

N-Series Z-Power™ Terminations

Data Sheet | ver. - 07/2026

High Power AℓN Thick Film RF Termination

HI PWR

ULR

RoHS

Sn62

NON-MAG

BONDABLE

Utilizing a tapered resistor body on an AℓN substrate, Z-Power™ terminations achieve equivalent power and improved frequency response when compared to rectangular resistors of equivalent size and are available in traditional orientation as well as in "reverse aspect". Available with either a precision scrub cut (Z), or as a higher tolerance "fired to value" element (V), the Z-Power™ family is intended for high power / advanced RF systems, or as an alternative to expensive diamond (CVD) terminations.

FEATURES

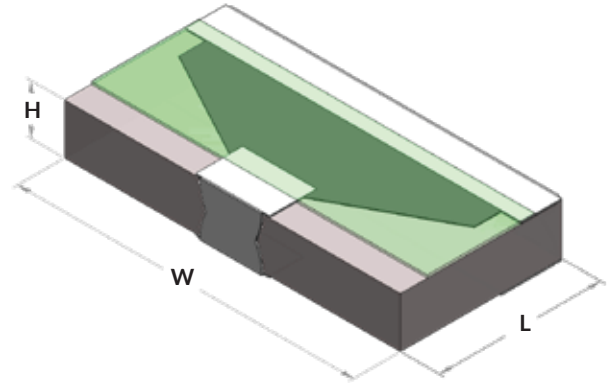
- Trapezoidal resistor body with low impedance ground terminal
- Non-magnetic terminals
- SnPb & RoHS solder pre-tin available
- Ultra Leach Resistant (ULR) option available
- Bondable configuration available

SPECIFICATIONS

ITEM	SPECIFICATION
System Impedance:	50Ω Nominal
DC Resistance (EZW/SZG):	50Ω ± 2% or 5%
DC Resistance (EVW/SVG):	62Ω ± 20%
Operating Temp:	-55°C to 150°C
Storage Temp:	-65°C to 150°C
Thermal Conductivity	K=170 W/m-°K @ 25°C
Architecture:	Thick Film on AℓN
Attachment:	Solder, Epoxy, Wirebond
End of Life	No E.O.L. Planned
Moisture Level	Level 1

APPLICATIONS

- Circulators
- Isolators
- Broadband Amplifiers



DIMENSIONS

All dimensions are in inches

	SIZE	NOMINAL		MAX HEIGHT 'H' ¹		
		LENGTH 'L'	WIDTH 'W'	'C'	'D'	'G'
REVERSE ASPECT	0510	.050	.100	.015	.020	N/A
	1020	.100	.200	N/A	.020	N/A
	1225	.126	.250	N/A	.020	.035
	2537	.250	.375	N/A	.020	.035
STANDARD	2010	.197	.098	N/A	.020	N/A
	2512	.250	.120	N/A	.020	.035
	3725	.375	.250	N/A	.020	.035

¹Substrate Thickness

C=.010"

D=.015"

G=.025"

N/A - Not Available

TERMINAL STYLE AVAILABILITY

	SIZE	SZG	EZW	SVG	EVW
REVERSE ASPECT	0510	•	•	•	•
	1020	•	•	•	•
	1225	•	•	•	•
	2537	•	•	•	•
STANDARD	2010	•	•	•	•
	2512	•	•	•	•
	3725	•	•	•	•

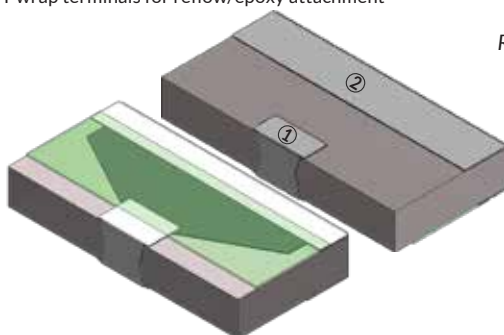
• Indicates Availability

Modelithics data available

TERMINAL STYLE AVAILABILITY & FUNCTION

EZW / EVW - Extended Wraparound²

SMT wrap terminals for reflow/epoxy attachment

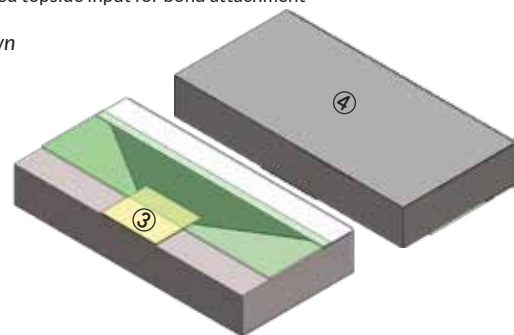


Reverse aspect case sizes shown

Terminal Function
①- Input (SMD)
②- Ground
③- Input (Wirebond)
④- Ground

SZG / SVG - Single Wrap to Ground³

Isolated topside input for bond attachment⁴



²EVW style shown (no trim)

³SVG style shown (no trim)

⁴7" metal code shown (for Au bond)

Consult the factory about other values, case sizes, substrate thickness, or terminal style capabilities



International Manufacturing Services, Inc.
(401) 683-9700 | www.ims-resistors.com

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Specifications subject to change without notice.

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High Power ALN Thick Film RF Termination

POWER RATING ESTIMATES

CONDUCTIVE HEAT MODEL

EZW / EVW terminals are typically reflow attached to a termination landing containing a via array to metal groundplane.

In this application environment, thermal resistances from the gnd via structure will constrain the maximum power dissipation potential in the system as a function of operating temperature and with respect to inherent material properties and geometry.

SZG / SVG termination styles are intended for wire or ribbon bond input, where the fully metallized backplane is attached to *either* a PCB via ground structure, or directly to a bulk metal plate, encasement, or other grounded metal structure.

The following tables provide typical thermal performance estimates by case size, PCB thickness, and via parameters assuming a maximum operating film temp of 150°C in a continuous wave RF signal application. Stated values assume steady state operation, and do not account for thermal effects of PCB type, lateral heat spreading, convection, or attachment material (unless otherwise specified).

Environments presented include 10 mil and 30 mil PCB constructions using either plated vias or copper slug vias.

Via hole diameter is assumed to be .012" for case sizes smaller than 3725 / 2537, and .020" in for 3725 / 2537.

Plated vias assume 1 oz copper plating. Both via plating and copper slugs are assigned a copper thermal conductivity of 320 W/m²K.

10MIL THICK RO4350B (EZW & EVW)

APPLICATION ENVIRONMENT				10MIL PCB W/ PLATED VIAS									10MIL PCB W/ SLUG VIAS								
SUBSTRATE THICKNESS				.010" (C)			.015" (D)			.025" (G)			.010" (C)			.015" (D)			.025" (G)		
BASEPLATE TEMPERATURE				50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C
CASE SIZE	REVERSE ASPECT	0510	EZW	8	6	4	7	5	3				14	10	6	11	8	5			
			EVW	11	8	5	10	7	5				20	14	9	16	12	7			
		1020	EZW				37	27	17							64	46	29			
			EVW				52	38	25							91	65	42			
	STANDARD	1225	EZW				45	33	22	38	28	18				78	56	36	59	42	26
			EVW				65	47	31	54	39	25				112	80	51	84	60	38
		2537	EZW				114	84	55	101	73	48				277	199	127	208	148	93
			EVW				163	120	79	144	105	68				395	284	181	297	211	133
	3725	2010	EZW				31	22	15							53	38	25			
			EVW				44	32	21							76	55	35			
		2512	EZW				44	33	21	38	27	18				78	56	36	59	42	27
			EVW				64	47	30	54	39	25				111	80	51	85	60	38
	3725		EZW				106	79	52	98	72	47				301	219	141	243	175	112
			EVW				151	112	74	140	103	68				429	312	202	347	250	160

All values supplied in watts (W)

30MIL THICK RO4350B (EZW & EVW)

APPLICATION ENVIRONMENT				30MIL PCB W/ PLATED VIAS									30MIL PCB W/ SLUG VIAS								
SUBSTRATE THICKNESS				.010" (C)			.015" (D)			.025" (G)			.010" (C)			.015" (D)			.025" (G)		
BASEPLATE TEMPERATURE				50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C
CASE SIZE	REVERSE ASPECT	0510	EZW	3	2	2	3	2	1				7	5	3	6	4	3			
			EVW	5	3	2	4	3	2				10	7	5	9	6	4			
		1020	EZW				15	11	7							31	23	15			
			EVW				21	16	10							45	33	21			
	STANDARD	1225	EZW				19	14	9	17	13	8				39	29	19	33	24	16
			EVW				27	20	13	25	18	12				55	41	27	48	35	22
		2537	EZW				44	33	22	42	31	21				138	102	66	119	86	56
			EVW				63	47	31	60	45	29				198	145	95	170	123	80
	3725	2010	EZW				13	9	6							26	19	13			
			EVW				18	13	9							37	27	18			
		2512	EZW				18	13	9	17	12	8				38	28	18	33	24	15
			EVW				26	19	13	24	18	12				54	40	26	47	34	22
	3725		EZW				39	29	19	37	28	18				131	97	64	119	87	57
			EVW				55	41	27	53	40	26				187	139	91	170	125	81

All values supplied in watts (W)

INSTALLED ON CONDUCTOR (SZG & SVG)

APPLICATION ENVIRONMENT					DIRECTLY ON CONDUCTOR (EPOXY ¹)									DIRECTLY ON CONDUCTOR (SOLDER ²)								
SUBSTRATE THICKNESS					.010" (C)			.015" (D)			.025" (G)			.010" (C)			.015" (D)			.025" (G)		
BASEPLATE TEMPERATURE					50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C
CASE SIZE	REVERSE ASPECT	0510	TERMINAL STYLE	SZG	11	8	5	10	8	5				56	39	25	40	28	17			
				SVG	16	12	8	15	11	7				80	56	35	58	40	25			
		1020		SZG				44	32	21							169	118	73			
				SVG				62	46	30							242	168	105			
		1225		SZG				51	38	25	44	32	21				197	138	85	126	87	54
				SVG				73	54	35	64	46	30				282	197	122	180	125	77
	2537	SZG					177	130	85	154	112	73				683	476	296	436	303	187	
		SVG					252	186	121	220	161	104				976	681	422	623	433	267	
	STANDARD	2010		SZG				39	29	19							150	105	65			
				SVG				56	41	27							215	150	93			
		2512		SZG				59	43	28	51	38	24				228	159	99	146	101	63
				SVG				84	62	41	74	54	35				326	227	141	208	145	89
		3725		SZG				175	129	84	153	111	72				676	472	293	432	300	185
				SVG				250	184	120	218	159	103				966	674	418	617	428	265

¹Epoxy Attachment assumes K=2.5W/m²K @0.001" thickness

²Solder attachment assumes K=50 W/m²K @0.001" thickness

All values supplied in watts (W)

10MIL THICK RO4350B (SZG & SVG)

APPLICATION ENVIRONMENT					10MIL PCB W/ PLATED VIAS									10MIL PCB W/ SLUG VIAS								
SUBSTRATE THICKNESS					.010" (C)			.015" (D)			.025" (G)			.010" (C)			.015" (D)			.025" (G)		
BASEPLATE TEMPERATURE					50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C
CASE SIZE	REVERSE ASPECT	0510	TERMINAL STYLE	SZG	13	10	6	12	9	6				25	18	12	21	15	10			
				SVG	19	14	9	17	12	8				36	26	17	30	22	14			
		1020		SZG				42	31	20							78	57	36			
				SVG				60	44	29							112	81	52			
		1225		SZG				48	36	23	42	31	20				90	66	42	72	51	33
				SVG				69	51	33	61	44	29				129	94	60	103	74	47
	STANDARD	2537		SZG				122	91	60	111	82	53				328	237	153	258	185	118
				SVG				175	129	85	159	117	76				469	339	218	369	264	168
		2010		SZG				38	28	18							70	51	33			
				SVG				54	40	26							100	72	47			
		2512		SZG				51	38	25	46	33	22				98	71	46	79	57	36
				SVG				74	54	36	65	48	31				140	102	66	113	81	52
	3725	SZG					122	90	59	111	81	53				327	236	152	257	184	117	
		SVG					175	129	85	158	116	76				467	338	217	367	262	167	

All values supplied in watts (W)

30MIL THICK RO4350B(SZG & SVG)

APPLICATION ENVIRONMENT					30MIL PCB W/ PLATED VIAS									30MIL PCB W/ SLUG VIAS								
SUBSTRATE THICKNESS					.010" (C)			.015" (D)			.025" (G)			.010" (C)			.015" (D)			.025" (G)		
BASEPLATE TEMPERATURE					50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C	50°C	75°C	100°C
CASE SIZE	REVERSE ASPECT	0510	TERMINAL STYLE	SZG	5	4	2	5	4	2				11	8	5	10	7	5			
				SVG	7	5	3	7	5	3				16	12	8	14	11	7			
		1020		SZG				16	12	8							35	26	17			
				SVG				23	17	11							50	37	24			
		1225		SZG				19	14	9	18	13	9				41	30	20	36	27	17
				SVG				27	20	13	25	19	12				58	43	28	52	38	25
	2537	SZG					45	34	22	44	33	22				150	111	73	134	98	64	
		SVG					65	48	32	62	46	31				215	158	104	191	140	91	
	STANDARD	2010		SZG				15	11	7							32	23	15			
				SVG				21	16	10							45	33	22			
		2512		SZG				20	15	10	19	14	9				43	32	21	39	29	19
				SVG				28	21	14	27	20	13				62	46	30	56	41	27
		3725		SZG				45	34	22	44	33	21				150	111	72	133	98	63
				SVG				65	48	32	62	46	31				214	158	104	190	139	91

All values supplied in watts (W)

RF PERFORMANCE ESTIMATES- RANGE OF -15DB to -10DB RETURN LOSS (GHz)

Estimated frequency ranges for EZW & EVW styles assume a matched 50Ω input trace, and convey the range (GHz) where Return Loss (S11) is likely to fall between -15dB and -10dB, respectively. Designers may assume Return Loss is below -15dB at frequencies lower than the first value reported for each respective case size and PCB substrate thickness.

Estimates provided are across multiple component and assumed PCB thicknesses to offer designers additional guidance during initial product evaluation. While it may be possible to exceed these estimates by utilizing tuning techniques in the application environment, designers are encouraged to consider the RF impact of using substantially thicker or thinner PCB material than is indicated in the following table.

SUBSTRATE THICKNESS				.010" (C)		.015" (D)		.025" (G)	
ROGERS 4350B THICKNESS				.010"	.030"	.010"	.030"	.010"	.030"
CASE SIZE	REVERSE ASPECT	0510	EZW	15.0 to 20.0	12.5 to 16.5	12.5 to 17.0	10.5 to 13.5		
			EVW	12.0 to 20.0	14.0 to 18.0	17.5 to 24.0	11.5 to 18.5		
		1020	EZW			6.5 to 10.0	10.0 to 14.0		
			EVW			6.5 to 10.0	10.0 to 18.0		
		1225	EZW			5.5 to 8.0	7.5 to 11.5	4.5 to 6.5	5.0 to 7.5
			EVW			5.5 to 8.0	7.0 to 16.0	4.5 to 6.5	5.0 to 9.0
	STANDARD	2537	EZW			3.5 to 6.5	5.5 to 9.5	4.0 to 8.0	6.5 to 11.0
			EVW			2.0 to 12.0	8.0 to 13.0	2.0 to 8.0	4.0 to 12.0
		2010	EZW			4.0 to 5.5	5.0 to 7.0		
			EVW			2.5 to 6.0	4.5 to 9.0		
		2512	EZW			2.0 to 3.5	4.5 to 6.0	2.0 to 3.5	2.0 to 4.0
			EVW			2.0 to 3.5	2.0 to 6.5	2.0 to 3.5	1.5 to 4.5
		3725	EZW			0.1 to 1.0	1.5 to 3.0	1.0 to 1.8	2.5 to 3.5
			EVW			0.1 to 1.0	0.1 to 1.5	0.1 to 1.5	0.1 to 3.5

SZG & SVG Termination variants intended for Au wire or Cu/Sn ribbon bond attachment can be expected to perform similarly to the RF ranges indicated above. In such application environments, designers are encouraged to consider the impact of RF effects that the chosen attachment method can introduce. It may be possible to fall short of or exceed the stated values by tuning a variety of attachment parameters which are part independent and application driven.

IMS recommends customers perform their own evaluation, which may include tuning and simulation of input trace or wire bond structures.

HEAT FLUX COMPARISON - 'Z' vs. 'V' TRIM CODES

IMS offers Z-Power terminations with two distinct trim style codes, 'Z' and 'V'.

Parts carrying the 'Z' code utilize a laser "scrub cut" to achieve 50Ω with 5% and 2% tolerance.

The newer 'V' code offerings are distinguished by being offered as "fired to value" (FTV) components with a value of 62Ω at 20% tolerance.

Despite the higher tolerance and 62Ω nominal DC value on 'V' code parts, the conserved cross-sectional area (CSA) of the resistor film, the RF properties of trapezoidal geometries with an input pad facilitating a 50Ω impedance connection, these parts may exceed traditional design expectations offering suitable broadband RF performance and *enhanced pulse power handling* in the most demanding applications.

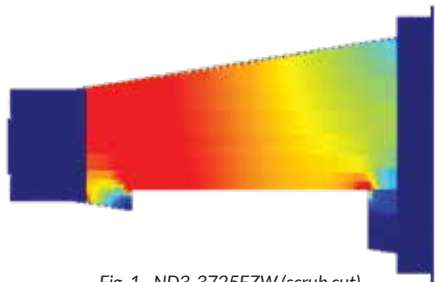


Fig. 1 - ND3-3725EZW (scrub cut)

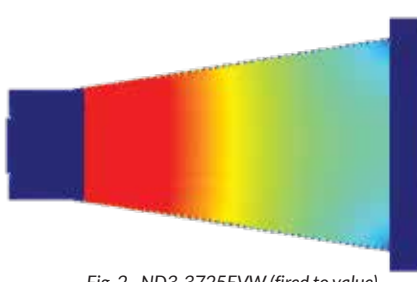


Fig. 2 - ND3-3725EVW (fired to value)

Shown above are simulated "heat flux" maps present on 3725 case size 'V' vs. 'Z' trim code parts. The model assumes operation at 1.5GHz on materials where each part showed -15dB Return Loss. Evaluation of the maximum heat flux present on figures 1 and 2 suggests a 12 to 15% reduction of heat flux on 'V' code parts compared to 'Z' versions. Even though there are application, RF power, and signal environments where either style could be suitable, IMS recommends that customers consider the 'V' coded parts after evaluation of 'Z' code parts has taken place.

Contact techsupport@ims-resistors for S-parameters and guidance regarding specific application environments.

N-Series Z-Power™ Terminations

High Power AlN Thick Film RF Termination

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NOMINAL TERMINAL DIMENSIONS¹ & PCB LANDING EXAMPLES

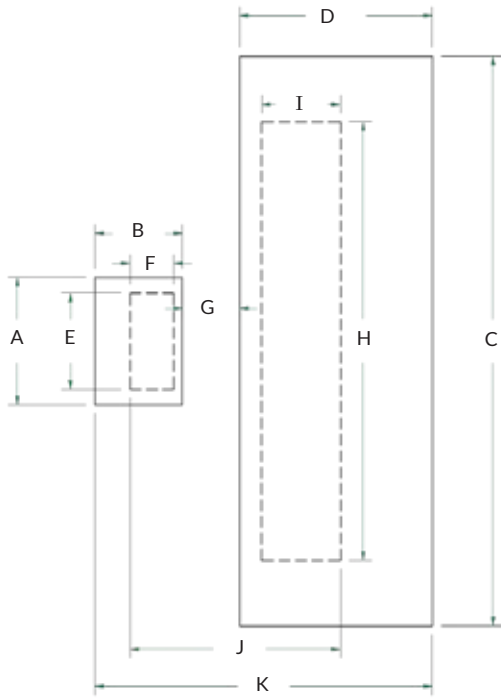
PCB landing examples are provided to offer designers a starting point for layout of Z-Power terminations in their application. The following is not intended to convey any specific claims of RF performance or heat sinking potential in arbitrary application environments.

SIZE		EZW & EVW (REFLOW/EPOXY)									SZG & SVG (BOND INPUT)			
		A	B	C	D	E	F	G	H	I	J	K	L	M (MIN)
REVERSE ASPECT	0510	.028	.024	.116	.052	.022	.010	.015	.100	.018	.050	.081	.022	.006
	1020	.035	.028	.220	.088	.025	.013	.024	.200	.061	.100	.125	.025	.008
	1225	.082	.044	.266	.102	.070	.026	.019	.250	.074	.125	.155	.030	.013
	2537	.090	.044	.415	.237	.075	.026	.024	.375	.194	.250	.295	.050	.010
STANDARD	2010	.060	.047	.114	.163	.050	.032	.024	.100	.136	.200	.224	.050	.013
	2512	.074	.063	.140	.203	.060	.044	.022	.120	.174	.250	.278	.050	.023
	3725	.090	.045	.266	.290	.075	.075	.030	.250	.260	.375	.405	.100	.034

¹All dimensions are in inches

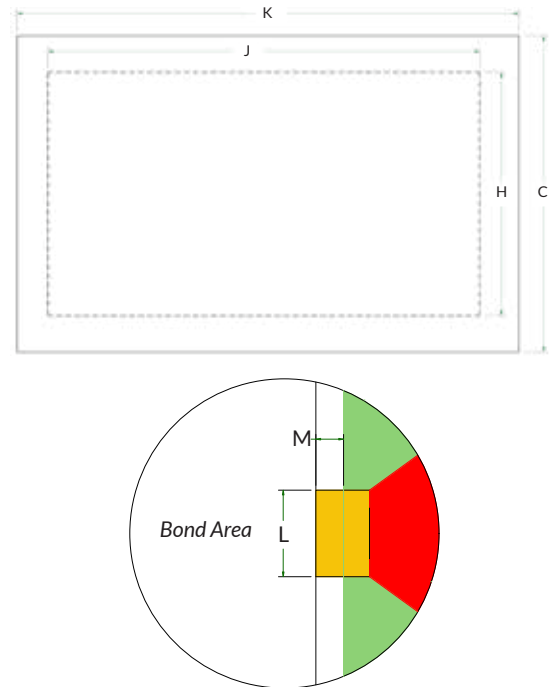
EVW- Extended Wraparound

SMT wrap terminals for reflow/epoxy attachment



SVG - Single Wrap to Ground

Isolated topside input for bond attachment



ORDERING INFORMATION

Example: 62Ω DC, ± 20%, 0510 trimless trapezoidal 50Ω termination with wrapped terminals

Prefix	N D 3 -	0510	EVW	62R0	M	Tolerance
AlN Thick Film Termination						G - 2% J - 5% M - 20%
Substrate Thickness						Resistance value
C - 0.010"						First 3 digits - significant values
D - 0.015"						4th digit - number of following zeros
G - 0.025"						R - Decimal point when value < 100Ω.
Terminal Material						Style
3 - PtAg	Case Size	0510				EZW EVW - Reflow / Epoxy
C - PtAg w/ Sn62 Solder						SZG SVG - Reflow / Epoxy / Bond
P - PtAg w/ Sn96 Solder		2010 1020				Z - Scrub Cut
8 - ULR PtAg		2512 1225				V - Fired To Value
H - ULR PtAg w/ Sn62 Solder		3725 2537				
R - ULR PtAg w/ Sn96 Solder						
7 - Au over PtAu (input) PtAu (ground)						

For packaging options please visit our website
www.ims-resistors.com/packaging

RoHS Compliant = ☒

ULR = Ultra Leach Resistant

