

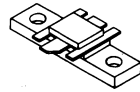
DESCRIPTION

The SD1401 is a 25. volt epitaxial silicon NPN planar transistor designed primarily for 800MHz mobile communications. This device utilizes matched input technology (Tuned Q) to increase bandwidth and power gain over the complete range of 850-900 MHz.

FEATURES

- * Designed for 850-900 MHz Base Equipment
- * 30 watts (min.) with greater than 8.5dB gain @875 MHz
- * Withstands 10:1 VSWR at rated operating conditions
- * Matched input technology
- * Common base
- * Gold Metallization

Frequency = 875 MHz
 Power Out = 30 Watts
 Voltage = 25 Volts
 Power Gain = 8.5 dB



Case : CB-302 (.2306LFL)

ABSOLUTE RATINGS	t case = 25°C	SYMBOLS	VALUES	UNITS
Collector-Base Voltage		V_{CBO}	55.0	V
Collector-Emitter Voltage		V_{CEO}	28.0	V
Emitter-Base Voltage		V_{EBO}	4.0	V
Collector Current (Max.)		I_C	5.0	A
Total Device Dissipation at +25°C		P_{tot}	83.0	W
Storage and Junction Temperatures		T_{stg}	-65 to +150	°C
		T_j	+200	°C

Junction Case Thermal Resistance (Hot Spot)	$R_{th(j-c)}$	2.1	°C/W
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September 1981 - 1/2

ELECTRICAL CHARACTERISTICS $t_{\text{case}} = 25^{\circ}\text{C}$

STATIC

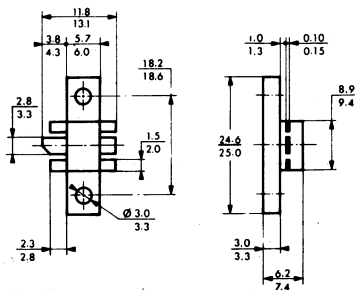
Symbols	Values			Units	Test Conditions	
	Min.	Typ.	Max.			
V_{CEO}^*	28.0	-	-	V	$I_{\text{C}} = 50\text{mA}$	$I_{\text{B}} = 0$
V_{CES}^*	55.0	-	-	V	$I_{\text{C}} = 10\text{mA}$	$V_{\text{BE}} = 0$
V_{EBO}	4.0	-	-	V	$I_{\text{E}} = 10\text{mA}$	$I_{\text{C}} = 0$
I_{CBO}	-	-	5.0	mA	$V_{\text{CB}} = 5.0\text{V}$	$I_{\text{E}} = 0$
h_{FE}	20.0	-	-	-	$V_{\text{CE}} = 6.0\text{V}$	$I_{\text{C}} = 1.0\text{A}$

*Pulsed through 25 mH inductor

DYNAMIC

Symbols	Values			Units	Test Conditions	
	Min.	Typ.	Max.			
P_{o}	30.0	-	-	W	$f = 875\text{kHz}$	$V_{\text{CE}} = 25\text{V}$
P_{g}	8.5	-	-	dB	$f = 875\text{kHz}$	$V_{\text{CE}} = 25\text{V}$
Z_{s}		TBD		ohms	$f = 875\text{MHz}$	$V_{\text{CE}} = 25\text{V}$ $P_{\text{o}} = 30\text{W}$
Z_{cl}		TBD		ohms	$f = 875\text{kHz}$	$V_{\text{CE}} = 25\text{V}$ $P_{\text{o}} = 30\text{W}$
C_{ob}	-	30.0	-	pF	$f = 1\text{MHz}$	$V_{\text{CB}} = 25\text{V}$ $I_{\text{E}} = 0$
η_{c}	55.0			%	$f = 875\text{MHz}$	$V_{\text{CE}} = 25\text{V}$

CASE DESCRIPTION

Dimensions
in millimetersCB-302
(.230 6LFL)

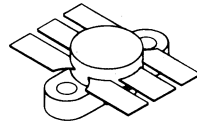
DESCRIPTION

The SD1415 is a 12.5 volt epitaxial silicon NPN planar transistor designed primarily for VHF communications. This device utilizes "Tuned Q" technology which incorporates a matching network on the input to provide high gain and broadband operation.

FEATURES

- * Designed for VHF military and commercial equipment
- * 40.0 watts (min.) with greater than 6.7dB gain
- * Withstands infinite VSWR under operating conditions
- * Input matched for wide bandwidth
- * High gain

Frequency = 175 MHz
 Power Out = 40 Watts
 Voltage = 12.5 Volts
 Power Gain = 6.7 dB



Case : CB-297 (.500 6LFL)

ABSOLUTE RATINGS	t case = 25°C	SYMBOLS	VALUES	UNITS
Collector-Base Voltage		V _{CBO}	36.0	V
Collector-Emitter Voltage		V _{CEO}	18.0	V
Emitter-Base Voltage		V _{EBO}	4.0	V
Collector Current (Max.)		I _C	7.0	A
Total Device Dissipation at +25°C		P _{tot}	85.0	W
Storage and Junction Temperatures		T _{stg}	-65 to +150	°C
		T _j	+200	°C

Junction Case Thermal Resistance	R _{th(j-c)}	2.06	°C/W
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September 1981 - 1/4

ELECTRICAL CHARACTERISTICS t case = 25°C

STATIC

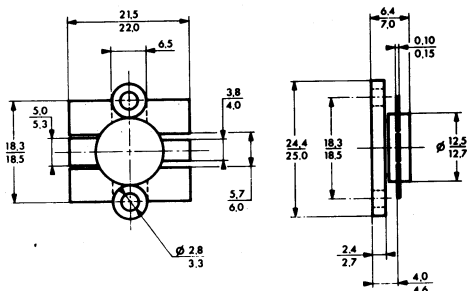
Symbols	Values			Units	Test Conditions
	Min.	Typ.	Max.		
V_{CE0}^*	18.0	-	-	V	$I_C = 20\text{mA}$ $I_B = 0$
V_{CES}^*	36.0	-	-	V	$I_C = 20\text{mA}$ $V_{BE} = 0$
V_{EBO}	4.0	-	-	V	$I_E = 5\text{mA}$ $I_C = 0$
I_{CBO}	-	-	5.0	mA	$V_{CB} = 15.0\text{V}$ $I_E = 0$
h_{FE}	20.0	-	-	-	$V_{CE} = 6.0\text{V}$ $I_C = 1.0\text{A}$

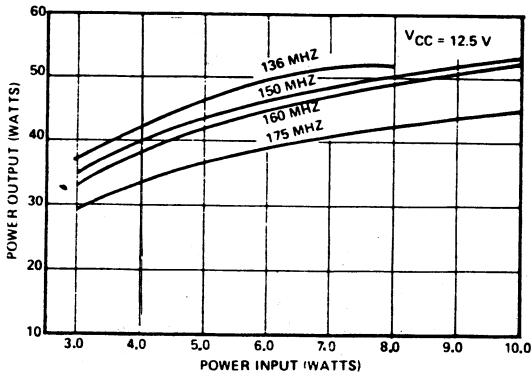
*Pulsed through 25 mH Inductor

DYNAMIC

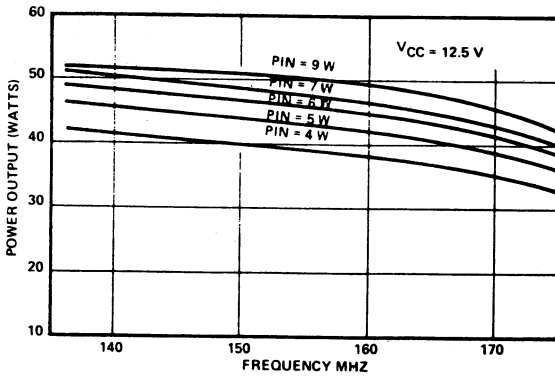
Symbols	Values			Units	Test Conditions
	Min.	Typ.	Max.		
P_o	40.0	-	-	W	$f = 175\text{MHz}$ $V_{CE} = 12.5\text{V}$
P_g	6.7	7.5	-	dB	$f = 175\text{MHz}$ $V_{CE} = 12.5\text{V}$
Z_s		1.58+ j1.30		ohms	$f = 175\text{MHz}$ $V_{CE} = 12.5\text{V}$ $P_o = 40\text{W}$
Z_{c1}		1.73+ j2.27		ohms	$f = 175\text{MHz}$ $V_{CE} = 12.5\text{V}$ $P_o = 40\text{W}$
C_{ob}	-	80.0	100.0	pF	$f = 1\text{MHz}$ $V_{CB} = 12.5\text{V}$ $I_E = 0$

CASE DESCRIPTION

Dimensions
in millimetersCB-297
(.500 6LFL)



POWER OUT VS. POWER IN

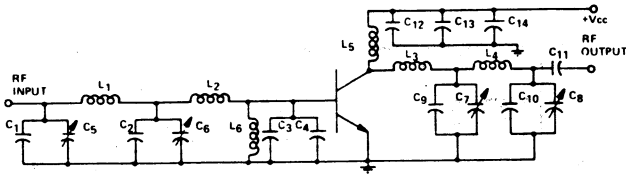
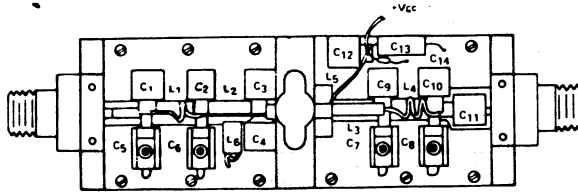


POWER OUTPUT VS. FREQUENCY

IMPEDANCE VS. FREQUENCY

V_{CC}	P_{IN} (W)	P_{OUT} (W)	f_o (MHz)	Z_{SOURCE}	Z_{LOAD}
12.5 V	5.0	43.0	150.	$1.38 + j .349 \Omega$	$2.25 + j 1.91 \Omega$
12.5 V	7.0	40.0	175.	$1.58 + j 1.30 \Omega$	$1.73 + j 2.27 \Omega$

TEST CIRCUIT



C1, C10 - 20 pf UNELCO
 C2 - 30 pf UNELCO
 C3, C4, C9 - 150 pf UNELCO
 C11, C12 - 1000 pf UNELCO
 C5, C6, C8 - 3-35 pf ARCO
 C7 - 8-60 pf ARCO
 C13 - 10 μ f ERIE RED CAP
 L1 - 1 Turn, No. 18 Awg., .16" ID
 L2 - 5/8" L, No. 18 Awg.,

L3 - Cu .003", 9/16" L, 5/32 W,
 L4 - 2 Turns, No. 18 Awg., .19" ID,
 .15" spacing
 L5 - 1 1/2" L, No. 18 Awg.
 L6 - RFC, 2 1/2 turns on VK211/07-3B
 ferroxcube
 Board Material - Double sided copper,
 1/16" Thk., 3M-K-6098 Mounted on
 3/8" Brass Plates

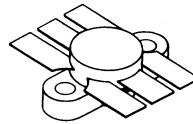
DESCRIPTION

The SD1416 is a 12.5 volt epitaxial silicon NPN planar transistor designed primarily for VHF communications. This device utilizes "Tuned Q" technology which incorporates a matching network on the input to provide both high gain and broadband operation.

FEATURES

- * Designed for VHF military and commercial equipment
- * 70.0 watts (min.) with greater than 6.7dB gain
- * Withstands infinite VSWR under operating conditions
- * Input matched for wide bandwidth
- * High gain

Frequency = 175 MHz
Power Out = 70 Watts
Voltage = 12.5 Volts
Power Gain = 6.7 dB



Case : CB-297 (.500 6LFL)

ABSOLUTE RATINGS	t case = 25°C	SYMBOLS	VALUES	UNITS
Collector-Base Voltage		V_{CBO}	36.0	v
Collector-Emitter Voltage		V_{CEO}	18.0	v
Emitter-Base Voltage		V_{EBO}	4.0	v
Collector Current (Max.)		I_C	20.0	A
Total Device Dissipation at +25°C		P_{tot}	220.0	W
Storage and Junction Temperatures		T_{stg}	-65 to +150	°C
		T_j	+200	°C

Junction Case Thermal Resistance	$R_{th(j-c)}$	0.795	°C/W
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September 1981 - 1/4

ELECTRICAL CHARACTERISTICS $t_{\text{case}} = 25^{\circ}\text{C}$

STATIC

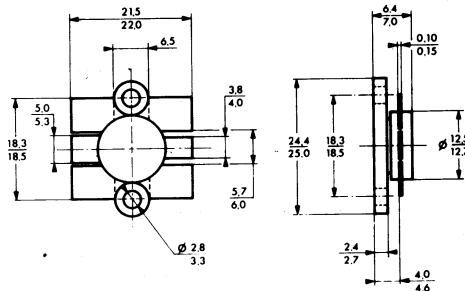
Symbols	Values			Units	Test Conditions
	Min.	Typ.	Max.		
BV_{CEO}^*	18.0	-	-	V	$I_{\text{C}} = 50\text{ mA}$ $I_{\text{B}} = 0$
BV_{CES}^*	36.0	-	-	V	$I_{\text{C}} = 100\text{ mA}$ $V_{\text{BE}} = 0$
BV_{EBO}	4.0	-	-	V	$I_{\text{E}} = 10\text{ mA}$ $I_{\text{C}} = 0$
I_{CBO}	-	-	5.0	mA	$V_{\text{CB}} = 15.0\text{ V}$ $I_{\text{E}} = 0$
h_{FE}	20.0	-	-		$V_{\text{CE}} = 5.0\text{ V}$ $I_{\text{C}} = 10\text{ A}$

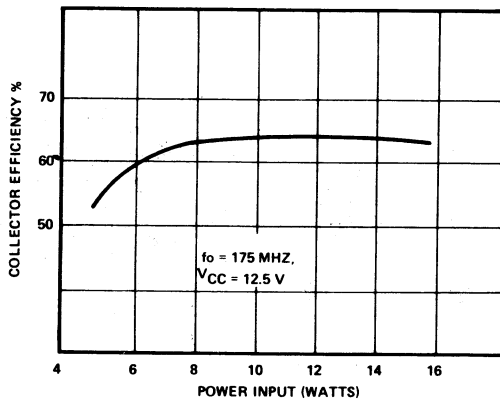
*Pulsed through 25 mH Inductor

DYNAMIC

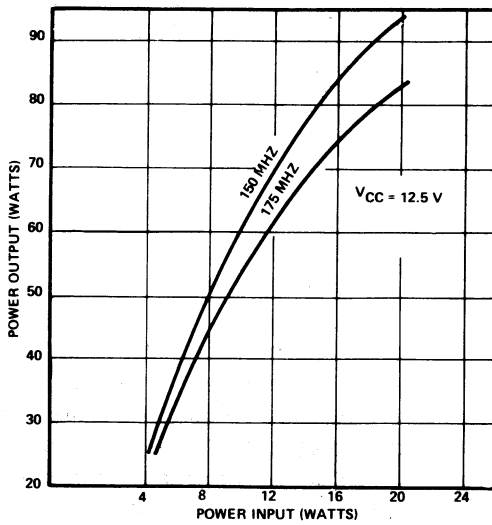
Symbols	Values			Units	Test Conditions
	Min.	Typ.	Max.		
P_{o}	70.0	-	-	W	$f = 175\text{ MHz}$ $V_{\text{CE}} = 12.5\text{ V}$
P_{g}	6.7	-	-	dB	$f = 175\text{ MHz}$ $V_{\text{CE}} = 12.5\text{ V}$
Z_{s}		.58+ j.44		ohms	$f = 175\text{ MHz}$ $V_{\text{CE}} = 12.5\text{ V}$ $P_{\text{o}} = 70\text{ W}$
Z_{c1}		.72+ j.44		ohms	$f = 175\text{ MHz}$ $V_{\text{CE}} = 12.5\text{ V}$ $P_{\text{o}} = 70\text{ W}$
C_{ob}	-	-	300.0	pF	$f = 1\text{ MHz}$ $V_{\text{CB}} = 12.5\text{ V}$ $I_{\text{E}} = 0$

CASE DESCRIPTION

Dimensions
in millimetersCB-297
(.500 6LFL)



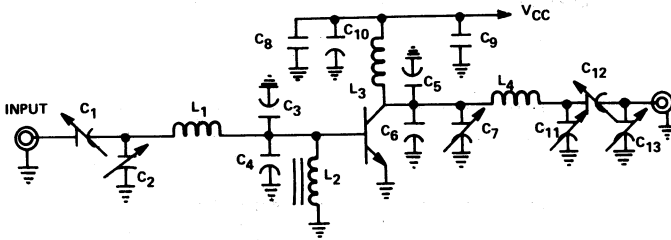
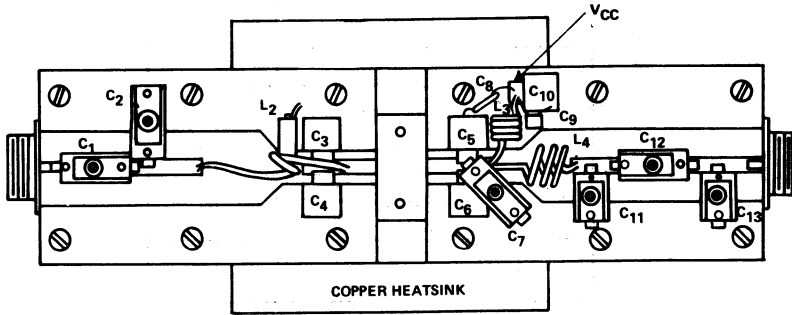
COLLECTOR EFFICIENCY VS. POWER INPUT



POWER OUTPUT VS. POWER INPUT

IMPEDANCE VS. FREQUENCY

V_{cc}	P_{IN} (W)	f_o (MHz)	Z_{SOURCE}	Z_{LOAD}
12.5 V	15.0	175.	$.58 + j .44 \Omega$	$.72 + j .44 \Omega$
12.5 V	15.0	150.	$.58 + j .44 \Omega$	$.72 + j .87 \Omega$



PARTS LIST

- C₁, C₇ ARCO 423 MICA CAP. - 7 pf → 100 pf
- C₂, C₁₂ ARCO 422 MICA CAP. - 4 pf → 40 pf
- C₃, C₄, C₅, C₆ UNELCO BOOK MICA CAP. - 100 pf @ 350 VDC
- C₈ ERIE DISC. CAP. - .01 μf @ 200 VDC
- C₉ ERIE MONOLITHIC CAP. - .22 μf @ 50 VDC
- C₁₀ UNELCO BOOK MICA. - 1000 pf @ 350 VDC
- C₁₁ ARCO 400 MICA CAP. - .1 pf → 7 pf
- C₁₃ ARCO 404 MICA CAP. - 8 pf → 60 pf
- L₁ IT #12 TCB .25" I.D.
- L₂ FERROXCUBE VK200
- L₃ 4T #12 TCB CLOSE SPACED .25" ID
- L₄ 3T #12 TCB SPACED #10.5" ID

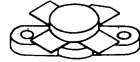
DESCRIPTION

The SD1450 is a 28 volt epitaxial silicon NPN planar transistor designed primarily for HF communications. This device utilizes an aluminum metallization system to achieve extreme ruggedness under severe operating conditions.

FEATURES

- * Designed for HF military and commercial equipment
- * 150 watts (min.) with greater than 10.0dB gain
- * Withstands severe mismatch under operating conditions
- * Ballasted emitter resistors
- * Low inductance stripline package

Frequency = 30 MHz
Power Out = 150 Watts
Voltage = 28.0 Volts
Power Gain = 10.0 dB



Case : CB-290 (.500 4LFL)

ABSOLUTE RATINGS	t case = 25°C	SYMBOLS	VALUES	UNITS
Collector-Base Voltage		V_{CBO}	60.0	V
Collector-Emitter Voltage		V_{CEO}	35.0	V
Emitter-Base Voltage		V_{EBO}	4.0	V
Collector Current (Max.)		I_C	20.0	A
Total Device Dissipation at +25°C		P_{tot}	290.0	W
Storage and Junction Temperatures		T_{stg}	-65 to +150	°C
		T_j	+200	°C

Junction Case Thermal Resistance	$R_{th(j-c)}$	0.6	°C/W
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September 1981 - 1/2

ELECTRICAL CHARACTERISTICS $t_{case} = 25^{\circ}C$

STATIC

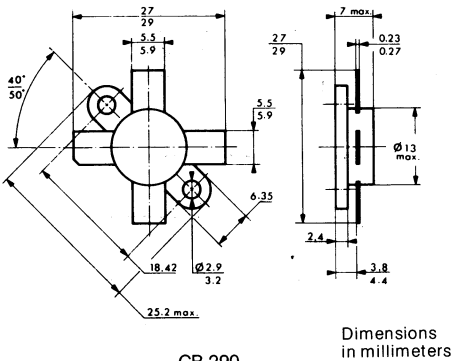
Symbols	Values			Units	Test Conditions
	Min.	Typ.	Max.		
BV_{CEO*}	35.0	-	-	V	$I_C = 50mA$ $I_B = 0$
BV_{CES*}	60.0	-	-	V	$I_C = 20mA$ $V_{BE} = 0$
BV_{EBO}	4.0	-	-	V	$I_E = 5mA$ $I_C = 0$
I_{CBO}	-	-	3.0	mA	$V_{CB} = 15.0V$ $I_E = 0$
h_{FE}	10	-	-	-	$V_{CE} = 5.0V$ $I_C = 2A$

*Pulsed through 25 mH Inductor

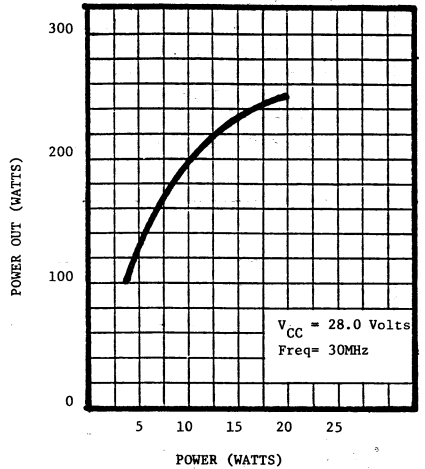
DYNAMIC

Symbols	Values			Units	Test Conditions
	Min.	Typ.	Max.		
P_o	150.0	-	-	W	$f = 30MHz$ $V_{CE} = 28.0V$
P_g	10.0	12.0	-	dB	$f = 30MHz$ $V_{CE} = 28.0V$
IMD	-	-	-30.0	dB	$f = 30MHz$ $V_{CE} = 28.0V$
C_{ob}	-	-	350.0	pF	$f = 1MHz$ $V_{CB} = 28.0V$ $I_E = 0$

CASE DESCRIPTION



TYPICAL POWER OUT VS. POWER IN



DESCRIPTION

The SD1478 is a 12.5 volt epitaxial silicon NPN planar transistor designed primarily for VHF communications. This device utilizes improved metallization systems to achieve extreme ruggedness under severe operating conditions.

FEATURES

- * Designed for VHF military and commercial equipment
- * 3.2 watts (min.) with greater than 8.1dB gain at 6.5V
- * Withstands severe mismatch under operating conditions
- * Intended for A.M. avionics applications using the series modulator approach.

Frequency = 136 MHz
Power Out = 7.5 Watts
Voltage = 12.5 Volts
Power Gain = 11.8 dB



Case : CB-298 (.380 4LSTUD)

ABSOLUTE RATINGS	t case = 25°C	SYMBOLS	VALUES	UNITS
Collector-Base Voltage		V _{CBO}	36.0	V
Collector-Emitter Voltage		V _{CEO}	16.0	V
Emitter-Base Voltage		V _{EBO}	4.0	V
Collector Current (Max.)		I _C	1.7	A
Total Device Dissipation at +25°C		P _{tot}	15.0	W
Storage and Junction Temperatures		T _{stg}	-65 to +150	°C
		T _j	+200	°C

Junction Case Thermal Resistance	R _{th(j-c)}	11.6	°C/W
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September 1981 - 1/2

ELECTRICAL CHARACTERISTICS $t_{case} = 25^{\circ}C$

STATIC

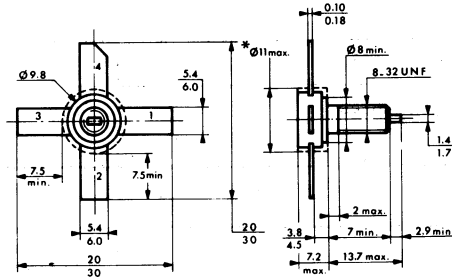
Symbols	Values			Units	Test Conditions	
	Min.	Typ.	Max.			
V_{CE0*}	16.0	-	-	V	$I_C = 50mA$	$I_B = 0$
V_{CES*}	36.0	-	-	V	$I_C = 10mA$	$V_{BE} = 0$
V_{EBO}	4.0	-	-	V	$I_E = 2mA$	$I_C = 0$
I_{CBO}	-	-	1.0	mA	$V_{CB} = 15.0V$	$I_E = 0$
h_{FE}	20.0	-	-	-	$V_{CE} = 5.0V$	$I_C = 200mA$

*Pulsed through 25 mH Inductor

DYNAMIC

Symbols	Values			Units	Test Conditions	
	Min.	Typ.	Max.			
P_o	3.2	-	-	W	$f = 136MHz$	$V_{CE} = 6.5V$
P_g	8.1	-	-	dB	$f = 136MHz$	$V_{CE} = 6.5V$
P_o	7.5	-	-	W	$f = 136MHz$	$V_{CE} = 12.5V$
P_g	11.8	-	-	dB	$f = 136MHz$	$V_{CE} = 12.5V$
C_{ob}	-	19.0	-	pF	$f = 1MHz$	$V_{CB} = 12.0V$ $I_E = 0$
C_{ib}	-	45.0	-	pF	$f = 1MHz$	$V_{EB} = 0.5V$ $I_C = 0$

CASE DESCRIPTION



* Leads must not be bent, cut or used in this area -

CB-298
(.380 4LSTUD)

DESCRIPTION

The SD1479 is a 12.5 volt epitaxial silicon NPN planar transistor designed primarily for VHF communications. This device utilizes improved metallization systems to achieve extreme ruggedness under severe operating conditions.

FEATURES

- * Designed for VHF military & commercial equipment
- * 5.0 watts (min.) with greater than 7.0dB gain
- * Withstands severe mismatch under operating conditions
- * Intended for A.M. avionics applications using the series modulator approach

Frequency = 136 MHz
Power Out = 20 Watts
Voltage = 12.5 Volts
Power Gain = 10.0 dB



Case : CB-298 (.380 4LSTUD)

ABSOLUTE RATINGS	t case = 25°C	SYMBOLS	VALUES	UNITS
Collector-Base Voltage		V_{CBO}	36.0	V
Collector-Emitter Voltage		V_{CEO}	16.0	V
Emitter-Base Voltage		V_{EBO}	4.0	V
Collector Current (Max.)		I_C	5.0	A
Total Device Dissipation at +25°C		P_{tot}	65.0	W
Storage and Junction Temperatures		T_{stg}	-65 to +150	°C
		T_j	+200	°C

Junction Case Thermal Resistance	$R_{th(j-c)}$	2.7	°C/W
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September 1981 - 1/2

ELECTRICAL CHARACTERISTICS $t_{case} = 25^{\circ}C$

STATIC

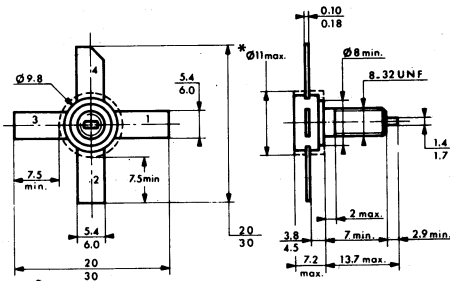
Symbols	Values			Units	Test Conditions	
	Min.	Typ.	Max.			
BV_{CEO}^*	16.0	-	-	V	$I_C = 50mA$	$I_B = 0$
BV_{CES}^*	36.0	-	-	V	$I_C = 20mA$	$V_{BE} = 0$
BV_{EBO}	4.0	-	-	V	$I_E = 5mA$	$I_C = 0$
I_{CBO}	-	-	5.0	mA	$V_{CB} = 12.0V$	$I_E = 0$
h_{FE}	10.0	-	-	-	$V_{CE} = 5.0V$	$I_C = 250mA$

* Pulsed through 25 mH Inductor

DYNAMIC

Symbols	Values			Units	Test Conditions	
	Min.	Typ.	Max.			
P_o	5.0	-	-	W	$f = 136MHz$	$V_{CE} = 6.5V$
P_g	7.0	-	-	dB	$f = 136MHz$	$V_{CE} = 6.5V$
P_o	20.0	-	-	W	$f = 136MHz$	$V_{CE} = 12.5V$
P_g	10.0	-	-	dB	$f = 136MHz$	$V_{CE} = 12.5V$
C_{ob}	-	55.0	-	pF	$f = 1MHz$	$V_{CB} = 12.0V$ $I_E = 0$

CASE DESCRIPTION

Dimensions
in millimeters

* Leads must not be bent, cut or used in this area -

CB-298
(.380 4LSTUD)

VHF/UHF COMMUNICATIONS TRANSISTOR

DESCRIPTION

The SD1484-10 is an NPN Silicon Epitaxial Planar Transistor designed for UHF/VHF Communications circuits in both Military and Commercial applications. The SD1484-10 is generally used as a frequency multiplier or amplifier stage where high gain and stability are required.

FEATURES

- * Designed for UHF/VHF Transmitters
- * JEDEC TO46 Package
- * Can be used as a multiplier or amplifier
- * 0.4 watts (Min.) with greater than 5.2dB gain at UHF
- * Rugged, stable performance

Power Output	=	1 W
Frequency	=	175 MHz
Voltage	=	12.5 Volts
Power Gain	=	10 dB



Case : CB-401 (TO-46)

ABSOLUTE RATINGS	t case = 25°C	SYMBOLS	VALUES	UNITS
Collector-Base Voltage		V _{CBO}	36.0	V
Collector-Emitter Voltage		V _{CEO}	18.0	V
Emitter-Base Voltage		V _{EBO}	4.0	V
Collector Current (Max.)		I _c	0.4	A
Total Device Dissipation @ +25°C		P _{tot}	3.5	W
Storage and Junction Temperature		T _{stg} T _j	-65 to +200 +200	°C °C

Junction-Case Thermal Resistance	R _{th} (J-C)	50.0	°C/W
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October 1981 - 1/2

ELECTRICAL CHARACTERISTICS $t_{case} = 25^{\circ}C$

STATIC

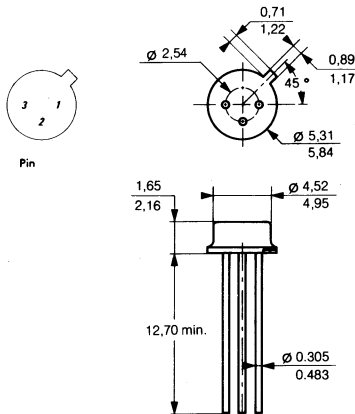
Symbols	Values			Units	Test Conditions	
	Min.	Typ.	Max.			
V_{CEO}^*	18.0	-	-	V	$I_C = 5.0mA$	$I_B = 0$
V_{CER}^*	36.0	-	-	V	$I_C = 10.0mA$	$R_{BE} = 10\ ohms$
V_{EBO}	4.0	-	-	V	$I_E = 1.0mA$	$I_C = 0$
I_{CEO}	-	-	0.1	mA	$V_{CE} = 12V$	$I_b = 0$
h_{FE}	10.0	-	200.0	-	$V_{CE} = 5V$	$I_C = 100.0mA$

*Pulsed through 25 mH Inductor

DYNAMIC

Symbols	Values			Units	Test Conditions	
	Min.	Typ.	Max.			
f_T	500.0	-	-	MHz	$V_{CE} = 15.0V$	$I_c = 50.0mA, f_o = 200MHz$
C_{ob}	-	-	4.5	pf	$V_{CB} = 12.0V$	$I_e = 0, f_o = 1MHz$
C_{ib}	-	10.5	-	pf	$V_{EB} = 0.5V$	$I_c = 0, f_o = 1MHz$
P_o	1.0	-	-	W	$V_{CE} = 12.5V$	$f_o = 175MHz$
P_g	10.0	-	-	dB	$V_{CE} = 12.5V$	$f_o = 175MHz$
P_o	0.4	-	-	W	$V_{CE} = 12.5V$	$f_o = 470MHz$
P_g	5.2	-	-	dB	$V_{CE} = 12.5V$	$f_o = 470MHz$

CASE DESCRIPTION



Dimensions in millimeters

CB-401 (TO-46)