83 Series

SMT Chip Attenuator

Part Numbering Code

8 3 – 7 0 2 7 – 1 0 . 0 0 F

STYLE
8 = Chip / Power Pak

TYPE
3 = Attenuator

PLATING OPTION
– = Tin Lead[1/]
A = Silver Nickel
B = Silver Copper
M = Non-Magnetic
P = Low-PIM

SUBSTRATE MATERIAL
7 = Aluminum Nitride
8 = Alumina
3 = Beryllium Oxide

DESCRIPTION
Random Numbers

ATTENUATION
Value in dB

ENVIRONMENTAL COMPLIANCE
F = RoHS Compliant

[1/] *Not RoHS Compliant*

Product Information Table

Power	Frequency	VSWR	L		W		H		Part Series #	Figure #
	GHz	Max:1	mm [inches]							
5	3.0	1.50	4.44	[0.175]	5.08	[0.200]	1.02	[0.040]	83 3995*	1
5	2.0	1.30	3.81	[0.150]	4.45	[0.175]	1.02	[0.040]	83 8999*	1
7	3.0	1.35	5.97	[0.235]	2.87	[0.113]	0.64	[0.025]	83 8054*	3
10	3.0	1.50	6.35	[0.250]	6.35	[0.250]	1.02	[0.040]	83 7999*	1
10	2.0	1.35	5.08	[0.200]	2.54	[0.100]	1.02	[0.040]	83 7014*	3
10	3.0	1.50	6.35	[0.250]	6.35	[0.250]	1.02	[0.040]	83 3999*	1
20	3.0	1.50	9.53	[0.375]	9.53	[0.375]	1.02	[0.040]	83 7027*	1
20	6.0	1.40	5.08	[0.200]	4.45	[0.175]	0.64	[0.025]	83 7044*	1
25	2.0	1.40	9.53	[0.375]	9.53	[0.375]	1.02	[0.040]	83 3998*	1
20	3.0	1.22	5.08	[0.200]	2.54	[0.100]	0.38	[0.015]	83 7046*	3
50	3.0	1.22	6.35	[0.250]	6.35	[0.250]	0.64	[0.025]	83 7047*	2
75	2.4	1.25	7.62	[0.250]	6.35	[0.250]	1.02	[0.040]	83 7012* /2	3
120	2.4	1.20	5.84	[0.230]	8.89	[0.350]	1.02	[0.040]	83 7026*	2

** is a place holder. See part number configurations to complete the part number.*

/2 only available in 30dB

Figure 1

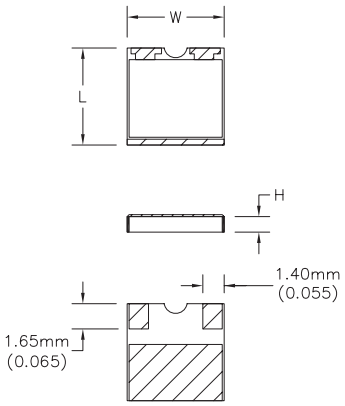


Figure 2

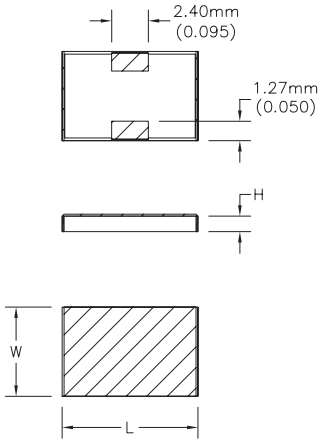
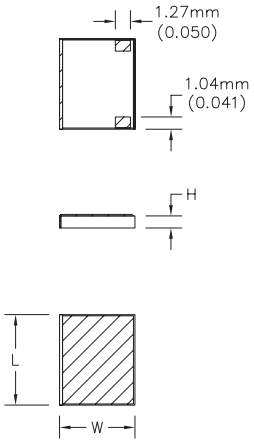


Figure 3

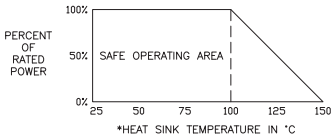


The 83 series surface mount chip attenuators are designed for direct installation on printed circuit boards and manufactured using thin film process. Edge metallization on two sides forms the solder fillets for stronger attachment, easier inspection, and increased heat removal area. The devices are available in Alumina, Aluminum Nitride (AlN) or BeO. RoHS-compliant versions are available.

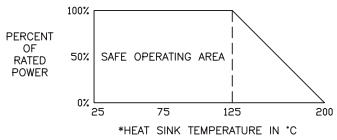
Specifications

Impedance	50 Ohms
Frequency Range	DC to 18 GHz
VSWR (Typical)	1.30
Power Rating	5 - 120 Watts
Operating Temperature	-55°C to 150°C
Substrate	Alumina, BeO and AlN
Resistive Material	Thin Film
Terminal Material	Thick Film, Nickel Barrier, Solder Plated or RoHS, Gold and Wire Bondable Options Available

Power Rating and Derating



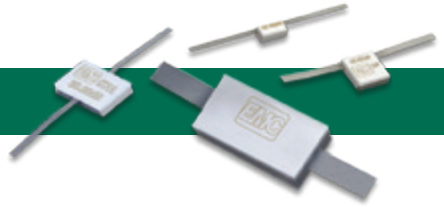
Alternative Derating Available Upon Request



**The heat sink is defined as the surface that the Component is attached to, ie. chassis or printed circuit board.*

83 Series Tab & Cover

Power Pack Attenuator



Part Numbering Code

8 3 – 7 0 0 6 T C – 2 0 . 0 0 F

- **STYLE**: 8 = Chip / Power Pak
- **TYPE**: 3 = Attenuator
- **PLATING OPTION**: – = Tin Lead[1/], A = Silver Nickel, B = Silver Copper
- **SUBSTRATE MATERIAL**: 7 = Aluminum Nitride, 8 = Alumina, 1, 3 = Beryllium Oxide
- **DESCRIPTION**: Random Numbers
- **MOUNTING**: TC = Tab & Cover
- **ATTENUATION**: Value in dB
- **ENVIRONMENTAL COMPLIANCE**: F = RoHS Compliant

[1/] *Not RoHS Compliant*

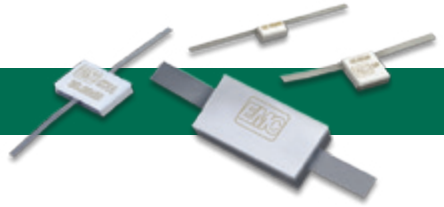
Product Information Table

Power	Freq	VSWR	Substrate	L		W		H		I		Part Number*	Figure #
	GHz	Max		mm [inches]									
10	4.0	1.35	BeO	5.08	[0.200]	2.54	[0.100]	2.16	[0.085]	1.02	[0.040]	83 3005TC*	1
20	4.0	1.50	BeO	6.35	[0.250]	6.35	[0.250]	2.16	[0.085]	1.52	[0.060]	83 1001TC*	1
20	4.0	1.50	BeO	5.08	[0.200]	2.54	[0.100]	2.16	[0.085]	1.02	[0.040]	83 3001TC*	1
50	2.5	1.40	BeO	9.53	[0.375]	9.53	[0.375]	2.16	[0.085]	1.52	[0.060]	83 3021TC*	1
50	2.0	1.25	BeO	6.35	[0.250]	9.53	[0.375]	1.02	[0.040]	1.02	[0.040]	83 1996TC* /2	3
70	2.8	1.25	AlN	6.35	[0.250]	9.53	[0.375]	2.16	[0.085]	1.02	[0.040]	83 7009TC* /1	1
70	2.0	1.35	BeO	9.53	[0.375]	9.53	[0.375]	2.16	[0.085]	1.52	[0.060]	83 3997TC* /2	4
75	2.0	1.20	AlN	6.35	[0.250]	9.53	[0.375]	2.16	[0.085]	1.02	[0.040]	83 7011TC* /1 /2	2
100	2.3	1.20	AlN	5.84	[0.230]	8.89	[0.350]	2.16	[0.085]	1.02	[0.040]	83 7023TC*	5
100	2.3	1.15	AlN	5.84	[0.230]	8.89	[0.350]	2.16	[0.085]	1.02	[0.040]	83 7017TC*	6
100	3.0	1.30	AlN	6.35	[0.250]	9.53	[0.375]	2.16	[0.085]	1.02	[0.040]	83 7006TC*	5
100	0.8	1.25	BeO	12.70	[0.500]	12.70	[0.500]	2.16	[0.085]	1.52	[0.060]	83 1003TC*	1
150	1.0	1.50	BeO	9.53	[0.375]	9.53	[0.375]	2.16	[0.085]	1.52	[0.060]	83 1006TC*	1
150	2.2	1.40	AlN	6.35	[0.250]	9.53	[0.375]	2.16	[0.085]	1.02	[0.040]	83 7034TC*	6
150	3.0	1.30	AlN	7.62	[0.300]	11.43	[0.450]	1.91	[0.075]	1.02	[0.040]	83 7008TC* /1 /2	3
150	2.0	1.30	BeO	6.35	[0.250]	9.53	[0.375]	2.16	[0.085]	1.02	[0.040]	83 3016TC* /1 /2	5
150	1.0	1.50	BeO	9.53	[0.375]	9.53	[0.375]	2.16	[0.085]	1.52	[0.060]	83 3006TC* /1 /2	1
250	1.0	1.25	BeO	12.70	[0.500]	12.70	[0.500]	2.16	[0.085]	1.52	[0.060]	83 3994TC* /1 /2	4

** is a place holder. See part number configurations to complete the part number.*

/1 only available in 20dB

/2 only available in 30dB



83 Series Tab & Cover

Power Pack Attenuator

Figure 1

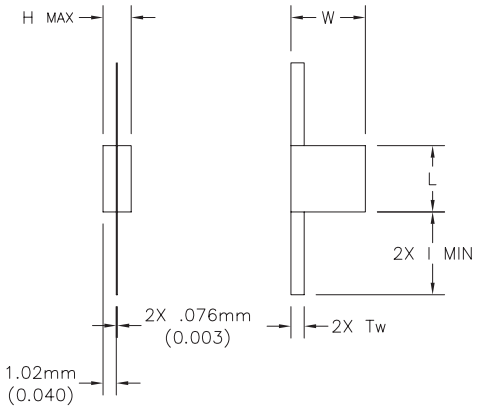
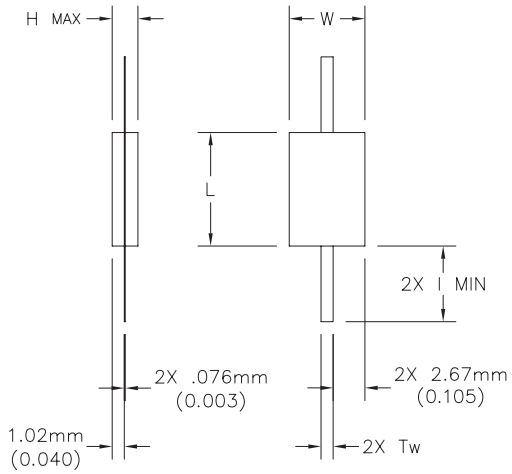


Figure 2



Tab & Cover devices are flangeless with protective ceramic covers and tab contacts, offering the highest performance available of any package style component. They are designed for direct solder attachment to a heat sink for excellent heat transfer. The tab and cover attenuators have attenuation range from 1 dB to 30 dB. Typical attenuation tolerance for values between 1-10 db is +/- 0.5 dB and 11-30 dB is +/- 1.0 dB (may vary for certain products please refer to drawing). All devices are made compliant to RoHS.

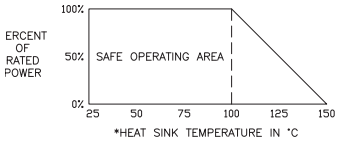
Features

- Substrates - BeO, AlN, and Alumina
- Highest Performance
- Direct Attachment
- Attenuation Values from 0 to 30 dB
- Single Tab and Double Tab Configurations
- Many Finishes Available

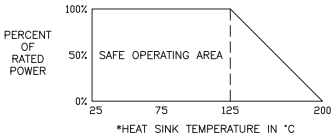
Specifications

Impedance	50 Ohms
Frequency Range	DC to 4 GHz
Attenuation Accuracy	±0.5 dB
VSWR (Typical)	1.30 @ 1 GHz
Power Rating	10 - 250 Watts
Operating Temperature	-55°C to 150°C
Substrate	Alumina, BeO or AlN
Resistive Material	Thin Film
Tab Contact	Different Finishes Available

Power Rating and Derating



Alternative Derating Available Upon Request



**The heat sink is defined as the surface that the Component is attached to, ie. chassis or printed circuit board.*

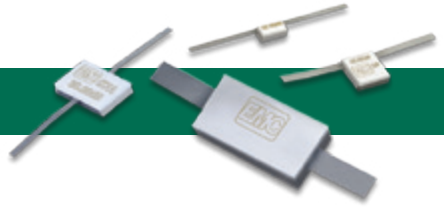


Figure 3

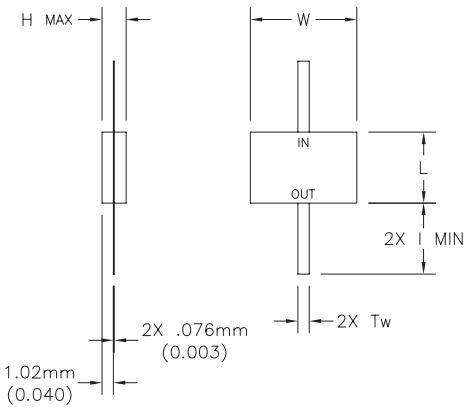


Figure 4

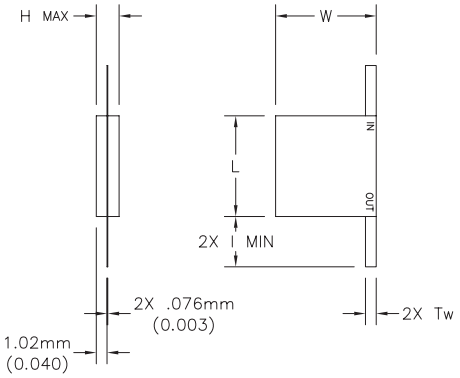


Figure 5

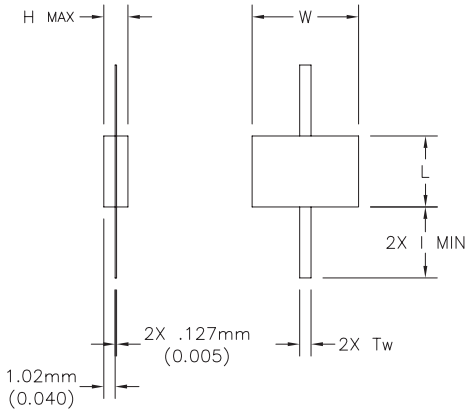
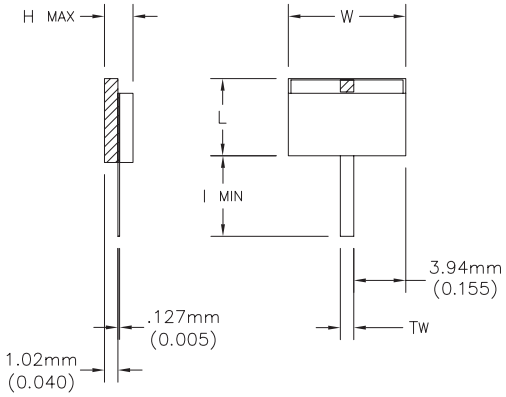
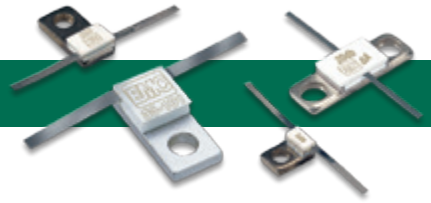


Figure 6





Part Numbering Code

3 — STYLE: 3 = High Power Flange

3 — TYPE: 3 = Attenuator

– — PLATING OPTION: – = Tin Lead[1/], A = Silver Nickel, B = Silver Copper

7 — SUBSTRATE MATERIAL: 7 = Aluminum Nitride, 1 = Beryllium Oxide

XXX – XX.XX — DESCRIPTION: Random Numbers; ATTENUATION: Value in dB

F — ENVIRONMENTAL COMPLIANCE: F = RoHS Compliant

[1/] *Not RoHS Compliant*

Product Information Table

Power	Freq	VSWR	Substrate	L		W		H		TW		Part Number*	Figure #
	GHz	Max		mm [inches]									
10	2.7	1.15	AlN	5.08	[0.200]	7.62	[0.300]	3.81	[0.150]	1.02	[0.040]	33 7003*	1
10	0.9	1.25	BeO	5.08	[0.200]	7.62	[0.300]	3.81	[0.150]	1.02	[0.040]	33 1041*	1
10	4.0	1.35	BeO	5.08	[0.200]	12.70	[0.500]	3.81	[0.150]	1.02	[0.040]	33 1017*	2
10	4.0	1.35	BeO	5.08	[0.200]	7.62	[0.300]	3.81	[0.150]	1.02	[0.040]	33 1005*	1
20	4.0	1.50	BeO	6.35	[0.250]	13.08	[0.515]	3.81	[0.150]	1.52	[0.060]	33 1001*	3
50	2.5	1.40	BeO	9.53	[0.375]	24.77	[0.975]	5.33	[0.210]	1.52	[0.060]	33 1021*	4
50	2.0	1.40	AlN	9.53	[0.375]	24.77	[0.975]	5.33	[0.210]	1.50	[0.059]	33 7002* /1	4
50	2.0	1.40	AlN	9.53	[0.375]	24.77	[0.975]	5.33	[0.210]	1.52	[0.060]	33 7001* /1	4
50	1.0	1.20	BeO	9.53	[0.375]	24.77	[0.975]	5.33	[0.210]	1.52	[0.060]	33 1002*	4
75	2.2	1.20	AlN	9.53	[0.375]	22.10	[0.870]	3.81	[0.150]	1.02	[0.040]	33 7005*	5
75	1.0	1.30	BeO	9.53	[0.375]	22.10	[0.870]	3.81	[0.150]	1.02	[0.040]	33 1009*	5
100	2.5	1.20	AlN	5.84	[0.230]	20.32	[0.800]	3.81	[0.150]	1.02	[0.040]	33 7023*	7
100	3.0	1.30	AlN	6.48	[0.255]	20.83	[0.820]	4.06	[0.160]	1.02	[0.040]	33 7004*	8
100	0.8	1.25	BeO	12.70	[0.500]	31.75	[1.250]	5.33	[0.210]	1.52	[0.060]	33 1003*	6
100	2.5	1.20	AlN	5.84	[0.230]	20.32	[0.800]	3.81	[0.150]	1.02	[0.040]	33 7023*	7
150	1.0	1.50	BeO	9.53	[0.375]	24.77	[0.975]	5.33	[0.210]	1.52	[0.060]	33 1006*	4
200	0.5	1.50	BeO	26.42	[1.040]	48.26	[1.900]	6.22	[0.245]	6.35	[0.250]	33 1004*	9
250	1.0	1.25	BeO	12.70	[0.500]	31.75	[1.250]	5.33	[0.210]	1.52	[0.060]	33 1042* /2	6
250	1.0	1.25	BeO	12.70	[0.500]	31.75	[1.250]	5.33	[0.210]	1.52	[0.060]	33 1052*	6
400	1.0	1.30	BeO	12.70	[0.500]	31.75	[1.250]	5.33	[0.210]	1.52	[0.060]	33 1050*	10

** is a place holder. See part number configurations to complete the part number.*

/1 only available in 20 dB

/2 only available in 30 dB

"I min" dimension = 3.18 mm [0.125]

33 Series Flange

High Power Attenuator

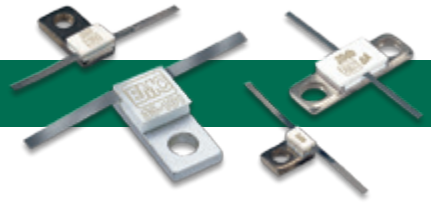


Figure 1

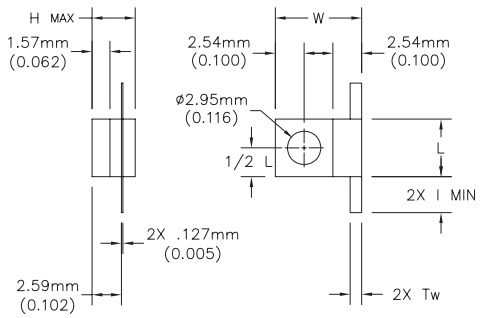
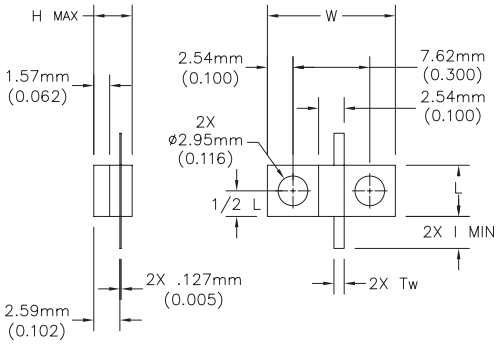


Figure 2

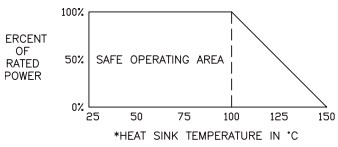


High power flange mount components offer high performance and the convenience of bolt-on installation. Flange attenuators have an attenuation range from 1 to 30 dB. Typical attenuation tolerance for values between 1-10 dB is +/- 0.5 dB and between 11-30 dB is +/- 1.0 dB (may vary for certain products, please refer to drawing). Maximum power rating of up to 400 watts can be achieved on a single device. All devices can be made RoHS compliant and available in Aluminum Nitride (AlN) or BeO.

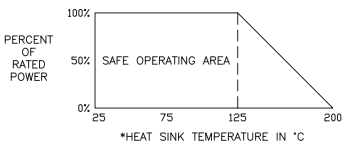
Specifications

Impedance	50 Ohms
Frequency Range	DC to 4 GHz
VSWR (Typical)	1.30
Power Rating	10 to 400 Watts
Operating Temperature	-55°C to 150°C
Substrate	BeO or AlN
Resistive Material	Nichrome
Tab Contact	Different Finishes Available
Cover	Alumina
Flange	Copper, Nickel Plated

Power Rating and Derating



Alternative Derating Available Upon Request



**The heat sink is defined as the surface that the Component is attached to, ie. chassis or printed circuit board.*

Figure 3

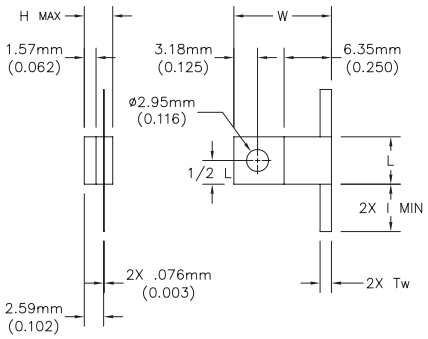


Figure 4

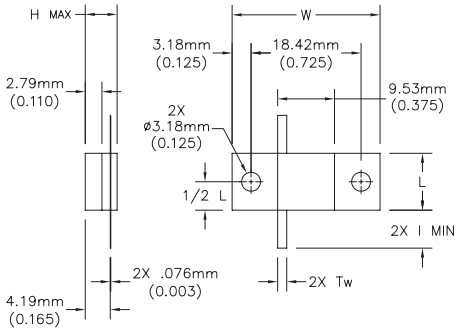


Figure 5

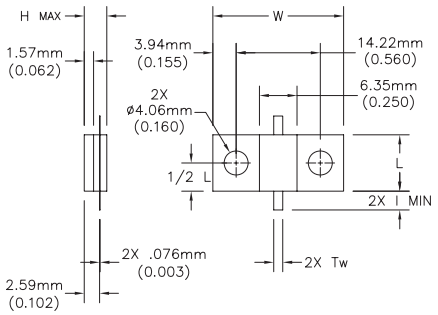


Figure 6

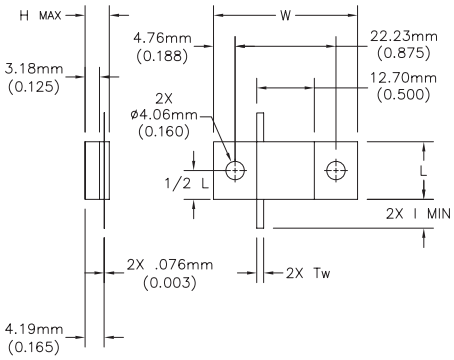


Figure 7

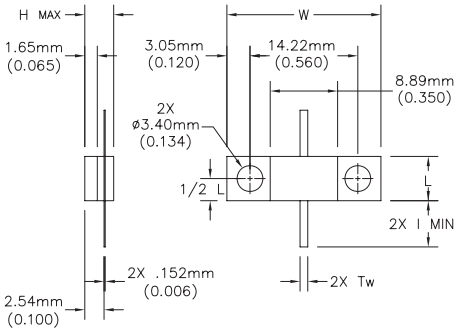


Figure 8

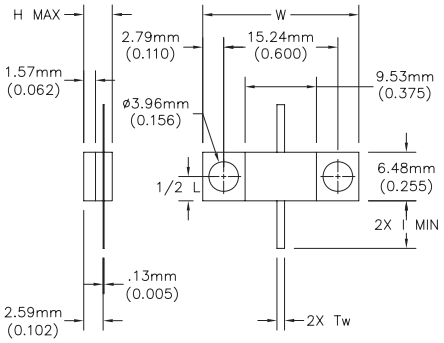


Figure 9

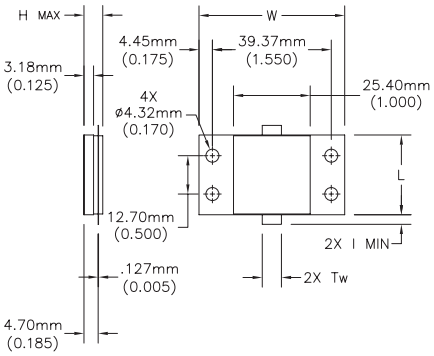


Figure 10