>	<u>V dc</u>	<u>A dc</u>	<u>A dc</u>	<u>A dc</u>	<u>A dc</u>	<u>°C</u>	<u>V dc</u>
2N7563	150	0.60	60	60	± 20	90	90	90	360		500
2N7564	200	0.81	100	100	± 20	75	53	75	300	-55 to +150	500
2N7565	320	0.26	200	200	± 20	90	60	90	360		500

(1) For $T_C > +25^\circ\text{C}$, derate linearly 1.2 W/°C for 2N7563, 1.6 W/°C for 2N7564, 2.56 W/°C for 2N7565.

(2) See figure 2, thermal impedance curves.

(3) See figure 3, derating current graph for I_D at $T_C > +25^\circ\text{C}$, limited to 90 A.

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

(4) $I_{DM} = 4 \times I_{D1}$ as calculated in footnote (3).

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/>.

1.4 Primary electrical characteristics at T_C = +25°C.

Type	Min	$V_{GS(TH)}$		Max I_{DSS1}	Max $r_{DS(ON)}$ (1)		E_{AS}	I_{AS}
	$V_{(BR)DSS}$	$V_{DS} \geq V_{GS}$		$V_{GS} = 0$	$V_{GS} = 10 \text{ V dc}$		at I_{AS}	
	$V_{GS} = 0$			$V_{DS} = @\text{rated}$				
	V dc	V dc		$\mu\text{A dc}$	ohm	ohm	mJ	A
		Min	Max					
2N7563	60	2.0	4.0	25		0.0055	310	130
2N7564	100	3.5	5.5	1.0		0.014	190	45
2N7565	200	3.0	5.0	25		0.023	101	56

(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.

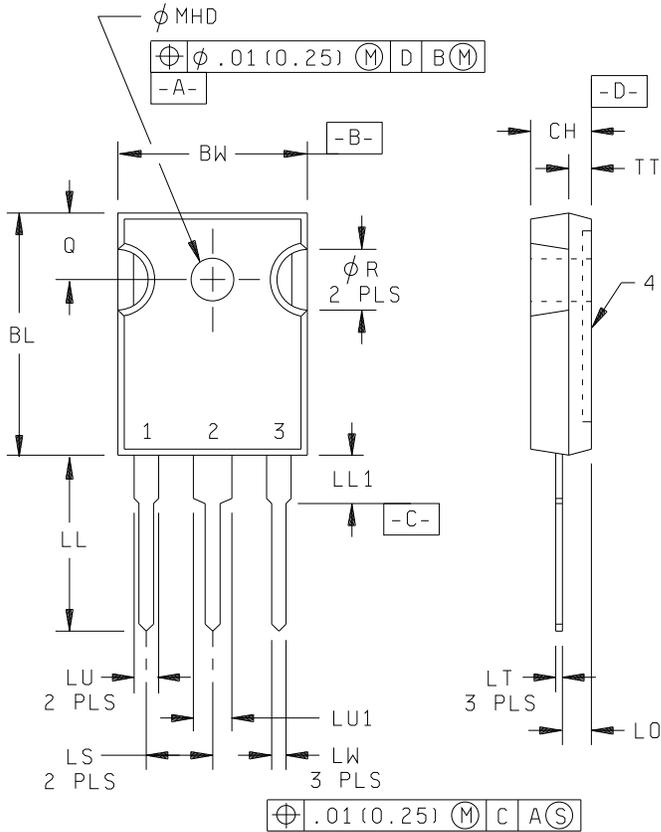
(Copies of these documents are available online at <http://assist.daps.dla.mil/quicksearch/> or <http://assist.daps.dla.mil/> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents 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.

JESD22-A101 Steady-State Temperature Humidity Bias Life Test.
 JESD22-A102 Accelerated Moisture Resistance - Unabashed Autoclave.
 JESD22-A112 ESD Testing. A Moisture-Induced Stress Sensitivity for Plastic Surface Mount Devices.

(Copies of these documents are available from <http://www.jedec.org/default.cfm> or the Electronics Industries Alliance, 2500 Wilson Boulevard, Arlington, VA 22201-3834.)

2.4 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.



Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BL	.775	.800	19.70	20.30
BW	.602	.626	15.30	15.90
CH	.185	.209	4.70	5.30
LL	.559	.583	14.20	14.80
LL1	.145	.170	3.70	4.30
LO	.087	.102	2.20	2.60
LS	.215 BSC		5.45 BSC	
LT	.016	.031	0.40	0.80
LU	.079	.094	2.00	2.40
LU1	.118	.133	3.00	3.40
LW	.039	.056	1.00	1.40
Q	.217 BSC		5.50 BSC	
TT	.059	.089	1.50	2.50
ØMHD	.140	.143	3.55	3.65
ØR	.177	.217	4.50	5.50
Term 1	Gate			
Term 2	Drain			
Term 3	Source			
Term 4	Drain			

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. All terminals are isolated from the case.
4. Dimension and tolerancing shall be in accordance with ASME Y14.5M.

FIGURE 1. Physical dimensions for TO-247AC (2N7563, 2N7564, 2N7565).

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 manufacturer's list (QML) 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.

I_{AS} - Rated avalanche current, nonrepetitive.

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). Lead finish can be redone if needed after all screening tests.

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

3.5.1 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 3.5).

- 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, $R \leq 100 \text{ k}\Omega$, whenever bias voltage is to be applied drain to source.

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 table I as specified herein.

3.8 Marking. Marking shall be in accordance with MIL-PRF-19500, except as specified herein.

3.8.1 JAN brand. The "J" denotes the JAN brand. Refer to the certificate of conformance or unit packaging for quality assurance level.

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 (see 4.2).
- b. Screening (see 4.3).
- c. Conformance inspection (see 4.4 and table I).

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.

4.3 Screening (JANTX, JANTXV). Screening shall be in accordance with table E-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 E-IV of MIL-PRF-19500)	Measurement
	JANTXV Level
(1)	Gate stress test (see 4.3.1).
(1)	Method 3470 of MIL-STD-750, E _{AS} (see 4.3.2).
1a	Not applicable.
1b	Method 2069 of MIL-STD-750 required, pre-cap internal visual inspection.
2	Not required.
3a	Method 1051 of MIL-STD-750 required, temperature cycling.
3b	Not required.
(1) 3c	Method 3161 of MIL-STD-750, thermal impedance (see 4.3.3).
4	Not required.
5 through 9	Not applicable.
10	Method 1042 of MIL-STD-750, test condition B required, V _{GS} = 16 V dc.
11	Subgroup 2 of table I herein.
12	Method 1042 of MIL-STD-750, test condition A required.
13a	Subgroup 2 of table I herein $\Delta I_{GSSF1} = \pm 20$ nA dc or ± 100 percent of initial value, whichever is greater. $\Delta I_{GSSR1} = \pm 20$ nA dc or ± 100 percent of initial value, whichever is greater. $\Delta I_{DSS1} = \pm 10$ 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.
13b through 16	Not applicable

(1) Shall be performed anytime after temperature cycling, screen 3a; and does not need to be repeated in screening requirements.

4.3.1 Gate stress test. Apply $V_{GS} = 20$ V minimum for $t = 250$ μ s minimum.

4.3.2 Single pulse avalanche energy (E_{AS}).

- a. Peak current (I_{AS}) $I_{AS(max)}$.
- b. Peak gate voltage (V_{GS}) 10 V minimum (up to rated V_{GS}).
- c. Gate to source resistor (R_{GS}) $25\Omega \leq R_{GS} \leq 200\Omega$.
- d. Initial case temperature (T_C) $+25^\circ\text{C} +10^\circ\text{C}, -5^\circ\text{C}$.
- e. Inductance (L) $\left[\frac{2E_{AS}}{(I_{DI})^2} \right] \left[\frac{(V_{BR} - V_{DD})}{V_{BR}} \right] \text{mH minimum}$.
- f. Number of pulses to be applied 1 pulse minimum.
- g. Supply voltage (V_{DD}) 50 V maximum.

4.3.3 Thermal impedance. The thermal impedance measurements shall be performed in accordance with method 3161 of MIL-STD-750 using the guidelines in that method for determining I_M, I_H, t_H, t_{SW} , (and V_H where appropriate). Measurement delay time (t_{MD}) = 70 μ s max. See table II, group E, subgroup 4 herein.

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 MIL-PRF-19500 and table I herein.

4.4.2 Group B inspection (JAN, JANTX, and JANTXV). Group B inspection shall be conducted in accordance with the conditions specified in 4.4.2.1 for JAN, JANTX, and JANTXV and as follows. Electrical measurements (end-points) for JAN, JANTX, and JANTXV shall be after each subgroup below and shall be in accordance with table I, subgroup 2. Separate samples may be used for each subgroup.

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
B1	2026 1022	Solderability. Resistance to solvents (not required for laser marked devices).
B1	JESD22-A113 (1)	Pre conditioning to level 1 for the following sequential tests:
B1	JESD22-A102 (1)	Autoclave: condition C, 96 hours
B1	1051	Temp cycle 168 cycles condition G.
B2	1056	Thermal shock: 10 cycles, condition A.
B3	1042	High temperature reverse bias: Condition B, 80 percent (minimum) of rated V_{GS} .
B3	1042	Intermittent operation life: Condition D, 2,000 cycles. The heating cycle shall be 30 seconds minimum.
B4	2075	Decap internal visual.
B4	2031	$T = 260^\circ\text{C}, 10 \text{ sec.}, n = 20, c = 0$.

(1) Non-government standard document, see 2.3.

4.4.2.1 Group B sample selection (JAN, JANTX, and JANTXV). Samples for subgroups in group B shall be in accordance with MIL-PRF-19500 and as specified herein. Separate samples may be used for each subgroup. In the event of a group B failure, the manufacturer may pull a new sample at double size from either the failed assembly lot or from another assembly lot from the same wafer lot. If the new “assembly lot” option is exercised, the failed assembly lot shall be scrapped.

4.4.3 Group C inspection. Group C inspection shall be as specified in 4.4.3.1 and shall include tests which are performed periodically. Electrical measurements (end-points) for JAN, JANTX, and JANTXV shall be after each subgroup in 4.3.1 and as specified in table I, subgroup 2 herein. Separate samples may be used for each subgroup. For rules on resubmission for failed subgroup, see MIL-PRF-19500. Sample sizes shall be in accordance with the corresponding group C subgroup from table E-VII of MIL-PRF-19500.

4.4.3.1 Group C inspection (JAN, JANTX, and JANTXV) of MIL-PRF-19500. Separate samples may be used for each step, $n = 77$, $c = 0$

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
C1	JESD22-A113 (1)	Pre conditioning to level 1
C1	2066	Physical dimensions: In accordance with figure 1 herein.
C2	1056	Thermal shock: condition B. Electrical measurements.
C2	1051	Temp. cycle: condition G, 500 cycles.
C3	JESD22-A101 (1)	High temperature reverse bias: 500 hours, (85/85 biased): 80 percent V; max of 100 V.
C4	1042	High temperature reverse bias: Condition B, 80 percent (minimum) of rated V_{GS} .
C4	1042	Intermittent operation life: Condition D, 5,000 cycles. The heating cycle shall be 30 seconds minimum.
C5	3161	Thermal resistance: $R_{\theta JC}(\max) = \text{rated } R_{\theta JC}$.

(1) Non-government standard document, see 2.3.

4.4.3.2 Group C sample selection. Samples for subgroups in group C shall be in accordance with MIL-PRF-19500.

4.4.4 Group E inspection. Group E inspection shall be performed for qualification or re-qualification only. The tests specified in table II herein must be performed to maintain qualification. Separate samples may be used for each subgroup.

4.5 Method 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.

TABLE I. Group A inspection.

Inspection <u>1</u> /	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 1</u>						
Visual and mechanical inspection	2071					
<u>Subgroup 2</u>						
Thermal impedance <u>2</u> /	3161	See 4.3.3	$Z_{\theta JC}$			$^{\circ}C/W$
Breakdown voltage, drain to source	3407	$V_{GS} = 0$ V dc, $I_D = 0.25$ mA dc, bias condition C	$V_{(BR)DSS}$			
2N7563				60		V dc
2N7564				100		V dc
2N7565				200		V dc
Gate to source voltage (threshold)	3403	$V_{DS} \geq V_{GS}$ $I_D = 0.25$ mA dc	$V_{GS(TH)1}$			
2N7563				2.0	4.0	V dc
2N7564				3.5	5.5	V dc
2N7565				3.0	5.0	V dc
Gate current	3411	$V_{GS} = +20$ V dc and -20 V dc, bias condition C, $V_{DS} = 0$	$I_{GSS(TH)1}$		± 100	nA dc
Drain current	3413	$V_{GS} = 0$ V dc, bias condition C, $V_{DS} =$ at rated V_{DS}	I_{DSS1}			
2N7563					25	μA dc
2N7564					1	μA dc
2N7565					25	μA dc
Static drain to source on-state resistance	3421	$V_{GS} = 10$ V dc, condition A, Pulsed (see 4.5.1) $I_D =$ rated I_{D1} A dc	$r_{DS(on)1}$			
2N7563					0.0055	Ω
2N7564					0.014	Ω
2N7565					0.023	Ω
Forward voltage	4011	Pulsed (see 4.5.1), $I_D = I_{D1}$, $V_{GS} = 0$ V dc	V_{SD}			
2N7563					1.2	V dc
2N7564					1.3	V dc
2N7565					1.5	V dc

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 3</u>						
High-temperature operation		$T_C = T_J = +125^\circ\text{C}$				
Gate current	3411	$V_{GS} = +20\text{ V dc and } -20\text{ V dc, bias condition C, } V_{DS} = 0$	I_{GSS2}		± 200	nA dc
Drain current	3413	$V_{GS} = 0\text{ V dc, bias condition C, } V_{DS} = 80\text{ percent of rated } V_{DS}$	I_{DSS2}	250		$\mu\text{A dc}$
Static drain to source on-state resistance	3421	$V_{GS} = 10\text{ V dc, pulsed (see 4.5.1), } I_D = \text{rated } I_{D2}\text{ dc}$	$r_{DS(on)3}$			
2N7563					0.011	Ω
2N7564					0.028	Ω
2N7565					0.052	Ω
Gate to source voltage (thresholds)	3403	$V_{DS} \geq V_{GS}, I_D = 0.25\text{ mA dc}$	$V_{GS(TH)2}$			
2N7563				1.0		V dc
2N7564				2.5		V dc
2N7565				2.0		V dc
Low-temperature operation:		$T_C = T_J = -55^\circ\text{C}$				
Gate to source voltage (threshold)	3403	$V_{DS} \geq V_{GS}, I_D = 0.25\text{ mA dc}$	$V_{GS(TH)3}$			
2N7563					5.0	V dc
2N7564					6.5	V dc
2N7565					6.0	V dc
<u>Subgroup 4</u>						
Forward transconductance	3475	$V_{DD} \geq 15\text{ V (see 4.5.1)}$	g_{FS}			
2N7563		$I_D = 78\text{ A dc}$		88		S
2N7564		$I_D = 45\text{ A dc}$		35		S
2N7565		$I_D = 56\text{ A dc}$		39		S

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 5</u>						
Safe operating area test (high voltage)	3474	See figure 4 of each P/N; $t_p = 10$ ms minimum, $V_{DS} = 80$ percent of rated voltage max 200 V dc				
Electrical measurements		See table I, subgroup 2.				
<u>Subgroup 6</u>						
Not applicable						
<u>Subgroup 7</u>						
Gate charge	3471	Condition B, $V_{DD} = 48V$				
On-state gate charge			$Q_{G(on)}$			
2N7563		$I_D = 78$ A dc		260	nC	
2N7564		$I_D = 45$ A dc		170	nC	
2N7565		$I_D = 56$ A dc		270	nC	
Gate to source charge			Q_{GS}			
2N7563		$I_D = 78$ A dc		68	nC	
2N7564		$I_D = 45$ A dc		-		
2N7565		$I_D = 56$ A dc		67	nC	
Gate to drain charge			Q_{GD}			
2N7563		$I_D = 78$ A dc		94	nC	
2N7564		$I_D = 45$ A dc		-		
2N7565		$I_D = 56$ A dc		130	nC	
Reverse recovery time	3473	$d/d_t \leq 100$ A/ μ s, $V_{DD} \leq 30$ V,	t_{rr}			
2N7563		$I_D = 78$ A dc		140	nS	
2N7564		$I_D = 45$ A dc		110	nS	
2N7565		$I_D = 56$ A dc		340	nS	

1/ For sampling plan see MIL-PRF-19500.

2/ This test required for the following end-point measurements only:
 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 only.

Inspection	MIL-STD-750 (unless otherwise noted)		Sample plan
	Method	Conditions	
<u>Subgroup 1</u> Temperature cycling (air to air)	1051	Test condition G, 500cycles	n = 77, c = 0
Electrical measurements		See table I, subgroup 2	
<u>Subgroup 2 1/</u> Steady state operation life	1042	1,000 hours, condition B. VGS = 16 V dc	n = 77, c = 0
Electrical measurements		See table I, subgroup 2	
<u>Subgroup 2a 1/</u> HTRB	1042	1,000 hours, condition A.	n = 77, c = 0
Electrical measurements		See table I, subgroup 2	
<u>Subgroup 3</u> Switching time test	3472	$I_D = \text{below}, V_{GS} = 10 \text{ V dc}, R_G = 9.1\Omega,$ Typical measurements: $I_D = 72 \text{ A}, V_{DD} = 48 \text{ V}, t_{d(\text{on})} = 26 \text{ ns}; t_r = 200 \text{ ns};$ $t_{d(\text{off})} = 100\text{ns}; t_f = 150\text{ns}$	n = 45, c = 0
2N7563			
2N7564		$I_D = 45 \text{ A}, V_{DD} = 50 \text{ V}, t_{d(\text{on})} = 35 \text{ ns}; t_r = 130\text{ns};$ $t_{d(\text{off})} = 41\text{ns}; t_f = 38\text{ns}$	
2N7565		$I_D = 56 \text{ A}, V_{DD} = 100 \text{ V}, t_{d(\text{on})} = 23\text{ns}; t_r = 160\text{ns};$ $t_{d(\text{off})} = 43\text{ns}; t_f = 79\text{ns}$	
<u>Subgroup 4</u> Moisture resistance	JESD22-A101 <u>2/</u>	1,000 hours	n = 77, c = 0
Electrical measurements		See table I, subgroup 2	
<u>Subgroup 4a 2/</u> Autoclave	JESD22-A102 <u>1/</u>	Condition C, 96 hours	n = 77, c = 0
Temperature cycling	1051	Condition G, 500 cycles.	
Autoclave	JESD22-A102 <u>1/</u>	Condition C, 96 hours	
Temperature cycling	1051	Condition G, 500 cycles.	

See footnotes at end of table.

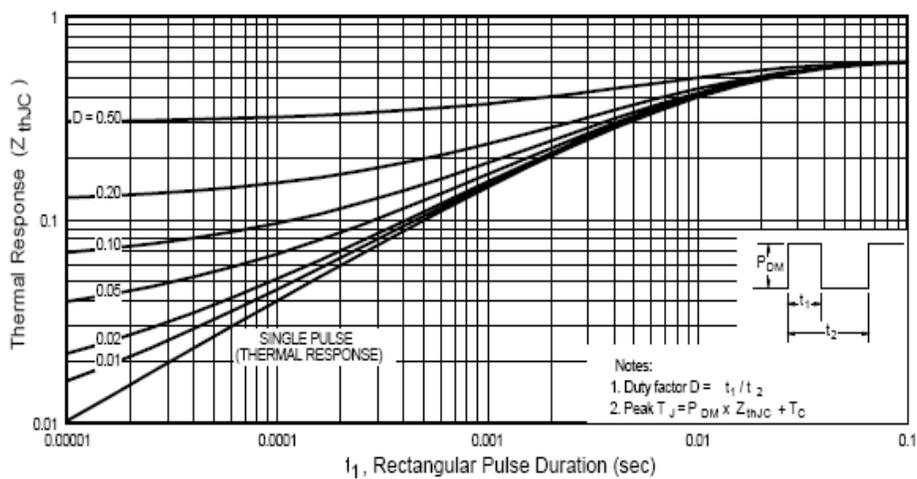
MIL-PRF-19500/715

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

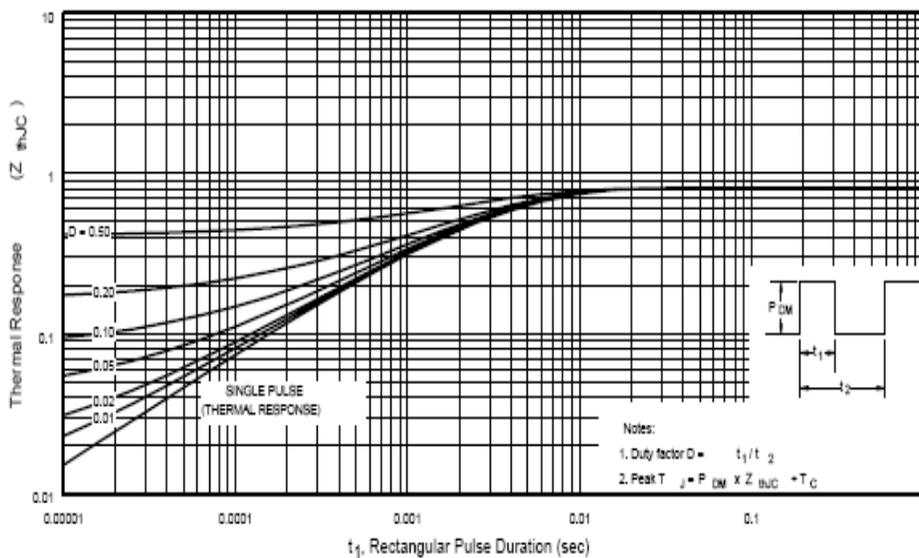
Inspection	MIL-STD-750 (unless otherwise noted)		Sample size
	Method	Conditions	
<u>Subgroup 4b</u> (any order after preconditioning)			n = 77, c = 0
Pre conditioning	JESD22-A113 <u>1/</u>	To level 1 for the following tests:	
Temperature cycling	1051	Condition G, 1000 cycles.	
High temperature reverse bias	JESD22-A101 <u>1/</u>	1000 hrs (85/85 biased): 80 percent V; Max of 100V.	
High temperature reverse bias	1042	Condition A, T _A = +150°C, 1000 hours, 80 percent BVR	
Intermittent operation life	1042	Intermittent operation life: Condition D, ΔT _J = 100 °C, 8572 cycles, 3.5 minutes on, 3.5 minutes off.	
<u>Subgroup 4c</u>			Sample size N/A
Thermal impedance curves		See MIL-PRF-19500, subgroup 4.	
<u>Subgroup 5</u>			n = 12, c = 0
Barometric pressure (reduced)	1001	V _{DS} = rated V ISO V dc; I (ISO) < 0.25 mA	

1/ Non-government standard document, see 2.3.

2/ These tests shall be performed in the order listed.

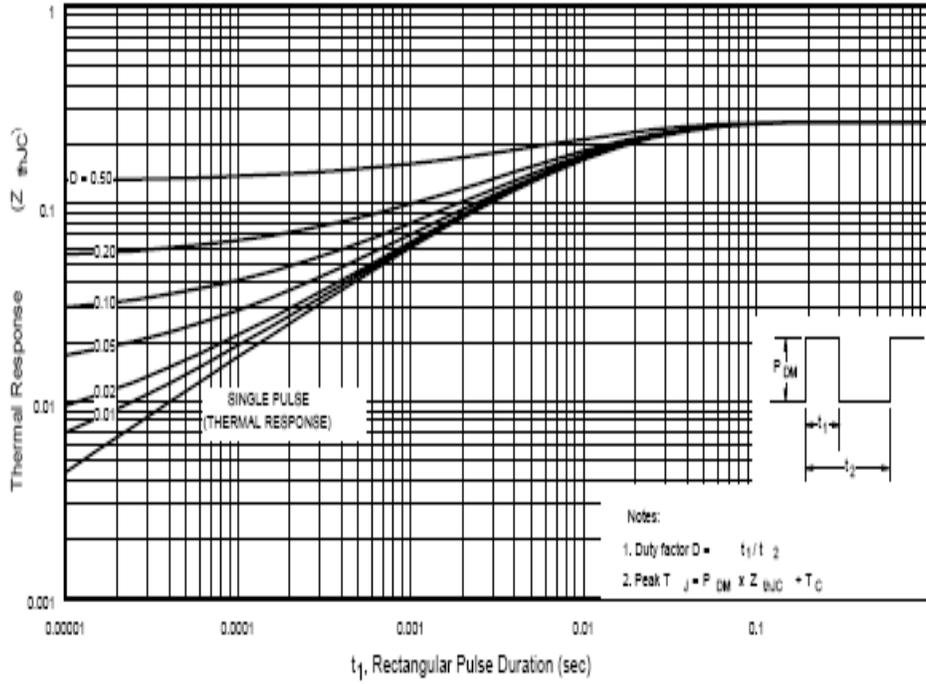


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FIGURE 2. Maximum effective transient thermal impedance, junction-to-case.

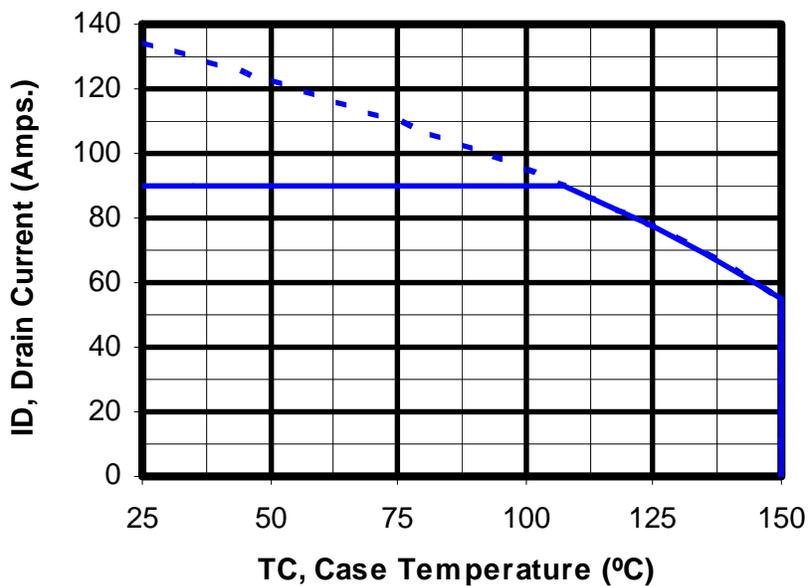


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FIGURE 2. Maximum effective transient thermal impedance, junction-to-case - Continued.

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Maximum Current Rating



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Maximum Current Rating

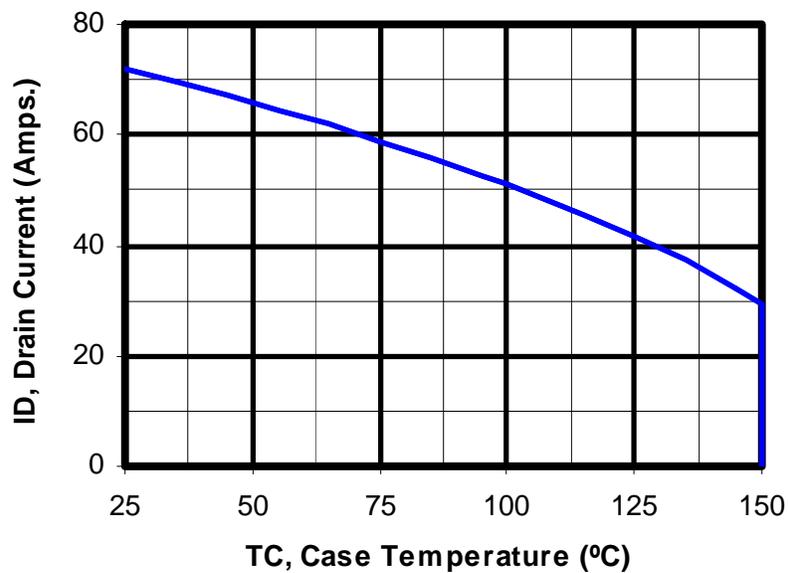


FIGURE 3. Maximum drain current versus case temperature graphs.

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Maximum Current Rating

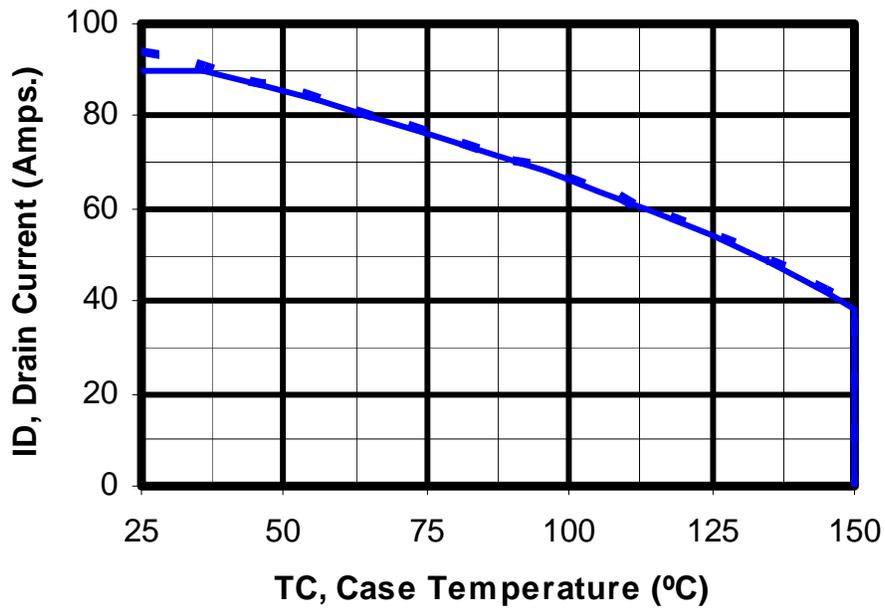
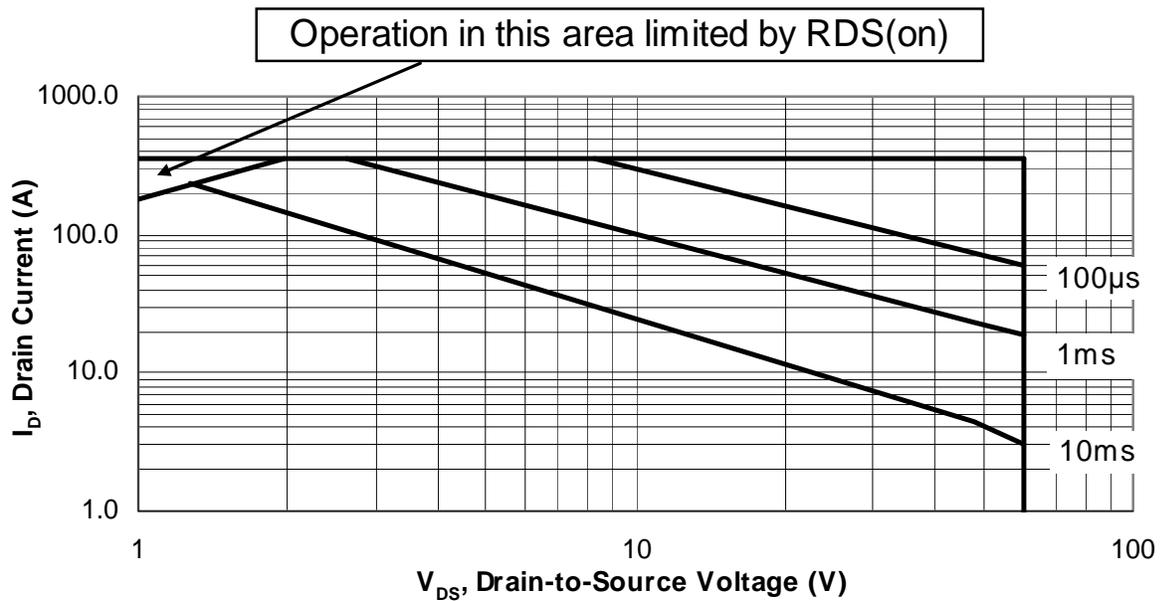
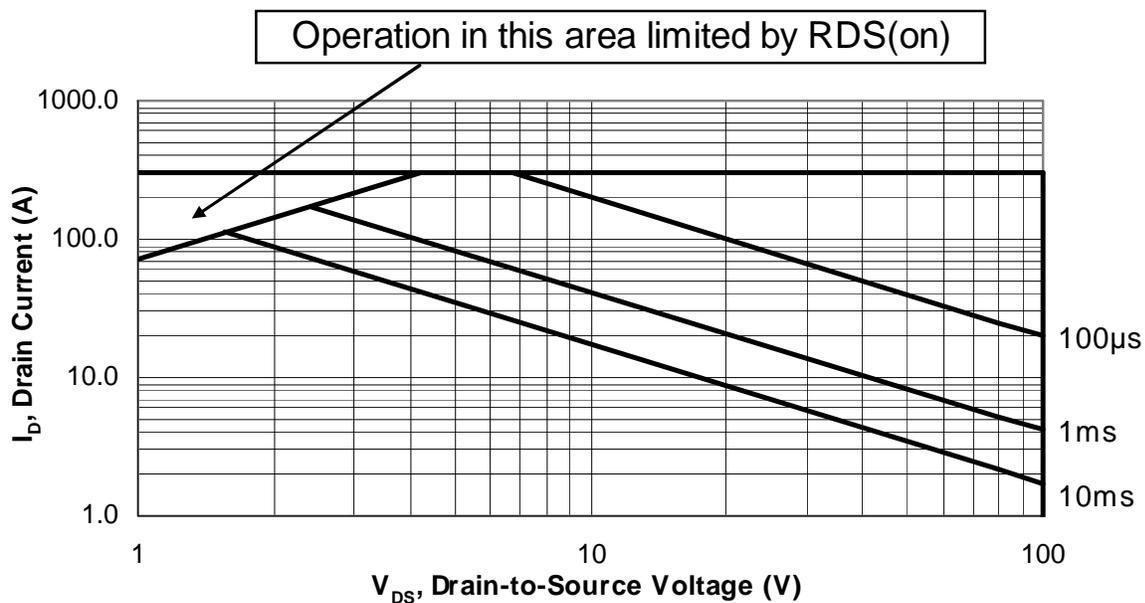


FIGURE 3. Maximum drain current versus case temperature graphs - Continued.

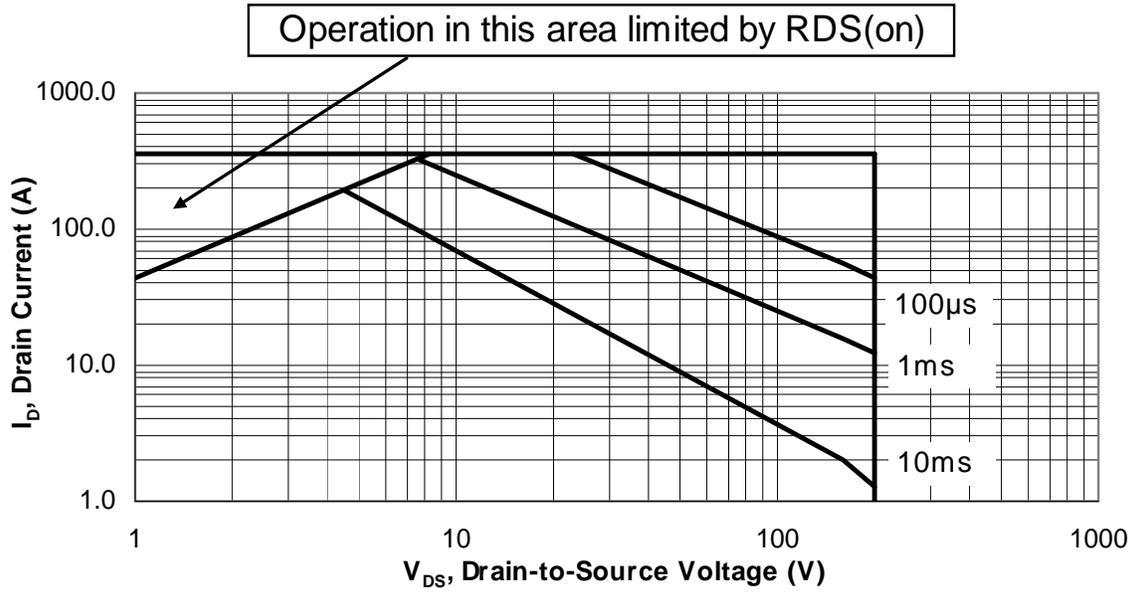


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FIGURE 4 Maximum safe operating area.



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FIGURE 4 Maximum safe operating area - Continued.

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. 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. An online listing of products qualified to this specification may be found in the Qualified Products Database (QPD) at <http://assist.daps.dla.mil>.

Custodians:
Army - CR
Navy - EC
Air Force - 85
NASA - NA
DLA - CC

Preparing activity:
DLA - CC
(Project 5961-2007-109)

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>.