Automotive High Temperature SMD Series

Surface Mount



Web Resources

Download ECAD models, order samples, and find technical recources at www.littelfuse.com

Agency Approvals

Agency	Agency File Number
	E74889
	50517757, 72161792

Description

This Automotive High Temperature SMD is the first miniature high temperature PPTC series from Littelfuse with AEC-Q200 qualification for automotive applications and it provides surface mount overcurrent protection for applications where space is a prime concern and resettable protection is desired.

Features & Benefits

- Meets applicable automotive industry standards
- Compatible with high volume electronics assembly
- Smaller footprint
- High operating temperature -40°C~125°C
- Resettable solution against overcurrent and short circuit
- AEC-Q200 qualified
- RoHS compliant, halogen-free, and lead-free
- Surface-mount form factor
- Expertise from the world's leading resettable overcurrent protection manufacturer
- Provides wider range of form factors to enhance design flexibility
- Meets ever-increasing demand for compact and space saving designs due to more electronics content in vehicle
- Restores system operation after reset when fault condition is removed, thus provides safety and protection
- Able to meet most stringent requirements for the extreme harsh automotive environment
- Suitable for standard PCB assembly to enable automated mass production

Applications

- Automotive and Industrial Transportation
- Infotainment/Telematics
- Climate Control Systems
- Body Electronics
- Sensor Protection
- ADAS (Advanced Driver Assistance)
- Auto Lighting
- Security and Communication Systems

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Automotive High Temperature SMD Series
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Electrical Characteristics

Part Number	Ordering Part Number	Size	I_H (A)	I_T (A)	V_{MAX} (V_{DC})	I_{MAX} (A)	$P_{D\ Typ}$ (W)	Max Time-to-trip (A)	Max Time-to-trip (s)	R_{MIN} (Ω)	R_{1MAX} (Ω)
Automotive SMD Series											
FEMTOASMDCH005F	RF5289-000	0603	0.05	0.25	16	40	0.5	0.5	0.77	1.5	30
FEMTOASMDCH010F	RF5290-000	0603	0.10	0.50	16	40	0.5	1	0.16	0.9	8.5
FEMTOASMDCH016F	RF5291-000	0603	0.16	0.8	16	40	0.5	1.6	0.11	0.6	6
picoASMDCH005F	RF4927-000	0805	0.05	0.18	16	40	0.60	0.50	0.08	3.50	38.00
picoASMDCH010F	RF4778-000	0805	0.10	0.60	16	40	1.00	2.50	1.50	1.00	10.00
picoASMDCH016F	RF5023-000	0805	0.16	0.68	16	40	0.90	8.00	0.10	0.80	6.00
picoASMDCH020F	RF4929-000	0805	0.20	0.70	16	40	0.90	8.00	0.10	0.75	3.40
picoASMDCH035F	RF5024-000	0805	0.35	1.10	16	40	0.90	8.00	0.10	0.30	1.90
picoASMDCH050F	RF5025-000	0805	0.50	1.70	16	40	1.50	8.00	0.10	0.25	1.60
nanoASMDCH005F	RF5030-000	1206	0.05	0.15	30	20	0.80	0.25	20.00	3.500	35
nanoASMDCH010F/30	RF5029-000	1206	0.10	0.30	30	20	0.80	0.50	5.00	1.000	7.50
nanoASMDCH016F	RF4896-000	1206	0.16	0.80	30	20	0.90	8.00	0.10	0.70	6.00
nanoASMDCH020F	RF5028-000	1206	0.20	0.60	30	20	0.90	8.00	0.01	0.60	4.50
nanoASMDCH035F	RF4646-000	1206	0.35	0.95	16	50	1.00	3.50	0.20	0.20	1.60
nanoASMDCH035F/30	RF4897-000	1206	0.35	1.75	30	20	1.20	8.00	0.10	0.40	2.20
nanoASMDCH050F/24	RF4914-000	1206	0.50	2.50	24	20	1.70	8.00	0.10	0.20	1.60
nanoASMDCH075F	RF5027-000	1206	0.75	2.25	12	40	0.80	8.00	0.15	0.080	0.46
microASMDCH010F	RF5160-000	1210	0.10	0.30	30	20	0.80	2.50	0.10	1.00	7.50
microASMDCH016F	RF5161-000	1210	0.16	0.48	30	20	0.80	2.50	0.10	0.70	60
microASMDCH020F	RF5162-000	1210	0.20	0.60	30	20	0.80	2.50	0.10	0.60	4.20
microASMDCH035F	RF5163-000	1210	0.35	1.05	30	20	1.20	8.00	0.01	0.40	2.20
microASMDCH050F	RF5164-000	1210	0.50	1.05	30	20	1.50	8.00	0.10	0.30	1.60
microASMDCH075F	RF5034-000	1210	0.75	2.25	16	20	1.30	8.00	0.10	0.100	0.68
microASMDCH110F	RF5033-000	1210	1.10	3.30	16	20	1.50	8.00	0.50	0.060	0.50
microASMDCH125F	RF5032-000	1210	1.25	3.75	12	40	1.50	8.00	1.00	0.030	0.30
microASMDCH150F	RF5031-000	1210	1.50	4.50	12	40	1.85	8.00	1.00	0.025	0.25
miniASMDCH050F	RF4983-000	1812	0.50	1.60	30	20	1.20	8.00	0.10	0.20	1.35
Automotive Terminal SMD Series											
AHS050	RF5235-000	2018	0.50	1.50	33	70	1.50	8.00	0.15	0.20	1.30
AHS080-2018	RF1640-000	2018	0.80	2.00	16	70	1.50	8.00	9.00	0.13	0.55
AHS080F/33	RF5236-000	2018	0.80	2.00	33	70	1.90	8.00	0.81	0.10	0.60
AHS120	RF2573-000	2920	1.20	2.30	16	50	2.20	8.00	2.00	0.15	0.34
AHS120F/33	RF5105-000	2920	1.20	2.30	33	20	2.20	8.00	2.00	0.15	0.34
AHS160	RF1641-000	3425	1.60	3.20	16	70	2.20	8.00	15.00	0.05	0.15
AHS160F/24	RF5237-000	3425	1.60	4.80	24	40	2.30	8.00	24.00	0.035	0.17
AHS200	RF0422-000	3425	2.00	4.00	16	70	2.30	8.00	13.40	0.05	0.14
AHS200F/24	RF5238-000	3425	2.00	6.00	24	40	2.30	8.00	33.00	0.03	0.124
AHS300	RF1644-000	3425	3.00	6.00	16	70	3.00	15.00	8.00	0.024	0.083
AHS300F/24	RF5062-000	3425	3.00	6.00	24	20	3.00	8.00	8.00	0.015	0.10

Notes:
I_H : Hold current: maximum current device will pass without interruption in 25°C, unless otherwise specified.
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_{MIN} : Minimum resistance of device as supplied at 25°C, unless otherwise specified.
R_{1MAX} : Maximum resistance of device when measured one hour post reflow at 25°C unless otherwise specified.
* Electrical characteristics determined at 25°C.

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Surface Mount

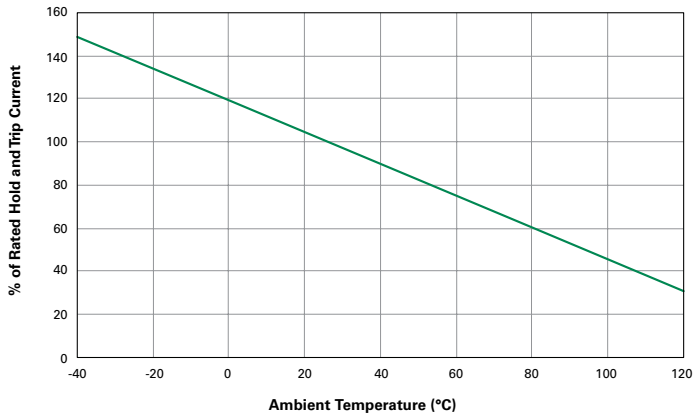
Temperature Rerating

Maximum Ambient Temperature											
Part Number	-40°C	-20°C	0°C	20°C	25°C	40°C	50°C	60°C	70°C	85°C	125°C
Hold Current (A)											
Automotive SMDC Series											
FEMTOASMDCH005F	0.074	0.067	0.060	0.051	0.050	0.043	0.039	0.037	0.031	0.025	0.010
FEMTOASMDCH010F	0.155	0.140	0.125	0.108	0.100	0.091	0.083	0.075	0.067	0.054	0.022
FEMTOASMDCH016F	0.240	0.220	0.190	0.170	0.160	0.145	0.133	0.126	0.110	0.090	0.040
picoASMDCH005F	0.075	0.069	0.060	0.056	0.050	0.048	0.046	0.042	0.040	0.035	0.022
picoASMDCH010F	0.150	0.130	0.115	0.103	0.100	0.090	0.084	0.078	0.072	0.063	0.040
picoASMDCH016F	0.250	0.220	0.200	0.170	0.160	0.150	0.140	0.130	0.110	0.100	0.045
picoASMDCH020F	0.300	0.270	0.240	0.210	0.200	0.180	0.160	0.150	0.130	0.110	0.050
picoASMDCH035F	0.490	0.450	0.400	0.340	0.350	0.310	0.280	0.270	0.230	0.200	0.100
picoASMDCH050F	0.800	0.710	0.640	0.550	0.500	0.480	0.440	0.400	0.360	0.300	0.150
nanoASMDCH005F	0.075	0.068	0.060	0.052	0.050	0.045	0.042	0.038	0.035	0.030	0.015
nanoASMDCH010F	0.150	0.135	0.120	0.104	0.100	0.090	0.082	0.075	0.070	0.060	0.030
nanoASMDCH016F	0.250	0.210	0.190	0.170	0.160	0.140	0.130	0.120	0.110	0.090	0.050
nanoASMDCH020F	0.299	0.269	0.239	0.209	0.202	0.179	0.164	0.149	0.134	0.112	0.052
nanoASMDCH035F	0.540	0.480	0.430	0.370	0.350	0.320	0.290	0.260	0.240	0.200	0.100
nanoASMDCH035F/30	0.510	0.460	0.410	0.360	0.350	0.310	0.290	0.260	0.240	0.200	0.100
nanoASMDCH050F/24	0.730	0.660	0.580	0.500	0.500	0.450	0.420	0.390	0.350	0.310	0.170
nanoASMDCH075F	1.100	1.000	0.900	0.790	0.750	0.690	0.640	0.590	0.540	0.460	0.250
microASMDCH010F	0.152	0.136	0.120	0.104	0.100	0.088	0.080	0.070	0.064	0.052	0.020
microASMDCH016F	0.250	0.226	0.200	0.170	0.160	0.142	0.128	0.120	0.100	0.079	0.022
microASMDCH020F	0.310	0.277	0.240	0.209	0.200	0.175	0.158	0.150	0.124	0.099	0.033
microASMDCH035F	0.531	0.475	0.420	0.363	0.350	0.307	0.279	0.250	0.223	0.181	0.074
microASMDCH050F	0.723	0.653	0.580	0.513	0.500	0.443	0.408	0.370	0.338	0.285	0.145
microASMDCH075F	1.150	1.050	0.900	0.790	0.750	0.700	0.650	0.600	0.550	0.450	0.250
microASMDCH110F	1.680	1.530	1.300	1.150	1.100	1.020	0.950	0.880	0.820	0.700	0.390
microASMDCH125F	1.900	1.680	1.510	1.320	1.250	1.170	1.090	1.000	0.920	0.790	0.450
microASMDCH150F	2.300	2.100	1.850	1.580	1.500	1.400	1.300	1.200	1.130	0.960	0.530
miniASMDCH050F	0.750	0.680	0.600	0.520	0.500	0.450	0.410	0.400	0.330	0.280	0.120
Automotive Terminal SMD Series											
AHS050	0.852	0.751	0.662	0.547	0.500	0.446	0.395	0.355	0.293	0.217	0.150
AHS080F/33	1.241	1.112	0.975	0.839	0.800	0.703	0.635	0.598	0.499	0.417	0.184
AHS080-2018	1.200	1.040	0.900	0.800	0.770	0.680	0.620	0.600	0.530	0.460	0.260
AHS120	1.720	1.540	1.360	1.200	1.140	1.010	0.920	0.830	0.740	0.610	0.250
AHS120F/33	1.720	1.540	1.360	1.200	1.140	1.010	0.920	0.830	0.740	0.610	0.250
AHS160	2.150	1.960	1.780	1.600	1.550	1.420	1.330	1.240	1.150	1.010	0.640
AHS160F/24	2.500	2.239	1.991	1.743	1.600	1.495	1.371	1.300	1.123	1.000	0.400
AHS200	2.900	2.500	2.200	2.000	1.940	1.800	1.750	1.700	1.400	1.180	0.670
AHS200F/24	3.000	2.720	2.432	2.144	2.000	1.856	1.712	1.660	1.424	1.270	0.560
AHS300	4.200	3.800	3.700	3.000	2.920	2.630	2.440	2.100	2.000	1.760	1.000
AHS300F/24	4.200	3.800	3.540	3.120	3.000	2.700	2.480	2.270	2.060	1.740	0.900

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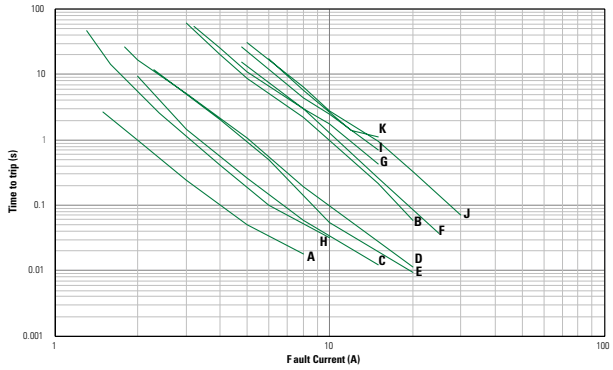
Automotive High Temperature SMD Series
Surface Mount

Temperature Rerating Curve



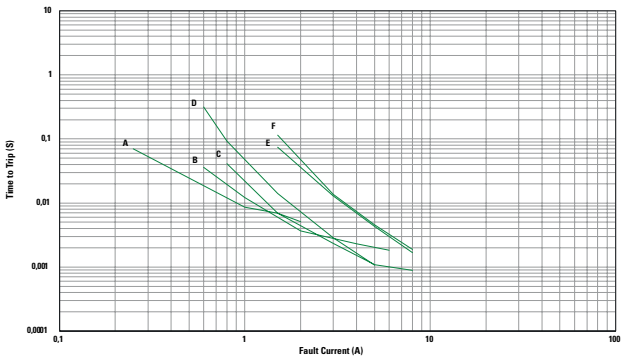
Typical Time-to-Trip Curves at 25°C

Automotive Terminal SMD Series



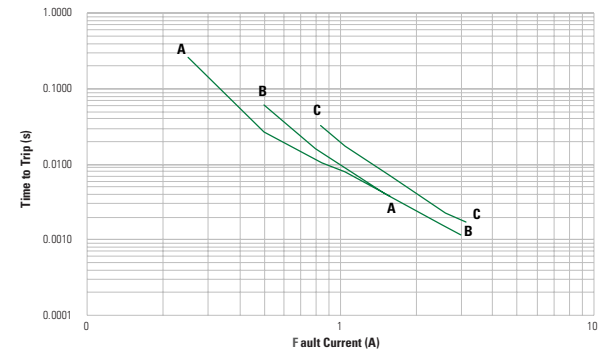
A = AHS050
B = AHS080-2018
C = AHS080F/33
D = AHS120
E = AHS120F/33
F = AHS160
G = AHS160F/24
H = AHS200
I = AHS200F/24
J = AHS300
K = AHS300F/24

Automotive Pico Series



A = picoASMDCH005F
B = picoASMDCH010F
C = picoASMDCH016F
D = picoASMDCH020F
E = picoASMDCH035F
F = picoASMDCH050F

Automotive Femto Series

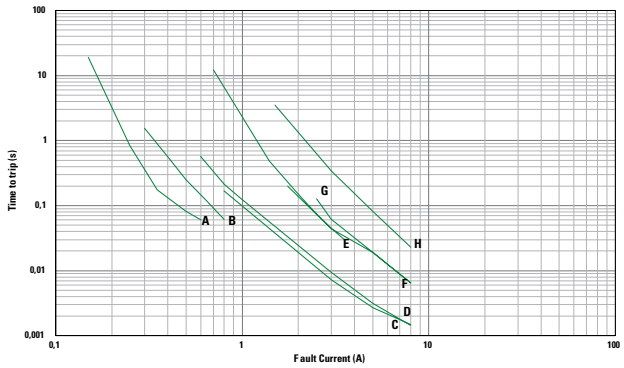


A = femtoASMDCH005F
B = femtoASMDCH010F
C = femtoASMDCH016F

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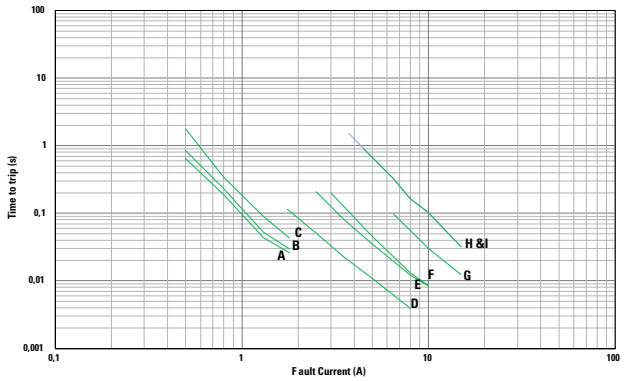
Automotive High Temperature SMD Series
Surface Mount

Automotive Nano Series



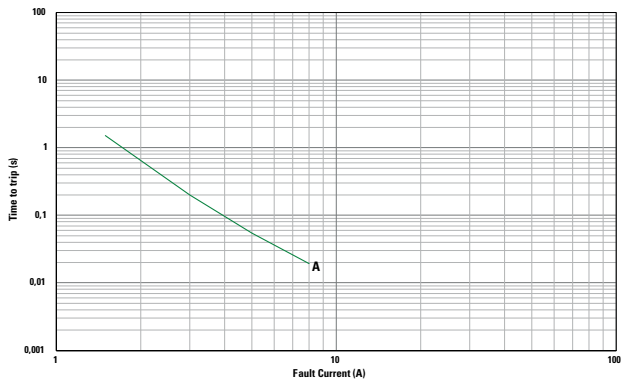
A = nanoASMDCH005F
B = nanoASMDCH010F
C = nanoASMDCH016F
D = nanoASMDCH020F
E = nanoASMDCH035F
F = nanoASMDCH035F/30
G = nanoASMDCH050F/24
H = nanoASMDCH075F

Automotive Micro Series



A = microASMDCH010F
B = microASMDCH016F
C = microASMDCH020F
D = microASMDCH035F
E = microASMDCH050F
F = microASMDCH075F
G = microASMDCH110F
H = microASMDCH125F
I = microASMDCH150F

Automotive Mini Series



A = miniASMDCH050F

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Automotive High Temperature SMD Series
Surface Mount

Physical Specifications

Terminal Pad Material	100% Matte Tin with Nickel Underplate
Soldering Characteristics	Solderability per ANSI-J-STD-002 Category 3
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
Operation Temperature	-40°C~125°C

Note: See PS400 for other physical specifications.

Environmental Specifications

Test	Conditions	Resistance Change
Passive Aging	60°C, 1000 hrs, 85°C, 1000 hrs	±3% Typical, ±5% Typical
Humidity Aging	85°C, 85% R.H., 100 hrs	±1.2% Typical
Thermal Shock	125°C, -40°C 10 times	-33% Typical
Solvent Resistance	Freon Trichloroethane Hydrocarbons	No change No change No change

Note: See PS400 for other environmental specifications.

Moisture Resistance Level	Level 2a, J-STD-020
Storage Conditions	40°C max, 70% RH max; devices should remain in original sealed bags prior to use. Devices may not meet specified values if these storage conditions are exceeded.

Dimensions

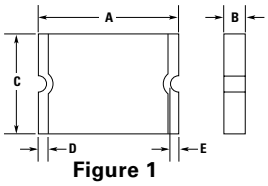


Figure 1

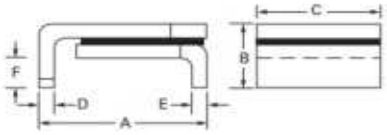


Figure 2

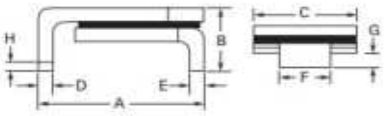


Figure 3

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Automotive High Temperature SMD Series

Surface Mount

Dimensions

Part Number	Dimensions in Millimeters (Inches)																Figure
	A		B		C		D		E		F		G		H		
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
Automotive SMDC Series																	
FEMTOASMDCH005F	1.400	1.800	0.35	0.800	0.600	1.000	0.100	0.500	0.075	-	-	-	-	-	-	-	1
	0.055	0.071	0.014	0.031	0.023	0.039	0.004	0.020	0.003								
FEMTOASMDCH010F	1.400	1.800	0.25	0.650	0.600	1.000	0.100	0.500	0.075	-	-	-	-	-	-	-	1
	0.055	0.071	0.010	0.026	0.023	0.039	0.004	0.020	0.003								
FEMTOASMDCH016F	1.400	1.800	0.25	0.650	0.600	1.000	0.100	0.500	0.075	-	-	-	-	-	-	-	1
	0.055	0.071	0.010	0.026	0.023	0.039	0.004	0.020	0.003								
picoASMDCH005F	2.00	2.20	0.40	0.80	1.30	1.50	0.25	0.75	0.08	-	-	-	-	-	-	-	1
	(0.079)	(0.087)	(0.016)	(0.031)	(0.051)	(0.059)	(0.010)	(0.030)	(0.03)								
picoASMDCH010F	2.00	2.20	0.40	0.80	1.30	1.50	0.25	0.75	0.076	-	-	-	-	-	-	-	1
	(0.079)	(0.087)	(0.016)	(0.310)	(0.051)	(0.059)	(0.010)	(0.030)	(0.003)								
picoASMDCH016F	2.00	2.20	0.40	0.80	1.30	1.50	0.25	0.75	0.08	-	-	-	-	-	-	-	1
	(0.079)	(0.087)	(0.016)	(0.031)	(0.051)	(0.059)	(0.010)	(0.030)	(0.03)								
picoASMDCH020F	2	2.2	0.4	0.8	1.3	1.5	0.25	0.75	0.08	-	-	-	-	-	-	-	1
	(0.079)	(0.087)	(0.016)	(0.031)	(0.051)	(0.059)	(0.010)	(0.030)	(0.03)								
picoASMDCH035F	2.00	2.20	0.60	1.20	1.30	1.50	0.25	0.75	0.08	-	-	-	-	-	-	-	1
	(0.079)	(0.087)	(0.024)	(0.047)	(0.051)	(0.059)	(0.010)	(0.030)	(0.03)								
picoASMDCH050F	2.00	2.20	0.60	1.20	1.30	1.50	0.25	0.75	0.08	-	-	-	-	-	-	-	1
	(0.079)	(0.087)	(0.024)	(0.047)	(0.051)	(0.059)	(0.010)	(0.030)	(0.03)								
nanoASMDCH005F	3.000	3.400	0.6	0.850	1.370	1.800	0.250	0.750	0.076	-	-	-	-	-	-	-	1
	0.118	0.134	0.024	0.033	0.054	0.071	0.010	0.030	0.003								
nanoASMDCH010F	3.000	3.400	0.6	0.850	1.370	1.800	0.250	0.750	0.076	-	-	-	-	-	-	-	1
	0.118	0.134	0.024	0.033	0.054	0.071	0.010	0.030	0.003								
nanoASMDCH016F	3.00	3.40	0.61	0.89	1.37	1.80	0.25	0.75	0.076	-	-	-	-	-	-	-	1
	(0.118)	(0.134)	(0.024)	(0.035)	(0.054)	(0.071)	(0.010)	(0.030)	(0.003)								
nanoASMDCH020F	3.000	3.400	0.6	0.850	1.370	1.800	0.250	0.750	0.076								1
	0.118	0.134	0.024	0.033	0.054	0.071	0.010	0.030	0.003								
nanoASMDCH035F	3.00	3.40	0.91	1.14	1.37	1.80	0.25	0.75	0.076	-	-	-	-	-	-	-	1
	(0.118)	(0.134)	(0.036)	(0.045)	(0.054)	(0.071)	(0.010)	(0.030)	(0.003)								
nanoASMDCH035F/30	3.00	3.40	1.16	1.46	1.37	1.80	0.25	0.75	0.076	-	-	-	-	-	-	-	1
	(0.118)	(0.134)	(0.046)	(0.057)	(0.054)	(0.071)	(0.010)	(0.030)	(0.003)								
nanoASMDCH050F/24	3.00	3.40	1.16	1.46	1.37	1.80	0.25	0.75	0.076	-	-	-	-	-	-	-	1
	(0.118)	(0.134)	(0.046)	(0.057)	(0.054)	(0.071)	(0.010)	(0.030)	(0.003)								
microASMDCH010F	3.000	3.430	0.6	0.850	2.350	2.800	0.250	0.750	0.076								1
	0.118	0.135	0.024	0.033	0.093	0.110	0.010	0.030	0.003								
microASMDCH016F	3.000	3.430	0.6	0.850	2.350	2.800	0.250	0.750	0.076								1
	0.118	0.135	0.024	0.033	0.093	0.110	0.010	0.030	0.003								
microASMDCH020F	3.000	3.430	0.6	0.850	2.350	2.800	0.250	0.750	0.076								1
	0.118	0.135	0.024	0.033	0.093	0.110	0.010	0.030	0.003								
microASMDCH035F	3.000	3.430	0.6	0.850	2.350	2.800	0.250	0.750	0.076								1
	0.118	0.135	0.024	0.033	0.093	0.110	0.010	0.030	0.003								
microASMDCH050F	3.000	3.430	1.1	1.400	2.350	2.800	0.250	0.750	0.076								1
	0.118	0.135	0.043	0.055	0.093	0.110	0.010	0.030	0.003								
nanoASMDCH075F	3.000	3.400	0.75	1.000	1.370	1.800	0.250	0.750	0.076	-	-	-	-	-	-	-	1
	0.118	0.134	0.030	0.039	0.054	0.071	0.010	0.030	0.003								
microASMDCH075F	3.000	3.430	0.4	0.600	2.350	2.800	0.250	0.750	0.076	-	-	-	-	-	-	-	1
	0.118	0.135	0.016	0.024	0.093	0.110	0.010	0.030	0.003								
microASMDCH110F	3.000	3.430	0.75	1.050	2.350	2.800	0.250	0.750	0.076	-	-	-	-	-	-	-	1
	0.118	0.135	0.030	0.041	0.093	0.110	0.010	0.030	0.003								
microASMDCH125F	3.000	3.430	1.1	1.400	2.350	2.800	0.250	0.750	0.076	-	-	-	-	-	-	-	1
	0.118	0.135	0.043	0.055	0.093	0.110	0.010	0.030	0.003								
microASMDCH150F	3.000	3.430	1.1	1.400	2.350	2.800	0.250	0.750	0.076	-	-	-	-	-	-	-	1
	0.118	0.135	0.043	0.055	0.093	0.110	0.010	0.030	0.003								
miniASMDCH050F	4.37	4.83	0.5	0.82	3.07	3.41	0.25	0.95	0.2	-	-	-	-	-	-	-	1
	(0.172)	(0.190)	(0.023)	(0.032)	(0.121)	(0.134)	(0.010)	(0.040)	(0.008)								

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Automotive High Temperature SMD Series
Surface Mount

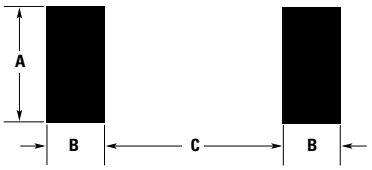
Dimensions

Part Number	Dimensions in Millimeters (Inches)																Figure
	A		B		C		D		E		F		G		H		
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
Automotive Terminal SMD Series																	
AHS050F	4.72	5.44	-	1.68	4.22	4.93	0.25	0.36	0.25	0.36	0.3	0.46	-	-	-	-	2
	0.186	0.214		0.066	0.166	0.194	0.01	0.014	0.01	0.014	0.012	0.018					
AHS080F/33	4.72	5.44	-	1.58	4.22	4.93	0.25	0.36	0.25	0.36	0.3	0.46	-	-	-	-	2
	0.186	0.214		0.062	0.166	0.194	0.01	0.014	0.01	0.014	0.012	0.018					
AHS080-2018	4.72	5.44	-	1.52	4.22	4.93	0.25	0.36	0.25	0.36	0.30	0.46	-	-	-	-	2
	(0.186)	(0.214)		(0.060)	(0.166)	(0.194)	(0.010)	(0.014)	(0.010)	(0.014)	(0.012)	(0.018)					
AHS120	6.73	7.98	-	3.00	4.80	5.44	0.56	0.71	0.56	0.71	2.16	2.41	0.66	1.37	0.43	-	3
	(0.265)	(0.314)		(0.118)	(0.190)	(0.214)	(0.022)	(0.028)	(0.022)	(0.028)	(0.085)	(0.095)	(0.026)	(0.054)	(0.017)		
AHS120F/33	6.73	7.98	-	3.00	4.80	5.44	0.56	0.71	0.56	0.71	2.16	2.41	0.66	1.37	0.43	-	3
	(0.265)	(0.314)		(0.118)	(0.190)	(0.214)	(0.022)	(0.028)	(0.022)	(0.028)	(0.085)	(0.095)	(0.026)	(0.054)	(0.017)		
AHS160	8.00	9.40	-	3.00	6.00	6.71	0.56	0.71	0.56	0.71	3.68	3.94	0.66	1.37	0.43	-	3
	(0.315)	(0.370)		(0.118)	(0.240)	(0.264)	(0.022)	(0.028)	(0.022)	(0.028)	(0.145)	(0.155)	(0.026)	(0.054)	(0.017)		
AHS160F/24	8.00	9.40	-	3.00	6.00	6.71	0.56	0.71	0.56	0.71	3.68	3.94	0.66	1.37	0.43		3
	(0.315)	(0.370)		(0.118)	(0.240)	(0.264)	(0.022)	(0.028)	(0.022)	(0.028)	(0.145)	(0.155)	(0.026)	(0.054)	(0.017)		
AHS200	8.00	9.40	-	3.00	6.00	6.71	0.56	0.71	0.56	0.71	3.68	3.94	0.66	1.37	0.43	-	3
	(0.315)	(0.370)		(0.118)	(0.240)	(0.264)	(0.022)	(0.028)	(0.022)	(0.028)	(0.145)	(0.155)	(0.026)	(0.054)	(0.017)		
AHS200F/24	8.00	9.40	-	3.00	6.00	6.71	0.56	0.71	0.56	0.71	3.68	3.94	0.66	1.37	0.43		3
	(0.315)	(0.370)		(0.118)	(0.240)	(0.264)	(0.022)	(0.028)	(0.022)	(0.028)	(0.145)	(0.155)	(0.026)	(0.054)	(0.017)		
AHS300	8.00	9.40	-	3.00	6.00	6.71	0.56	0.71	0.56	0.71	3.68	3.94	0.66	1.37	0.43	-	3
	(0.315)	(0.370)		(0.118)	(0.240)	(0.264)	(0.022)	(0.028)	(0.022)	(0.028)	(0.145)	(0.155)	(0.026)	(0.054)	(0.017)		
AHS300F/24	8.00	9.40	-	3.00	6.00	6.71	0.56	0.71	0.56	0.71	3.68	3.94	0.66	1.37	0.43	-	3
	(0.315)	(0.370)		(0.118)	(0.240)	(0.264)	(0.022)	(0.028)	(0.022)	(0.028)	(0.145)	(0.155)	(0.026)	(0.054)	(0.017)		

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Automotive High Temperature SMD Series
Surface Mount

Recommended Pad Layout



Packaging and Marking Information

Part Number	Tape and Reel Quantity	Standard Package	Part Marking	Recommended Pad Layout Figures [mm (in)]			Agency Recognition
				Dimension A (Nom)	Dimension B (Nom)	Dimension C (Nom)	
Automotive SMDC Series							
FEMTOASMDCH005F	4000	20000	S	0.8 (0.032)	0.6 (0.024)	0.8 (0.032)	UL, TUV
FEMTOASMDCH010F	5000	25000	L	0.8 (0.032)	0.6 (0.024)	0.8 (0.032)	UL, TUV
FEMTOASMDCH016F	5000	25000	N	0.8 (0.032)	0.6 (0.024)	0.8 (0.032)	UL, TUV
picoASMDCH005F	4000	20000	A	1.50 (0.060)	1.00 (0.039)	1.20 (0.047)	UL, TUV
picoASMDCH010F	4000	20000	L	1.50 (0.060)	1.00 (0.039)	1.20 (0.047)	UL, TUV
picoASMDCH016F	4000	20000	T	1.50 (0.060)	1.00 (0.039)	1.20 (0.047)	UL, TUV
picoASMDCH020F	4000	20000	Y	1.50 (0.060)	1.00 (0.039)	1.20 (0.047)	UL, TUV
picoASMDCH035F	3000	15000	B	1.50 (0.060)	1.00 (0.039)	1.20 (0.047)	UL, TUV
picoASMDCH050F	3000	15000	P	1.50 (0.060)	1.00 (0.039)	1.20 (0.047)	UL, TUV
nanoASMDCH005F	3000	15000	H05	1.60 (0.063)	1.00 (0.039)	2.00 (0.079)	UL, TUV
nanoASMDCH010F	3000	15000	H10	1.60 (0.063)	1.00 (0.039)	2.00 (0.079)	UL, TUV
nanoASMDCH016F	3000	15000	H16	1.60 (0.063)	1.00 (0.039)	2.00 (0.079)	UL, TUV
nanoASMDCH020F	3000	15000	H20	1.60 (0.063)	1.00 (0.039)	2.00 (0.079)	UL, TUV
nanoASMDCH035F	3000	15000	H35	1.60 (0.063)	1.00 (0.039)	2.00 (0.079)	UL, TUV
nanoASMDCH035F/30	3000	15000	V	1.60 (0.063)	1.00 (0.039)	2.00 (0.079)	UL, TUV
nanoASMDCH050F/24	3000	15000	H50	1.60 (0.063)	1.00 (0.039)	2.00 (0.079)	UL, TUV
nanoASMDCH075F	3000	15000	H75	1.60 (0.063)	1.00 (0.039)	2.00 (0.079)	UL, TUV
microASMDCH010F	4000	20000	H010	2.50 (0.098)	1.00 (0.039)	2.00 (0.079)	UL, TUV
microASMDCH016F	4000	20000	H016	2.50 (0.098)	1.00 (0.039)	2.00 (0.079)	UL, TUV
microASMDCH020F	4000	20000	H020	2.50 (0.098)	1.00 (0.039)	2.00 (0.079)	UL, TUV
microASMDCH035F	4000	20000	H035	2.50 (0.098)	1.00 (0.039)	2.00 (0.079)	UL, TUV
microASMDCH050F	3000	15000	H050	2.50 (0.098)	1.00 (0.039)	2.00 (0.079)	UL, TUV
microASMDCH075F	4000	20000	H075	2.50 (0.098)	1.00 (0.039)	2.00 (0.079)	UL, TUV
microASMDCH110F	3000	15000	H11	2.50 (0.098)	1.00 (0.039)	2.00 (0.079)	UL, TUV
microASMDCH125F	3000	15000	H12	2.50 (0.098)	1.00 (0.039)	2.00 (0.079)	UL, TUV
microASMDCH150F	3000	15000	H15	2.50 (0.098)	1.00 (0.039)	2.00 (0.079)	UL, TUV
miniASMDCH050F	2000	10000	H050F	3.15 (0.124)	1.68 (0.066)	3.10 (0.122)	UL, TUV
Automotive Terminal SMD Series							
AHS050	4000	20000	H05	4.6 (0.18)	1.5 (0.059)	3.4 (0.134)	UL, TUV
AHS080F/33	4000	20000	H083	4.6 (0.18)	1.5 (0.059)	3.4 (0.134)	UL, TUV
AHS080-2018	4000	20000	H08	4.6 (0.18)	1.5 (0.06)	3.4 (0.134)	UL, TUV
AHS120	2000	10000	H12	3.1 (0.12)	2.3 (0.09)	5.1 (0.201)	UL, TUV
AHS120F/33	2000	10000	H123	3.1 (0.12)	2.3 (0.09)	5.1 (0.201)	UL, TUV
AHS160	1500	7500	160	4.6 (0.18)	2.3 (0.09)	6.1 (0.240)	UL, TUV
AHS160F/24	1500	7500	H162	4.6 (0.18)	2.3 (0.09)	6.1 (0.240)	UL, TUV
AHS200	1500	7500	H200	4.6 (0.18)	2.3 (0.09)	6.1 (0.240)	UL, TUV
AHS200F/24	1500	7500	H202	4.6 (0.18)	2.3 (0.09)	6.1 (0.240)	UL, TUV
AHS300	1500	7500	H300	4.6 (0.18)	2.3 (0.09)	6.1 (0.240)	UL, TUV
AHS300F/24	1500	7500	H324	4.6 (0.18)	2.3 (0.09)	6.1 (0.240)	UL, TUV

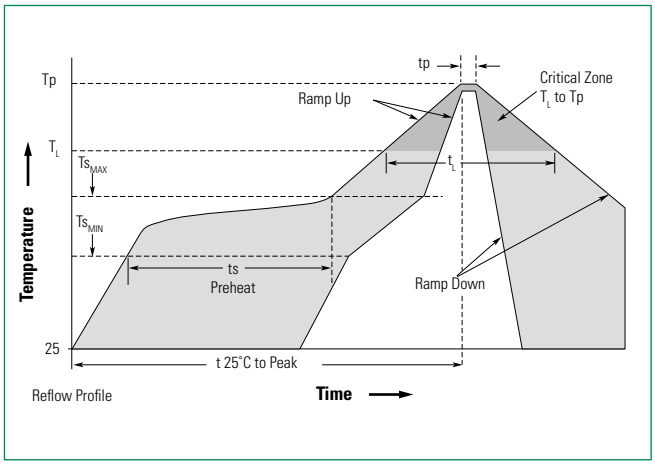
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Automotive High Temperature SMD Series
Surface Mount

Solder Reflow Recommendations

Profile Feature	Pb-Free Assembly
Average ramp up rate (Ts_{MAX} to Tp)	3°C/s max
Preheat	
• **Temperature min (Ts_{MIN})**	150°C
• **Temperature max (Ts_{MAX})**	200°C
• **Time (ts_{MIN} to ts_{MAX})**	60-120 s
Time maintained above:	
• **Temperature (T_L)**	217°C
• **Time (t_L)**	60-150 s
Peak/Classification temperature (Tp)	260°C
Time within 5°C of actual peak temperature	
Time (tp)	30 s max
Ramp down rate	3°C/s max
Time 25°C to peak temperature	8 min max

Note: All temperatures refer to topside of the package, measured on the package body surface.



Solder Reflow

- Recommended reflow method: IR, hot air, nitrogen.
- Recommended maximum paste thickness: 0.25mm (0.010in)
- Devices can be cleaned using standard methods and aqueous solvents.
- Experience has shown the optimum conditions for forming acceptable solder fillets occur when a reasonable amount of solder paste is placed underneath each device's termination. As such, we request that customers comply with our recommended solder pad layouts.
- Customer should validate that the solder paste amount and reflow recommendations meet its application.
- We request that customer board layouts refrain from placing raised features (e.g. vias, nomenclature, traces, etc.) underneath PolySwitch devices. It is possible that raised features could negatively impact solderability performance of our devices.

Rework

- Standard industry practices. (Please also avoid direct contact to the device.)

Part Number System

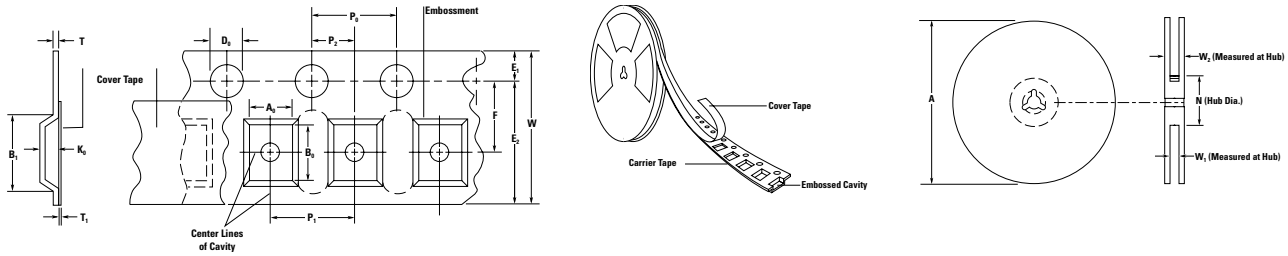
picoASMDCH 010 F -2

- **Packaging**
  2 = Tape and Reel
- **Lead Free**
- **Hold Current Indicator**
- **ASMDCH:** Automotive SMDC Series
  AHS: Automotive Terminal SMD Series

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Automotive High Temperature SMD Series
Surface Mount

Tape and Reel Diagrams



Warning:
- Users should independently evaluate the suitability of and test each product selected for their own application.
- Operation beyond the maximum ratings or improper use may result in device damage and possible electrical arcing and flame.
- These devices are intended for protection against damage caused by 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 silicone-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.
- PPTC devices are not recommended for installation in applications where the device is constrained such that its PTC properties are inhibited, for example in rigid potting materials or in rigid housings, which lack adequate clearance to accommodate device expansion.
- Operation in circuits with a large inductance can generate a circuit voltage (Ldi/dt) above the rated voltage of the device.

Tape and Reel Specifications

Description		Automotive SMDC Series								Automotive Terminal SMD Series			
	FEM-TOASMD-CH005F FEM-TOASMD-CH010F FEM-TOASMD-CH016F	picoASMD-CH016F picoASMD-CH005F picoASMD-CH010F picoASMD-CH020F picoASMD-CH035F picoASMD-CH050F	nano-ASMD-CH005F nano-ASMD-CH010F nano-ASMD-CH020F	nano-ASMD-CH016F nano-ASMD-CH035F	nanoASMD-CH035F/30 nanoASMD-CH050F/24	na-no-ASM-DCH075F	microASMD-CH010F microASMD-CH010F microASMD-CH016F microASMD-CH020F microASMD-CH035F micro-ASMD-CH075F microASMD-CH110F	microASMD-CH050F microASMD-CH125F microASMD-CH150F	miniASM-DCH050F	AHS080-2018	AHS050F AHS080F/33	AHS120 AHS120F/33	AHS160 AHS160F/24 AHS200 AHS200F/24 AHS300 AHS300F/24
W	8.0 ± 0.30	8.0 ± 0.30	8.0 ± 0.30	8.0 ± 0.30	8.0 ± 0.30	8.0 ± 0.30	8.0 ± 0.30	8.0 ± 0.30	12.0 ± 0.30	16.0 ± 0.30	16.0 ± 0.30	16.0 ± 0.30	16.0 ± 0.30
P_0	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10
P_1	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	4.0 ± 0.10	8.0 ± 0.10	8.0 ± 0.10	8.0 ± 0.10	8.0 ± 0.10	12.0 ± 0.10
P_2	2.0 ± 0.05	2.0 ± 0.10	2.0 ± 0.05	2.0 ± 0.05	2.0 ± 0.05	2.0 ± 0.05	2.0 ± 0.05	2.0 ± 0.05	2.0 ± 0.05	2.0 ± 0.10	2.0 ± 0.10	2.0 ± 0.10	2.0 ± 0.10
A_0	0.95 ± 0.05	1.70 ± 0.1	1.95 ± 0.1	1.95 ± 0.1	1.95 ± 0.1	1.95 ± 0.1	2.9 ± 0.1	2.9 ± 0.1	3.5 ± 0.1	5.11 ± 0.15	5.11±0.15	5.6 ± 0.23	6.9 ± 0.23
B_0	1.85 ± 0.05	2.45 ± 0.1	3.5 ± 0.1	3.5 ± 0.1	3.5 ± 0.1	3.5 ± 0.1	3.5 ± 0.1	3.5 ± 0.1	4.95 ± 0.1	5.6 ± 0.23	5.6±0.23	8.1 ± 0.15	9.6 ± 0.15
B_1 max	4.35	4.35	4,35	4.35	4.35	4,35	4,35	4,35	6.15	12,1	6.4	12,1	12,1
D_0	1.55 + 0.05	1.55 ± .05	1.55 + 0.05	1.55 ± .05	1.55 ± .05	1.55 + 0.05	1.55 + 0.05	1.55 + 0.05	1.5 + 0.10/ -.00	1.5 + 0.10/ -.00	1.5 + 0.10/ -.00	1.5 + 0.10/ -.00	1.5 + 0.10/ -.00
F	3.50 ± 0.05	3.50 ± 0.05	3.50 ± 0.05	3.50 ± 0.05	3.50 ± 0.05	3.50 ± 0.05	3.50 ± 0.05	3.50 ± 0.05	5.50 ± 0.05	7.50 ± 0.10	7.50 ± 0.10	7.50 ± 0.10	7.50 ± 0.10
E_1	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10
E_2 min	6.25	6.25	6,25	6.25	6.25	6,25	6,25	6,25	10.25	14,25	14.25	14,25	14,25
T max	0.3	0.3	0,3	0.6	0.6	0,3	0,3	0,3	0.35	0,4	0.4	0,4	0,4
T_1 max	0.1	0.1	0,1	0.1	0.1	0,1	0,1	0,1	0.1	0,1	0.1	0,1	0,1
K_0	0.9 ± 0.1	0.86 ± 0.1	1.27 ± 0.1	1.27 ± 0.1	1.50 ± 0.1	0.89 ± 0.1	0.9 ± 0.1	1.27 ± 0.1	0.9 ± 0.1	1.8 ± 0.15	1.8±0.15	3.2 ± 0.15	3.4 ± 0.15
A max	185	185	185	185	185	185	185	185	185	330	330	330	330
N min	50	50	50	50	50	50	50	50	50	50	50	50	50
W_1	8.4 + 1.5/-.00	8.4 + 1.5/-.00	8.4 + 1.5/-.00	8.4 + 1.5/-.00	8.4 + 1.5/-.00	8.4 + 1.5/-.00	8.4 + 1.5/-.00	8.4 + 1.5/-.00	12.4 + 2.0/-.00	16.4 + 2.0/-.00	16.4 + 2.0/-.00	16.4 + 2.0/-.00	16.4 + 2.0/-.00
W_2 max	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	18.4	22.4	22.4	22.4	22.4

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