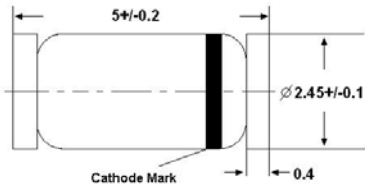
ZM47xxxPF-M

Silicon Planar Power Zener Diodes

for use in stabilizing and clipping circuits with high power rating. Standard Zener voltage tolerance is ±10%. Add suffix "A" for ±5% tolerance and suffix "B" for ±2% tolerance. Other tolerances available are upon request.

These diodes are also available in DO-41 case with the type designation 1N4728...1N4761

LL-41



Glass case MELF
Dimensions in mm

Features

• Lead Free

Absolute Maximum Ratings (T_a = 25℃)

Parameter	Symbol	Value	Unit
Power Dissipation [1]	P_{tot}	1	W
Junction Temperature	T_j	175	℃
Storage Temperature Range	T_{stg}	- 65 to + 175	℃

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance Junction to Ambient [1]	$R_{\theta JA}$	150	℃/W

[1] Valid provided that electrodes are kept at ambient temperature.

Dated: 12/10/2021 Rev: 01

Characteristics at T_a = 25℃ (V_F max : 1.2 V at I_F = 200 mA)

Type	Zener Voltage [3]				Dynamic Resistance [1]			Reverse Current		Maximum Surge Current [4]	Maximum Regulator Current [2]
	V_{Znom}	V_Z		at I_{ZT}	Z_{ZT} at I_{ZT}	Z_{ZK}	at I_{ZK}	I_R	at V_R	at T_a = 25℃	
	(V)	Min. (V)	Max. (V)	(mA)	Max. (Ω)	Max. (Ω)	(mA)	Max. (μA)	(V)	I_{ZSM} (mA)	I_{ZM} (mA)
ZM4728PF	3.3	2.97	3.63	76	10	400	1	150	1	1375	275
ZM4729PF	3.6	3.24	3.96	69	10	400	1	100	1	1260	252
ZM4730PF	3.9	3.51	4.29	64	9	400	1	100	1	1190	234
ZM4731PF	4.3	3.87	4.73	58	9	400	1	50	1	1070	217
ZM4732PF	4.7	4.23	5.17	53	8	500	1	10	1	970	193
ZM4733PF	5.1	4.59	5.61	49	7	550	1	10	1	890	178
ZM4734PF	5.6	5.04	6.16	45	5	600	1	10	2	810	162
ZM4735PF	6.2	5.58	6.82	41	2	700	1	10	3	730	146
ZM4736PF	6.8	6.12	7.48	37	3.5	700	1	10	4	660	133
ZM4737PF	7.5	6.75	8.25	34	4	700	0.5	10	5	605	121
ZM4738PF	8.2	7.38	9.02	31	4.5	700	0.5	10	6	550	110
ZM4739PF	9.1	8.19	10.01	28	5	700	0.5	10	7	500	100
ZM4740PF	10	9.00	11.00	25	7	700	0.25	10	7.6	454	91
ZM4741PF	11	9.90	12.10	23	8	700	0.25	5	8.4	414	83
ZM4742PF	12	10.80	13.20	21	9	700	0.25	5	9.1	380	76
ZM4743PF	13	11.70	14.30	19	10	700	0.25	5	9.9	344	69
ZM4744PF	15	13.50	16.50	17	14	700	0.25	5	11.4	304	61
ZM4745PF	16	14.40	17.60	15.5	16	700	0.25	5	12.2	285	57
ZM4746PF	18	16.20	19.80	14	20	750	0.25	5	13.7	250	50
ZM4747PF	20	18.00	22.00	12.5	22	750	0.25	5	15.2	225	45
ZM4748PF	22	19.80	24.20	11.5	23	750	0.25	5	16.7	205	41
ZM4749PF	24	21.60	26.40	10.5	25	750	0.25	5	18.2	190	38
ZM4750PF	27	24.30	29.70	9.5	35	750	0.25	5	20.6	170	34
ZM4751PF	30	27.00	33.00	8.5	40	1000	0.25	5	22.8	150	30
ZM4752PF	33	29.70	36.30	7.5	45	1000	0.25	5	25.1	135	27
ZM4753PF	36	32.40	39.60	7	50	1000	0.25	5	27.4	125	25
ZM4754PF	39	35.10	42.90	6.5	60	1000	0.25	5	29.7	115	23
ZM4755PF	43	38.70	47.30	6	70	1500	0.25	5	32.7	110	22
ZM4756PF	47	42.30	51.70	5.5	80	1500	0.25	5	35.8	95	19

[1] The dynamic resistance is derived from the 60 Hz AC voltage which results when an AC current having an RMS value equal to 10% of the Zener Current (I_{ZT} or I_{ZK}) is superimposed on I_{ZT} or I_{ZK}. Dynamic resistance is measured at two points to insure a sharp knee on the breakdown curve and to eliminate unstable units.

[2] Valid provided that electrodes are kept at ambient temperature.

[3] Tested with pulses tp = 20 ms.

[4] The rating listed in the electrical characteristics table is maximum peak, non-repetitive, reverse surge current of 1/2 square wave or equivalent sine wave pulse of 1/120 second duration superimposed on the test current I_{ZT}.

Characteristics at T_a = 25℃ (V_F max : 1.2 V at I_F = 200 mA)

Type	Zener Voltage [3]				Dynamic Resistance [1]			Reverse Current		Maximum Surge Current [4]	Maximum Regulator Current [2]
	V_{Znom}	V_Z		at I_{ZT}	Z_{ZT} at I_{ZT}	Z_{ZK}	at I_{ZK}	I_R	at V_R	at T_a = 25℃	
	(V)	Min. (V)	Max. (V)	(mA)	Max. (Ω)	Max. (Ω)	(mA)	Max. (μA)	(V)	I_{ZSM} (mA)	I_{ZM} (mA)
ZM4728APF	3.3	3.14	3.47	76	10	400	1	150	1	1375	275
ZM4729APF	3.6	3.42	3.78	69	10	400	1	100	1	1260	252
ZM4730APF	3.9	3.71	4.10	64	9	400	1	100	1	1190	234
ZM4731APF	4.3	4.09	4.52	58	9	400	1	50	1	1070	217
ZM4732APF	4.7	4.47	4.94	53	8	500	1	10	1	970	193
ZM4733APF	5.1	4.85	5.36	49	7	550	1	10	1	890	178
ZM4734APF	5.6	5.32	5.88	45	5	600	1	10	2	810	162
ZM4735APF	6.2	5.89	6.51	41	2	700	1	10	3	730	146
ZM4736APF	6.8	6.46	7.14	37	3.5	700	1	10	4	660	133
ZM4737APF	7.5	7.13	7.88	34	4	700	0.5	10	5	605	121
ZM4738APF	8.2	7.79	8.61	31	4.5	700	0.5	10	6	550	110
ZM4739APF	9.1	8.65	9.56	28	5	700	0.5	10	7	500	100
ZM4740APF	10	9.50	10.50	25	7	700	0.25	10	7.6	454	91
ZM4741APF	11	10.45	11.55	23	8	700	0.25	5	8.4	414	83
ZM4742APF	12	11.40	12.60	21	9	700	0.25	5	9.1	380	76
ZM4743APF	13	12.35	13.65	19	10	700	0.25	5	9.9	344	69
ZM4744APF	15	14.25	15.75	17	14	700	0.25	5	11.4	304	61
ZM4745APF	16	15.20	16.80	15.5	16	700	0.25	5	12.2	285	57
ZM4746APF	18	17.10	18.90	14	20	750	0.25	5	13.7	250	50
ZM4747APF	20	19.00	21.00	12.5	22	750	0.25	5	15.2	225	45
ZM4748APF	22	20.90	23.10	11.5	23	750	0.25	5	16.7	205	41
ZM4749APF	24	22.80	25.20	10.5	25	750	0.25	5	18.2	190	38
ZM4750APF	27	25.65	28.35	9.5	35	750	0.25	5	20.6	170	34
ZM4751APF	30	28.50	31.50	8.5	40	1000	0.25	5	22.8	150	30
ZM4752APF	33	31.35	34.65	7.5	45	1000	0.25	5	25.1	135	27
ZM4753APF	36	34.20	37.80	7	50	1000	0.25	5	27.4	125	25
ZM4754APF	39	37.05	40.95	6.5	60	1000	0.25	5	29.7	115	23
ZM4755APF	43	40.85	45.15	6	70	1500	0.25	5	32.7	110	22
ZM4756APF	47	44.65	49.35	5.5	80	1500	0.25	5	35.8	95	19

[1] The dynamic resistance is derived from the 60 Hz AC voltage which results when an AC current having an RMS value equal to 10% of the Zener Current (I_{ZT} or I_{ZK}) is superimposed on I_{ZT} or I_{ZK}. Dynamic resistance is measured at two points to insure a sharp knee on the breakdown curve and to eliminate unstable units.

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Characteristics at T_a = 25℃ (V_F max : 1.2 V at I_F = 200 mA)

Type	Zener Voltage [3]				Dynamic Resistance [1]			Reverse Current		Maximum Surge Current [4]	Maximum Regulator Current [2]
	V_{Znom}	V_Z		at I_{ZT}	Z_{ZT} at I_{ZT}	Z_{ZK}	at I_{ZK}	I_R	at V_R	at T_a = 25℃	
	(V)	Min. (V)	Max. (V)	(mA)	Max. (Ω)	Max. (Ω)	(mA)	Max. (μA)	(V)	I_{ZSM} (mA)	I_{ZM} (mA)
ZM4728BPF	3.3	3.23	3.37	76	10	400	1	150	1	1375	275
ZM4729BPF	3.6	3.53	3.67	69	10	400	1	100	1	1260	252
ZM4730BPF	3.9	3.82	3.98	64	9	400	1	100	1	1190	234
ZM4731BPF	4.3	4.21	4.39	58	9	400	1	50	1	1070	217
ZM4732BPF	4.7	4.61	4.79	53	8	500	1	10	1	970	193
ZM4733BPF	5.1	5.00	5.20	49	7	550	1	10	1	890	178
ZM4734BPF	5.6	5.49	5.71	45	5	600	1	10	2	810	162
ZM4735BPF	6.2	6.08	6.32	41	2	700	1	10	3	730	146
ZM4736BPF	6.8	6.66	6.94	37	3.5	700	1	10	4	660	133
ZM4737BPF	7.5	7.35	7.65	34	4	700	0.5	10	5	605	121
ZM4738BPF	8.2	8.04	8.36	31	4.5	700	0.5	10	6	550	110
ZM4739BPF	9.1	8.92	9.28	28	5	700	0.5	10	7	500	100
ZM4740BPF	10	9.80	10.20	25	7	700	0.25	10	7.6	454	91
ZM4741BPF	11	10.78	11.22	23	8	700	0.25	5	8.4	414	83
ZM4742BPF	12	11.76	12.24	21	9	700	0.25	5	9.1	380	76
ZM4743BPF	13	12.74	13.26	19	10	700	0.25	5	9.9	344	69
ZM4744BPF	15	14.70	15.30	17	14	700	0.25	5	11.4	304	61
ZM4745BPF	16	15.68	16.32	15.5	16	700	0.25	5	12.2	285	57
ZM4746BPF	18	17.64	18.36	14	20	750	0.25	5	13.7	250	50
ZM4747BPF	20	19.60	20.40	12.5	22	750	0.25	5	15.2	225	45
ZM4748BPF	22	21.56	22.44	11.5	23	750	0.25	5	16.7	205	41
ZM4749BPF	24	23.52	24.48	10.5	25	750	0.25	5	18.2	190	38
ZM4750BPF	27	26.46	27.54	9.5	35	750	0.25	5	20.6	170	34
ZM4751BPF	30	29.40	30.60	8.5	40	1000	0.25	5	22.8	150	30
ZM4752BPF	33	32.34	33.66	7.5	45	1000	0.25	5	25.1	135	27
ZM4753BPF	36	35.28	36.72	7	50	1000	0.25	5	27.4	125	25
ZM4754BPF	39	38.22	39.78	6.5	60	1000	0.25	5	29.7	115	23
ZM4755BPF	43	42.14	43.86	6	70	1500	0.25	5	32.7	110	22
ZM4756BPF	47	46.06	47.94	5.5	80	1500	0.25	5	35.8	95	19

[1] The dynamic resistance is derived from the 60 Hz AC voltage which results when an AC current having an RMS value equal to 10% of the Zener Current (I_{ZT} or I_{ZK}) is superimposed on I_{ZT} or I_{ZK}. Dynamic resistance is measured at two points to insure a sharp knee on the breakdown curve and to eliminate unstable units.

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Dated: 12/10/2021 Rev: 01

Electrical Characteristics Curves

Fig 1. Zener Characteristics Curve

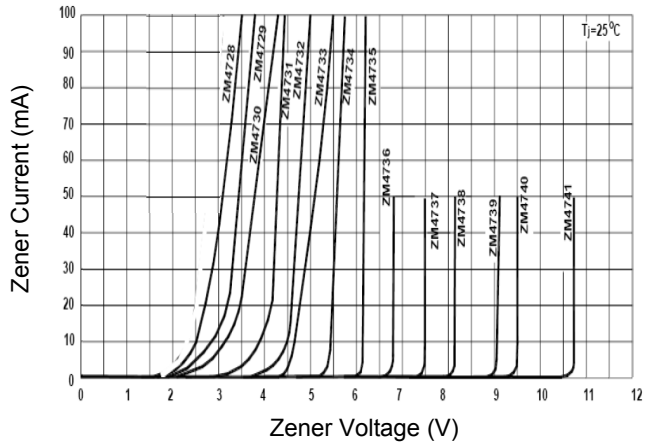

Fig 2. Zener Characteristics Curve

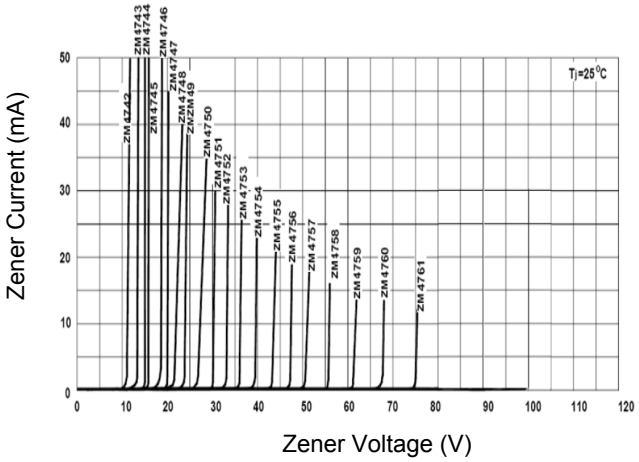

Fig 3. Power Derating Curve