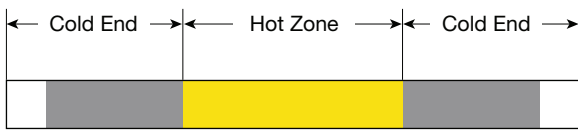


Type E2



Metallized Width

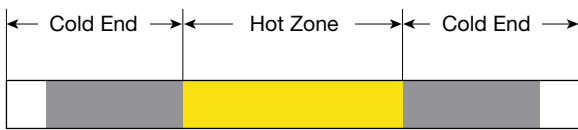
Outside diameter (mm)	Metallized Length (mm)
ø16	(30)
ø20 to 30	(50)

Number	Size				Hot Zone surface area cm ²	Nominal loading values*		
	External diameter	Hot Zone Length	Cold End Length	Overall Length		Volts	Watts	Ohms
	mm	mm	mm	mm				
E2-163025	16	300	250	800	150	64	2430	1.69
E2-163035		300	350	1000	150	66	2510	1.74
E2-164025		400	250	900	201	83	3150	2.19
E2-164030		400	300	1000	201	84	3190	2.21
E2-164035		400	350	1100	201	86	3270	2.26
E2-164530		450	300	1050	226	94	3570	2.48
E2-165025		500	250	1000	251	103	3910	2.71
E2-166025		600	250	1100	301	122	4640	3.21
E2-203030	20	300	300	900	188	59	3160	1.10
E2-204030		400	300	1000	251	77	4120	1.44
E2-204035		400	350	1100	251	78	4170	1.46
E2-204040		400	400	1200	251	79	4230	1.48
E2-204535		450	350	1150	282	87	4650	1.63
E2-204540		450	400	1250	282	88	4710	1.64
E2-205030		500	300	1100	314	94	5030	1.76
E2-205040		500	400	1300	314	97	5190	1.81
E2-207030		700	300	1300	439	130	6960	2.43
E2-208045		800	450	1700	502	151	8080	2.82
E2-254030	25	400	300	1000	314	68	4860	0.95
E2-254040		400	400	1200	314	70	5010	0.98
E2-254540		450	400	1250	353	78	5580	1.09
E2-255030		500	300	1100	392	84	6010	1.17
E2-255040		500	400	1300	392	86	6150	1.20
E2-256030		600	300	1200	471	100	7150	1.40
E2-257040		700	400	1500	549	118	8440	1.65
E2-257045		700	450	1600	549	119	8510	1.66
E2-258030		800	300	1400	628	132	9440	1.85
E2-258035		800	350	1500	628	133	9510	1.86
E2-258040	800	400	1600	628	134	9580	1.87	
E2-258050	800	500	1800	628	136	9720	1.90	
E2-306035	30	600	350	1300	565	92	8600	0.98
E2-306040		600	400	1400	565	93	8700	0.99
E2-307030		700	300	1300	659	106	9910	1.13
E2-307045		700	450	1600	659	108	10100	1.15
E2-308030		800	300	1400	753	120	11200	1.29
E2-308040		800	400	1600	753	122	11400	1.31
E2-309030		900	300	1500	848	135	12600	1.45
E2-309040		900	400	1700	848	136	12700	1.46
E2-301030		1000	300	1600	942	149	13900	1.60

* Nominal loading values are measured at 1000°C in open air. The tolerance range is ±15% of center current value by converting into current value.

* Pre-shipment heat generation tests are conducted in open air with the heating element surface temperature at 850°C.

Type E2-DV



Metallized Width

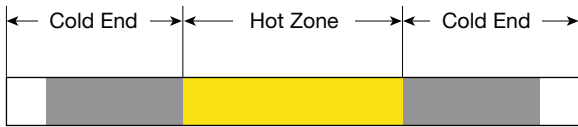
Outside diameter (mm)	Metallized Length (mm)
ø16	(30)
ø20 or more	(50)

Number	Size				Hot Zone surface area cm ²	Nominal loading values*			
	External diameter	Hot Zone Length	Cold End Length	Overall Length		Volts	Watts	Ohms	
	mm	mm	mm	mm					
E2-DV-161520	16	150	200	550	75	39	1330	1.14	
E2-DV-162020		200	200	600	101	50	1700	1.47	
E2-DV-162520		250	200	650	126	61	2070	1.80	
E2-DV-163020		300	200	700	150	72	2450	2.12	
E2-DV-163025		300	250	800	150	74	2520	2.17	
E2-DV-163030		300	300	900	150	76	2580	2.24	
E2-DV-164025		400	250	900	200	96	3260	2.83	
E2-DV-164030		400	300	1000	200	98	3330	2.88	
E2-DV-164525		450	250	950	225	107	3640	3.15	
E2-DV-165025		500	250	1000	250	118	4010	3.47	
E2-DV-165030		500	300	1100	250	120	4080	3.53	
E2-DV-166025		600	250	1100	300	140	4760	4.12	
E2-DV-203020		20	300	200	700	188	65	3120	1.35
E2-DV-203025			300	250	800	188	66	3170	1.37
E2-DV-203030	300		300	900	188	68	3260	1.42	
E2-DV-203040	300		400	1100	188	71	3410	1.48	
E2-DV-204025	400		250	900	251	86	4130	1.79	
E2-DV-204030	400		300	1000	251	88	4220	1.84	
E2-DV-204035	400		350	1100	251	90	4320	1.88	
E2-DV-204040	400		400	1200	251	91	4370	1.89	
E2-DV-204535	450		350	1150	283	100	4800	2.08	
E2-DV-205030	500		300	1100	314	108	5180	2.25	
E2-DV-205040	500		400	1300	314	111	5330	2.31	
E2-DV-206030	600		300	1200	376	128	6140	2.67	
E2-DV-207030	700		300	1300	439	148	7100	3.09	
E2-DV-208030	800		300	1400	502	168	8060	3.50	
E2-DV-254030	25	400	300	1000	314	76	4940	1.17	
E2-DV-254040		400	400	1200	314	79	5140	1.21	
E2-DV-255030		500	300	1100	392	94	6110	1.45	
E2-DV-255040		500	400	1300	392	97	6310	1.49	
E2-DV-256025		600	250	1100	470	110	7150	1.69	
E2-DV-256030		600	300	1200	470	111	7220	1.71	
E2-DV-257030		700	300	1300	550	129	8390	1.98	
E2-DV-257035		700	350	1400	550	130	8450	2.00	
E2-DV-257040		700	400	1500	550	131	8520	2.01	
E2-DV-307030		30	700	300	1300	660	117	10100	1.36
E2-DV-307040	700		400	1500	660	119	10200	1.39	
E2-DV-308030	800		300	1400	750	133	11400	1.55	

* Nominal loading values are measured at 1000°C in open air. The tolerance range is ±15% of center current value by converting into current value.

* Pre-shipment heat generation tests are conducted in open air with the heating element surface temperature at 1000°C.

Type F2



Metallized Width

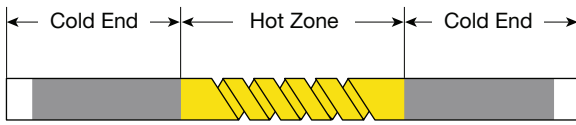
Outside diameter (mm)	Metallized Length (mm)
ø35 or more	(50)

Number	Size				Hot Zone surface area cm ²	Nominal loading values*			
	External diameter	Hot Zone Length	Cold End Length	Overall Length		Volts	Watts	Ohms	
	mm	mm	mm	mm					
F2-354040	35	400	400	1200	439	64	6850	0.60	
F2-355030		500	300	1100	549	78	8350	0.73	
F2-355035		500	350	1200	549	79	8450	0.74	
F2-355040		500	400	1300	549	79	8450	0.74	
F2-356035		600	350	1300	659	94	10100	0.87	
F2-356040		600	400	1400	659	94	10100	0.87	
F2-356050		600	500	1600	659	96	10300	0.89	
F2-357040		700	400	1500	769	109	11700	1.02	
F2-358035		800	350	1500	879	124	13300	1.16	
F2-351040		1000	400	1800	1099	154	16500	1.44	
F2-351430		1400	300	2000	1539	213	22800	1.99	
F2-406045		40	600	450	1500	753	88	11500	0.67
F2-407050			700	500	1700	879	103	13500	0.79
F2-408040	800		400	1600	1005	115	15100	0.88	
F2-401035	1000		350	1700	1256	143	18700	1.09	
F2-451035	45	1000	350	1700	1413	117	19700	0.69	
F2-501540	50	1500	400	2300	2356	182	33900	0.98	

* Nominal loading values are measured at 1000°C in open air. The tolerance range is ±15% of center current value by converting into current value.

* Pre-shipment heat generation tests are conducted in open air with the heating element surface temperature at 850°C

Type SG



Metallized Width

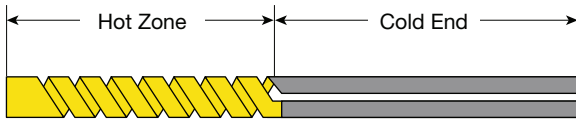
Outside diameter (mm)	Metallized Length (mm)
ø14 to 16	(30)
ø20 or more	(50)

Number	Size				Hot Zone surface area cm ²	Nominal loading values*		
	External diameter	Hot Zone Length	Cold End Length	Overall Length		Volts	Watts	Ohms
	mm	mm	mm	mm				
G-142020	14	200	200	600	87	59	1650	2.11
G-142025		200	250	700	87	60	1680	2.14
G-142520		250	200	650	109	71	1990	2.53
G-142525		250	250	750	109	73	2040	2.61
G-143025		300	250	800	131	85	2380	3.04
G-162025	16	200	250	700	100	58	1970	1.71
G-162520		250	200	650	125	69	2350	2.03
G-162525		250	250	750	125	70	2380	2.06
G-162530		250	300	850	125	71	2410	2.09
G-163020		300	200	700	150	81	2750	2.39
G-163025		300	250	800	150	82	2790	2.41
G-163030		300	300	900	150	83	2820	2.44
G-163525		350	250	850	175	94	3200	2.76
G-163530		350	300	950	175	95	3230	2.79
G-203040		20	300	400	1100	188	84	3440
G-203540	350		400	1150	219	97	3980	2.36
G-204040	400		400	1200	251	109	4470	2.66
G-204540	450		400	1250	282	121	4960	2.95
G-253040	25	300	400	1100	235	84	4120	1.71
G-253050		300	500	1300	235	86	4210	1.76
G-254040		400	400	1200	314	110	5390	2.24
G-255040		500	400	1300	392	135	6620	2.75
G-303040	30	300	400	1100	282	79	4980	1.25
G-303050		300	500	1300	282	80	5040	1.27
G-304040		400	400	1200	376	103	6490	1.63
G-304050		400	500	1400	376	104	6550	1.65
G-305040		500	400	1300	471	127	8000	2.02
G-306040		600	400	1400	565	151	9510	2.40
G-354040	35	400	400	1200	439	101	7680	1.33
G-354050		400	500	1400	439	102	7750	1.34
G-355040		500	400	1300	549	124	9420	1.63
G-355050		500	500	1500	549	125	9500	1.64
G-356040		600	400	1400	659	148	11200	1.96
G-357040		700	400	1500	769	171	13000	2.25
G-405040	40	500	400	1300	628	116	10700	1.26
G-405050		500	500	1500	628	117	10800	1.27
G-406040		600	400	1400	753	138	12700	1.50
G-406045		600	450	1500	753	139	12800	1.51
G-407040		700	400	1500	879	161	14800	1.75
G-457045	45	700	450	1600	989	149	16800	1.32
G-458040		800	400	1600	1130	168	19000	1.49

* Nominal loading values are measured at 1000°C in open air. The tolerance range is ±15% of center current value by converting into current value.

* Pre-shipment heat generation tests are conducted in open air with the heating element surface temperature at 1000°C.

Type SGR



Metallized Width

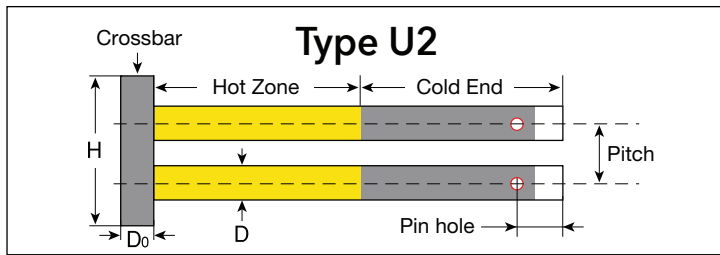
Outside diameter (mm)	Metallized Length (mm)
ø16	(30)
ø20 or more	(50)

Number	Size				Hot Zone surface area cm ²	Nominal loading values*		
	External diameter	Hot Zone Length	Cold End Length	Overall Length		Volts	Watts	Ohms
	mm	mm	mm	mm				
GR-161015	16	100	150	250	50	61	940	3.96
GR-161020		100	200	300	50	69	1060	4.49
GR-161025		100	250	350	50	77	1190	4.98
GR-161515		150	150	300	75	84	1290	5.47
GR-161520		150	200	350	75	91	1400	5.92
GR-161525		150	250	400	75	99	1520	6.45
GR-162015		200	150	350	100	106	1630	6.89
GR-162020		200	200	400	100	113	1740	7.34
GR-162025		200	250	450	100	121	1860	7.87
GR-162515		250	150	400	125	128	1970	8.32
GR-162520		250	200	450	125	135	2080	8.76
GR-162525		250	250	500	125	143	2200	9.30
GR-162530		250	300	550	125	151	2330	9.79
GR-201015		20	100	150	250	62	58	1110
GR-201020	100		200	300	62	65	1250	3.38
GR-201025	100		250	350	62	72	1380	3.76
GR-201515	150		150	300	94	80	1540	4.16
GR-201520	150		200	350	94	87	1670	4.53
GR-201525	150		250	400	94	94	1800	4.91
GR-202015	200		150	350	125	102	1960	5.31
GR-202020	200		200	400	125	109	2090	5.68
GR-202025	200		250	450	125	116	2230	6.03
GR-202515	250		150	400	157	124	2380	6.46
GR-202520	250		200	450	157	131	2520	6.81
GR-202525	250		250	500	157	138	2650	7.19
GR-203020	300		200	500	188	153	2940	7.96
GR-203025	300		250	550	188	160	3070	8.34
GR-251520	25	150	200	350	117	87	2000	3.78
GR-251525		150	250	400	117	92	2120	3.99
GR-251530		150	300	450	117	98	2250	4.27
GR-252020		200	200	400	157	110	2530	4.78
GR-252025		200	250	450	157	115	2650	4.99
GR-252030		200	300	500	157	121	2780	5.27
GR-252520		250	200	450	196	133	3060	5.78
GR-252525		250	250	500	196	139	3200	6.04
GR-252530		250	300	550	196	144	3310	6.26
GR-253030		300	300	600	235	167	3840	7.26
GR-253035		300	350	650	235	173	3980	7.52
GR-253040		300	400	700	235	179	4120	7.78
GR-253530		350	300	650	274	191	4390	8.31
GR-253535		350	350	700	274	196	4510	8.52
GR-254030	400	300	700	314	214	4920	9.31	
GR-302020	30	200	200	400	188	90	2790	2.90
GR-302025		200	250	450	188	91	2820	2.94
GR-302030		200	300	500	188	91	2820	2.94
GR-302520		250	200	450	235	111	3440	3.58
GR-302525		250	250	500	235	111	3440	3.58
GR-302530		250	300	550	235	112	3470	3.61
GR-303030		300	300	600	282	132	4090	4.26
GR-303035		300	350	650	282	132	4090	4.26

Number	Size				Hot Zone surface area cm ²	Nominal loading values*			
	External diameter	Hot Zone Length	Cold End Length	Overall Length		Volts	Watts	Ohms	
	mm	mm	mm	mm					
GR-303040	30	300	400	700	282	133	4120	4.29	
GR-303530		350	300	650	329	153	4740	4.94	
GR-303535		350	350	700	329	153	4740	4.94	
GR-303540		350	400	750	329	153	4740	4.94	
GR-304030		400	300	700	376	173	5360	5.58	
GR-304035		400	350	750	376	173	5360	5.58	
GR-304040		400	400	800	376	174	5390	5.62	
GR-304530		450	300	750	424	193	5980	6.23	
GR-304535		450	350	800	424	194	6010	6.26	
GR-305030		500	300	800	471	214	6630	6.91	
GR-352020		35	200	200	400	219	89	3260	2.43
GR-352025			200	250	450	219	89	3260	2.43
GR-352030			200	300	500	219	90	3290	2.46
GR-352520			250	200	450	274	109	3990	2.98
GR-352525	250		250	500	274	109	3990	2.98	
GR-352530	250		300	550	274	110	4030	3.00	
GR-353030	300		300	600	329	130	4760	3.55	
GR-353035	300		350	650	329	131	4790	3.58	
GR-353040	300		400	700	329	131	4790	3.58	
GR-353530	350		300	650	384	150	5490	4.10	
GR-353535	350		350	700	384	151	5530	4.12	
GR-353540	350		400	750	384	151	5530	4.12	
GR-354030	400		300	700	439	171	6260	4.67	
GR-354035	400		350	750	439	171	6260	4.67	
GR-354040	400	400	800	439	172	6300	4.70		
GR-354530	450	300	750	494	191	6990	5.22		
GR-354535	450	350	800	494	191	6990	5.22		
GR-355030	500	300	800	549	211	7720	5.77		
GR-402020	40	200	200	400	251	86	3660	2.02	
GR-402025		200	250	450	251	87	3700	2.05	
GR-402030		200	300	500	251	87	3700	2.05	
GR-402520		250	200	450	314	106	4510	2.49	
GR-402525		250	250	500	314	107	4550	2.52	
GR-402530		250	300	550	314	107	4550	2.52	
GR-403030		300	300	600	376	127	5400	2.99	
GR-403035		300	350	650	376	127	5400	2.99	
GR-403040		300	400	700	376	127	5400	2.99	
GR-403530		350	300	650	439	147	6250	3.46	
GR-403535		350	350	700	439	147	6250	3.46	
GR-403540		350	400	750	439	147	6250	3.46	
GR-404030		400	300	700	502	167	7100	3.93	
GR-404035		400	350	750	502	167	7100	3.93	
GR-404040	400	400	800	502	167	7100	3.93		
GR-404530	450	300	750	565	186	7910	4.37		
GR-404535	450	350	800	565	187	7950	4.40		
GR-405030	500	300	800	628	206	8760	4.84		

* Nominal loading values are measured at 1000°C in open air. The tolerance range is ±20% of center current value by converting into current value.

* Pre-shipment heat generation tests are conducted in open air with the heating element surface temperature at 1000°C.



Metallized Width

Outside diameter (mm)	Metallized Length (mm)
ø16	(30)
ø20 or more	(50)

Crossbar size

D	16	20	25	30	35
Do	25	30	35	40	45
H	76	90	110	125	140

Note)1. Overall length of U-Type heating element: U-Type nominal length (Cold End Length+ Hot Zone Length) plus Crossbar Do.
 2. The value H shows the max. width of U-Type heating elements.

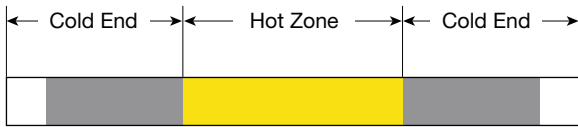
Number	Size				Hot Zone surface area cm ²	Nominal loading values*1			Standard pin hole location*2
	External diameter	Hot Zone Length	Cold End Length	Pitch		Voltage	Power	Resistance	
	mm	mm	mm	mm					
U2-163030	16	300	300	40	301	121	4600	3.18	40
U2-164030		400	300	40	402	160	6080	4.21	
U2-164040		400	400	40	402	163	6190	4.29	
U2-165030		500	300	40	502	200	7600	5.26	
U2-203040	20	300	400	50	376	112	5990	2.09	45
U2-203540		350	400	50	439	130	6960	2.43	
U2-204040		400	400	50	502	147	7860	2.75	
U2-204535		450	350	50	565	164	8770	3.07	
U2-205040		500	400	50	628	183	9790	3.42	
U2-205050		500	500	50	628	185	9900	3.46	
U2-206040		600	400	50	753	218	11700	4.06	
U2-206050		600	500	50	753	220	11800	4.10	
U2-207040		700	400	50	879	253	13500	4.74	
U2-207050		700	500	50	879	256	13700	4.78	
U2-208040	800	400	50	1005	289	15500	5.39	55	
U2-208050	800	500	50	1005	291	15600	5.43		
U2-254040	25	400	400	60	628	131	9370		1.83
U2-254050		400	500	60	628	133	9510		1.86
U2-254540		450	400	60	706	147	10500		2.06
U2-255040		500	400	60	785	163	11700		2.27
U2-255050		500	500	60	785	165	11800		2.31
U2-255540		550	400	60	863	179	12800		2.50
U2-256040		600	400	60	942	195	13900		2.74
U2-256050		600	500	60	942	197	14100		2.75
U2-257040		700	400	60	1099	227	16200	3.18	
U2-257050		700	500	60	1099	229	16400	3.20	
U2-258040	800	400	60	1256	259	18500	3.63	55	
U2-258050	800	500	60	1256	261	18700	3.64		
U2-305040	30	500	400	70	942	148	13800		1.59
U2-305050		500	500	70	942	150	14000		1.61
U2-306040		600	400	70	1130	177	16500		1.90
U2-306050		600	500	70	1130	179	16700		1.92
U2-307040		700	400	70	1319	206	19300		2.20
U2-307050		700	500	70	1319	208	19400		2.23
U2-308040		800	400	70	1507	235	22000		2.51
U2-308050		800	500	70	1507	237	22200		2.53
U2-309040		900	400	70	1696	264	24700	2.82	
U2-309050		900	500	70	1696	266	24900	2.84	
U2-301050	1000	500	70	1884	295	27600	3.15	60	
U2-356040	35	600	400	80	1319	179	19200		1.67
U2-356050		600	500	80	1319	181	19400		1.69
U2-357040		700	400	80	1539	209	22400		1.95
U2-357050		700	500	80	1539	211	22600		1.97
U2-358040		800	400	80	1759	239	25600		2.23
U2-358050		800	500	80	1759	240	25700		2.24
U2-359040		900	400	80	1979	269	28800		2.51
U2-359050		900	500	80	1979	270	28900		2.52
U2-351050		1000	500	80	2199	300	32100		2.80

*1 Nominal loading values are measured at 1000°C in open air. The tolerance range is ±15% of center current value by converting into current value.

*2 Pin hole diameter is optional.

* Pre-shipment heat generation tests are conducted in open air with the heating element surface temperature at 1000°C.

Type SA



Metallized Width

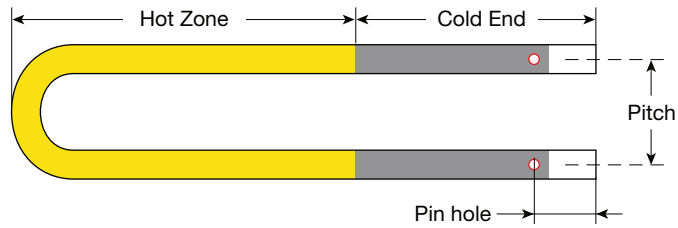
Outside diameter (mm)	Metallized Length (mm)
ø16	(30)
ø20 or more	(50)

Number	Size				Hot Zone surface area cm ²	Nominal loading values*		
	External diameter	Hot Zone Length	Cold End Length	Overall Length		Volts	Watts	Ohms
	mm	mm	mm	mm				
SA-161520	16	150	200	550	75	28	1430	0.55
SA-162020		200	200	600	101	36	1840	0.71
SA-162520		250	200	650	126	44	2240	0.86
SA-163020		300	200	700	150	51	2600	1.00
SA-163025		300	250	800	150	52	2650	1.02
SA-163030		300	300	900	150	53	2700	1.04
SA-164025		400	250	900	200	67	3420	1.31
SA-164030		400	300	1000	200	68	3470	1.33
SA-165025		500	250	1000	250	83	4230	1.63
SA-165030		500	300	1100	250	84	4280	1.65
SA-203020	20	300	200	700	188	43	3050	0.61
SA-203025		300	250	800	188	44	3120	0.62
SA-203030		300	300	900	188	45	3200	0.63
SA-204025		400	250	900	251	57	4050	0.80
SA-204030		400	300	1000	251	58	4120	0.82
SA-205030		500	300	1100	314	71	5040	1.00
SA-206030		600	300	1200	376	85	6040	1.20
SA-207030		700	300	1300	439	98	6960	1.38
SA-208030		800	300	1400	502	111	7880	1.56

* Nominal loading values are measured at 1000°C in open air. The tolerance range is ±20% of center current value by converting into current value.

* Pre-shipment heat generation tests are conducted in open air with the heating element surface temperature at 1000°C.

Type U3



Feature size

Outside diameter: \varnothing 16, 20, 25, 30mm
 Hot Zone max. Length: 800mm
 Cold End max. Length: 500mm
 Available in the above range by 50mm as a unit.
 Inside of Hot Zone is solid.
 The pitch is the same as that of Type U2

Standard pin hole location (Pin hole diameter is optional.)

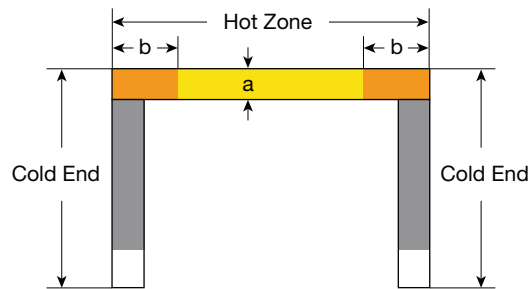
Outside diameter	Pin hole location (mm)
16	40
20	45
25	55

* Non-standard requests will be accepted.

Electric conditions

Same as those of the same size as Type U2

Type M2



Standard length of the low temperature area (b) shall be 1.5 times of the heating element diameter (a).

Feature size

Outside diameter: \varnothing 12, 16, 20, 25, 30mm
 Length: 400mm or less \times 700mm or less or 700mm or less \times 400mm or less
 (Hot Zone \times Cold End for the above both)

Electric conditions

Same as those of the same size of Type E2.

**Type
E7, F7
& U7**

Feature size

Outside diameter: $\varnothing 16, 20, 25, 30, 35, 40\text{mm}$
 Hot Zone max. Length: 1000mm
 Cold End max. Length: 500mm
 Size of Types E2, F2 and U2 are available in the above range.

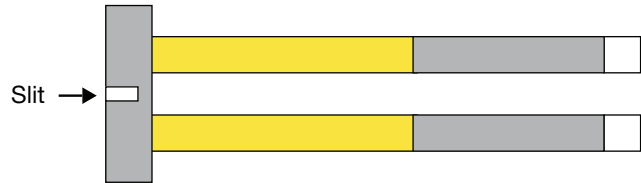
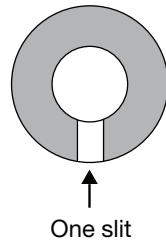
Electric conditions

Same as that of the same size of Types E2, F2 and U2.

Identification Method

Identify by the following method as Types E2, F2 and U2 are not identifiable by appearance.

Type E7 and F7 have slits on their end surface.

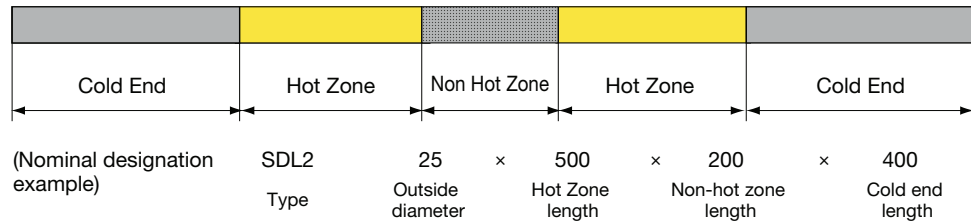


Type U7 has a slit at the center of the crossbar.

Caution:

As their temperature rise is slightly different from that of other general heating elements, do not use them by combining with Types E2, F2 or U2 in the same circuit.

**Type
SDL2**



Feature size

Diameter: $\varnothing 14, 16, 20, 25, 30, 35, 45, 50\text{mm}$
 Please feel free to contact us for the Hot Zone length and Cold End length.

Electric conditions

The same as Types E2 and F2 in the case of the same total length like the following example.

Example)	SDL2	25	x	500	x	200	x	400] The same electric conditions
	E2	25	x	1000	x	500			

Please contact us for details.