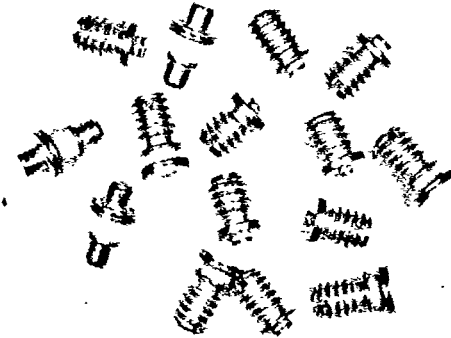


Gunn Diodes

Features

- Spot Frequency or Wideband Operation
- Choice of Package Styles
- Range of Microwave Power Outputs
- Specific Types for Low Cost Commercial Applications
- High Reliability
- Special Screening to Customer Requirements Available



Description

Gunn devices are solid state components which are used to generate energy at microwave frequencies from a DC power input.

Alpha Gunn diodes are produced from epitaxial gallium arsenide grown in Alpha's own in-house epitaxy facility. This sheet describes both the performance of low power, low cost devices suitable for high volume commercial applications as well as high power diodes. Devices for the lowest power applications are produced in a nonflip configuration; that is with the active layer uppermost in the package, requiring the heat sink to be

biased as the anode. A flip device construction is used for the higher power diodes in which the active layer is bonded close to the package heat sink for optimum thermal performance. Such devices require the heat sink to be biased as the cathode.

The tables below list standard device types with performance data applicable to their operation in Alpha critically coupled test cavities. To accommodate alternative requirements, special devices may also be manufactured and tested against other specifications in customer supplied cavities. Please inquire.

C.W. GUNN DEVICES FOR C-BAND (5-8.2 GHz)

Type	Specified Frequency ¹ (GHz)	Min. C.W. Output ^{2,3} (mW)	Operating Current Typical (mA)	Operating Voltage Typical (V)	Heat Sink Polarity ⁵	Package Style ⁴
DGB8211	5-8.2	20	150	12	Cathode	023-001
DGB8212	5-8.2	20	150	12	Cathode	158-001
DGB8213	5-8.2	20	150	12	Cathode	188-001
DGB8214	5-8.2	20	150	12	Cathode	315-001
DGB8215	5-8.2	20	150	12	Cathode	305-001
DGB8311	5-8.2	50	200	12	Cathode	023-001
DGB8312	5-8.2	50	200	12	Cathode	158-001
DGB8313	5-8.2	50	200	12	Cathode	188-001
DGB8314	5-8.2	50	200	12	Cathode	315-001
DGB8315	5-8.2	50	200	12	Cathode	305-001
DGB8411	5-8.2	100	300	12	Cathode	023-001
DGB8412	5-8.2	100	300	12	Cathode	158-001
DGB8413	5-8.2	100	300	12	Cathode	188-001
DGB8414	5-8.2	100	300	12	Cathode	315-001
DGB8415	5-8.2	100	300	12	Cathode	305-001
DGB8511	5-8.2	200	500	12	Cathode	023-001
DGB8512	5-8.2	200	500	12	Cathode	158-001
DGB8513	5-8.2	200	500	12	Cathode	188-001
DGB8514	5-8.2	200	500	12	Cathode	315-001
DGB8515	5-8.2	200	500	12	Cathode	305-001

Gunn Diodes

C.W. GUNN DEVICES FOR C-BAND (5-8.2 GHz) (cont.)

Type	Specified Frequency ¹ (GHz)	Min. C.W. Output ^{2,3} (mW)	Operating Current Typical (mA)	Operating Voltage Typical (V)	Heat Sink Polarity ⁵	Package Style ⁴
DGB8612	5-8.2	300	700	12	Cathode	158-001
DGB8613	5-8.2	300	700	12	Cathode	188-001
DGB8614	5-8.2	300	700	12	Cathode	315-001
DGB8615	5-8.2	300	700	12	Cathode	305-001
DGB8712	5-8.2	400	900	12	Cathode	158-001
DGB8713	5-8.2	400	900	12	Cathode	188-001
DGB8714	5-8.2	400	900	12	Cathode	315-001
DGB8715	5-8.2	400	900	12	Cathode	305-001
DGB8812	5-8.2	500	1100	12	Cathode	158-001
DGB8813	5-8.2	500	1100	12	Cathode	188-001
DGB8912	5-8.2	600	1250	12	Cathode	158-001
DGB8913	5-8.2	600	1250	12	Cathode	188-001
DGB8012	5-8.2	700	1450	12	Cathode	158-001
DGB8013	5-8.2	700	1450	12	Cathode	188-001
DGB8112	5-8.2	800	1650	12	Cathode	158-001
DGB8113	5-8.2	800	1650	12	Cathode	188-001
DGB9211	FULLBAND 5-8.2	20	250	9-17	Cathode	023-001
DGB9212	FULLBAND 5-8.2	20	250	9-17	Cathode	158-001
DGB9213	FULLBAND 5-8.2	20	250	9-17	Cathode	188-001
DGB9214	FULLBAND 5-8.2	20	250	9-17	Cathode	315-001
DGB9215	FULLBAND 5-8.2	20	250	9-17	Cathode	305-001
DGB9311	FULLBAND 5-8.2	50	350	9-17	Cathode	023-001
DGB9312	FULLBAND 5-8.2	50	350	9-17	Cathode	158-001
DGB9313	FULLBAND 5-8.2	50	350	9-17	Cathode	188-001
DGB9314	FULLBAND 5-8.2	50	350	9-17	Cathode	315-001
DGB9315	FULLBAND 5-8.2	50	350	9-17	Cathode	305-001
DGB9411	FULLBAND 5-8.2	100	500	9-17	Cathode	023-001
DGB9412	FULLBAND 5-8.2	100	500	9-17	Cathode	158-001
DGB9413	FULLBAND 5-8.2	100	500	9-17	Cathode	188-001
DGB9414	FULLBAND 5-8.2	100	500	9-17	Cathode	315-001
DGB9415	FULLBAND 5-8.2	100	500	9-17	Cathode	305-001
DGB9512	FULLBAND 5-8.2	200	900	9-17	Cathode	158-001
DGB9513	FULLBAND 5-8.2	200	900	9-17	Cathode	188-001
DGB9514	FULLBAND 5-8.2	200	900	9-17	Cathode	315-001
DGB9515	FULLBAND 5-8.2	200	900	9-17	Cathode	305-001
DGB9612	FULLBAND 5-8.2	300	1200	9-17	Cathode	158-001
DGB9613	FULLBAND 5-8.2	300	1200	9-17	Cathode	188-001

Gunn Diodes

C.W. GUNN DEVICES FOR X-BAND (8.2-12.4 GHz)

Type	Specified Frequency ¹ (GHz)	Min. C.W. Output ^{2,3} (mW)	Operating Current Typical (mA)	Operating Voltage Typical (V)	Heat Sink Polarity ⁵	Package Style ⁴
DGB8081	9.3-10.9	5	40	8	Anode	023-001
DGB8181	9.3-10.9	10	80	8	Anode	023-001
DGB8281	9.3-10.9	20	110	8	Anode	023-001
DGB8381	8.2-12.4	30	140	8	Anode	023-001
DGB8121	8.2-9.3 & 10.9-12.4	10	80	8	Anode	023-001
DGB8122	8.2-12.4	10	80	8	Anode	158-001
DGB8123	8.2-12.4	10	80	8	Anode	188-001
DGB8124	8.2-12.4	10	80	8	Anode	315-001
DGB8125	8.2-12.4	10	80	8	Anode	305-001
DGB8221	8.2-9.3 & 10.9-12.4	20	110	8	Anode	023-001
DGB8222	8.2-12.4	20	110	8	Anode	158-001
DGB8223	8.2-12.4	20	110	8	Anode	188-001
DGB8224	8.2-12.4	20	110	8	Anode	315-001
DGB8225	8.2-12.4	20	110	8	Anode	305-001
DGB8321	8.2-12.4	50	200	10	Cathode	023-001
DGB8322	8.2-12.4	50	200	10	Cathode	158-001
DGB8323	8.2-12.4	50	200	10	Cathode	188-001
DGB8324	8.2-12.4	50	200	10	Cathode	315-001
DGB8325	8.2-12.4	50	200	10	Cathode	305-001
DGB8421	8.2-12.4	100	300	10	Cathode	023-001
DGB8422	8.2-12.4	100	300	10	Cathode	158-001
DGB8423	8.2-12.4	100	300	10	Cathode	188-001
DGB8424	8.2-12.4	100	300	10	Cathode	315-001
DGB8425	8.2-12.4	100	300	10	Cathode	305-001
DGB8521	8.2-12.4	200	600	10	Cathode	023-001
DGB8522	8.2-12.4	200	600	10	Cathode	158-001
DGB8523	8.2-12.4	200	600	10	Cathode	188-001
DGB8524	8.2-12.4	200	600	10	Cathode	315-001
DGB8525	8.2-12.4	200	600	10	Cathode	305-001
DGB8622	8.2-12.4	300	800	10	Cathode	158-001
DGB8623	8.2-12.4	300	800	10	Cathode	188-001
DGB8624	8.2-12.4	300	800	10	Cathode	315-001
DGB8625	8.2-12.4	300	800	10	Cathode	305-001
DGB8722	8.2-12.4	400	1050	10	Cathode	158-001
DGB8723	8.2-12.4	400	1050	10	Cathode	188-001
DGB8724	8.2-12.4	400	1050	10	Cathode	315-001
DGB8725	8.2-12.4	400	1050	10	Cathode	305-001
DGB8822	8.2-12.4	500	1300	10	Cathode	158-001
DGB8823	8.2-12.4	500	1300	10	Cathode	188-001
DGB8922	8.2-12.4	600	1550	10	Cathode	158-001
DGB8923	8.2-12.4	600	1550	10	Cathode	188-001
DGB8082	8.2-12.4	700	1750	10	Cathode	158-001
DGB8083	8.2-12.4	700	1750	10	Cathode	188-001
DGB8982	8.2-11.0	800	1850	10	Cathode	158-001
DGB8983	8.2-11.0	800	1850	10	Cathode	188-001
DGB9221	FULLBAND 8.2-12.4	20	300	7-14	Cathode	023-001
DGB9222	FULLBAND 8.2-12.4	20	300	7-14	Cathode	158-001
DGB9223	FULLBAND 8.2-12.4	20	300	7-14	Cathode	188-001
DGB9224	FULLBAND 8.2-12.4	20	300	7-14	Cathode	315-001
DGB9225	FULLBAND 8.2-12.4	20	300	7-14	Cathode	305-001

Gunn Diodes

C.W. GUNN DEVICES FOR X-BAND (8.2-12.4 GHz) (cont.)

Type	Specified Frequency ¹ (GHz)	Min. C.W. Output ^{2,3} (mW)	Operating Current Typical (mA)	Operating Voltage Typical (V)	Heat Sink Polarity ⁵	Package Style ⁴
DGB9321	FULLBAND 8.2-12.4	50	450	7-14	Cathode	023-001
DGB9322	FULLBAND 8.2-12.4	50	450	7-14	Cathode	158-001
DGB9323	FULLBAND 8.2-12.4	50	450	7-14	Cathode	188-001
DGB9324	FULLBAND 8.2-12.4	50	450	7-14	Cathode	315-001
DGB9325	FULLBAND 8.2-12.4	50	450	7-14	Cathode	305-001
DGB9421	FULLBAND 8.2-12.4	100	600	7-14	Cathode	023-001
DGB9422	FULLBAND 8.2-12.4	100	600	7-14	Cathode	158-001
DGB9423	FULLBAND 8.2-12.4	100	600	7-14	Cathode	188-001
DGB9424	FULLBAND 8.2-12.4	100	600	7-14	Cathode	315-001
DGB9425	FULLBAND 8.2-12.4	100	600	7-14	Cathode	305-001
DGB9522	FULLBAND 8.2-12.4	200	1050	7-14	Cathode	158-001
DGB9523	FULLBAND 8.2-12.4	200	1050	7-14	Cathode	188-001
DGB9524	FULLBAND 8.2-12.4	200	1050	7-14	Cathode	315-001
DGB9525	FULLBAND 8.2-12.4	200	1050	7-14	Cathode	305-001
DGB9622	FULLBAND 8.2-12.4	300	1250	7-14	Cathode	158-001
DGB9623	FULLBAND 8.2-12.4	300	1250	7-14	Cathode	188-001
DGB9624	FULLBAND 8.2-12.4	300	1250	7-14	Cathode	315-001
DGB9625	FULLBAND 8.2-12.4	300	1250	7-14	Cathode	305-001

C.W. GUNN DEVICES FOR Ku-BAND (12.4-18 GHz)

Type	Specified Frequency ¹ (GHz)	Min. C.W. Output ^{2,3} (mW)	Operating Current Typical (mA)	Operating Voltage Typical (V)	Heat Sink Polarity ⁵	Package Style ⁴
DGB8131	12.4-18	10	95	7	Anode	023-001
DGB8132	12.4-16	10	95	7	Anode	158-001
DGB8133	12.4-16	10	95	7	Anode	188-001
DGB8134	12.4-18	10	95	7	Anode	315-001
DGB8135	12.4-18	10	95	7	Anode	305-001
DGB8231	12.4-18	20	125	7	Anode	023-001
DGB8232	12.4-16	20	125	7	Anode	158-001
DGB8233	12.4-16	20	125	7	Anode	188-001
DGB8234	12.4-18	20	125	7	Anode	315-001
DGB8235	12.4-18	20	125	7	Anode	305-001
DGB8331	12.4-18	50	260	8	Cathode	023-001
DGB8332	12.4-16	50	260	8	Cathode	158-001
DGB8333	12.4-16	50	260	8	Cathode	188-001
DGB8334	12.4-18	50	260	8	Cathode	315-001
DGB8335	12.4-18	50	260	8	Cathode	305-001
DGB8431	12.4-18	100	400	8	Cathode	023-001
DGB8432	12.4-16	100	400	8	Cathode	158-001
DGB8433	12.4-16	100	400	8	Cathode	188-001
DGB8434	12.4-18	100	400	8	Cathode	315-001
DGB8435	12.4-18	100	400	8	Cathode	305-001
DGB8531	12.4-18	200	700	8	Cathode	023-001
DGB8532	12.4-16	200	700	8	Cathode	158-001
DGB8533	12.4-16	200	700	8	Cathode	188-001
DGB8534	12.4-18	200	700	8	Cathode	315-001
DGB8535	12.4-18	200	700	8	Cathode	305-001

Gunn Diodes

C.W. GUNN DEVICES FOR Ku-BAND (12.4-18 GHz) (cont.)

Type	Specified Frequency ¹ (GHz)	Min. C.W. Output ^{2,3} (mW)	Operating Current Typical (mA)	Operating Voltage Typical (V)	Heat Sink Polarity ⁵	Package Style ⁴
DGB8632	12.4-16	300	1000	8	Cathode	158-001
DGB8633	12.4-16	300	1000	8	Cathode	188-001
DGB8634	12.4-18	300	1000	8	Cathode	315-001
DGB8635	12.4-18	300	1000	8	Cathode	305-001
DGB8732	12.4-16	400	1300	8	Cathode	158-001
DGB8733	12.4-16	400	1300	8	Cathode	188-001
DGB8734	12.4-18	400	1300	8	Cathode	315-001
DGB8735	12.4-18	400	1300	8	Cathode	305-001
DGB8832	12.4-16	500	1550	8	Cathode	158-001
DGB8833	12.4-16	500	1550	8	Cathode	188-001
DGB8834	12.4-18	500	1550	8	Cathode	315-001
DGB8835	12.4-18	500	1550	8	Cathode	305-001
DGB8932	12.4-15	600	1750	8	Cathode	158-001
DGB8933	12.4-15	600	1750	8	Cathode	188-001
DGB8934	12.4-15	600	1750	8	Cathode	315-001
DGB8935	12.4-15	600	1750	8	Cathode	305-001
DGB9234	FULLBAND 12.4-18	20	360	6-12	Cathode	315-001
DGB9235	FULLBAND 12.4-18	20	360	6-12	Cathode	305-001
DGB9236	FULLBAND 12.4-18	20	360	6-12	Cathode	296-001
DGB9334	FULLBAND 12.4-18	50	520	6-12	Cathode	315-001
DGB9335	FULLBAND 12.4-18	50	520	6-12	Cathode	305-001
DGB9336	FULLBAND 12.4-18	50	520	6-12	Cathode	296-001
DGB9434	FULLBAND 12.4-18	100	720	6-12	Cathode	315-001
DGB9435	FULLBAND 12.4-18	100	720	6-12	Cathode	305-001
DGB9436	FULLBAND 12.4-18	100	720	6-12	Cathode	296-001
DGB9534	FULLBAND 12.4-18	200	1050	6-12	Cathode	315-001
DGB9535	FULLBAND 12.4-18	200	1050	6-12	Cathode	305-001

C.W. GUNN DEVICES FOR K-BAND (18-26.5 GHz)

Type	Specified Frequency ¹ (GHz)	Min. C.W. Output ^{2,3} (mW)	Operating Current Typical (mA)	Operating Voltage Typical (V)	Heat Sink Polarity ⁵	Package Style ⁴
DGB8091	23.5-24.5	5	70	5	Anode	023-001
DGB8094	23.5-24.5	5	70	5	Anode	315-001
DGB8095	23.5-24.5	5	70	5	Anode	305-001
DGB8191	23.5-24.5	10	110	5	Anode	023-001
DGB8194	23.5-24.5	10	110	5	Anode	315-001
DGB8195	23.5-24.5	10	110	5	Anode	305-001
DGB8291	23.5-24.5	20	175	5	Anode	023-001
DGB8294	23.5-24.5	20	175	5	Anode	315-001
DGB8295	23.5-24.5	20	175	5	Anode	305-001
DGB8141	18-23.5 & 24.5-26.5	10	120	5	Anode	023-001
DGB8144	18-23.5 & 24.5-26.5	10	120	5	Anode	315-001
DGB8145	18-23.5 & 24.5-26.5	10	120	5	Anode	305-001
DGB8241	18-23.5 & 24.5-26.5	20	185	5	Anode	023-001
DGB8244	18-23.5 & 24.5-26.5	20	185	5	Anode	315-001
DGB8245	18-23.5 & 24.5-26.5	20	185	5	Anode	305-001

Gunn Diodes

C.W. GUNN DEVICES FOR K-BAND (18-26.5 GHz) (cont.)

Type	Specified Frequency ¹ (GHz)	Min. C.W. Output ^{2,3} (mW)	Operating Current Typical (mA)	Operating Voltage Typical (V)	Heat Sink Polarity ⁵	Package Style ⁴
DGB8344	18-26.5	50	300	6	Cathode	315-001
DGB8345	18-26.5	50	300	6	Cathode	305-001
DGB8346	18-26.5	50	300	6	Cathode	296-001
DGB8444	18-26.5	100	550	6	Cathode	315-001
DGB8445	18-26.5	100	550	6	Cathode	305-001
DGB8446	18-26.5	100	550	6	Cathode	296-001
DGB8544	18-26.5	200	900	6	Cathode	315-001
DGB8545	18-26.5	200	900	6	Cathode	305-001
DGB8546	18-26.5	200	900	6	Cathode	296-001
DGB8644	18-26.5	300	1250	6	Cathode	315-001
DGB8645	18-26.5	300	1250	6	Cathode	305-001
DGB8646	18-26.5	300	1250	6	Cathode	296-001
DGB8744	18-26.5	400	1600	6	Cathode	315-001
DGB8745	18-26.5	400	1600	6	Cathode	305-001
DGB9244	FULLBAND 18-26.5	20	400	4-8	Cathode	315-001
DGB9245	FULLBAND 18-26.5	20	400	4-8	Cathode	305-001
DGB9246	FULLBAND 18-26.5	20	400	4-8	Cathode	296-001
DGB9344	FULLBAND 18-26.5	50	600	4-8	Cathode	315-001
DGB9345	FULLBAND 18-26.5	50	600	4-8	Cathode	305-001
DGB9346	FULLBAND 18-26.5	50	600	4-8	Cathode	296-001
DGB9444	FULLBAND 18-26.5	100	950	4-8	Cathode	315-001
DGB9445	FULLBAND 18-26.5	100	950	4-8	Cathode	305-001
DGB9446	FULLBAND 18-26.5	100	950	4-8	Cathode	296-001
DGB9544	FULLBAND 18-26.5	200	1250	4-8	Cathode	315-001
DGB9545	FULLBAND 18-26.5	200	1250	4-8	Cathode	305-001
DGB9546	FULLBAND 18-26.5	200	1250	4-8	Cathode	296-001

C.W. GUNN DEVICES FOR Ka-BAND (26.5-40 GHz)

Type	Specified Frequency ¹ (GHz)	Min. C.W. Output ^{2,3} (mW)	Operating Current Typical (mA)	Operating Voltage Typical (V)	Heat Sink Polarity ⁵	Package Style ⁴
DGB8054	26.5-40	5	100	4	Anode	315-001
DGB8055	26.5-40	5	100	4	Anode	305-001
DGB8056	26.5-40	5	100	4	Anode	296-001
DGB8154	26.5-40	10	175	4	Anode	315-001
DGB8155	26.5-40	10	175	4	Anode	305-001
DGB8156	26.5-40	10	175	4	Anode	296-001
DGB8254	26.5-40	20	280	5	Cathode	315-001
DGB8255	26.5-40	20	280	5	Cathode	305-001
DGB8256	26.5-40	20	280	5	Cathode	296-001
DGB8354	26.5-35	50	380	5	Cathode	315-001
DGB8355	26.5-35	50	380	5	Cathode	305-001
DGB8356	26.5-40	50	380	5	Cathode	296-001
DGB8454	26.5-35	100	650	5	Cathode	315-001
DGB8455	26.5-35	100	650	5	Cathode	305-001
DGB8456	26.5-40	100	650	5	Cathode	296-001
DGB8554	26.5-35	150	950	5	Cathode	315-001
DGB8555	26.5-35	150	950	5	Cathode	305-001
DGB8556	26.5-40	150	950	5	Cathode	296-001

Gunn Diodes

C.W. GUNN DEVICES FOR Ka-BAND (26.5-40 GHz) (cont.)

Type	Specified Frequency ¹ (GHz)	Min. C.W. Output ^{2,3} (mW)	Operating Current Typical (mA)	Operating Voltage Typical (V)	Heat Sink Polarity ⁵	Package Style ⁴
DGB8654	26.5-35	200	1300	5	Cathode	315-001
DGB8655	26.5-35	200	1300	5	Cathode	305-001
DGB8656	26.5-40	200	1300	5	Cathode	296-001
DGB8754	26.5-35	225	1400	5	Cathode	315-001
DGB8755	26.5-35	225	1400	5	Cathode	305-001
DGB8756	26.5-40	225	1400	5	Cathode	296-001
DGB9254	FULLBAND 26.5-35	20	500	4-7	Cathode	315-001
DGB9255	FULLBAND 26.5-35	20	500	4-7	Cathode	305-001
DGB9256	FULLBAND 26.5-40	20	500	4-7	Cathode	296-001
DGB9354	FULLBAND 26.5-35	50	800	4-7	Cathode	315-001
DGB9355	FULLBAND 26.5-35	50	800	4-7	Cathode	305-001
DGB9356	FULLBAND 26.5-40	50	800	4-7	Cathode	296-001

C.W. GUNN DEVICES FOR U-BAND (40-60 GHz)

Type	Specified Frequency ¹ (GHz)	Min. C.W. Output ^{2,3} (mW)	Operating Current Typical (mA)	Operating Voltage Typical (V)	Heat Sink Polarity ⁵	Package Style ⁴
DGB8064	40-50	5	140	3	Anode	315-001
DGB8065	40-50	5	140	3	Anode	305-001
DGB8066	40-60	5	140	3	Anode	296-001
DGB8164	40-50	10	250	3	Anode	315-001
DGB8165	40-50	10	250	3	Anode	305-001
DGB8166	40-60	10	250	3	Anode	296-001
DGB8266	40-60	20	400	4	Cathode	296-001
DGB8366	40-60	50	600	4	Cathode	296-001
DGB8466	40-50	75	750	4	Cathode	296-001
DGB8566	40-50	100	950	4	Cathode	296-001
DGB8666	40-50	125	1100	4	Cathode	296-001
DGB8766	40-50	150	1300	4	Cathode	296-001

C.W. devices for 60-100 GHz are available. Consult the factory for your specific requirement. For example:

DGB8076	94GHz	5	600	4	Cathode	296-001
DGB8176	94GHz	10	750	4	Cathode	296-001
DGB8276	94GHz	15	900	4	Cathode	296-001
DGB8376	94GHz	20	950	4	Cathode	296-001

Notes:

- The required operating frequency (or in the case of wide band types, the frequency range) must be specified when ordering. The specification of any unnecessarily wide frequency range will result in unnecessary expenditure.
- The power output is measured at a single frequency (except for wide band units) in a critically coupled Alpha test cavity at 25°C. Alpha may agree to undertake special testing in a customer cavity if required.
- The standard catalog range of Alpha Gunn devices are tested under C.W. conditions. For certain pulse applications, alternative device types are available. Consult the factory.
- Alternative package styles are available and should be requested as specials at the time of ordering.
- Devices with cathode heat sink are burned in for 24 hours as standard.