PolySwitch Resettable Devices

Automotive Devices

Raychem Circuit Protection has provided PPTC resettable devices in the automotive industry for over 25 years. Until recently, the products sold by Raychem Circuit Protection to this industry were either custom products (TD and Chip series devices) or our standard commercial versions of PPTC resettable devices. With the advent of TS16949 and our continued involvement in the automotive industry, we decided to develop automotive specific versions of our PPTC resettable devices. The result of this development is the four device families (AHS, ASMD, AHRF and AGRF) featured in this section, along with constant additions to these portfolios. These products are qualified and sold under our PS400 specification which is derived from AEC-Q200, the standard for electronic components used in the automotive industry. The key difference between these families and other protection devices in the Raychem Circuit Protection portfolio is the qualification according to a series of rigorous tests related to the automotive environment. As a result, they are characterized by some specific additional values determined post automotive related testing. Raychem Circuit Protection is currently also working on offering single use surface-mount fuses and varistor devices to the automotive electronic market.

Benefits

- Overcurrent and Overvoltage circuit protection devices
- Various form factors
- Meet automotive industry standards

Features

- Coordinated overcurrent and overvoltage circuit protection
- Many product form factors give engineers more design flexibility
- Compatible with high-volume electronics assembly
- Higher voltage ratings possible for new applications (42V)
- Device characteristics tuned to car electronics needs

Applications

- Liquid Crystal Display backlight heaters
- Automotive IEEE 1394 Network
- H-Bridge protection form reverse battery damage
- Printed circuit board trace protection
- Automobile harness protection
- DC cigarette-lighter & power plug adapter – charger protection
- Telematics, infotainment, navigation system
- Automotive actuators and medium-size DC motors
- One-touch-down circuit for power windows and power sunroofs
- Electronic control modules (black boxes)
- Junction boxes
- Power outlets
- Lamp protection
- Powered antennae
- HVAC and climate control
- Cooling fan motors

Table A1 - Product Series - Current Rating, Voltage Rating/Typical Resistance for Automotive Devices

Volyage Rating	AGRF 16V	AHRF 16V	AHRF 30V	AHS 16V	ASMD 16V	ASMD 30V	ASMD 60V
Hold Current (A)							
0.30	—	—	—	—	—	—	0.23Ω
0.50	—	—	0.565Ω	—	—	—	0.90Ω
0.70	—	—	0.385Ω	—	—	—	—
0.75	—	—	—	—	—	0.60Ω	—
0.80	—	—	—	0.25Ω	—	—	—
1.00	—	—	0.225Ω	—	—	0.30Ω	—
1.25	—	—	—	—	0.16Ω	—	—
1.50	—	—	—	—	0.14Ω	—	—
1.60	—	—	—	0.10Ω	—	—	—
2.00	—	0.0565Ω	—	—	0.09Ω	—	—
2.50	—	—	—	—	0.06Ω	—	—
3.00	—	0.041Ω	—	—	—	—	—
4.00	0.030Ω	0.0305Ω	—	—	—	—	—
4.50	—	0.029Ω	—	—	—	—	—
5.00	0.0192Ω	—	—	—	—	—	—
5.50	—	0.019Ω	—	—	—	—	—
6.00	0.0145Ω	0.018Ω	—	—	—	—	—
6.50	—	0.014Ω	—	—	—	—	—
7.00	0.0105Ω	0.0126Ω	—	—	—	—	—
7.50	—	0.012Ω	—	—	—	—	—
8.00	0.0086Ω	0.0104Ω	—	—	—	—	—
9.00	0.0070Ω	0.010Ω	—	—	—	—	—
10.00	0.0056Ω	0.0083Ω	—	—	—	—	—
11.00	0.0050Ω	0.0069Ω	—	—	—	—	—
12.00	0.0046Ω	—	—	—	—	—	—
13.00	—	0.0055Ω	—	—	—	—	—
14.00	0.0040Ω	0.005Ω	—	—	—	—	—
15.00	—	0.005Ω	—	—	—	—	—

Table A2 - Thermal Derating for Automotive Devices [Hold Current (A) at Ambient Temperature (°C)]

		Maximum Ambient Temperature										
		-40°C	-20°C	0°C	20°C	25°C	40°C	50°C	60°C	70°C	85°C	125°C
	Part Number											
	AGRF 16V—Radial-leaded											
	AGRF400	5.9	5.3	4.8	4.1	4.0	3.5	3.2	2.8	2.5	1.9	—
	AGRF500	7.3	6.6	6.0	5.2	5.0	4.4	4.0	3.6	3.1	2.4	—
	AGRF600	8.8	8.0	7.2	6.2	6.0	5.2	4.8	4.2	3.8	2.8	—
	AGRF700	10.3	9.3	8.4	7.3	7.0	6.2	5.6	5.0	4.4	3.3	—
	AGRF800	11.7	10.7	9.6	8.3	8.0	6.9	6.4	5.6	5.1	3.7	—
	AGRF900	13.2	11.9	10.7	9.4	9.0	7.9	7.2	6.4	5.6	4.2	—
	AGRF1000	14.7	13.3	12.0	10.3	10.0	8.7	8.0	7.0	6.3	4.7	—
	AGRF1100	16.1	14.6	13.1	11.5	11.0	9.7	8.8	7.8	6.9	5.2	—
	AGRF1200	17.6	16.0	14.4	12.4	12.0	10.4	9.6	8.4	7.6	5.6	—
	AGRF1400	20.5	18.7	16.8	14.5	14.0	12.1	11.2	9.8	8.9	6.5	—
	AHRF (High Temperature) 30V—Radial-leaded											
New	AHRF050	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.1
New	AHRF070	1.0	0.9	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.2
New	AHRF100	1.4	1.2	1.1	1.0	1.0	0.9	0.8	0.7	0.7	0.6	0.2
	AHRF (High Temperature) 16V—Radial-leaded											
New	AHRF200	2.7	2.5	2.3	2.1	2.00	1.8	1.6	1.5	1.3	1.1	0.5
New	AHRF300	4.1	3.7	3.4	3.1	3.00	2.7	2.4	2.2	2.0	1.7	0.7
New	AHRF400	5.6	5.1	4.7	4.2	4.00	3.6	3.3	3.0	2.7	2.3	1.0
	AHRF450	6.1	5.6	5.1	4.6	4.50	4.0	3.6	3.3	3.0	2.5	1.1
New	AHRF550	7.5	6.9	6.2	5.7	5.50	4.9	4.4	4.0	3.7	3.1	1.4
	AHRF600	8.2	7.5	6.8	6.2	6.00	5.3	4.9	4.4	4.0	3.3	1.5
	AHRF650	8.8	8.1	7.4	6.7	6.50	5.7	5.3	4.8	4.3	3.6	1.6
New	AHRF700	9.5	8.7	8.0	7.2	7.00	6.2	5.6	5.2	4.7	3.9	1.7
	AHRF750	10.2	9.4	8.6	7.7	7.50	6.6	6.1	5.6	5.0	4.1	1.9
New	AHRF800	10.9	10.0	9.1	8.2	8.00	7.1	6.4	5.9	5.3	4.4	2.0
New	AHRF900	12.2	11.2	10.2	9.3	9.00	8.0	7.2	6.6	6.0	5.0	2.2
	AHRF1000	13.6	12.5	11.4	10.3	10.00	8.8	8.1	7.4	6.6	5.5	2.5

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Table A2 - Thermal Derating for Automotive Devices [Hold Current (A) at Ambient Temperature (°C)] ... Cont'd

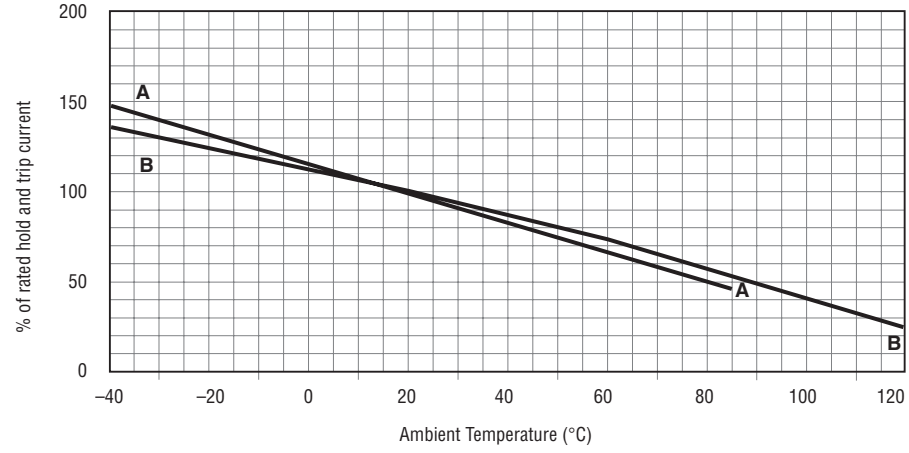
		Maximum Ambient Temperature										
		-40°C	-20°C	0°C	20°C	25°C	40°C	50°C	60°C	70°C	85°C	125°C
	Part Number											
	AHRF (High Temperature) 16V—Radial-leaded											
New	AHRF1100	14.9	13.7	12.5	11.3	11.00	9.7	8.8	8.1	7.3	6.1	2.7
	AHRF1300	17.7	16.3	14.8	13.4	13.00	11.4	10.5	9.6	8.6	7.2	3.3
New	AHRF1400	19.0	17.5	15.9	14.4	14.00	12.4	11.2	10.3	9.3	7.8	3.5
New	AHRF1500	20.4	18.8	17.1	15.5	15.00	13.2	12.1	11.1	9.9	8.3	3.8
	AHS (High Temperature) 16V—Surface-mount											
	AHS080-2018	1.20	1.04	0.90	0.80	0.77	0.68	0.62	0.60	0.53	0.46	0.26
	AHS160	2.15	1.96	1.78	1.60	1.55	1.42	1.33	1.24	1.15	1.01	0.64
	ASMD 16-60V—Surface-mount											
	ASMD030F	0.35	0.31	0.27	0.23	0.22	0.19	0.17	0.15	0.13	0.11	—
	ASMD050F	0.59	0.53	0.46	0.39	0.37	0.33	0.29	0.26	0.23	0.18	—
	ASMD075F	0.91	0.81	0.71	0.60	0.58	0.50	0.45	0.40	0.35	0.28	—
	ASMD100F	1.37	1.22	1.06	0.90	0.86	0.76	0.68	0.60	0.52	0.41	—
	ASMD125F	1.58	1.40	1.23	1.04	1.00	0.87	0.78	0.70	0.60	0.48	—
	ASMD150F	1.93	1.70	1.50	1.27	1.22	1.07	0.95	0.85	0.74	0.58	—
	ASMD200F	2.63	2.34	2.04	1.73	1.66	1.45	1.30	1.16	1.00	0.80	—
	ASMD250F	3.00	2.66	2.32	1.97	1.89	1.65	1.48	1.32	1.14	0.91	—

Figures A1-A2 - Thermal Derating Curves for Automotive Devices

A = AGRF

B = AHRF

Figure A1



A = ASMD

B = AHS

Figure A2

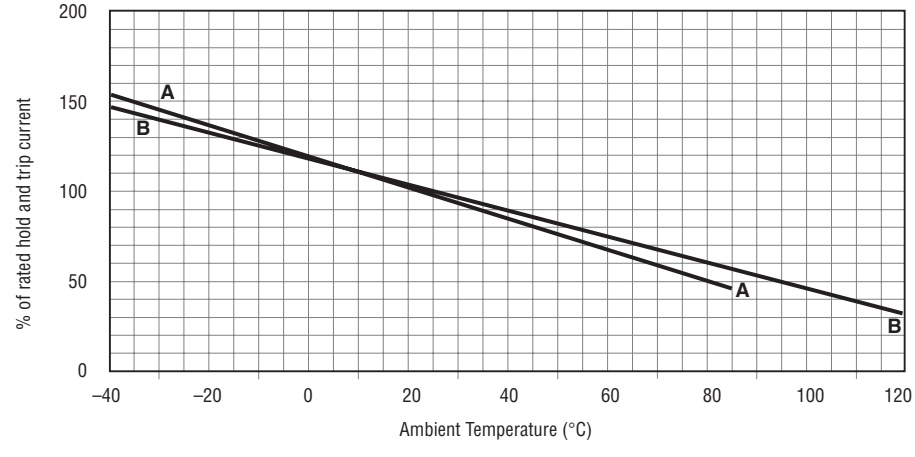


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Table A3 - Electrical Characteristics for Automotive Devices

	Part Number	I_H(A)@ R_{1Max}	I_H(A)@ R_{aMax}	I_T (A)	V_{Max} (V_{AC})	I_{Max} (A)	$P_{D\,TYP}$ (W)	Max. Time-to-trip (A)	Max. Time-to-trip (s)	R_{Min} (Ω)	R_{1Max} (Ω)	R_{aMax} (Ω)	Figure for Dimensions
	AGRF 16V–Radial-leaded												
	AGRF400	4.0	3.0	7.6	16	100	2.5	20.0	2.0	0.0186	0.061	0.085	A3, A6, A7
	AGRF500	5.0	4.3	9.4	16	100	2.7	25.0	2.5	0.0140	0.034	0.048	A3, A6, A7
	AGRF600	6.0	5.3	10.7	16	100	2.8	30.0	3.5	0.0095	0.028	0.032	A3, A6, A7
	AGRF700	7.0	6.5	13.2	16	100	3.0	35.0	4.0	0.0066	0.020	0.022	A3, A6, A7
	AGRF800	8.0	7.6	15.0	16	100	3.2	40.0	5.5	0.0049	0.0175	0.0181	A3, A6, A7
	AGRF900	9.0	8.6	16.5	16	100	3.4	45.0	6.0	0.0041	0.0135	0.0140	A3, A6, A7
	AGRF1000	10.0	9.6	18.5	16	100	3.6	50.0	7.0	0.0034	0.0102	0.0106	A3, A6, A7
	AGRF1100	11.0	10.5	20.3	16	100	3.7	55.0	7.5	0.0033	0.0089	0.0093	A3, A6, A7
	AGRF1200	12.0	11.5	22.1	16	100	4.2	60.0	8.0	0.0030	0.0086	0.0091	A3, A6, A7
	AGRF1400	14.0	13.0	27.3	16	100	4.6	70.0	9.0	0.0022	0.0064	0.0067	A3, A6, A7
	AHRF 30V–Radial-leaded (High Temperature)												
New	AHRF050	0.5	0.5	1.0	30	40	0.9	2.5	3.0	0.3500	1.100	1.100	A6, A7, A8
New	AHRF070	0.7	0.7	1.4	30	40	1.4	3.5	3.2	0.2300	0.800	0.800	A3, A6, A7
New	AHRF100	1.0	1.0	1.9	30	40	1.4	5.0	6.2	0.1500	0.430	0.430	A6, A7, A8
	AHRF 16V–Radial-leaded (High Temperature)												
New	AHRF200	2.0	2.0	3.8	16	100	1.4	10.0	4.8	0.0390	0.110	0.110	A6, A7, A8
New	AHRF300	3.0	3.0	6.5	16	100	3.0	15.0	5.0	0.0290	0.079	0.079	A3, A6, A7
New	AHRF400	4.0	4.0	7.4	16	100	3.3	20.0	5.0	0.0210	0.060	0.060	A3, A6, A7
	AHRF450	4.5	4.5	8.7	16	100	3.6	22.5	4.0	0.0170	0.054	0.054	A3, A6, A7
New	AHRF550	5.5	5.5	10.0	16	100	3.5	27.5	6.0	0.0130	0.037	0.037	A3, A6, A7
	AHRF600	6.0	6.0	12.0	16	100	4.1	30.0	6.5	0.0100	0.032	0.032	A3, A6, A7
	AHRF650	6.5	6.5	13.7	16	100	4.3	32.5	7.0	0.0090	0.026	0.026	A3, A6, A7
New	AHRF700	7.0	7.0	13.1	16	100	4.0	35.0	7.0	0.0087	0.025	0.025	A3, A6, A7
	AHRF750	7.5	7.5	14.8	16	100	4.5	37.5	8.0	0.0074	0.022	0.022	A3, A6, A7
New	AHRF800	8.0	8.0	15.0	16	100	4.2	40.0	8.0	0.0072	0.020	0.020	A3, A6, A7
New	AHRF900	9.0	9.0	18.5	16	100	5.0	45.0	11.5	0.0061	0.017	0.017	A3, A6, A7
	AHRF1000	10.0	10.0	20.5	16	100	5.3	50.0	10.5	0.0051	0.015	0.015	A3, A6, A7
New	AHRF1100	11.0	11.0	21.2	16	100	5.5	55.0	11.0	0.0048	0.013	0.013	A3, A6, A7
	AHRF1300	13.0	13.0	27.0	16	100	6.9	65.0	15.0	0.0034	0.010	0.010	A3, A6, A7
New	AHRF1400	14.0	14.0	28.3	16	100	6.9	70.0	15.5	0.0029	0.009	0.009	A3, A6, A7
New	AHRF1500	15.0	15.0	33.0	16	100	7.0	75.0	20.0	0.0027	0.0092	0.0092	A3, A6, A7

	Part Number	I_H(A)@ R_{1Max}	I_T(A)@ R_{aMax}	I_T (A)	V_{Max} (V_{AC})	I_{Max} (A)	$P_{D\,TYP}$ (W)	Max. Time-to-trip (A)	Max. Time-to-trip (s)	R_{Min} (Ω)	R_{1Max} (Ω)	R_{aMax} (Ω)	Figure for Dimensions
	AHS 16V–Surface-mount (High Temperature)												
	AHS080-2018	0.80	0.80	2.00	16	70	1.5	8.0	9.0	0.130	0.550	0.550	A4
	AHS160	1.60	1.60	3.20	16	70	2.1	8.0	15.0	0.050	0.150	0.150	A5
	ASMD 16-60V–Surface-mount												
	ASMD030F	0.23	0.23	0.59	60	10	1.1	1.15	12.0	0.98	4.800	4.800	A5
	ASMD050F	0.39	0.39	0.98	60	10	1.1	1.95	20.0	0.29	1.400	1.400	A5
	ASMD075F	0.60	0.60	1.48	30	40	1.1	3.00	20.0	0.29	1.000	1.000	A5
	ASMD100F	0.90	0.90	2.16	30	40	1.1	4.50	20.0	0.098	0.480	0.480	A5
	ASMD125F	1.04	1.04	2.46	16	40	1.1	5.20	20.0	0.057	0.250	0.250	A5
	ASMD150F	1.27	1.27	2.95	16	40	1.2	6.35	25.0	0.049	0.250	0.250	A5
	ASDM200F	1.73	1.73	3.93	16	40	1.2	8.65	30.0	0.05	0.120	0.120	A5
	ASMD250F	1.97	1.97	5.00	16	40	1.2	9.85	30.0	0.035	0.085	0.085	A5

Notes:
- I_H = Hold current: maximum current device will pass without interruption in 25°C, unless otherwise specified (20°C for ASMD).
- I_T = Trip current: minimum current that will switch the device from low resistance to high resistance in 25°C still air, unless otherwise specified.
- V_{MAX} = Maximum voltage device can withstand without damage at rated current.
- I_{MAX} = Maximum fault current device can withstand without damage at rated voltage.
- P_D = Power dissipated from device when in the tripped state in 25°C still air, unless otherwise specified.
- R_{1MAX} = Maximum resistance of device when measured one hour post reflow (surface-mount device) or one hour post trip (radial-leaded device) at 25°C unless otherwise specified.
- R_{aMIN} = Minimum functional resistance of device after being subjected to the stresses described in PS400 at 25°C, unless otherwise specified.
- R_{aMAX} = Maximum functional resistance of device after being subjected to the stresses described in PS400 at 25°C, unless otherwise specified.
- R_{MIN} = Minimum resistance of device as supplied at 25°C, unless otherwise specified.

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Figures A3-A8 - Dimension Figures for Automotive Devices

Figure A3

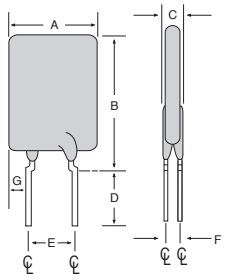


Figure A4

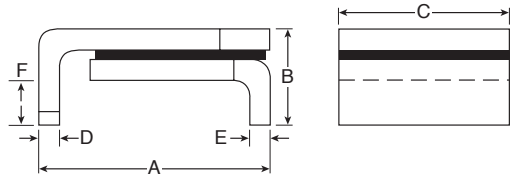


Figure A5

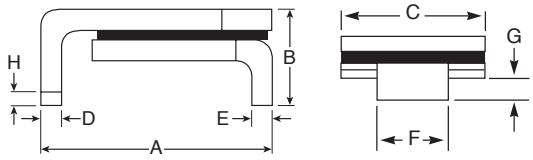


Figure A6

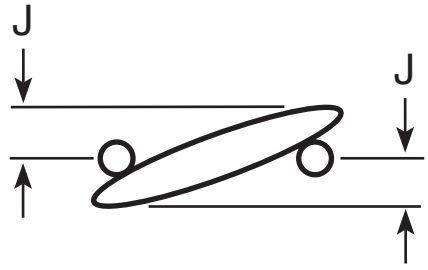


Figure A7

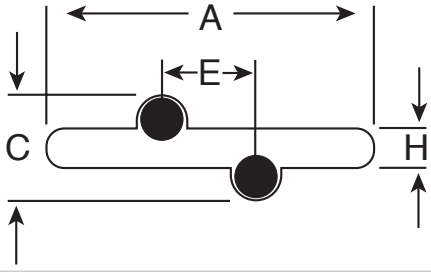


Figure A8

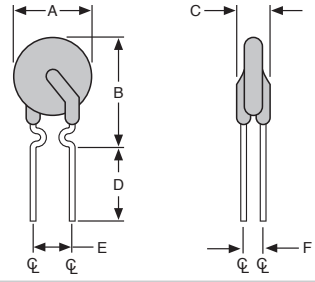


Table A4 - Dimensions for Automotive Devices in Millimeters (Inches)

Part Number	Dimension A Min.	A Max.	B Min.	B Max.	C Min.	C Max.	D Min.	D Max.	E Min.	E Max.	F Min.	F Max.	G Min.	G Max.	H TYP.	J Max.	Figure
AGRF 16V—Radial-leaded																	
AGRF400	—	8.9 (0.35)	—	14.1 (0.56)	—	3.0 (0.12)	7.6 (0.3)	—	4.3 (0.17)	5.8 (0.20)	1.2 (0.15)	—	—	3.05 (0.120)	1.24 (0.049)	1.4 (0.06)	A3, A6, A7
AGRF500	—	10.4 (0.41)	—	15.6 (0.61)	—	3.0 (0.12)	7.6 (0.3)	—	4.3 (0.17)	5.8 (0.20)	1.2 (0.05)	—	—	3.94 (0.155)	1.24 (0.049)	1.6 (0.06)	A3, A6, A7
AGRF600	—	10.7 (0.42)	—	18.4 (0.73)	—	3.0 (0.12)	7.6 (0.3)	—	4.3 (0.17)	5.8 (0.20)	1.2 (0.05)	—	—	4.07 (0.160)	1.24 (0.049)	1.6 (0.06)	A3, A6, A7
AGRF700	—	11.2 (0.44)	—	21.0 (0.73)	—	3.0 (0.12)	7.6 (0.3)	—	4.3 (0.17)	5.8 (0.20)	1.2 (0.05)	—	—	4.49 (0.177)	1.24 (0.049)	1.7 (0.07)	A3, A6, A7
AGRF800	—	12.7 (0.50)	—	22.2 (0.88)	—	3.0 (0.12)	7.6 (0.3)	—	4.3 (0.17)	5.8 (0.20)	1.2 (0.05)	—	—	5.08 (0.200)	1.24 (0.049)	1.8 (0.07)	A3, A6, A7
AGRF900	—	14.0 (0.55)	—	23.0 (0.91)	—	3.0 (0.12)	7.6 (0.3)	—	4.3 (0.17)	5.8 (0.20)	1.2 (0.05)	—	—	5.69 (0.224)	1.24 (0.049)	2.0 (0.08)	A3, A6, A7
AGRF1000	—	16.51 (0.65)	—	25.7 (1.01)	—	3.0 (0.12)	7.6 (0.3)	—	4.3 (0.17)	5.8 (0.20)	1.2 (0.05)	—	—	6.96 (0.274)	1.24 (0.049)	2.0 (0.08)	A3, A6, A7
AGRF1100	—	17.5 (0.69)	—	26.5 (1.04)	—	3.0 (0.12)	7.6 (0.3)	—	4.3 (0.17)	5.8 (0.20)	1.2 (0.05)	—	—	7.47 (0.294)	1.24 (0.049)	2.4 (0.09)	A3, A6, A7
AGRF1200	—	17.5 (0.69)	—	28.8 (1.14)	—	3.5 (0.14)	7.6 (0.3)	—	9.4 (0.37)	10.16 (0.4)	1.4 (0.06)	—	—	4.83 (0.190)	1.45 (0.057)	1.5 (0.06)	A3, A6, A7
AGRF1400	—	23.5 (0.925)	—	28.7 (1.13)	—	3.5 (0.14)	7.6 (0.3)	—	9.4 (0.37)	10.16 (0.4)	1.4 (0.06)	—	—	7.82 (0.308)	1.45 (0.057)	1.9 (0.07)	A3, A6, A7

RoHS compliant, ELV compliant

Table A4 - Dimensions for Automotive Devices in Millimeters (Inches) ... Cont'd

	Part Number	Dimension A Min.	A Max.	B Min.	B Max.	C Min.	C Max.	D Min.	D Max.	E Min.	E Max.	F Min.	F Max.	G Min.	G Max.	H TYP.	J Max.	Figure
	AHRF (High Temperature) 30V—Radial-leaded																	
New	AHRF050	—	7.4 (0.29)	—	12.7 (0.50)	—	3.0 (0.12)	7.6 (0.30)	—	4.3 (0.17)	5.8 (0.23)	1.2 (0.05)	—	—	—	1.24 (0.049)	1.6 (0.06)	A6, A7, A8
New	AHRF070	—	6.9 (0.27)	—	10.8 (0.43)	—	3.0 (0.12)	7.6 (0.30)	—	4.3 (0.17)	5.8 (0.23)	1.2 (0.05)	—	—	—	1.24 (0.049)	1.6 (0.06)	A3, A6, A7
New	AHRF100	—	9.7 (0.38)	—	13.6 (0.54)	—	3.0 (0.12)	7.6 (0.30)	—	4.3 (0.17)	5.8 (0.23)	1.2 (0.05)	—	—	—	1.24 (0.049)	1.8 (0.07)	A6, A7, A8
	AHRF (High Temperature) 16V—Radial-leaded																	
New	AHRF200	—	9.4 (0.37)	—	14.4 (0.57)	—	3.0 (0.12)	7.6 (0.30)	—	4.3 (0.17)	5.8 (0.23)	1.2 (0.05)	—	—	—	1.24 (0.049)	1.6 (0.06)	A6, A7, A8
New	AHRF300	—	8.8 (0.35)	—	13.8 (0.55)	—	3.0 (0.12)	7.6 (0.30)	—	4.3 (0.17)	5.8 (0.23)	1.2 (0.05)	—	—	—	1.24 (0.049)	1.6 (0.06)	A3, A6, A7
New	AHRF400	—	10.0 (0.39)	—	15.0 (0.59)	—	3.0 (0.12)	7.6 (0.30)	—	4.3 (0.17)	5.8 (0.23)	1.2 (0.05)	—	—	—	1.24 (0.049)	1.6 (0.06)	A3, A6, A7
	AHRF450	—	10.4 (0.41)	—	15.6 (0.61)	—	3.0 (0.12)	7.6 (0.30)	—	4.3 (0.17)	5.8 (0.23)	1.2 (0.05)	—	—	3.94 (0.155)	1.24 (0.049)	1.6 (0.06)	A3, A6, A7
New	AHRF550	—	11.2 (0.44)	—	18.9 (0.74)	—	3.0 (0.12)	7.6 (0.30)	—	4.3 (0.17)	5.8 (0.23)	1.2 (0.05)	—	—	—	1.24 (0.049)	1.6 (0.06)	A3, A6, A7
	AHRF600	—	11.2 (0.44)	—	21.0 (0.73)	—	3.0 (0.12)	7.6 (0.30)	—	4.3 (0.17)	5.8 (0.23)	1.2 (0.05)	—	—	4.49 (0.177)	1.24 (0.049)	1.7 (0.067)	A3, A6, A7
	AHRF650	—	12.7 (0.50)	—	22.2 (0.88)	—	3.0 (0.12)	7.6 (0.30)	—	4.3 (0.17)	5.8 (0.23)	1.2 (0.05)	—	—	5.08 (0.200)	1.24 (0.049)	1.8 (0.07)	A3, A6, A7
New	AHRF700	—	14.0 (0.55)	—	21.9 (0.86)	—	3.0 (0.12)	7.6 (0.30)	—	4.3 (0.17)	5.8 (0.23)	1.2 (0.05)	—	—	—	1.24 (0.049)	1.6 (0.06)	A3, A6, A7
	AHRF750	—	14.0 (0.55)	—	23.5 (0.93)	—	3.0 (0.14)	7.6 (0.30)	—	4.3 (0.17)	5.8 (0.23)	1.2 (0.05)	—	—	5.69 (0.224)	1.24 (0.049)	2.0 (0.08)	A3, A6, A7
New	AHRF800	—	16.5 (0.65)	—	22.5 (0.88)	—	3.0 (0.12)	7.6 (0.30)	—	4.3 (0.17)	5.8 (0.23)	1.2 (0.05)	—	—	—	1.24 (0.049)	1.6 (0.06)	A3, A6, A7
New	AHRF900	—	16,5 (0.65)	—	25.7 (1.01)	—	3.0 (0.12)	7.6 (0.30)	—	4.3 (0.17)	5.8 (0.23)	1.2 (0.05)	—	—	—	—	—	A3, A6 A7
	AHRF1000	—	17.5 (0.69)	—	26.5 (1.04)	—	3.0 (0.12)	7.6 (0.30)	—	9.4 (0.37)	10.9 (0.43)	1.2 (0.05)	—	—	7.47 (0.294)	1.24 (0.049)	1.5 (0.06)	A3, A6, A7
New	AHRF1100	—	21.0 (0.83)	—	26.1 (1.03)	—	3.0 (0.12)	7.6 (0.30)	—	9.4 (0.37)	10.9 (0.43)	1.2 (0.05)	—	—	—	1.24 (0.049)	1.6 (0.06)	A3, A6, A7
	AHRF1300	—	23.5 (0.925)	—	28.7 (1.13)	—	3.5 (0.14)	7.6 (0.30)	—	9.4 (0.37)	10.9 (0.43)	1.4 (0.06)	—	—	7.82 (0.308)	1.45 (0.057)	1.9 (0.08)	A3, A6, A7
New	AHRF1400	—	23.5 (0.93)	—	28.7 (1.13)	—	3.5 (0.14)	7.6 (0.30)	—	9.4 (0.37)	10.9 (0.43)	1.4 (0.06)	—	—	—	1.24 (0.049)	1.6 (0.06)	A3, A6, A7
New	AHRF1500	—	23.5 (0.93)	—	28.7 (1.13)	—	3.5 (0.14)	7.6 (0.30)	—	9.4 (0.37)	10.9 (0.43)	1.4 (0.06)	—	—	7.82 (0.308)	—	—	A3, A6, A7

	Part Number	Dimension A Min.	A Max.	B Min.	B Max.	C Min.	C Max.	D Min.	D Max.	E Min.	E Max.	F Min.	F Max.	G Min.	G Max.	H Min.	H Max.	Figure
	AHS (High Temperature) 16V—Surface-mount																	
	AHS080-2018	4.72 (0.186)	5.44 (0.214)	—	1.52 (0.060)	4.22 (0.166)	4.93 (0.194)	0.25 (0.010)	0.36 (0.014)	0.25 (0.010)	0.36 (0.014)	0.30 (0.012)	0.46 (0.018)	—	—	—	—	A4
	AHS160	8.00 (0.315)	9.40 (0.370)	—	3.00 (0.118)	6.0 (0.24)	6.71 (0.264)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	3.68 (0.145)	3.94 (0.155)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)		A5
	ASMD 16-60V—Surface-mount																	
	ASMD030F	6.73 (0.265)	7.98 (0.314)	—	3.18 (0.125)	4.8 (0.19)	5.44 (0.214)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	2.16 (0.085)	2.41 (0.095)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)	—	A5
	ASMD050F	6.73 (0.265)	7.98 (0.314)	—	3.18 (0.125)	4.8 (0.19)	5.44 (0.214)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	2.16 (0.085)	2.41 (0.095)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)	—	A5
	ASMD075F	6.73 (0.265)	7.98 (0.314)	—	3.18 (0.125)	4.8 (0.19)	5.44 (0.214)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	2.16 (0.085)	2.41 (0.095)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)	—	A5
	ASMD100F	6.73 (0.265)	7.98 (0.314)	—	3.00 (0.118)	4.8 (0.19)	5.44 (0.214)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	2.16 (0.085)	2.41 (0.095)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)	—	A5
	ASMD125F	6.73 (0.265)	7.98 (0.314)	—	3.00 (0.118)	4.8 (0.19)	5.44 (0.214)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	2.16 (0.085)	2.41 (0.095)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)	—	A5
	ASMD150F	8.00 (0.315)	9.40 (0.370)	—	3.00 (0.118)	6.0 (0.24)	6.71 (0.264)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	3.68 (0.145)	3.94 (0.155)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)	—	A5
	ASMD200F	8.00 (0.315)	9.40 (0.370)	—	3.00 (0.118)	6.0 (0.24)	6.71 (0.264)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	3.68 (0.145)	3.94 (0.155)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)	—	A5
	ASMD250F	8.00 (0.315)	9.40 (0.370)	—	3.00 (0.118)	6.0 (0.24)	6.71 (0.264)	0.56 (0.022)	0.71 (0.028)	0.56 (0.022)	0.71 (0.028)	3.68 (0.145)	3.94 (0.155)	0.66 (0.026)	1.37 (0.054)	0.43 (0.017)	—	A5

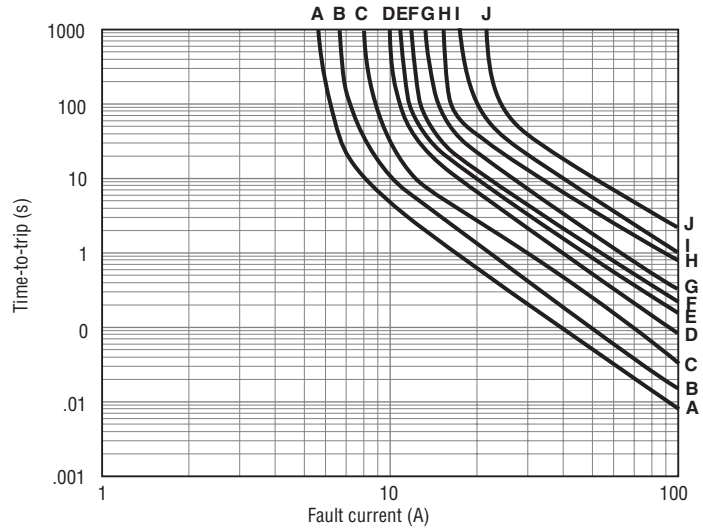
RoHS compliant, ELV compliant

Figures A9-A12 - Typical Time-to-trip at 25°C for Automotive Devices ... Cont'd

AGRF

A = AGRF400
B = AGRF500
C = AGRF600
D = AGRF700
E = AGRF800
F = AGRF900
G = AGRF1000
H = AGRF1100
I = AGRF1200
J = AGRF1400

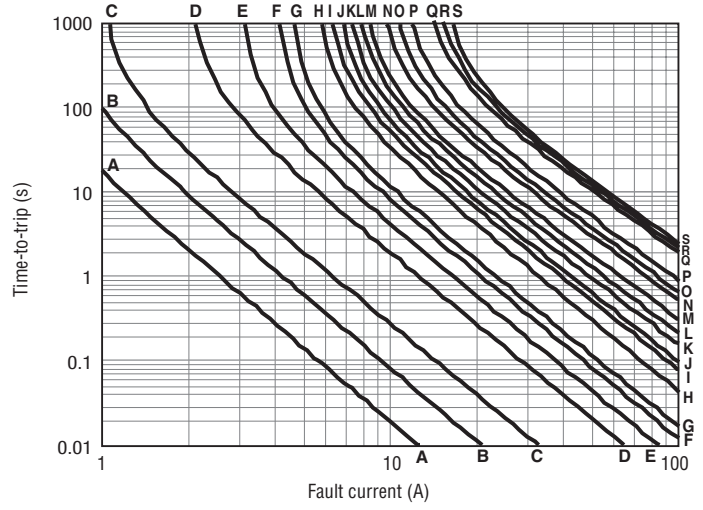
Figure A9



AHRF

A = AHRF050
B = AHRF070
C = AHRF100
D = AHRF200
E = AHRF300
F = AHRF400
G = AHRF450
H = AHRF550
I = AHRF600
J = AHRF650
K = AHRF700
L = AHRF750
M = AHRF800
N = AHRF900
O = AHRF1000
P = AHRF1100
Q = AHRF1300
R = AHRF1400
S = AHRF1500

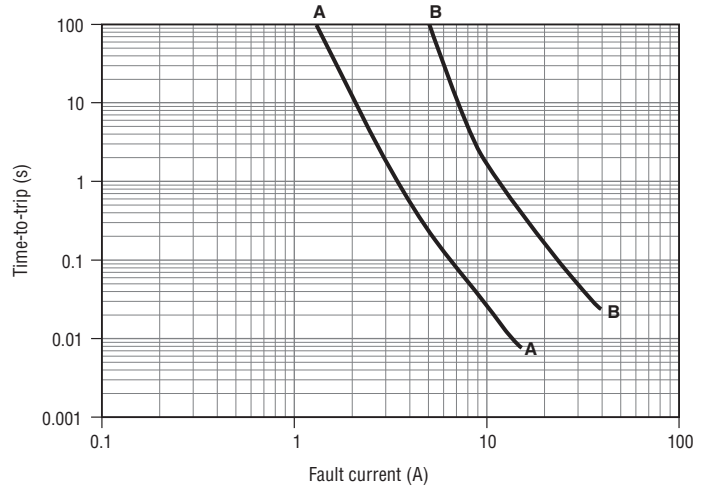
Figure A10



AHS

A = AHS080-2018
B = AHS160

Figure A11



Figures A9-A12 - Typical Time-to-trip at 25°C for Automotive Devices ... Cont'd

ASMD

A = ASMD030F
B = ASMD050F
C = ASMD075F
D = ASMD100F
E = ASMD125F
F = ASMD150F
G = ASMD200F
H = ASMD250F

Figure A12

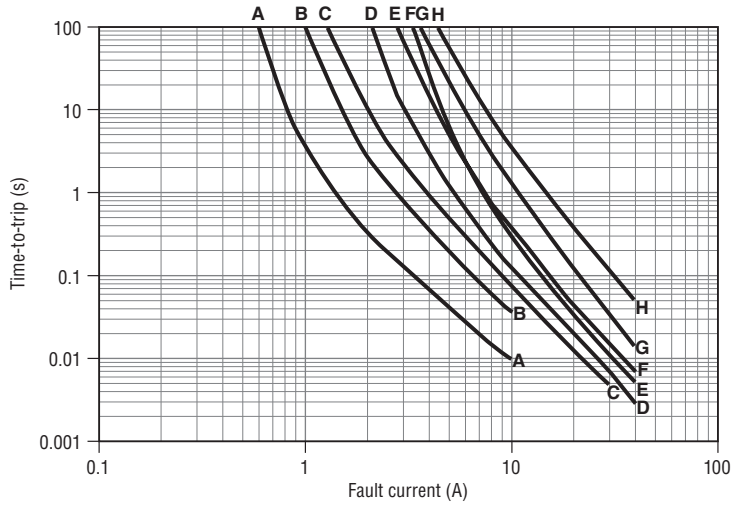


Table A5 - Physical Characteristics and Environmental Specifications for Automotive Devices

AGRF Physical Characteristics

Lead material	AGRF400 to AGRF1100: Tin/Lead Plated Copper, 0.52mm² (20AWG) ø 0.8 mm/0.032in AGRF1200 to AGRF1400: Tin/Lead Plated Copper, 0.82mm² (18AWG) ø 1.0mm/0.040in
Soldering characteristics	Solderability per ANSI/J-STD-002 Category 3
Solder heat withstand	AGR400: per IEC68-2-20 Test Tb, method 1a, condition a: can withstand 5 seconds at 260˚C ± 5˚C AGRF500-AGRF1400: per IEC68-2-20 Test Tb, method 1a, condition b: can withstand 10 seconds at 260˚C ± 5˚C
Insulating material	Cured, flame-retardant epoxy polymer; meets UL 94V-0

See PS400 for other physical characteristics

Note: Devices are not designed to be placed through a reflow process.

AGRF Environmental Specifications

Test	Conditions	Resistance Change
Passive aging	70°C, 1000 hours	±5%
	85°C, 1000 hours	±5%
Humidity aging	85°C, 85% RH, 1000 hours	±5%
Thermal shock	85°C, -40°C (10 times)	±5%
Solvent resistance	MIL-STD-202, Method 215F	No change

See PS400 for other environmental specifications

AHRF Physical Characteristics

Lead material	AHRF050 to AHRF200: Tin-plated Copper 0.205mm² (24 AWG), ø 0.51mm/0.020in AHRF300 to AHRF1100: Tin-plated copper 0.52mm² (20 AWG),. ø 0.81mm/0.032 in AHRF1300 to AHRF1500: Tin-plated copper 0.82mm² (18 AWG),. ø 1.0mm/0.04 in
Soldering characteristics	Solderability per ANSI/J-STD 002 Category 3
Solder heat withstand	per IEC 68-2-20, Test Tb, Method 1a, condition b; can withstand 10 seconds at 260°C ± 5°C
Insulating material	Cured, flame-retardant epoxy polymer; meets UL 94V-0 requirements

See PS400 for other physical specifications

Note: Devices are not designed to be placed through a reflow process.

AHRF Environmental Specifications

Test	Conditions	Resistance Change
Passive aging	70°C, 1000 hours	±5%
	85°C, 1000 hours	±5%
Humidity aging	85°C, 85% RH, 1000 hours	±5%
Thermal shock	125°C, -40°C (10 times)	±5%
Solvent resistance	MIL-STD-202, Method 215F	No change

See PS400 for other environmental specifications

Table A5 - Physical Characteristics and Environmental Specifications for Automotive Devices ... Cont'd

ASMD Physical Characteristics

Terminal pad material	98%+ Tin-plated Brass
Soldering characteristics	Solderability per ANSI-J-STD-002 Category 1
Solder heat withstand	per IEC-STD 68-2-20, Test Tb, Section 5, Method 1A
Flammability resistance	per IEC 695-2-2 Needle flame test for 20 seconds
Recommended storage conditions	40˚C max, 70% RH max; devices may not meet specified ratings if storage conditions are exceeded

See PS400 for other physical characteristics

ASMD Environmental Specifications

Test	Conditions	Resistance Change
Passive aging	60°C, 1000 hours	±3% typical
	85°C, 1000 hours	±5% typical
Humidity aging	85°C, 85% RH, 100 hours	±1.2% typical
Thermal shock	85°C, -40°C (20 times)	-33% typical
	125˚C, -55˚C (10 times)	-33% typical
Solvent resistance	Freon	No change
	Trichloroethane	No change
	Hydrocarbons	No change

See PS400 for other environmental specifications

AHS Physical Characteristics

Lead material	Tin-plated brass to MIL-T-10727B
Soldering characteristics	Solderability per ANSI-J-STD-002 Category 1
Solder heat withstand	per IEC-STD 68-2-20, Test Tb, Section 5, Method 1A
Flammability	per IEC 695-2-2 Needle flame test for 20 seconds

See PS400 for other physical characteristics

AHS Environmental Specifications

Test	Conditions	Resistance Change
Passive aging	70°C, 1000 hours	±3% Typical
	85°C, 1000 hours	±5% Typical
Humidity aging	85°C, 85% RH, 1000 hours	±1.2% Typical
Thermal shock	125°C, -40°C (20 times)	-33% Typical
Solvent resistance	Freon	No change
	Trichloroethane	No change
	Hydrocarbons	No change

See PS400 for other environmental specifications

Table A6 - Packaging and Marking Information for Automotive Devices

Part Number	Bag Quantity	Tape & Reel Quantity	Ammo Quantity	Standard Package Quantity	Part Marking	Agency Recognition
AGRF Radial-leaded						
AGRF400	500	—	—	10,000	GF4	*
AGRF400-2	—	2,500	—	12,500	GF4	*
AGRF400-AP	—	—	2,000	10,000	GF4	*
AGRF500	500	—	—	10,000	GF5	*
AGRF500-2	—	2,000	—	10,000	GF5	*
AGRF500-AP	—	—	2,000	10,000	GF5	*
AGRF600	500	—	—	10,000	GF6	*
AGRF600-2	—	2,000	—	10,000	GF6	*
AGRF600-AP	—	—	2,000	10,000	GF6	*
AGRF700	500	—	—	10,000	GF7	*
AGRF700-2	—	1,500	—	7,500	GF7	*
AGRF700-AP	—	—	1,500	7,500	GF7	*
AGRF800	500	—	—	10,000	GF8	*
AGRF800-2	—	1,000	—	5,000	GF8	*
AGRF800-AP	—	—	1,000	5,000	GF8	*
AGRF900	500	—	—	10,000	GF9	*
AGRF900-2	—	1,000	—	5,000	GF9	*
AGRF900-AP	—	—	1,000	5,000	GF9	*

RoHS compliant, ELV compliant

Table A6 - Packaging and Marking Information for Automotive Devices ... Cont'd

	Part Number	Bag Quantity	Tape & Reel Quantity	Ammo Quantity	Standard Package Quantity	Part Marking	Agency Recognition
	AGRF Radial-leaded						
	AGRF1000	250	—	—	5,000	GF10	*
	AGRF1000-2	—	1,000	—	5,000	GF10	*
	AGRF1000-AP	—	—	1,000	5,000	GF10	*
	AGRF1100	250	—	—	5,000	GF11	*
	AGRF1100-2	—	1,000	—	5,000	GF11	*
	AGRF1100-AP	—	—	1,000	5,000	GF11	*
	AGRF1200	250	—	—	5,000	GF12	*
	AGRF1200-2	—	1,000	—	5,000	GF12	*
	AGRF1200-AP	—	—	1,000	5,000	GF12	*
	AGRF1400	250	—	—	5,000	GF14	*
	AGRF1400-2	—	1,000	—	5,000	GF14	*
	AGRF1400-AP	—	—	1,000	5,000	GF14	*
	AHRF (High Temperature) Radial-leaded						
New	AHRF050	500	—	—	10,000	HF0.5	*
	AHRF050-2	—	2,500	—	12,500	HF0.7	*
	AHRF050-AP	—	2,500	—	12,500	HF0.7	*
New	AHRF070	500	—	—	10,000	HF0.7	*
	AHRF070-2	—	2,500	—	12,500	HF0.7	*
	AHRF070-AP	—	2,500	—	12,500	HF0.7	*
New	AHRF100	500	—	—	10,000	HF1.0	*
	AHRF100-2	—	3,000	—	15,000	HF1.0	*
	AHRF100-AP	—	3,000	—	15,000	HF1.0	*
New	AHRF200	500	—	—	10,000	HF2	*
	AHRF200-2	—	2,500	—	12,500	HF2	*
	AHRF200-AP	—	2,500	—	12,500	HF2	*
New	AHRF300	500	—	—	10,000	HF3	*
	AHRF300-2	—	2,000	—	10,000	HF3	*
	AHRF300-AP	—	2,000	—	10,000	HF3	*
New	AHRF400	500	—	—	10,000	HF4	*
	AHRF400-2	—	1,500	—	7,500	HF4	*
	AHRF400-AP	—	—	1,500	7,500	HF4	*
	AHRF450	500	—	—	10,000	HF4.5	*
	AHRF450-2	—	1,500	—	7,500	HF4.5	*
	AHRF450-AP	—	—	1,500	7,500	HF4.5	*
New	AHRF550	500	—	—	10,000	HF5.5	*
	AHRF550-2	—	2,000	—	10,000	HF5.5	*
	AHRF550-AP	—	—	2,000	10,000	HF5.5	*
	AHRF600	500	—	—	10,000	HF6	*
	AHRF600-2	—	1,500	—	7,500	HF6	*
	AHRF600-AP	—	—	1,500	7,500	HF6	*
	AHRF650	500	—	—	10,000	HF6.5	*
	AHRF650-2	—	1,500	—	7,500	HF6.5	*
	AHRF650-AP	—	—	1,500	7,500	HF6.5	*
New	AHRF700	500	—	—	10,000	HF7	*
	AHRF700-2	—	1,500	—	7,500	HF7	*
	AHRF700-AP	—	—	1,500	7,500	HF7	*
	AHRF750	500	—	—	10,000	HF7.5	*
	AHRF750-2	—	1,000	—	5,000	HF7.5	*
	AHRF750-AP	—	—	1,000	5,000	HF7.5	*
New	AHRF800	500	—	—	10,000	HF8	*
	AHRF800-2	—	1,000	—	5,000	HF8	*
	AHRF800-AP	—	—	1,000	5,000	HF8	*
New	AHRF900	250	—	—	5,000	HF9	*
	AHRF900-2	—	1,000	—	5,000	HF9	*
	AHRF900-AP	—	—	1,000	5,000	HF9	*
	AHRF1000	250	—	—	5,000	HF10	*
	AHRF1000-2	—	1,000	—	5,000	HF10	*
	AHRF1000-AP	—	—	1,000	5,000	HF10	*
New	AHRF1100	250	—	—	5,000	HF11	*
	AHRF1100-2	—	1,000	—	5,000	HF11	*
	AHRF1100-AP	—	—	1,000	5,000	HF11	*
	AHRF1300	250	—	—	5,000	HF13	*
	AHRF1300-2	—	1,000	—	5,000	HF13	*
	AHRF1300-AP	—	—	1,000	5,000	HF13	*
New	AHRF1400	250	—	—	5,000	HF14	*
	AHRF1400-2	—	1,000	—	5,000	HF14	*
	AHRF1400-AP	—	—	1,000	5,000	HF14	*
New	AHRF1500	250	—	—	5,000	HF15	*
	AHRF1500-2	—	1,000	—	5,000	HF15	*
	AHRF1500-AP	—	—	1,000	5,000	HF15	*

RoHS compliant, ELV compliant

Table A6 - Packaging and Marking Information for Automotive Devices ... Cont'd

Part Number	Tape & Reel Quantity	Standard Package Quantity	Part Marking	Recommended Pad Layouts [mm (in) See Figure A12] Dimension A (min*/nom)	Dimension B (nom.)	Dimension C (nom.)	Agency Recognition
AHS (High Temperature)							
AHS080-2018	4,000	20,000	H08	4.6 (0.18)	1.5 (0.09)	3.4 (0.134)	*
AHS160	1,500	7,500	160	4.6 (0.18)	2.3 (0.09)	6.1 (0.240)	*
ASMD							
ASMD030F	2,000	10,000	030	3.1 (0.12)	2.3 (0.09)	5.1 (0.201)	*
ASMD050F	2,000	10,000	050	3.1 (0.12)	2.3 (0.09)	5.1 (0.201)	*
ASMD075F	2,000	10,000	075	3.1 (0.12)	2.3 (0.09)	5.1 (0.201)	*
ASMD100F	2,000	10,000	100	3.1 (0.12)	2.3 (0.09)	5.1 (0.201)	*
ASMD125F	2,000	10,000	125	3.1 (0.12)	2.3 (0.09)	5.1 (0.201)	*
ASMD150F	1,500	7,500	150	4.6 (0.18)	2.3 (0.09)	6.1 (0.240)	*
ASMD200F	1,500	7,500	200	4.6 (0.18)	2.3 (0.09)	6.1 (0.240)	*
ASMD250F	1,500	7,500	250	4.6 (0.18)	2.3 (0.09)	6.1 (0.240)	*

Note: * These devices have been designed for use in automotive applications. For commercial alternatives to these product series please see the Radial-leaded or Surface-mount section of this catalog.

Figure A13 - Recommended Pad Layout for Automotive Devices

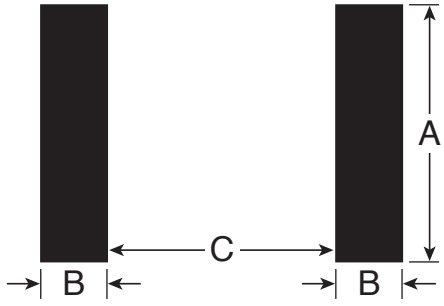


Table A7 - Tape and Reel Specifications for Automotive Devices

AGRF and AHRF devices are available in tape and reel packaging per EIA468-B/IEC286-2 and EIA 481-2 standards. See Figures A14 and A15 for details.

Description	EIA Mark	Dimensions (mm)	Tolerance
Carrier tape width	W	18.0	-0.5/+1.0
Hold down tape width	W_4	11.0	Minimum
Top distance between tape edges	W_6	3.0	Maximum
Sprocket hole position	W_5	9.0	-0.5/+0.75
Sprocket hole diameter	D_0	4.0	±0.2
Abscissa to plane	H_0	16.0	±0.5
Abscissa to top AGRF500 to AGRF600 & AHRF450	H_1	32.2	Maximum
Abscissa to top AGRF700 to AGRF1400 & AHRF600 to AHRF1300*	H_1	45.0	Maximum
Overall width w/lead protrusion AGRF400 to AGRF600 & AHRF450	C_1	43.2	Maximum
Overall width w/lead protrusion AGRF700 to AGRF1400 & AHRF600 to AHRF1300	C_1	55.0	Maximum
Overall width w/o lead protrusion AGRF400 to AGRF600 & AHRF450	C_2	42.5	Maximum
Overall width w/o lead protrusion AGRF700 to AGRF1400 & AHRF600 to AHRF1300	C_2	54.0	Maximum
Lead protrusion	L_1	1.0	Maximum
Protrusion of cut-out	L	11.0	Maximum
Protrusion beyond hold-down tape	I_2	Not specified	—
Sprocket hole pitch	P_0	12.7	±0.3
Device pitch AGRF400 to AGRF700, AHRF450 to AHRF600	—	12.7	±0.3
Device pitch AGRF800 to AGRF1400, AHRF650 to AHRF1300	—	25.4	±0.6
Pitch tolerance	—	20 consec.	±0.1
Tape thickness	t	0.9	Maximum
Overall tape and lead thickness AGRF400 to AGRF1100, AHRF450 to AHRF1000*	t_1	2.0	Maximum
Overall tape and lead thickness AGRF1200 to AGRF1400, AHRF1300*	t_1	2.3	Maximum
Splice sprocket hole alignment	—	0	±0.3
Body lateral deviation	Dh	0	±1.0
Body tape plane deviation	Dp	0	±1.3

RoHS compliant, ELV compliant

Table A7 - Tape and Reel Specifications for Automotive Devices ... Cont'd

AGRF and AHRF devices are available in tape and reel packaging per EIA468-B/IEC286-2 and EIA 481-2 standards. See Figures A14 and A15 for details.

Description	Mark	EIA Dimensions (mm)	Tolerance
Ordinate to adjacent component lead AGRF400 to AGRF1100, AHRF450 to AHRF750	P_1	3.81	±0.7
Ordinate to adjacent component lead AGRF1200 to AGRF1400, AHRF1000 to AHRF1300	P_1	7.62	±0.7
Lead spacing AGRF400 to AGRF1100, AHRF450 to AHRF750*	F	5.08	±0.75/-0.5
Lead spacing AGRF1200 to AGRF1400, AHRF1000 to AHRF1300*	F	10.2	±0.75/-0.5
Reel width AGRF400 to AGRF600 & AHRF450	W_2	56.0	Maximum
Reel width AGRF700 to AGRF1400, AHRF600 to AHRF1300*	W_2	63.5	Maximum
Reel diameter	a	370.0	Maximum
Space between flanges less device*	W_1	4.75	±3.25
Arbor hold diameter	c	26.0	±12.0
Core diameter*	n	91.0	Maximum
Box	—	64/372/362	Maximum
Consecutive missing places	—	None	—
Empty places per reel	—	0.1%	Maximum

* Differs from EIA specification

Figure A14 - EIA Referenced Taped Component Dimensions for AGRF, AHRF

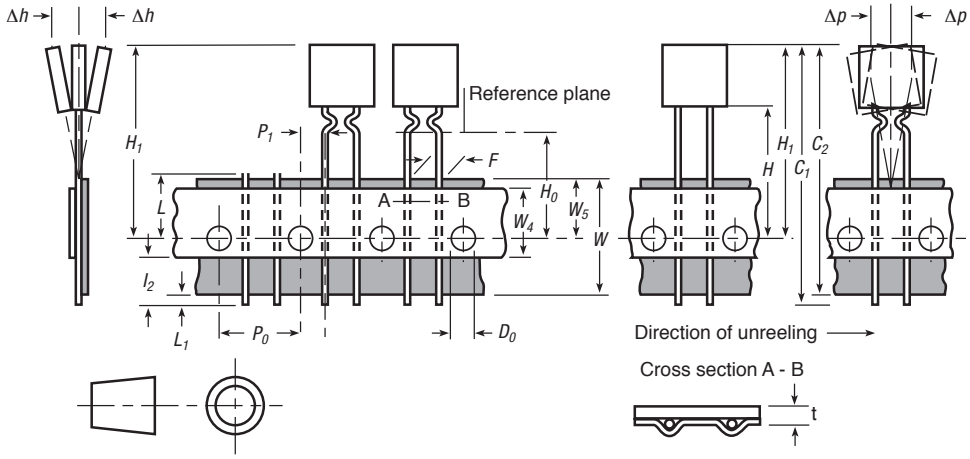


Figure A15 - EIA Referenced Reel Dimensions for AGRF, AHRF

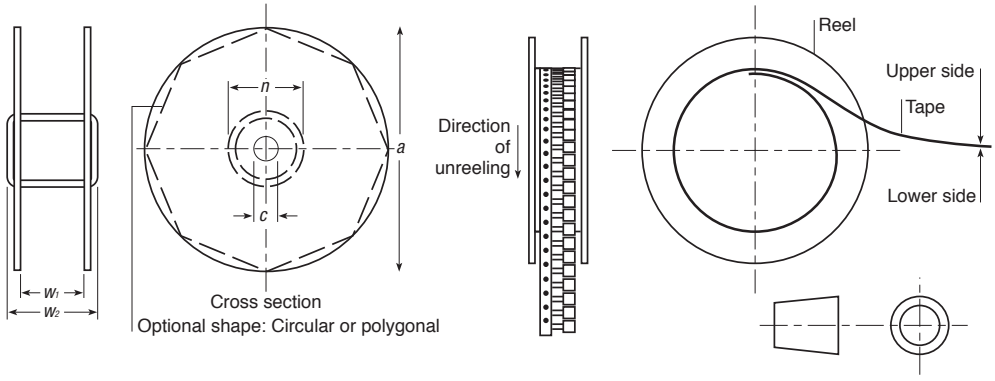


Table A7 - Tape and Reel Specifications for Automotive Devices ... Cont'd

AHS and ASMD devices are available in tape and reel packaging per EIA 468-2 standards. See Figures A16 and A17 for details.

Description	Mark	EIA Dimensions (mm)	Tolerance
Carrier tape width	W	16.0	± 0.3
Sprocket hole pitch	P_0	4.0	± 0.10
Embossed cavity pitch (ASMD030F to ASMD125F & AHS080)	P_1	8.0	± 0.10
Embossed cavity pitch (ASMD150F to ASMD250F & AHS160)	P_1	12.0	± 0.10
Ordinate to embossed cavity center	P_2	2.0	± 0.10
Embossed cavity length (inside) (AHS080)	A_0	5.11	± 0.15
Embossed cavity length (inside) (ASMD030F to ASMD125F & AHS160)	A_0	5.6	± 0.23
Embossed cavity length (inside) (ASDM150F to ASMD250F)	A_0	6.9	± 0.23
Embossed cavity width (inside) (AHS080)	B_0	5.6	± 0.23
Embossed cavity width (inside) (ASMD030F to ASMD125F)	B_0	8.1	± 0.15
Embossed cavity width (inside) (ASMD150F to ASMD250F)	B_0	9.6	± 0.15
Embossed cavity length (outside)	B_1 max.	12.1	—
Sprocket hole diameter	D_0	1.5	+ 0.1, -0
Abscissa to embossed cavity center	F	7.5	± 0.10
Sprocket hole location	E_1	1.75	± 0.10
Sprocket hole location (across embossed cavity)	E_2min.	14.25	—
Carrier tape thickness	T max.	0.6	—
Cover tape thickness	T_1 max.	0.1	—
AHS080	K_0	1.8	± 0.15
ASMD100F, ASMD125F	K_0	3.2	± 0.15
ASMD150F to 250F	K_0	3.4	± 0.15
Embossed cavity depth (inside)	K_0	—	± 0.15
Leader min.	—	400	—
Trailer min.	—	160	—
Reel diameter	A max.	330	—
Core diameter	N min.	50	—
Reel width measured at inside hub	W_1	16.4	+ 2.0, -0
Reel width measured at outside hub	W_2 max.	22.4	—

Figure A16 - EIA Referenced Taped Component Dimensions for AHS and ASMD Devices

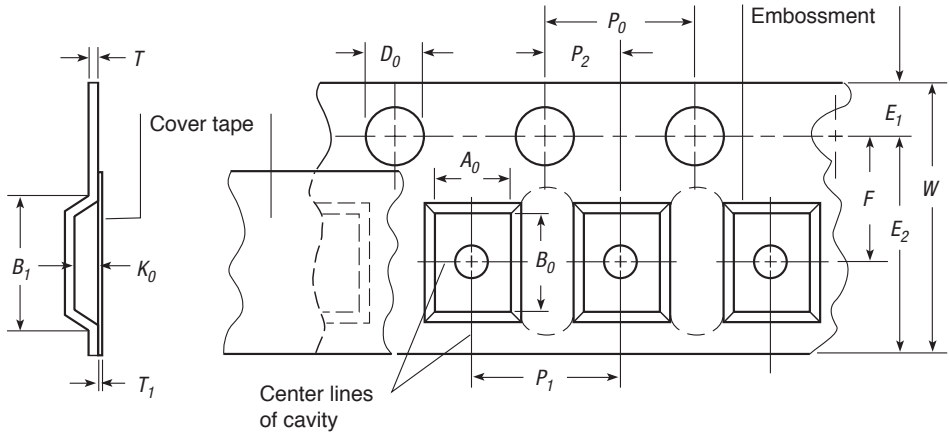
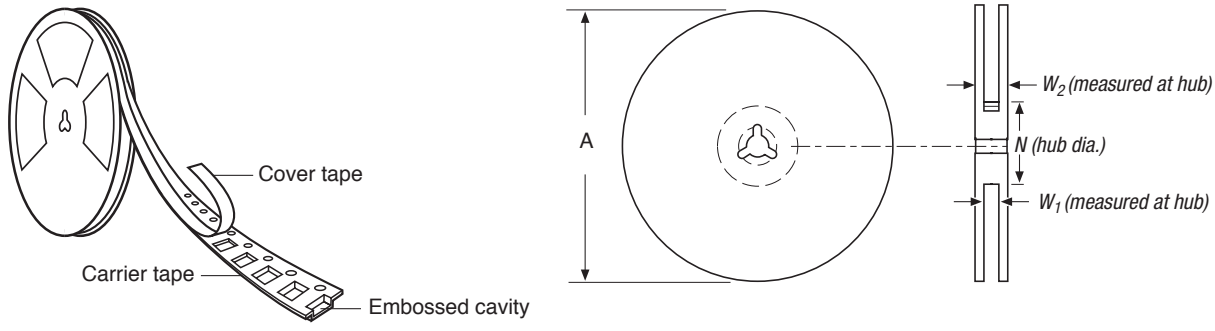
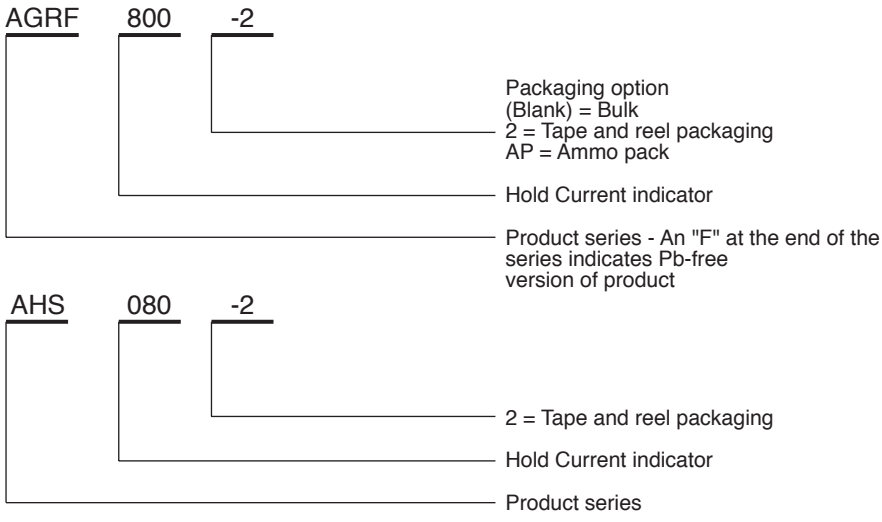


Figure A17 - EIA Referenced Reel Dimensions for AHS and ASMD Devices



Part Numbering System for Automotive Devices



⚠ WARNING:

- Operation beyond the maximum ratings or improper use may result in device damage and possible electrical arcing and flame.
- The devices are intended for protection against occasional overcurrent or overtemperature fault conditions and should not be used when repeated fault conditions or prolonged trip events are anticipated.
- Contamination of the PPTC material with certain silicon based oils or some aggressive solvents can adversely impact the performance of the devices.
- Device performance can be impacted negatively if devices are handled in a manner inconsistent with recommended electronic, thermal, and mechanical procedures for electronic components.
- Operation in circuit with a large inductance can generate a circuit voltage ($L\ {}^{di}/_{dt}$) above the rated voltage of the PolySwitch resettable device.