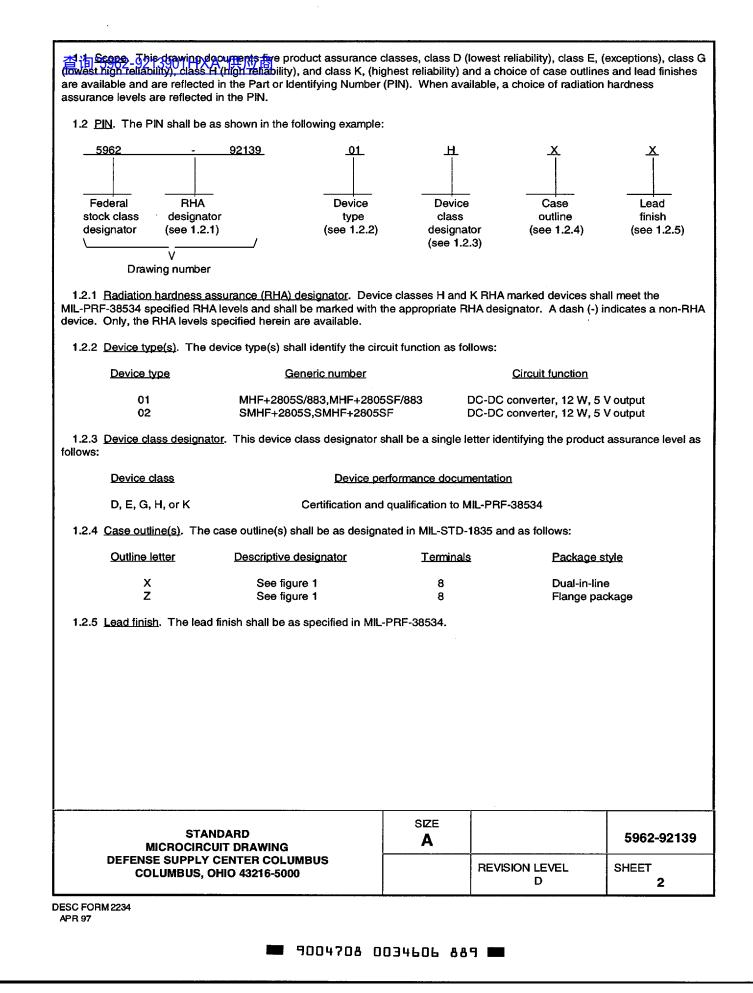
								F	REVISI	ONS										
查询"59	62-92	1390	1HX	A"供	应商	ESCR	IPTIO	N					DA	ATE (Y	R-MO-D	DA)		APPF	OVED)
с		Added RadHard and Class K devices. Added RadHard requirements. Redrew entire documentsld								nts.	97	-10-23	3		K.A.	Cotto	ngim			
D	Table I; For the Output voltage test $+V_{OUT}$ change the min and max limits for the Radhard L and R for device type 02 from 4 and 6 V to 4.7 and 5.3 V. Change the max limit for Radhard L and R for device type 02 for the V _{RIP} and I _{IN} tests. Change the max limit for device type 02 for the V _{RIP} test subgroups 2 and 3 from 120 to 240 mVp-psld								98	-02-03	3		K.A.	Cotto	ngim					
REV									[[[[
SHEET																				
REV																				
SHEET										·										
REV STATU				RE	V	L	D	D	D	D	D	D	D	D	D	D	D	D		
OF SHEETS	\$			SH	EET		1	2	3	4	5	6	7	8	9	10	11	12		
	COLUMBUS, OHI										6									
MICRO	STANDARD ICROCIRCUIT Gary Zahn																			
THIS DRAW FOR U DEP/							rcuit ., DC/[OLT, S	SINGLI	E						
AND AGE DEPARTME							/AL DA ⁻ 07-02	TE		SIZE	7		e codi 726			59	962·	-92	139	
AMSC				KEV	ISION L)			SHE		1		OF	1	2				

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

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Input voltage range	-0.5 V dc to +50 V dc
Power dissipation (P _D)	6 W
Output power	12.36 W
Lead soldering temperature (10 seconds)	+300° C
Storage temperature range	-65°C to +150°C

1.4 Recommended operating conditions.

Input voltage range	+16 V dc to +40 V dc
Case operating temperature range	-55° C to +125° C

2. APPLICABLE DOCUMENTS

2.1 <u>Government specification, standards, and handbook</u>. The following specification, standards, and handbook form a part of this drawing 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 solitation.

SPECIFICATION

DEPARTMENT OF DEFENSE

MIL-PRF-38534 - Hybrid Microcircuits, General Specification for.

STANDARDS

DEPARTMENT OF DEFENSE

MIL-STD-883	-	Test Methods and Procedures for Microelectronics.
MIL-STD-973	-	Configuration Management.
MIL-STD-1835	-	Microcircuit Case Outlines.

HANDBOOK

DEPARTMENT OF DEFENSE

MIL-HDBK-780 - Standard Microcircuit Drawings.

(Unless otherwise indicated, copies of the specification, standards, and handbook are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2 <u>Order of precedence</u>. In the event of a conflict between the text of this drawing and the references cited herein, the text of this drawing takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

1/ Stresses above the absolute maximum rating may cause permanent damage to the device. Extended operation at the maximum levels may degrade performance and affect reliability.

STANDARD MICROCIRCUIT DRAWING	SIZE A		5962-92139
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COLUMBUS, OHIO 43216-5000		D	3

DESC FORM 2234 APR 97

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查省前"5965"与245969HXA"供应商

3.1 <u>Item requirements</u>. The individual item performance requirements for device classes D, E, G, H, and K shall be in accordance with MIL-PRF-38534. Compliance with MIL-PRF-38534 may include the performance of all tests herein or as designated in the device manufacturer's Quality Management (QM) plan or as designated for the applicable device class. Therefore, the tests and inspections herein may not be performed for the applicable device class (see MIL-PRF-38534). Futhermore, the manufacturers may take exceptions or use alternate methods to the tests and inspections herein and not perform them. However, the performance requirements as defined in MIL-PRF-38534 shall be met for the applicable device class.

3.2 <u>Design, construction, and physical dimensions</u>. The design, construction, and physical dimensions shall be as specified in MIL-PRF-38534 and herein.

3.2.1 Case outline(s). The case outline(s) shall be in accordance with 1.2.4 herein and figure 1.

3.2.2 Terminal connections. The terminal connections shall be as specified on figure 2.

3.3 <u>Electrical performance characteristics</u>. Unless otherwise specified herein, the electrical performance characteristics are as specified in table I and shall apply over the full specified operating temperature range.

3.4 <u>Electrical test requirements</u>. The electrical test requirements shall be the subgroups specified in table II. The electrical tests for each subgroup are defined in table I.

3.5 <u>Marking of Device(s)</u>. Marking of device(s) shall be in accordance with MIL-PRF-38534. The device shall be marked with the PIN listed in 1.2 herein. In addition, the manufacturer's vendor similar PIN may also be marked as listed in QML-38534.

3.6 <u>Data</u>. In addition to the general performance requirements of MIL-PRF-38534, the manufacturer of the device described herein shall maintain the electrical test data (variables format) from the initial quality conformance inspection group A lot sample, for each device type listed herein. Also, the data should include a summary of all parameters manually tested, and for those which, if any, are guaranteed. This data shall be maintained under document revision level control by the manufacturer and be made available to the preparing activity (DSCC-VA) upon request.

3.7 <u>Certificate of compliance</u>. A certificate of compliance shall be required from a manufacturer in order to supply to this drawing. The certificate of compliance (original copy) submitted to DSCC-VA shall affirm that the manufacturer's product meets the performance requirements of MIL-PRF-38534 and herein.

3.8 <u>Certificate of conformance</u>. A certificate of conformance as required in MIL-PRF-38534 shall be provided with each lot of microcircuits delivered to this drawing.

4. QUALITY ASSURANCE PROVISIONS

4.1 <u>Sampling and inspection</u>. Sampling and inspection procedures shall be in accordance with MIL-PRF-38534 or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein.

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Test	Symbol	Conditio -55°C ≤ T _C V _{IN} = 28V do	Group A subgrou		Limits		Unit		
		no external s unless otherw	$vnc, C_1 = 0,$			Min	Max		
Output voltage	+VOUT	V _{IN} = 16, 28, and	40 V dc	1	01,02	4.95	5.05	V	
				2,3	01,02	4.85	5.15		
			L,R	1,2,3	02	4.7	5.3		
Output current	Ιουτ	V _{IN} = 16, 28, and 40 V dc		1,2,3	01,02	· · · · · · · · · · · · · · · · · · ·	2400	mA	
			L,R	1,2,3	02		2400		
Output ripple	V _{RIP}	I _{OUT} = 2.4 A, B.W. = 10 kHz to	2/	1	01,02		80	mV p-p	
voltage		B.W. = 10 kHz to	2MHz	2,3	01		100]	
					02		240		
			L,R	1,2,3	02		350		
Line regulation	VRLINE	V _{IN} = 16 and 40 V	√ dc	1,2,3	01		50	mV	
					02		100		
			L,R	1,2,3	02		200		
Load regulation	VRLOAD	I _{OUT} = 0 to 2.4 A		1,2,3	01,02		50	m∨	
			L,R	1,2,3	02		100		
Input current	I _{IN}	I _{IN} I _{OUT} = 0, inhibit p		1,2,3	01,02		12	mA	
			L,R	_	02		15	_	
		l _{OUT} = 0, inhibit open	pin (pin 1) =		01,02		40		
			L,R		02		100		
Input ripple current	IRIP	I _{OUT} = 2.4 A, B. W. = 10 kHz to		1	01,02		80	mA p-p	
		B. W. = 10 kHz to	0 10 MHz	2,3	01		100		
					02		120		
			L,R	1,2,3	02		150		
Efficiency	Eff	I _{OUT} = 2.4 A		1	01,02	75		%	
				2,3	01,02	72			
			L,R	1,2,3	02	68			
See footnotes at end	l of table.								
MIC	STANDA ROCIRCUIT		\$	SIZE A			596	52-92139	
DEFENSE S		ITER COLUMBUS			REVISION LEVEL		SHEE	SHEET 5	

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Test	Symbol	Condition -55°C ≤ T _C V _{IN} = 28V dc	ns <u>1</u> / ≤+125°C +5 percent	Group A subgroups	Device Type	Limits		Unit
		no external sy unless otherwi			Min	Мах		
solation	ISO	Input to output or a (except pin 6) at 5		1	01,02	100		MΩ
			L,R		02	100		-
Capacitive load	CL	No effect on dc performance		4	01,02		300	μf
3/ 4/			L,R	4	02		300]
nternal power	PD	Short circuit		1,2,3	01		6	w
dissipation, short circuit					02		8	_
			L,R		02		9	
Switching frequency	FS	I _{OUT} = 2.4 A		4	01,02	500	600	kHz
inequency				5,6	01,02	480	620	
			L,R	4,5,6	02	400	700	
External sync <u>5</u> /		I _{OUT} = 2.4 A, TTL level to pin 5		4,5,6	01,02	500	600	kHz
range					02	500	600	
Output response to VOTLO				4,5,6	01	-400	+400	mV pk
step transient load changes <u>6</u> /					02	-500	+500	
			L,R		02	-1200	+1200	
Recovery time, step transient load changes <u>6/7</u> /		50 percent load to percent load	50 percent load to/from 100 percent load		01,02		300	μs
			L,R		02		1200	
Output response to transient step line changes	VOTLINE	Input step from 16	V to 40 V dc,	4,5,6	01,02	-800	+800	mV pk
<u>4/8/</u>			L,R		02	-1500	+1500	
		Input step from 40 I _{OUT} = 2.4 A	V to 16 V dc,		01,02	-800	+800	
			L,R		02	-1500	+1500	
ee footnotes at end	of table.		L,R		02	-1500	+1500	
	STANDAR	D		ZE			5960	2-92139
MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216-5000			A RI	EVISION LEV D	VEL	SHEET		

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Test	Symbol		Conditions <u>1</u> / -55°C ≤ T _C ≤+125°C V _{IN} = 28V dc ±5 percent,		Device Type	Limits		Unit
			± 5 percent, nc, C _L = 0, vise specified			Min	Max	
Recovery time to transient step line	TTLINE	Input step from 16 V to 40 V dc, I _{OUT} = 2.4 A		4,5,6	01,02		1.2	ms
changes <u>4/7/</u>	· ·		L,R		02		2.4	
		Input step from 40 V to 16 V dc, I _{OUT} = 2.4 A			01,02		1.2	
			L,R		02		2.4	
Turn-on overshoot <u>4</u> /	VtonOS	I _{OUT} = 2.4 A		4,5,6	01,02		600	mV p
			L,R	4,5,6	02		1500	
Turn-on delay <u>9</u> /	TonD	I _{OUT} = 2.4 A		4,5,6	01,02		25	ms
			L,R		02		100	
Load fault recovery	⊤r _{LF}	I _{OUT} = 2.4 A		4,5,6	01,02		30	ms
<u>4</u> / <u>7</u> /			L,R	4,5,6	02		100	
 Post irradiation test Bandwidth guarantest Capacitive load ma Capacitive load ma Parameter shall be the parameter shall A TTL level wavefor to the sync input pin become synchrono Load step transition Recovery time is m of V_{OUT} final value Input step transition Turn-on delay time 	eed by design. y be any value tested as part be guaranteed rm ($V_{IH} = 4.5$ \ n (pin 5) within us with the freq time is 10 mic easured from the homogreater the	Tested for 10 k from 0 to the ma of design charact to the limits spe / minimum, V_{IL} = the sync range guency applied to roseconds minima in initiation of th	Hz to 2 MHz. aximum limit wit serified in table = .8 V maximum frequency shall to the sync inpu num. e transient to v	after design or l.) with a 50 pero cause the con t pin (pin 5).	process cha cent ±10 per verters switc	nges. Th cent duty hing freq	cycle appli uency to	ied

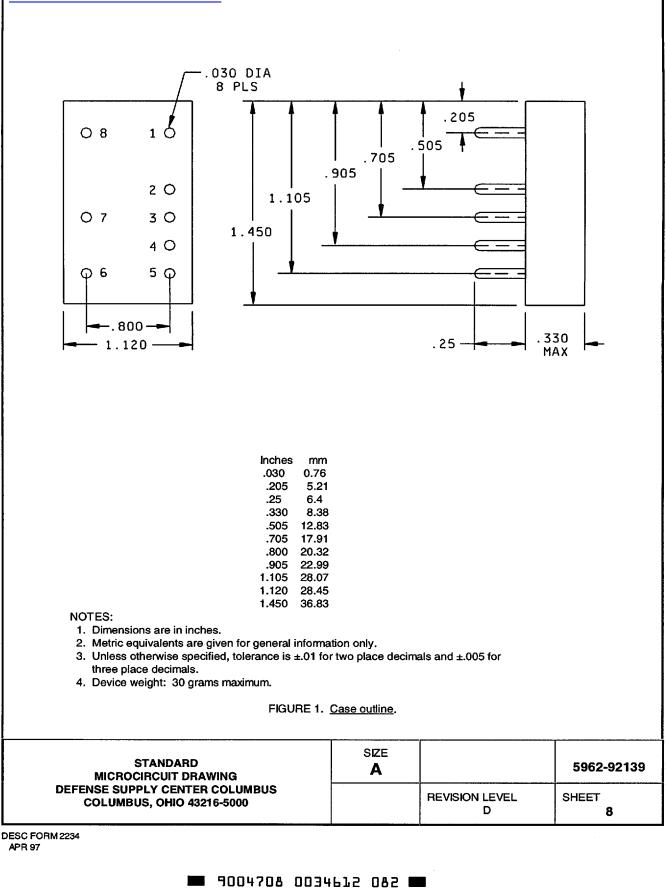
STANDARD MICROCIRCUIT DRAWING	SIZE A		5962-92139
DEFENSE SUPPLY CENTER COLUMBUS		REVISION LEVEL	SHEET
COLUMBUS, OHIO 43216-5000		D	7

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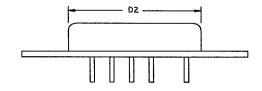
查询"5962-9213901HXA"供应商

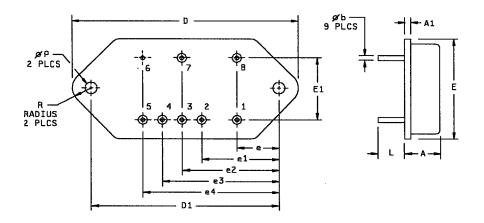
Case X



查询"5962-9213901HXA"供应商

Case Z





Symbol	Millimete	rs	Inches	
-	Min	Max	Min	Max
A		8.38		.330
A1	.94	1.45	.037	.057
фb	.64	.89	.025	.035
D		50.80		2.000
D1	43.82	44.07	1.725	1.735
D2		36.83		1.450
е	8.64	8.89	.340	.350
e1	16.26	16.51	.640	.650
e2	21.37	21.59	.840	.850
e3	26.41	26.67	1.040	1.050
e4	31.50	31.75	1.240	1.250
E		28.70	ł	1.130
E1	20.07	20.57	.790	.810
L	6.10	6.60	.240	.260
фр	3.20	3.30	.126	.130
B	3.18	3.43	.125	.135

Notes:
 The case outline Z was originally designed using inch-pound units of measurement, in the event of conflict between the metric and inch-pound units, the inch-pound shall take precedence.
 Device weight: 30 grams maximum

FIGURE 1	. Case outline	- Continued
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STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216-5000	SIZE A		5962-92139
		REVISION LEVEL D	SHEET 9

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查询"5962-9213901HXA"供应商 Device types Case outlines Terminal number

Device types	01 and 02
Case outlines	X and Z
Terminal number	Terminal symbol
1	Inhibit
2	No connection
3	Output return
4	Output
5	Sync input
6	Case ground
7	Input retum
8	Input

FIGURE 2. Terminal connections.

STANDARD MICROCIRCUIT DRAWING	SIZE A		5962-92139
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•	STAND MICROCIRCUI		SIZE A		5962-92139
			0775		1
					1
(3) Test duration: 1,000 hours, except as permitted by method 1005 of MIL-STD-883.					
(2) T _C as specified in accordance with table I of method 1005 of MIL-STD-883.					
(1)	control and shall be r shall specify the inpu in test method 1005 (C, or D. The test circuit shall be made available to either DSCC- its, outputs, biases, and power o of MIL-STD-883.	VA or the acquirin dissipation, as app	g activity upon request. Al blicable, in accordance with	iment revision leve so, the test circuit the intent specifi
	•	ethod 1005 of MIL-STD-883.			
a. End-point electrical parameters shall be as specified in table II herein.					
4.3.3 Group C inspection (PI). Group C inspection shall be in accordance with MIL-PRF-38534 and as follows:					
4.3.2 Group B inspection (PI). Group B inspection shall be in accordance with MIL-PRF-38534.					
b. Subgroups 7, 8, 9, 10, and 11 shall be omitted.					
a. Tests shall be as specified in table II herein.					
4.3.1 Group A inspection (CI). Group A inspection shall be in accordance with MIL-PRF-38534 and as follows:					
4.3 <u>Conformance and periodic inspections</u> . Conformance inspection (CI) and periodic inspection (PI) shall be in accordance with MIL-PRF-38534 and as specified herein.					
b. Interim and final electrical test parameters shall be as specified in table II herein, except interim electrical parameter tes prior to burn-in are optional at the discretion of the manufacturer.					
(2)	0	cordance with table I of method			
(1)	control and shall be r	C, or D. The test circuit shall be nade available to either DSCC- ts, outputs, biases, and power o of MIL-STD-883.	VA or the acquiring	o activity upon request. Al	so, the test circuit
a. I	Burn-in test, method 101				
4.2 <u>Sc</u>	reening. Screening sha	II be in accordance with MIL-PF	RF-38534. The fol	lowing additional criteria sl	nall apply:
		* PDA applies to subgroup 1.			
		Post irradiation end-point elect parameters for RHA devices	otrical 1,	2, 3, 4 ,5, 6	
		Group C end-point electrical parameters		1	
		Group A test requirements	1,	2, 3, 4, 5, 6	
		Final electrical parameters	1*,	, 2, 3, 4, 5, 6	
		Interim electrical parameters			
		MIL-PRF-38534 test requirer	(in ac MIL-PF	Subgroups ecordance with RF-38534, group test table)	

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4.3.4 Group D inspection (PI), Group D inspection shall be in accordance with MIL-PRF-38534.

世间 3902-9213901117A [洪/亚间] 4.3.5 <u>Radiation Hardness Assurance (RHA)</u>. RHA qualification is required only for those devices with the RHA designator as specified herein.

	RHA level L	RHA level R	Units
Total ionizing dose tolerance level	50	100	kRad(Si)
Single event upset survival level (LET)	No guarantee	40	MeV

- a. The manufacturer shall perform a worst-case and radiation susceptibility analysis on the device. This analysis shall show that the minimum performance requirements of each component has adequate design margin under worst-case operating conditions (extremes of line voltage, temperatures, load, frequency, radiation enviroment, etc). This analysis guarantees the post-irradiation parameter limits specified in table I.
- b. RHA testing shall be performed at the component level for initial device qualification, and after design changes that may affect the RHA performance of the device. As an alternative to testing, components may be procured to manufacturer radiation guarantees that meet the minimum performance requirements. Component radiation performance guarantees shall be established in compliance with MIL-PRF-19500, Group D or MIL-PRF-38535, Group E, as applicable. For components with less than adequate performance margin, component lot radiation acceptance screening shall be performed.
- c. The manufacturer shall establish procedures controlling component radiation testing, and shall establish radiation test plans used to implement component lot qualification during procurement. Test plans and test reports shall be filed and controlled in accordance with the manufacturer's configuration management system.
- d. The device manufacturer shall designate a RHA program manager to oversee component lot qualification, and to monitor design changes for continued compliance to RHA requirements.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-PRF-38534.

6. NOTES

6.1 Intended use. Microcircuits conforming to this drawing are intended for use for Government microcircuit applications (original equipment), design applications, and logistics purposes.

6.2 <u>Replaceability</u>. Microcircuits covered by this drawing will replace the same generic device covered by a contractor-prepared specification or drawing.

6.3 <u>Configuration control of SMD's</u>. All proposed changes to existing SMD's will be coordinated with the users of record for the individual documents. This coordination will be accomplished in accordance with MIL-STD-973 using DD Form 1692, Engineering Change Proposal.

6.4 <u>Record of users</u>. Military and industrial users shall inform Defense Supply Center Columbus when a system application requires configuration control and the applicable SMD. DSCC will maintain a record of users and this list will be used for coordination and distribution of changes to the drawings. Users of drawings covering microelectronic devices (FSC 5962) should contact DSCC-VA, telephone (614) 692-7603.

6.5 <u>Comments</u>. Comments on this drawing should be directed to DSCC-VA, Columbus, Ohio 43216-5000, or telephone (614) 692-0512.

6.6 <u>Sources of supply</u>. Sources of supply are listed in QML-38534. The vendors listed in QML-38534 have submitted a certificate of compliance (see 3.7 herein) to DSCC-VA and have agreed to this drawing.

STANDARD MICROCIRCUIT DRAWING	SIZE A		5962-92139
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STANDARD MICROCIRCUIT DRAWING SOURCE APPROVAL BULLETIN

DATE: 98-02-03

Approved sources of supply for SMD 5962-92139 are listed below for immediate acquisition only and shall be added to QML-38534 during the next revision. QML-38534 will be revised to include the addition or deletion of sources. The vendors listed below have agreed to this drawing and a certificate of compliance has been submitted to and accepted by DSCC-VA. This bulletin is superseded by the next dated revision of QML-38534.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor similar PIN 길/
5962-9213901HXA 5962-9213901HXC 5962-9213901HZA 5962-9213901HZC	50821 50821 50821 50821 50821	MHF+2805S/883 MHF+2805S/883 MHF+2805SF/883 MHF+2805SF/883
5962-9213902HXA 5962-9213902HXC 5962-9213902HZA 5962-9213902HZC	50821 50821 50821 50821 50821	SMHF+2805S/HO SMHF+2805S/HO SMHF+2805SF/HO SMHF+2805SF/HO
5962L9213902HXA 5962L9213902HXC 5962L9213902HXC 5962L9213902HZA 5962L9213902HZC	50821 50821 50821 50821 50821	SMHF+2805S/HL SMHF+2805S/HL SMHF+2805SF/HL SMHF+2805SF/HL
5962R9213902HXA 5962R9213902HXC 5962R9213902HXC 5962R9213902HZA 5962R9213902HZC	50821 50821 50821 50821 50821	SMHF+2805S/HR SMHF+2805S/HR SMHF+2805SF/HR SMHF+2805SF/HR
5962L9213902KXA 5962L9213902KXC 5962L9213902KZA 5962L9213902KZC	50821 50821 50821 50821 50821	SMHF+2805S/KL SMHF+2805S/KL SMHF+2805SF/KL SMHF+2805SF/KL
5962R9213902KXA 5962R9213902KXC 5962R9213902KZA 5962R9213902KZA 5962R9213902KZC	50821 50821 50821 50821 50821	SMHF+2805S/KR SMHF+2805S/KR SMHF+2805SF/KR SMHF+2805SF/KR

- 1/ The lead finish shown for each PIN representing a hermetic package is the most readily available from the manufacturer listed for that part. If the desired lead finish is not listed contact the vendor to determine its availability.
- availability. 2/ <u>Caution</u>. Do not use this number for item acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.

Vendor CAGE __number__

50821

Vendor name and address

Interpoint Corporation 10301 Willows Road Redmond, WA 98052

The information contained herein is disseminated for convenience only and the Government assumes no liability whatsoever for any inaccuracies in this information bulletin.

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