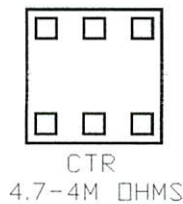
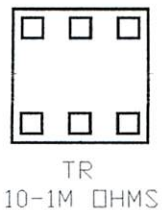
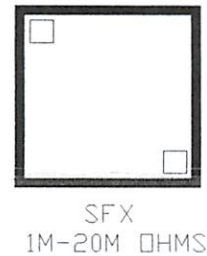
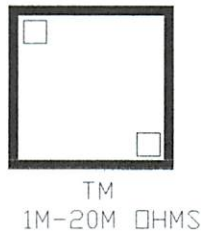
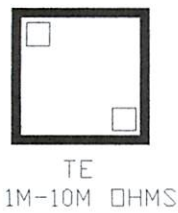
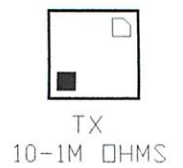
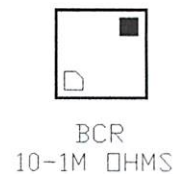
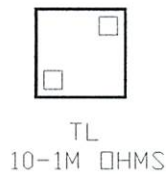
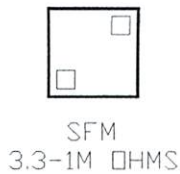


1. MECHANICAL

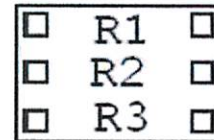
- 1.1. The suggested chip size and vendor(s) are not to be construed as a guarantee of continued availability or approval as a source of supply.
- 1.2. Die shall be packaged in "Black Conductive" waffle pack tray, cover.
- 1.3. Waffle pack will be of adequate size to prevent die rotation, flipping and sticking.
- 1.4. Die orientation will be in the same direction with waffle pack notch in upper left corner.
- 1.5. Die will be free of attached Foreign Material/Debris on bottom side of die (no die sticking in socket is allowed).
- 1.6. Tyvek, Rice, or equivalent lint free material will be used between trays to protect the die surface.
- 1.7. Waffle pack trays and covers will be free of previous markings, labels, stickers, tags, etc.
- 1.8. Each waffle pack label will contain, as a minimum, Cirrus APP Part Number, lot number and quantity.
- 1.9. Certificate of Conformance (C-of-C) is required with each shipment



APEX P/N: BEO0E039Z3

Mfg P/N : WNET-011-103600

(R1=6.4K, R2=3.2K, R3=2.0K)

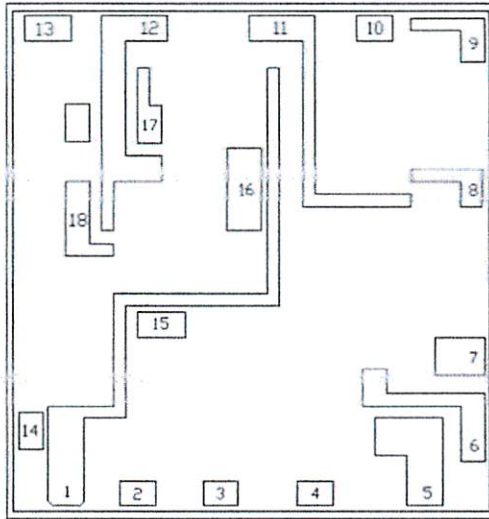


APEX P/N: BEO0E039Z2

Mfg P/N : WNET-013-036100

(R1=6.4K, R2=3.2K, R3=2.0K)

	TITLE: PROCUREMENT - Thin Film Resistors						MODEL:	
	ENG: L-C	DWN: keg	DATE: 012991	SH: 1	OF: 5	DWG NO: TFLMRES	REV: J	DATE: 051512



APEX P/N: BE00E189Z1

Mfg P/N: RN1456

VISHAY (VISE)
SIZE: 103 X 103 mils

SEMI-FILM/ELECTRO FILM and CALIFORNIA MICRO DEVICES

- Pad material..... Al 10,000 angstroms minimum.
- Backing..... Au 3000 angstroms minimum for BCR only. Si for all others.
- Die size..... 20x20 ± 3 mils for BCR, SFM, SFX with process code PC065, TL, TX
 30x30 ± 3 mils for CTR, SFX with process code PC064, TE, TR, 113
 36x36 ± 3 mils for TM
 103x103 +/- 3 mils for APEX P/N BE00E189Z1, or Mfg P/N RN1456
 58x35 +/- 3 mils for APEX P/N BE00E039Z2, or Mfg P/N WNET-013-036100
 30x30 +/- 3 mils for APEX P/N BE00E039Z3, or Mfg P/N WNET-011-103600
- Die thickness..... 10 ± 2 mils
 15 +/- 3 mils for APEX P/N BE00E189Z1, or Mfg P/N RN1456

NOTE 1: Termination exact shapes and sizes depend on resistor value and type.

NOTE 2: All BCR and TX die must have one pad notched.

1.10. PART NUMBER SCHEME: XYZVVVMT or XYZ0EUUMT#

1.10.1. X = B

1.10.2. Y = Type where; A = BCR, TX C = SFM, TL
 B = CTR, TR D = SFX, TM, TE E = NET

1.10.3. Z = Manufacturer's process code where;

- A = BCR 008* H = 051
- B = BCR 000 I = 045
- C = CTR 103 J = 059
- D = CTR 102 K = PC064
- E = CTR 100 L = 048
- F = CTR 101* M = 049
- G = 050 N = PC065
- O = 013
- P = CTR 113
- X = WNET

	TITLE: PROCUREMENT - Thin Film Resistors						MODEL:	
	ENG: L-C	DWN: keg	DATE: 012991	SH: 2	OF: 5	DWG NO: TFLMRES	REV: J	DATE: 051512

*indicates preferred process

1.10.4. VVVV = first four significant digits of nominal resistance value.

Or

0EUU: Where 0E means the chip is a multiple independent resistors network configuration chip.
Where UU is the total number of independent resistors on the chip.

This 0EUU code is only valid for the Y = E case (in the part number scheme above) which is the case of the chip has multiple resistors network configuration. For example, if there are 18 independent resistors on the chip, then the 0EUU would be as 0E18.

1.10.5. M = resistance multiplier where;

D = 0.0001	0 = 1
C = 0.001	1 = 10
B = 0.01	2 = 100
A = 0.1	3 = 1000
	4 = 10K
	9 = refer to the resistor value table for multiple network resistors chip configuration.

1.10.6. T = tolerance in percent where;

B = 0.1	G = 2
C = 0.2	H = 2.5
D = 0.5	J = 5
F = 1	K = 10
	Z = refer to the resistor value table for multiple network resistors chip configuration.

1.10.7. # = Table # of the resistor values, where;

1 = Resistor value Table 1
2 = Resistor value Table 2
3 = Resistor value Table 3

Example: Center tapped 15K ohm, 1% \pm 100PPM/ $^{\circ}$ C

Apex Part Number: BBF15001F

Mfr Part Number: WCTR-101-15001F

Example 2: Center tapped 10K Ohms, +/- 5%, 100PPM/ $^{\circ}$ C

Apex Part Number: BBP20001J

Mfr Part Number: WCTR-113-20001J

Example 3: A resistor network chip with 18 resistors on it and using an unidentified process (RN1456)

Apex Part Number: BEX0E189Z1

Mfr Part Number: RN1456

Vendor: VISHAY

Example 4: A resistor network chip with 3 resistors on it and using process code 013 (WNET-013-036100)

Apex Part Number: BEO0E039Z2


Mfr Part Number: WNET-013-036100

Vendor: VISHAY

Example 5: A resistor network chip with 3 resistors on it and using process code 011 (WNET-011-103600)

Apex Part Number: BEO0E039Z3

Mfr Part Number: WNET-011-103600

	TITLE: PROCUREMENT - Thin Film Resistors						MODEL:	
	ENG: L-C	DWN: keg	DATE: 012991	SH: 3	OF: 5	DWG NO: TFLMRES	REV: J	DATE: 051512

Vendor: VISHAY

1.11. DESCRIPTION SCHEME

The description of a thin film resistor shall have the following format:

"Value" ohm, "Tolerance" %, " Type", "Size", Tflm Res.

Example: Center tapped 15k ohm 1%

15k ohm, 1%, CTR, 30x30, Tflm Res.

"Value" can contain normal engineering multipliers;

i.e., k = 1000, meg = 1,000,000.

"Size" is in mils.

2. ELECTRICAL


2.1 CHARACTERISTICS

These components are 100% visually inspected, tested, and packaged by the manufacturer prior to shipping.

2.1.1 For multiple individual resistors network chip, their individual resistor value is referred to the Table below:

Resistor Value Table 1, for APEX part number - BEX0E189Z1 (previously P/N RN1456):

PARAMETER	TEST CONDITIONS	NOMINAL	MINIMUM	MAXIMUM	UNIT
R2	$P_{DISS} < 10 \text{ mW}$	10	--	--	k Ω
R3	$P_{DISS} < 10 \text{ mW}$	26	24.7	27.3	k Ω
R4	$P_{DISS} < 10 \text{ mW}$	13	--	--	k Ω
R5	$P_{DISS} < 10 \text{ mW}$	182	180.2	183.8	Ω
R6	$P_{DISS} < 10 \text{ mW}$	182	180.2	183.8	Ω
R7	$P_{DISS} < 10 \text{ mW}$	500	475	525	Ω
R9	$P_{DISS} < 10 \text{ mW}$	500	475	525	Ω
R10	$P_{DISS} < 10 \text{ mW}$	13	--	--	k Ω
R11	$P_{DISS} < 10 \text{ mW}$	7	6.93	7.07	k Ω
R12	$P_{DISS} < 10 \text{ mW}$	21.7	--	--	k Ω
R13	$P_{DISS} < 10 \text{ mW}$	500	475	525	Ω
R14	$P_{DISS} < 10 \text{ mW}$	2.5	2.475	2.525	k Ω
R17	$P_{DISS} < 10 \text{ mW}$	1	0.95	1.05	k Ω
R18	$P_{DISS} < 10 \text{ mW}$	5	4.95	5.05	k Ω
R12/R13	$P_{DISS} < 10 \text{ mW}$	43.4	43.313	43.487	--
R2/R18	$P_{DISS} < 10 \text{ mW}$	2	1.998	2.002	--
R4/R7	$P_{DISS} < 10 \text{ mW}$	26	25.948	26.052	--
R10/R9	$P_{DISS} < 10 \text{ mW}$	26	25.948	26.052	--
TCR	Any Resistor		-100	+100	ppm/ $^{\circ}\text{C}$

	TITLE: PROCUREMENT - Thin Film Resistors					MODEL:	
	ENG: L-C	DWN: keg	DATE: 012991	SH: OF: 4 5	DWG NO: TFLMRES	REV: J	DATE: 051512

P_{DISS}	Any Resistor -55 < T_1 < 125			100	mW
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Resistor Value Table 2: for APEX part number – BEO0E039Z2 (previously P/N WNET-013-036100) :


PARAMETER	TEST CONDITIONS	NOMINAL	MINIMUM	MAXIMUM	UNIT
R1	$P_{DISS} < 10 \text{ mW}$	6400	6080	6720	Ω
R2	$P_{DISS} < 10 \text{ mW}$	3200	3040	3360	Ω
R3	$P_{DISS} < 10 \text{ mW}$	2000	1900	2100	Ω
TCR	Any Resistor		-100	+100	ppm/ $^{\circ}\text{C}$

Resistor Value Table 3: for APEX part number – BEO0E039Z3 (previously P/N WNET-011-103600) :

PARAMETER	TEST CONDITIONS	NOMINAL	MINIMUM	MAXIMUM	UNIT
R1	$P_{DISS} < 10 \text{ mW}$	6400	6080	6720	Ω
R2	$P_{DISS} < 10 \text{ mW}$	3200	3040	3360	Ω
R3	$P_{DISS} < 10 \text{ mW}$	2000	1900	2100	Ω
TCR	Any Resistor		-100	+100	ppm/ $^{\circ}\text{C}$

2.2 QUALIFICATION

Qualification of substitution will be application dependent. Design Engineering should be contacted if substitutions are needed because in many cases the substitute part will qualify by similarity.

	TITLE: PROCUREMENT - Thin Film Resistors					MODEL:	
	ENG: L-C	DWN: keg	DATE: 012991	SH: OF: 5 5	DWG NO: TFLMRES	REV: J	DATE: 051512