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Source controlled drawing

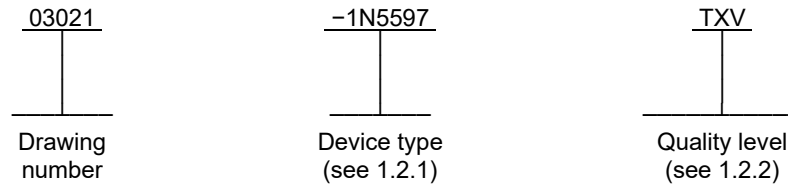
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1. SCOPE

1.1 Scope. This drawing describes the requirements for silicon, high power, rectifier modules. Two levels of product assurance are provided for each device type as specified in [MIL-PRF-19500](#).

1.2 Part or Identifying Number (PIN). The complete PIN shall be as follows:



1.2.1 Device type. The device types are as follows: 1N5597, 1N5600 and 1N5603.

1.2.2 Quality level. The TX and TXV suffix relates to the JANTX and JANTXV quality level requirements of [MIL-PRF-19500](#).

1.2.3 Package outline. The device package outline is a circular screw thread mount package in accordance with [figure 1](#) for all device types.

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

Types	V_{RWM}	$I_O = I_F$ $T_C = 75^\circ\text{C}$	I_{FSM} $T_C = 75^\circ\text{C}$	t_{rr}	$I_{R(surge)}$ $T_C = 75^\circ\text{C}$	T_J and T_{STG}
	<u>KV (pk)</u>	<u>A dc</u>	<u>A dc</u>	<u>μs</u>	<u>J</u>	<u>$^\circ\text{C}$</u>
1N5597	10	1.0 (1)	30	2	2	-55 to +150
1N5600	5	2.0 (2)	80	2	6	-55 to +150
1N5603	5	5.0 (3)	200	2	12	-55 to +150

- (1) Derate linearly by 13.3 mA dc/ $^\circ\text{C}$ from $I_O = 1.0$ A dc at $T_C = +75^\circ\text{C}$. Derate to zero at $T_C = +150^\circ\text{C}$.
- (2) Derate linearly by 26.7 mA dc/ $^\circ\text{C}$ from $I_O = 2.0$ A dc at $T_C = +75^\circ\text{C}$. Derate to zero at $T_C = +150^\circ\text{C}$.
- (3) Derate linearly by 66.7 mA dc/ $^\circ\text{C}$ from $I_O = 5.0$ A dc at $T_C = +75^\circ\text{C}$. Derate to zero at $T_C = +150^\circ\text{C}$.

1.4 Primary electrical characteristics. Unless otherwise specified, $T_c = +25^\circ\text{C}$.

Types	V_F at $I_F = \text{rated } I_F$ (see 1.3)		I_{R1} at $V_R = V_{RWM}$ (see 1.3)		I_{R2} at $V_R = V_{RWM}$ (see 1.3)		C $V_R = 100$ V dc $f = 0.1$ to 0.15 Mhz	
	<u>V dc</u>		<u>$\mu\text{A dc}$</u>		<u>$\mu\text{A dc}$</u>		<u>pF</u>	
	<u>Min</u>	<u>Max</u>	<u>Min</u>	<u>Max</u>	<u>Min</u>	<u>Max</u>	<u>Min</u>	<u>Max</u>
1N5597	13	19		1		75	5	30
1N5600	6	10		5		100	7	30
1N5603	6	10		10		100	15	40

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2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 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 in sections 3 and 4 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 (see 6.2).

DEPARTMENT OF DEFENSE SPECIFICATIONS

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

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-202 – Electronic and Electrical Component Parts.
MIL-STD-750 – Test Methods for Semiconductor Devices.

FEDERAL STANDARDS

FED-STD-H28 Screw Thread Standards For Federal Services.

(Copies of these documents are available online at <https://quicksearch.dla.mil>.)

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 (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D1868 – Standard Test Method for Detection and Measurement of Partial Discharge (Corona) Pulses in Evaluation of Insulation Systems.
ASTM D3487 – Standard Specification for Mineral Insulating Oil Used in Electrical Apparatus

(Copies of these documents are available online at <https://www.astm.org>.)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

AMS-C-26074 – Coatings, Electroless Nickel, Requirements for.

(Copies of these documents are available online at <https://www.sae.org>.)

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.

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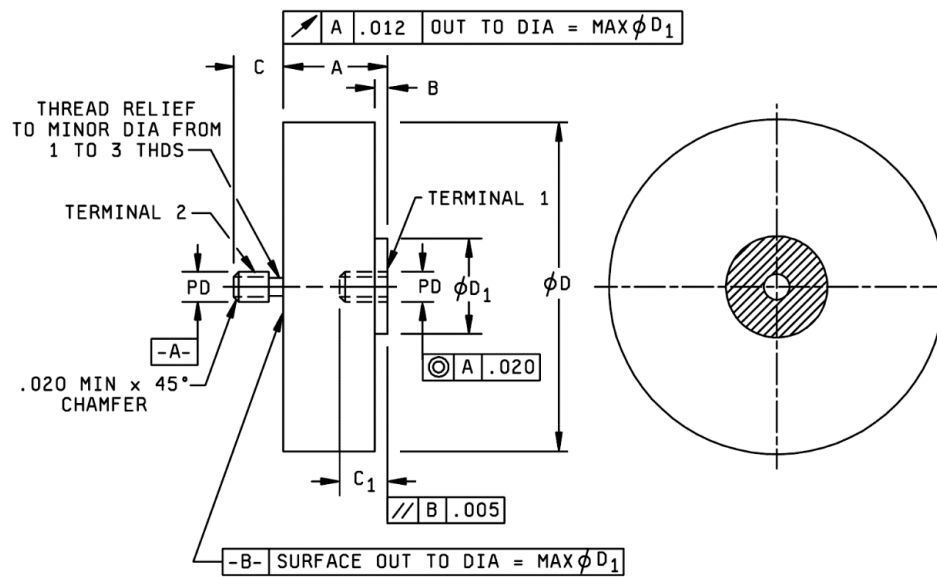
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Symbol	Dimension for type 1N5603				Notes
	Inch	Inch	mm	mm	
	Min	Max	Min	Max	
A	.970	1.020	24.64	25.91	3
B	.050	.080	1.27	2.03	
C	.307	.317	7.80	8.05	4
C ₁	.318	.400	8.08	10.16	4
ØD	3.450	3.650	87.63	92.71	
ØD ₁	.95	1.250	24.13	31.75	5
Term 1	Threaded insert .375-24UNF-2B				
Term 2	Threaded stud .375-24UNF-2A				

Symbol	Dimensions for types 1N5600 and 1N5597				Notes
	Inch	Inch	mm	mm	
	Min	Max	Min	Max	
A	.73	.83	18.54	21.08	3
B		.080		2.03	
C	.240	.264	6.10	6.71	4
C ₁	.265	.400	6.73	10.16	4
ØD	1.85	1.95	46.99	49.53	
ØD ₁	.57	.67	14.48	17.02	5
Term 1	Threaded insert .250-28UNF-2B				
Term 2	Threaded stud .250-28UNF-2A.				

NOTES:

1. Dimensions are in inches. Metric equivalents are given for general information only.
2. Polarity: For type 1N5603 the cathode is connected to terminal 1. For types 1N5600 and 1N5597 the cathode is connected to terminal 2.
3. Module contour within dimension A is optional.
4. Full length thread.
5. Metal terminal contact surface.
6. Surface roughness of all external metal surfaces except threaded areas shall not exceed 63 microinches rms.
7. Threaded portions of the assembly shall be in accordance with [FED-STD-H28](#) (Screw Thread Standards For Federal Services). The maximum pitch diameter of plated threads shall be the basic pitch diameter.
8. Location of marking is optional.

FIGURE 1. Semiconductor device, rectifier module.

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3. REQUIREMENTS

3.1 General. All semiconductor devices described herein shall meet all requirements of [MIL-PRF-19500](#) as specified herein except qualification is not required for these devices. It is prohibited for a manufacturer not listed in [6.5](#) to mark devices with this drawing number.

3.2 Certification and manufacturer eligibility.

3.2.1 Certification as approved source of supply. In order to be listed as an approved source of supply of rectifiers compliant to this drawing (see [6.5](#)), a manufacturer shall submit a certificate of compliance to DLA Land and Maritime – VAC prior to listing as an approved source of supply. The certificate of compliance shall state that the manufacturer's product meets the screening requirements of [MIL-PRF-19500](#) and the requirements herein.

3.2.2 Manufacturer eligibility. To be eligible to supply devices to this drawing, the manufacturer shall have an approved facility in accordance with [MIL-PRF-19500](#) for at least one line and at least one qualified JAN device listed on QML-19500 or, when specified, perform eligibility inspection in accordance with this drawing (see [4.2](#)) on a sample of parts agreed upon by the manufacturer and DLA Land and Maritime VAC.

3.2.3 Certificate of conformance. A certificate of conformance shall be provided with each shipment of devices delivered in accordance with this drawing to the customer.

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. The interface and physical dimensions shall be as specified in [MIL-PRF-19500](#), and herein.

3.4.1 Internal construction. The rectifier module shall contain an assembly of series-connected discrete controlled avalanche diodes (arbitrarily designated D-1, D-2, and D-3 in tables I and II). Each diode shall be in a glass-to-metal, ceramic-to-metal, or fused metal oxide-to-metal hermetically sealed non-cavity package. The completed assembly of diodes and other internal structures shall be encapsulated in a plastic material which polymerizes to a rigid condition by virtue of a chemical cross-linking mechanism. The rectifier module shall be free of voids either visible or as evidenced by failure to pass the environmental corona test specified. The rectifier module shall not internally include nor utilize component capacitors and/or resistors for compensation. Only those discrete diodes which have passed the tests in [4.3](#), tables I, and II shall be used in the rectifier module. Discrete diodes shall be TX or TXV screened devices.

3.4.2 External construction. Metal surfaces shall be nickel plated in accordance with AMS-C-26074 (class 3, grade A). Plastic surfaces shall be finished smooth, free of pits, cracks, and other imperfections.

3.5 Marking. The marking shall be in accordance with [MIL-PRF-19500](#). It is not necessary that marking be on one line. Complete marking, which shall include PIN (see [1.2](#)), manufacturer's identification, Commercial and Government Entity (CAGE) code, and lot date code, shall be included on the initial packaging. As an option to the polarity marking requirements, a diode graphic symbol or the words cathode terminal may be used.

3.6 Performance characteristics. Performance characteristics shall be in accordance with [table III](#).

3.7 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.8 Workmanship. The semiconductor shall be uniform in quality and free from any 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. Screening (see 4.3).
- b. Conformance inspection (see 4.4).

4.1.1 Inspection of product for delivery. Inspection of product for delivery shall consist of conformance inspection in accordance with 4.4.1 and 4.4.2 (groups A and B inspection).

4.1.2 Sampling and inspection. Unless otherwise specified, sampling and inspection procedures shall be performed in accordance with MIL-PRF-19500, and as specified herein.

4.2 Eligibility verification. When conformance testing is used to verify a device manufacturer eligibility, a sample of devices shall be subjected to inspection of product for delivery in accordance with 4.1.1. When specified, group E inspection shall be performed. In addition, the device manufacturer shall make available to DLA Land and Maritime VAC, upon request, all pertinent test data on its production of the listed parts, including, but not limited to, the results of testing in accordance with tables I, II, III, and IV as applicable.

4.2.1 Group E inspection. Group E inspection shall be performed on test specimens that are representative of subsequent production.

4.2.2 Inspection routines. Group E inspection shall consist of either a full inspection or partial inspection as directed by DLA Land and Maritime VAC.

4.2.2.1 Full inspection. A sample of test specimens shall be submitted for group E inspection and subjected to the testing of each subgroup of table IV in the order shown. Alternately, separate samples of test specimens of the same PIN may be tested for each subgroup. All product characteristics of the PINs to be listed for a manufacturer shall be covered in the full group E inspection.

4.2.2.2 Partial inspection. At the discretion of DLA Land and Maritime VAC, a manufacturer may be required to perform a partial group E inspection for the reasons listed in 4.2.3. The manufacturer shall coordinate with DLA Land and Maritime VAC to determine the applicable subgroups of table IV and sample quantities required to be tested.

4.2.2.3 Extent of listing. A group E inspection on a particular diode PIN shall be extended to cover all other diode PINs of this drawing.

4.2.3 Design, location, material, or process changes. A full or partial group E inspection may be required when any of the following events occurs:

- a. A change in the design affecting form, fit, or function of the part.
- b. A change in the location of the manufacture.
- c. A change in manufacturing source(s), process(es), inspection method(s), tooling or materials, affecting form, fit, or function.
- d. A natural or man-made event, which may adversely affect the manufacturing process.

4.2.4 Nonconformance. The group E inspection is not complete until all non-conformances affecting the part are addressed and corrective actions have been implemented and accepted. The group E inspection shall be repeated for the affected characteristics and the results recorded.

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4.3 Screening. 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 III](#) herein. Devices that exceed the limits of [tables I](#) and [II](#) herein shall not be acceptable. Screening shall be conducted on 100 percent of the discrete diode lot prior to assembly and encapsulation into rectifier modules.

Screen	Measurement for TX and TXV levels
(1)	Surge, see 4.3.2
(2)	Peak transient reverse power (table I)
9, 10	Not applicable
11	V_{F2} and I_{R1}
12	See 4.3.1
13	$\Delta V_{F2} = +0.1/-0.2$ V dc $\Delta I_{R1} = 250$ nA dc or 100 percent of initial value, whichever is greater, for D-1 (1N5597) and D-2 (1N5600). $\Delta I_{R1} = 500$ nA dc or 100 percent of initial value, whichever is greater, for D-3 (1N5603). Electrical endpoints, table II, all tests.

- 1/ Surge screening shall be performed anytime after screen 3 and before screen 10.
2/ Shall be performed anytime after screen 3.

4.3.1 Power burn-in conditions. The power burn-in conditions shall be as follows: $T_A = +125^\circ\text{C}$, V_R at rated (dc), $I_F = 0$.

4.3.2 Surge screening. Surge current screening shall be performed in accordance with condition C of method 4066 of [MIL-STD-750](#). $V_{RWM} = 0$, $I_O = 0$, $I_{FSM} = 20 \times I_O$ rated (see [1.3](#)) at $T_A = +25^\circ\text{C}$, $t_p = 8.3$ ms, 3 surges, duty factor = 1 percent maximum (half-sine or rectangular pulse of equivalent energy).

4.3.3 Internal corona screening. This 100-percent test shall be performed in accordance with [4.5.4](#) herein on the finished rectifier module.

4.4 Conformance inspection. Conformance inspection shall be in accordance with [MIL-PRF-19500](#) and [tables I](#), [II](#), and [III](#) herein.

4.4.1 Group A inspection. Group A inspection shall consist of the inspections and tests specified in [table III](#).

4.4.2 Group B inspection. Group B inspection shall be conducted in accordance with the conditions specified for subgroup testing in table E-VIB of [MIL-PRF-19500](#) and below. Electrical measurements shall be in accordance with the applicable inspections of [table III](#), subgroup 2 herein.

Subgroup	Method	Condition
B1	2026	Not applicable.
B2	4066	Condition A, $V_{RWM} = 0$ V, $I_{FSM} =$ (see 1.3) ten surges, 8.3 ms $I_O = I_O$ rated at $T_C = +75^\circ\text{C}$.
B3	1036	Intermittent life test See 4.5.7; Duration = 340 cycles (340 hours).
B4		Not applicable.
B5		Not applicable.
B6	1032	$T_A = +150^\circ\text{C}$.

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4.4.3 Group C inspection. Group C inspection shall be conducted in accordance with the conditions specified for subgroup testing in table E-VII of [MIL-PRF-19500](#), and as follows. Electrical measurements shall be in accordance with table III, subgroup 2 herein.

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
C2	2036	Test condition D2 (stud torque), $t = 3$ seconds; Torque for 1N5597 and 1N5600 = 18 inch-pound (2.03 N m); Torque for 1N5603 = 36 inch-pound (4.07 N m).
C3		Not applicable.
C4	1041	Reject criteria, a device with illegible marking, evidence of flaking or pitting or corrosion that will interfere with the application of the device will be considered a failure.
C5		Not applicable.
C6	1036	Intermittent life test, See 4.5.7 ; Duration 1,000 cycles (1,000 hours).

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 Reverse recovery time. Reverse recovery time shall be performed in accordance with condition C of method 4031 of [MIL-STD-750](#) but shall be measured in a circuit and with equipment as shown on [figure 2](#). The pulse generator shall have a pulse repetition frequency of 1 kHz maximum, and a pulse width of 10 microseconds minimum. Recovery conditions: 0.5 ampere forward current to 1.0 ampere reverse current. Recovery time measured from the time the rectifier begins to conduct in the reverse direction (crosses $I = 0$) until the reverse current recovers to -0.25 ampere.

4.5.3 Peak transient reverse power. The circuit on [figure 3](#) or a similar circuit, at the option of the supplier, shall be used to apply a single cycle reverse power surge to discrete diodes. The reverse power surge used to test discrete diodes may be applied in the form of a one-half sinusoidal pulse of 8.3 milliseconds duration.

4.5.4 Internal corona testing. Internal corona testing shall be conducted on all rectifier modules (see [figure 4](#)). The method of corona detection, measurement and display shall conform to the following requirements:

- The corona tester shall be a Biddle Company AC Corona Tester (Catalog No. 661409), or equivalent.
- The terminals shall be connected together and connected to the high potential side of the corona test equipment.
- A test voltage of 25 KV(rms) at 60 Hz shall be applied between the terminals and the ground plane which shall be no more than 2 inches (50.8 mm) from the major diameter of the rectifier module. The test potential shall be applied for not less than 20 seconds.
- The corona discharge as viewed on the Biddle tester display screen shall show no more than 50 discharges per cycle (whole ellipse). None of the 50 discharges shall exceed 5 picocoulombs. In order to minimize the masking of internal corona by any external corona, rounded terminal hardware of suitable design may be added to the connectors during the corona test.
- In addition, the test may be performed with the unit either entirely or partially immersed in a suitable dielectric fluid in order to reduce external corona.

4.5.5 External corona testing. The method of corona detection, measurement and display shall conform to the requirements of ASTM D1868. The apparatus shall consist of a corona-free high-voltage adjustable power supply, a corona-free pickup network consisting of a high-pass filter, a corona detector consisting of a high-gain amplifier/oscilloscope, and a calibrating means to make quantitative measurement of corona magnitude in picocoulombs. Using the scheme shown on figure 5, an external corona test shall be conducted on two diode modules of the same rating connected in opposition from 0 V to the required test voltage of:

- a. 20 KV(peak-to-peak) = 14.14 KV(rms) for diode module type 1N5597; or
- b. 10 KV(peak-to-peak) = 7.07 KV(rms) for diode module types 1N5600 and 1N5603.

With a corona detector sensitivity of 1 picocoulomb per 0.1-inch (2.54 mm) minimum, no corona discharges exceeding 5 picocoulombs shall be visible for types 1N5597 and 1N5600 and no corona discharges exceeding 15 picocoulombs shall be visible for type 1N5603. The number of detectable discharges shall not exceed 50 per cycle (whole ellipse).

4.5.6 Avalanche (bulk-breakdown) characteristic. The avalanche (bulk-breakdown) characteristic shall be determined using condition B of test method 4023 of [MIL-STD-750](#). The reverse breakdown characteristics shall be viewed on an oscilloscope with display calibration factors of 5 to 20 μ A/division and 50 to 200 V/division. Reverse current over the knee shall be at least 50 μ A. Each device shall exhibit a sharp knee characteristic and any discontinuity or dynamic instability of the trace shall be cause for rejection.

4.5.7 Intermittent life test. The intermittent life test, the modules may be series connected and horizontally mounted in a dielectric fluid such as 3M Brand FC40 or equivalent, or oil in accordance with ASTM-D3487, controlled to maintain a case temperature of 75°C minimum. Time on = 50 min, time off = 10 min, duration shall be as specified. For determining sample size, each module shall be considered a test unit with resistive load. The I_o during time on shall be as follows:

1N5597 - 1 A dc
 1N5600 - 2 A dc
 1N5603 - 5 A dc.

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TABLE I. Discrete diode-process conditioning tests and measurements.

Inspection	MIL-STD-750		Symbol	Limit	Limit	Unit
	Method	Conditions		Min	Max	
Peak transient reverse power D-1 (1N5597) D-2 (1N5600) D-3 (1N5603)		See 4.5.3 single cycle surge; one-half sinusoidal wave 8.3 ms Surge = .17 J Surge = 1.00 J Surge = 2.00 J				

TABLE II. Discrete diodes-inspection test to verify sampling plan.

Inspection	MIL-STD-750		Symbol	Limits	Limits	Unit
	Method	Conditions		Min	Max	
<u>Subgroup 1</u> Avalanche (bulk-breakdown characteristics)		100 percent test See 4.5.6				
<u>Subgroup 2</u> Forward voltage D-1 (1N5597) D-2 (1N5600) D-3 (1N5603)	4011	Condition A; $I_F = 1.0$ A dc $I_F = 2.0$ A dc $I_F = 5.0$ A dc	V_{F1}		1.1 1.0 1.0	V dc V dc V dc
Reverse current D-1 (1N5597) D-2 (1N5600) D-3 (1N5603)	4016	Conditions A or B, DC methods $V_R = 600$ V dc $V_R = 600$ V dc $V_R = 600$ V dc	I_{R1}		1 5 5	μ A dc μ A dc μ A dc
Breakdown voltage	4021	$I_R = 10$ μ A dc	V_{BR1}	660		V dc
Breakdown voltage	4021	$I_R = 50$ μ A dc	V_{BR2}		1,000	V dc

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TABLE III. Group A inspection.

Inspection <u>1/</u>	MIL-STD-750		Symbol	Limit	Limit	Unit
	Method	Conditions		Min	Max	
<u>Subgroup 1</u>						
Visual and mechanical examination	2071					
<u>Subgroup 2</u>						
Forward voltage	4011	Condition A;	V_{F2}			
1N5597		$I_F = 1.0$ A dc		13	19	V dc
1N5600		$I_F = 2.0$ A dc		6	10	V dc
1N5603		$I_F = 5.0$ A dc		6	10	V dc
Reverse current	4016	Conditions A or B, DC methods	I_{R2}			
1N5597		$V_R = 10.0$ KV dc			1	μ A dc
1N5600		$V_R = 5.0$ KV dc			1	μ A dc
1N5603		$V_R = 5.0$ KV dc			5	μ A dc
<u>Subgroup 3</u>						
High temperature operation:		$T_A = +100^\circ\text{C}$				
Reverse current	4016	Conditions A or B, DC methods	I_{R3}			
1N5597		$V_R = 10.0$ KV dc			75	μ A dc
1N5600		$V_R = 5.0$ KV dc			100	μ A dc
1N5603		$V_R = 5.0$ KV dc			100	μ A dc
Low temperature operation		$T_A = -55^\circ\text{C}$				
Forward voltage	4011	Condition A;	V_{F3}			
1N5597		$I_F = 1.0$ A dc		13	24	V dc
1N5600		$I_F = 2.0$ A dc		6	12	V dc
1N5603		$I_F = 5.0$ A dc		6	12	V dc
<u>Subgroup 4</u>						
Capacitance	4001	$V_R = 100$ V dc	C			
		$0.1 \text{ MHz} \leq f \leq 0.15 \text{ MHz}$				
1N5597				5	30	pF
1N5600				7	30	pF
1N5603				15	40	pF
Reverse recovery time	4031	See 4.5.2 and figure 2	t_{rr}		2	μ s
<u>Subgroups 5 and 6</u>						
Not applicable						

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

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TABLE IV. Group E inspection.

Inspection	MIL-STD-750		Sampling plan
	Method	Conditions	
<u>Subgroup 1</u> Temperature cycling Electrical measurements	1051	500 cycles, condition F. See table III , subgroup 2.	45 devices, c = 0
<u>Subgroup 2</u> Steady-state dc blocking life Electrical measurements	1038	1,000 hours, condition A, except TA = 100°C See table III , subgroup 2.	45 devices, c = 0
<u>Subgroup 3</u> Not applicable			
<u>Subgroup 4</u> External corona <u>1/</u> Flammability		See 4.5.5 MIL-STD-202 , method 111, allowable burning time = 5 s. Point of impingement shall be midpoint of one side.	
<u>Subgroup 10</u> Surge current Electrical measurements	4066	Condition A, 100 surges of 8.3 ms superimposed on IO. VR = 0; IO = 0 A pk half sine wave, continuous, TA = +25 °C. See table III , subgroup 2.	

1/ Subgroup 1 samples may be used for this test.

TABLE IV. Group E end-point electrical measurements. 1/

Step	Inspection	MIL-STD-750		Symbol	Limit		Unit
		Method	Condition		Min	Max	
1.	Forward voltage Reverse current 1N5597, 1N5600 1N5603	4011 4016	Condition A or B (dc methods)	ΔV_{F1} <u>2/</u> ΔI_{R1} <u>2/</u>	0.2	0.1	V dc
						250 nA dc or 100 percent of initial value, whichever is greater. 500 nA dc or 100 percent of initial value, whichever is greater.	

1/ The electrical measurements for table IV herein are as follows: Subgroups 1 and 2, see table V herein, steps 1 and 2.

2/ Devices which exceed the group A limits for this test shall not be accepted.

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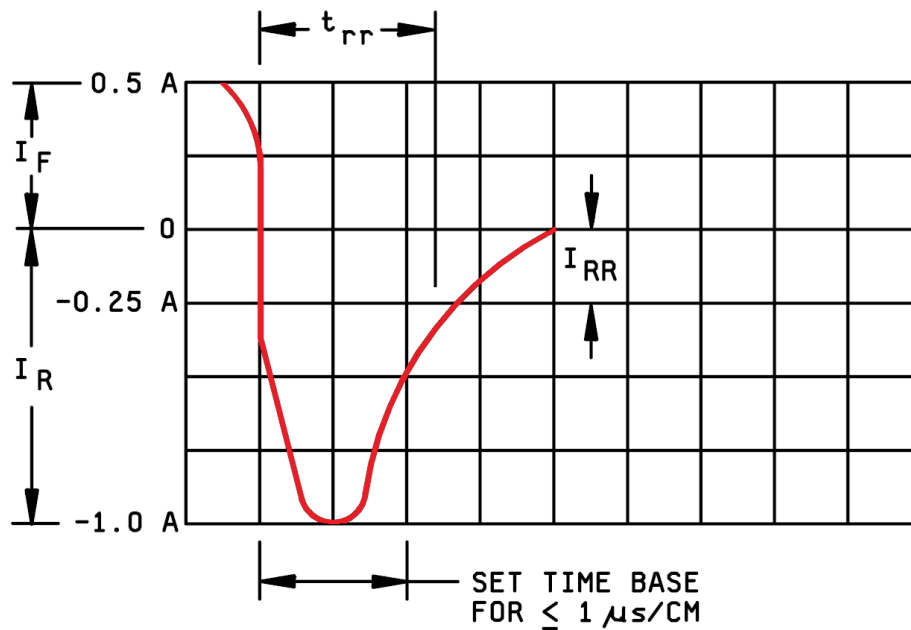
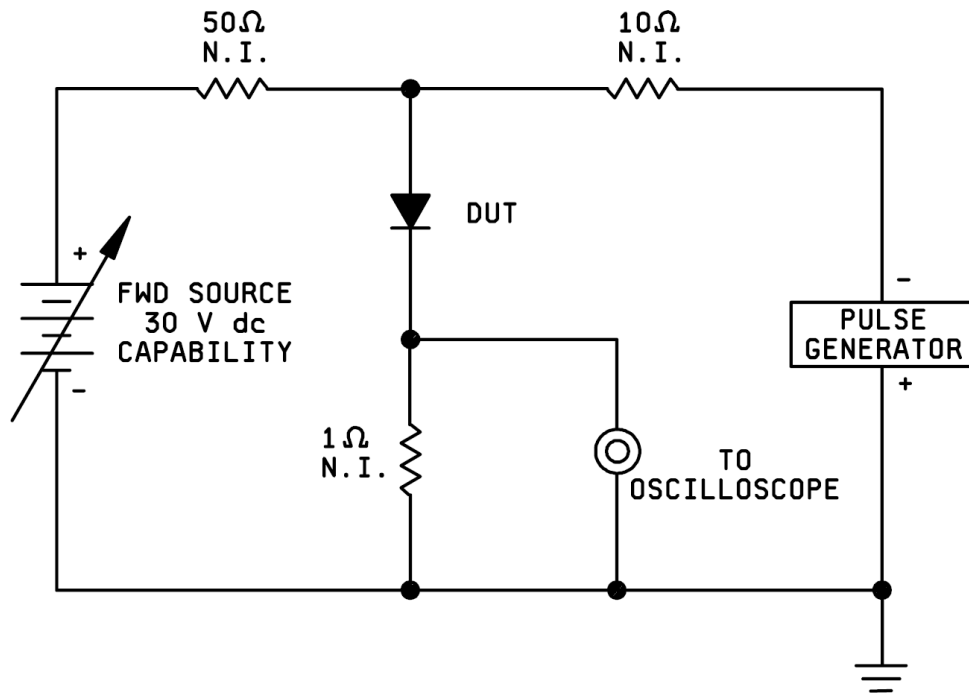
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NOTES:

1. Oscilloscope rise time < 7 ns; input impedance = 1 MΩ; 22 pF.
2. Pulse generator - rise time < 10 ns; source impedance = 50Ω.
3. Recovery time shall be measured on the above circuit and with equipment as shown.

FIGURE 2. Reverse recovery time test circuit and characteristic nomograph.

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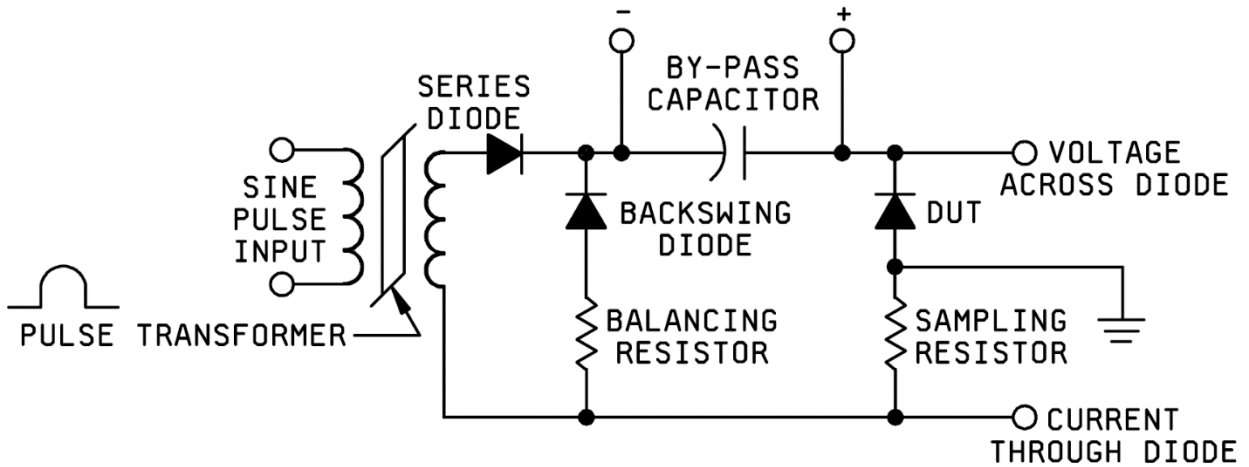


FIGURE 3. Peak transient reverse power test circuit.

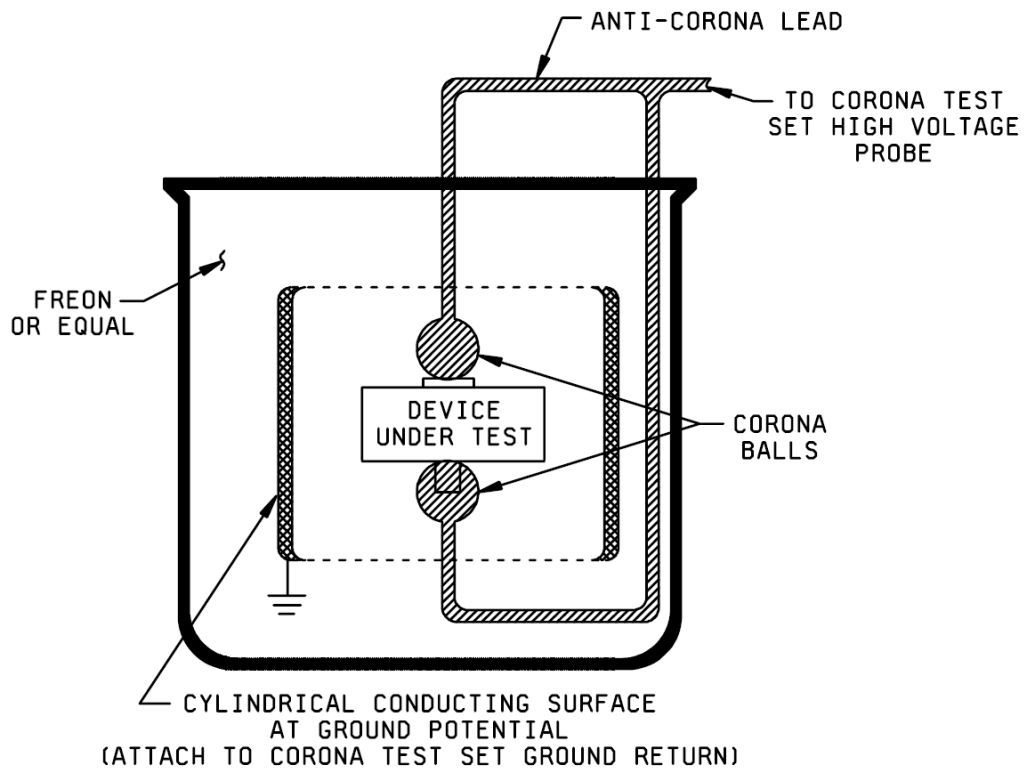


FIGURE 4. Internal corona test scheme.

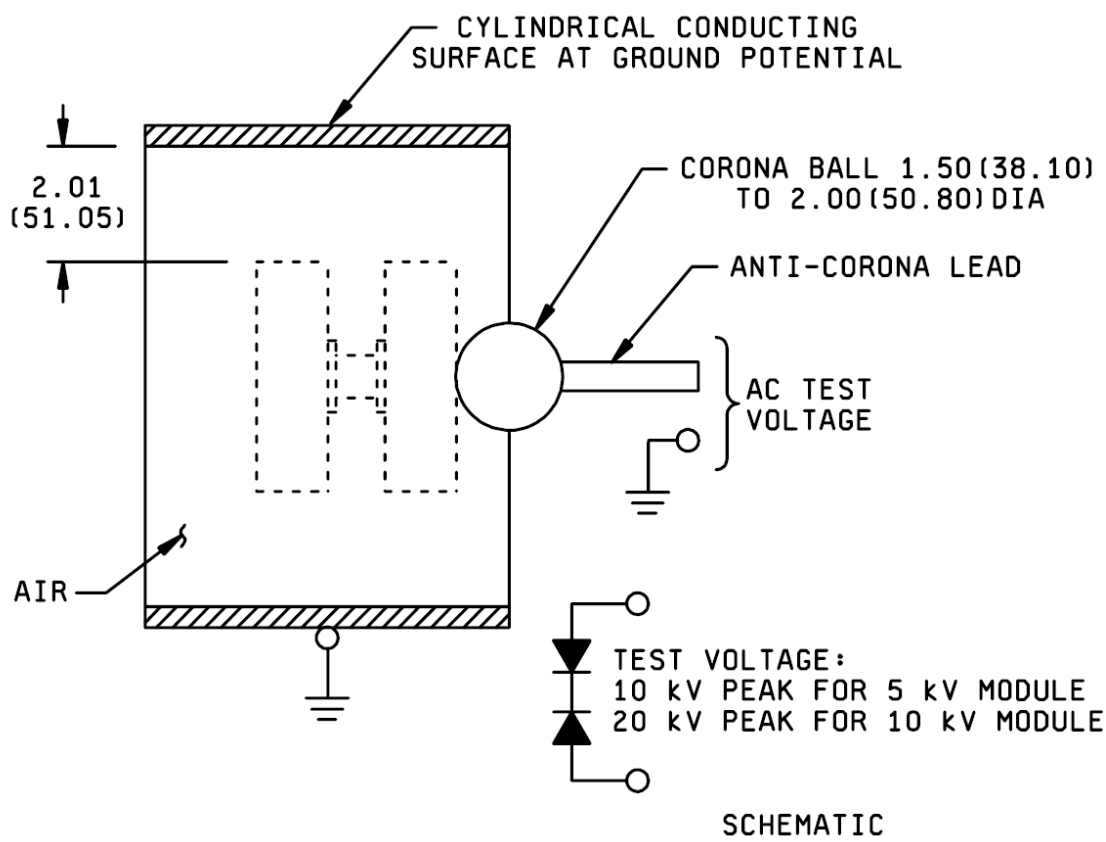


FIGURE 5. External corona test scheme.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual 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 activity within the Military Department or Defense Agency, or within the Military Department's system command. 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 which may be helpful, but is not mandatory.)

6.1 Intended use. Devices conforming to this drawing are intended for use when performance specifications do not exist and qualified military devices that will perform the required function are not available for OEM application. This drawing is intended exclusively to prevent the proliferation of duplicate specifications, drawings, and stock number listings.

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6.2 Ordering data. The acquisition requirements should specify the following:

- a. Complete PIN (see 1.2).
- b. Requirements for delivery of one copy of the conformance inspection data or certificate of compliance that parts have passed conformance inspection with each shipment of parts by the manufacturer.
- c. Requirements for packaging and packing.

6.3 Replaceability. Devices covered by this drawing may be used as a substitute for MIL-PRF-19500/404. All devices on this drawing are 100 percent interchangeable with devices supplied to MIL-PRF-19500/404.

DSCC drawing PIN	Superseded PINs from MIL-PRF-19500/404C Dated 30 July 1999	Superseded PINs from MIL-S-19500/404(USAF) Dated 14 August 1968
03021-1N5597TX	JANTX1N5597	M19500/404-01
03021-1N5597TXV	JANTXV1N5597	
03021-1N5600TX	JANTX1N5600	M19500/404-02
03021-1N5600TXV	JANTXV1N5600	
03021-1N5603TX	JANTX1N5603	M19500/404-03
03021-1N5603TXV	JANTXV1N5603	

6.4 Users of record. Coordination of this document for future revisions are coordinated only with the suggested sources of supply and the users of record of this document. Requests to be added as a recorded user of this drawing should be in writing to: DLA Land and Maritime, ATTN: VAC, Post Office Box 3990, Columbus, OH 43218-3990 or by electronic mail at "5998.Documents@dla.mil".

6.5 Approved sources of supply. Approved sources of supply are listed herein. Additional sources will be added as they become available. The vendors listed herein have concurred with this drawing and have submitted a certificate of compliance (see 3.2.1 herein) to DLA Land and Maritime VAC.

DESC drawing PIN (1)	Vendor similar designation or type number (2)	Vendor CAGE	Vendor name and address
03021-1N5597TX 03021-1N5597TXV	1N5597 1N5597	43611	Microsemi Lawrence 800 Hoyt Street Broomfield, CO 80020 Tele: (303) 469-2161 FAX: (303) 466-3775 E-mail: support@microsemi.com URL: http://www.microsemi.com
03021-1N5600TX 03021-1N5600TXV	1N5600 1N5600		
03021-1N5603TX 03021-1N5603TXV	1N5603 1N5603		

- (1) Parts must be purchased to this DSSC PIN to assure that all performance requirements and tests are met.
- (2) Do not use vendor PIN's for acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.

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