

Models and Ratings								
Model Number	Input Voltage (VDC) Nom.	Output Voltage (VDC)	Output Current (mA)	Input Current (mA) typ.		Ripple & Noise (mVp-p) max.	Load Regulation (%) max.	Efficiency (%) typ.
			Full Load	No Load	Full Load			
SA1-3R33R3 LF	3.3	3.3	300	62	459	50	15	70
SA1-3R305 LF		5	200	68	446	60	15	72
SA1-3R309 LF		9	110	61	433	80	10	74
SA1-3R312 LF		12	84	59	421	100	10	76
SA1-3R315 LF		15	67	61	421	120	10	76
SA1-053R3 LF	5	3.3	300	41	290	50	12	73
SA1-0505 LF		5	200	40	282	60	12	75
SA1-0509 LF		9	110	39	270	80	8	78
SA1-0512 LF		12	84	25	263	100	8	80
SA1-0515 LF		15	67	44	270	120	8	78
SA1-123R3 LF	12	3.3	300	14	117	50	10	75
SA1-1205 LF		5	200	15	108	60	8	81
SA1-1209 LF		9	110	15	113	80	8	78
SA1-1212 LF		12	84	15	108	100	5	81
SA1-1215 LF		15	67	14	105	120	5	83
SA1-153R3 LF	15	3.3	300	11	88	50	10	76
SA1-1505 LF		5	200	11	85	60	8	79
SA1-1509 LF		9	110	10	88	80	8	76
SA1-1512 LF		12	84	10	85	100	5	79
SA1-1515 LF		15	67	10	84	120	5	80
SA1-243R3 LF	24	3.3	300	6	66	50	8	67
SA1-2405 LF		5	200	7	62	60	5	71
SA1-2409 LF		9	110	6	60	80	5	73
SA1-2412 LF		12	84	8	58	100	5	76
SA1-2415 LF		15	67	8	58	120	5	77

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			Full Load	No Load	Full Load			
SA1-3R3D3R3 LF	3.3	±3.3	±150	48	446	50	15	68
SA1-3R3D05 LF		±5	±100	48	433	60	12	70
SA1-3R3D09 LF		±9	±55	47	410	80	12	74
SA1-3R3D12 LF		±12	±42	46	400	100	8	76
SA1-3R3D15 LF		±15	±34	46	410	120	8	74
SA1-05D3R3 LF	5	±3.3	±150	35	270	50	12	74
SA1-05D05 LF		±5	±100	35	257	60	10	78
SA1-05D09 LF		±9	±55	33	267	80	10	75
SA1-05D12 LF		±12	±42	48	286	100	10	74
SA1-05D15 LF		±15	±34	33	257	120	8	78
SA1-12D3R3 LF	12	±3.3	±150	16	117	50	10	72
SA1-12D05 LF		±5	±100	15	108	60	8	78
SA1-12D09 LF		±9	±55	15	113	80	8	75
SA1-12D12 LF		±12	±42	15	108	100	5	78
SA1-12D15 LF		±15	±34	14	105	120	5	80
SA1-15D3R3 LF	15	±3.3	±150	12	93	50	10	72
SA1-15D05 LF		±5	±100	11	88	60	8	76
SA1-15D09 LF		±9	±55	11	88	80	8	76
SA1-15D12 LF		±12	±42	11	86	100	5	78
SA1-15D15 LF		±15	±34	10	86	120	5	78
SA1-24D3R3 LF	24	±3.3	±150	8	58	50	8	72
SA1-24D05 LF		±5	±100	8	58	60	5	72
SA1-24D09 LF		±9	±55	7	58	80	5	73
SA1-24D12 LF		±12	±42	7	55	100	5	76
SA1-24D15 LF		±15	±34	7	56	120	5	75

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			Full Load	No Load	Full Load			
SA1-3R33R3H LF	3.3	3.3	300	47	446	50	15	68
SA1-3R305H LF		5	200	47	421	60	12	72
SA1-3R309H LF		9	110	47	400	80	12	76
SA1-3R312H LF		12	84	45	410	100	8	74
SA1-3R315H LF		15	67	45	410	120	8	74
SA1-053R3H LF	5	3.3	300	25	274	50	12	77
SA1-0505H LF		5	200	25	260	60	10	81
SA1-0509H LF		9	110	23	270	80	10	78
SA1-0512H LF		12	84	25	263	100	8	80
SA1-0515H LF		15	67	28	260	120	8	81
SA1-123R3H LF	12	3.3	300	14	117	50	10	75
SA1-1205H LF		5	200	20	117	60	8	75
SA1-1209H LF		9	110	15	113	80	8	78
SA1-1212H LF		12	84	15	108	100	5	81
SA1-1215H LF		15	67	14	109	120	5	83
SA1-153R3H LF	15	3.3	300	11	88	50	10	76
SA1-1505H LF		5	200	11	85	60	8	79
SA1-1509H LF		9	110	10	88	80	8	76
SA1-1512H LF		12	84	10	85	100	5	79
SA1-1515H LF		15	67	10	84	120	5	80
SA1-243R3H LF	24	3.3	300	6	66	50	8	67
SA1-2405H LF		5	200	7	62	60	5	71
SA1-2409H LF		9	110	6	60	80	5	73
SA1-2412H LF		12	84	8	58	100	5	76
SA1-2415H LF		15	67	8	58	120	5	77

Models and Ratings								
Model Number	Input Voltage (VDC) Nom.	Output Voltage (VDC)	Output Current (mA)	Input Current (mA) typ.		Ripple & Noise (mVp-p) max.	Load Regulation (%) max.	Efficiency (%) typ.
			Full Load	No Load	Full Load			
SA1-3R3D3R3H LF	3.3	±3.3	±150	48	446	50	15	68
SA1-3R3D05H LF		±5	±100	48	433	60	12	70
SA1-3R3D09H LF		±9	±55	47	410	80	12	74
SA1-3R3D12H LF		±12	±42	46	400	100	8	76
SA1-3R3D15H LF		±15	±34	46	410	120	8	74
SA1-05D3R3H LF	5	±3.3	±150	35	270	50	12	74
SA1-05D05H LF		±5	±100	35	257	60	10	78
SA1-05D09H LF		±9	±55	33	267	80	10	75
SA1-05D12H LF		±12	±42	33	259	100	8	77
SA1-05D15H LF		±15	±34	33	257	120	8	78
SA1-12D3R3H LF	12	±3.3	±150	16	117	50	10	72
SA1-12D05H LF		±5	±100	15	108	60	8	78
SA1-12D09H LF		±9	±55	15	113	80	8	75
SA1-12D12H LF		±12	±42	15	108	100	5	78
SA1-12D15H LF		±15	±34	14	105	120	5	80
SA1-15D3R3H LF	15	±3.3	±150	12	93	50	10	72
SA1-15D05H LF		±5	±100	11	88	60	8	76
SA1-15D09H LF		±9	±55	11	88	80	8	76
SA1-15D12H LF		±12	±42	11	86	100	5	78
SA1-15D15H LF		±15	±34	10	86	120	5	78
SA1-24D3R3H LF	24	±3.3	±150	8	58	50	8	72
SA1-24D05H LF		±5	±100	8	58	60	5	72
SA1-24D09H LF		±9	±55	7	58	80	5	73
SA1-24D12H LF		±12	±42	7	55	100	5	76
SA1-24D15H LF		±15	±34	7	56	120	5	75

Input Specifications

Parameter	Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	3.3Vin Model	2.97	3.3	3.63	VDC
	5Vin Model	4.5	5	5.5	
	12Vin Model	10.8	12	13.2	
	15Vin Model	13.5	15	15.5	
	24Vin Model	21.6	24	26.4	
Input Absolute Voltage Range	3.3Vin Model	-0.7	3.3	4.2	VDC
	5Vin Model	-0.7	5	7	
	12Vin Model	-0.7	12	15	
	15Vin Model	-0.7	15	18	
	24Vin Model	-0.7	24	28	
Input Filter		Capacitor			

Output Specifications

Parameter	Condition	Min.	Typ.	Max.	Unit
Output Power				1	W
Output Voltage Accuracy	Nominal Vin and Full Load		3.0	5.0	%
Line Regulation	1% Vin step			1.5	%
Load Regulation	10% to 100% load	See Models and Ratings table			
Output Ripple and Noise (20MHz Bandwidth)	Full load				
Efficiency	Nominal Vin and Full Load				
Temperature Coefficient				±0.02	%/°C

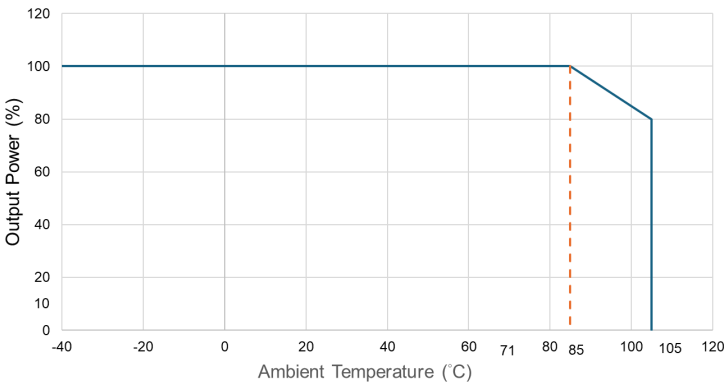
General Specification

Parameter	Condition	Min.	Typ.	Max.	Unit
Switching Frequency		60	100	150	kHz
Isolation Voltage	60 s, SA1-□□□□□ LF	1000			VDC
	60 s, SA1-□□□□□ H LF	3000			
Isolation Resistance	500VDC	1000			MΩ

Isolation Capacitance	3.3Vin Model		12		pF
	5Vin Model		16		
	12Vin Model		16		
	15Vin Model		16		
	24Vin Model		16		
Operating Ambient Temperature	Full Load	-40		+85	°C
Case Temperature				+105	°C
Storage Temperature		-55		+125	°C
Humidity				90	% RH
Peak Airflow Temperature with CECC 00802 Profile				+245	°C
Weight	SA1-□□S□□ LF		1.5		g
	SA1-□□D□□ LF		1.7		g
	SA1-□□□□□H LF		1.7		g

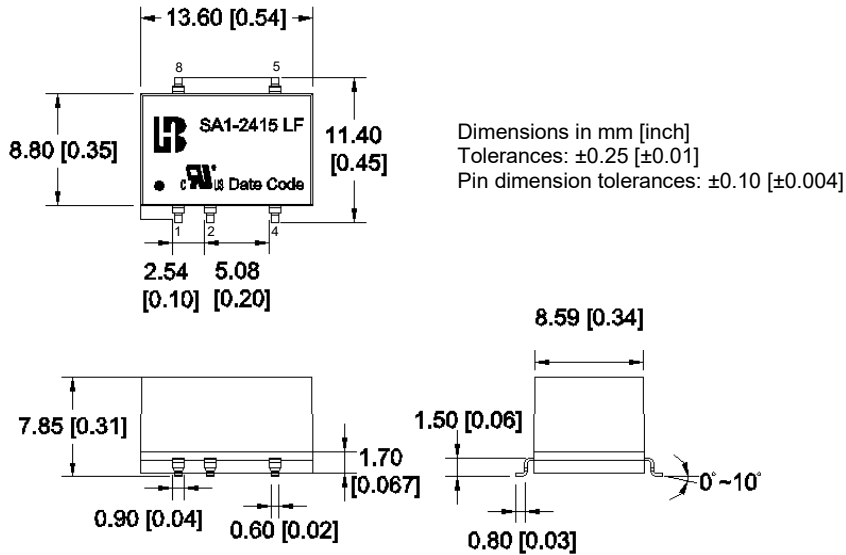
Characteristic Curves

Power Derating Curve



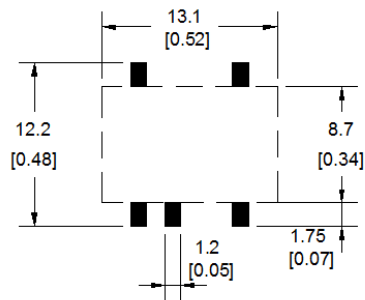
Mechanical

SA1-□□S□□ LF (Single Output Model for Isolation Voltage 1000VDC)

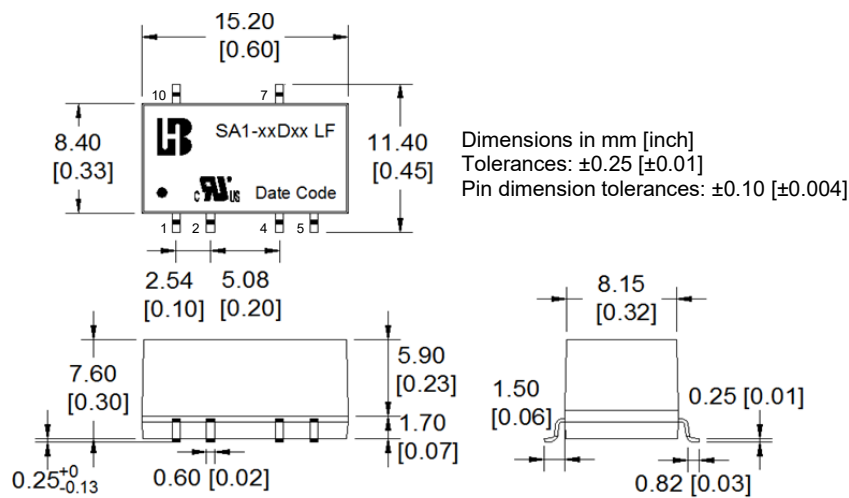


Pinout	
PIN	Function
1	-Vin
2	+Vin
3	No Pin
4	-Vout
5	+Vout
6	No Pin
7	No Pin
8	No Connection

Recommended Solder Pad Layout

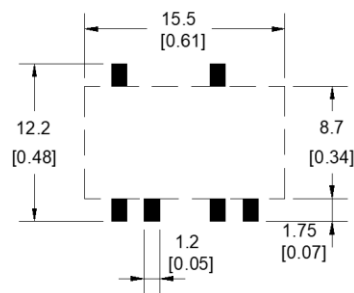


SA1-□□D□□ LF (Dual Output Model for Isolation Voltage 1000VDC)

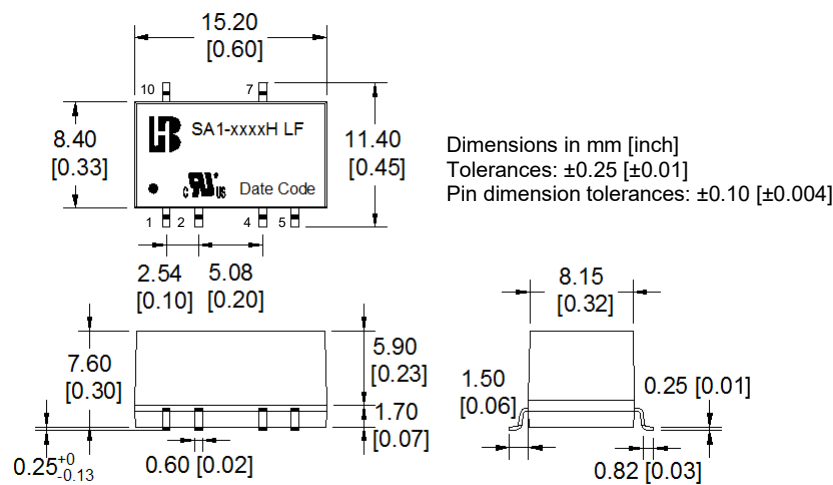


Pinout	
PIN	Function
1	-Vin
2	+Vin
3	No Pin
4	Common
5	-Vout
6	No Pin
7	+Vout
8	No Pin
9	No Pin
10	No Connection

Recommended Solder Pad Layout

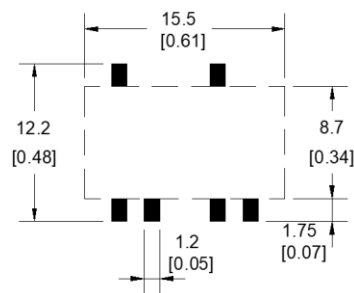


SA1-□□S□□H LF (Single Output Model for Isolation Voltage 3000VDC)

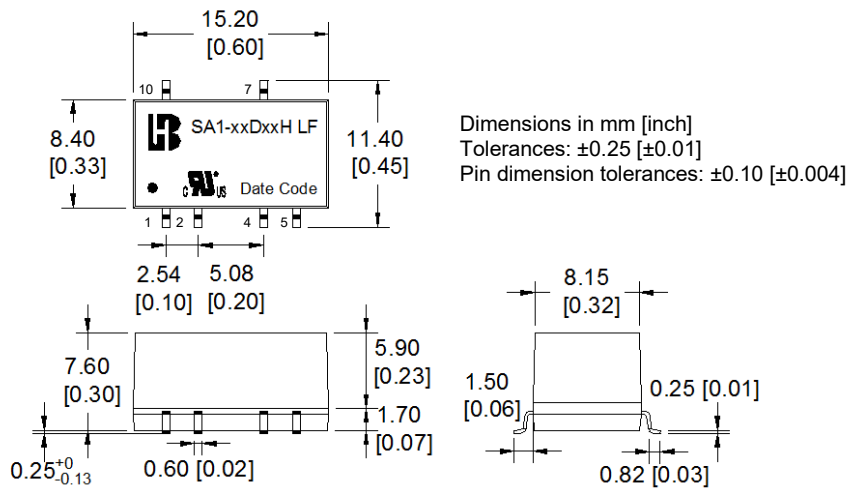


Pinout	
PIN	Function
1	-Vin
2	+Vin
3	No Pin
4	-Vout
5	No Connection
6	No Pin
7	+Vout
8	No Pin
9	No Pin
10	No Connection

Recommended Solder Pad Layout

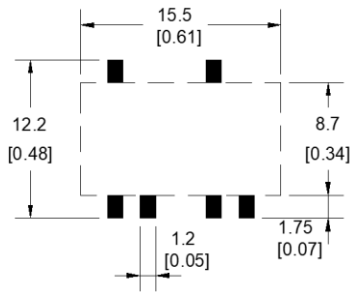


SA1-□□D□□H LF (Dual Output Model for Isolation Voltage 3000VDC)

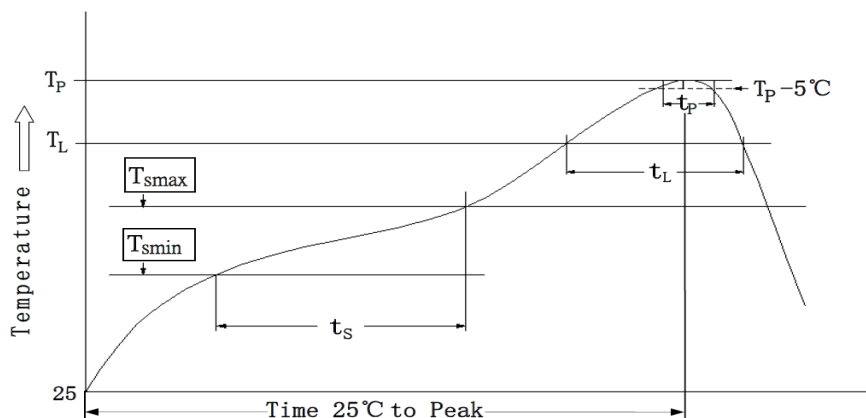


Pinout	
PIN	Function
1	-Vin
2	+Vin
3	No Pin
4	Common
5	-Vout
6	No Pin
7	+Vout
8	No Pin
9	No Pin
10	No Connection

Recommended Solder Pad Layout



Pb-free SMD Package AIR Reflow Profile

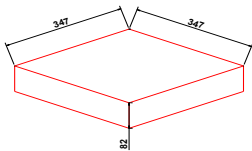
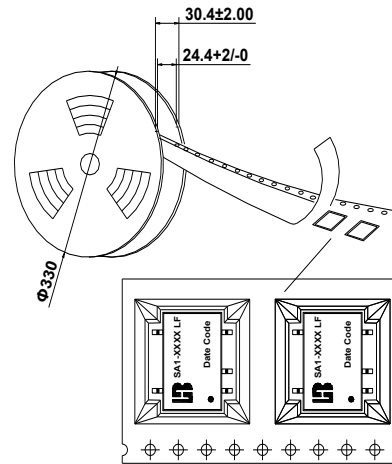
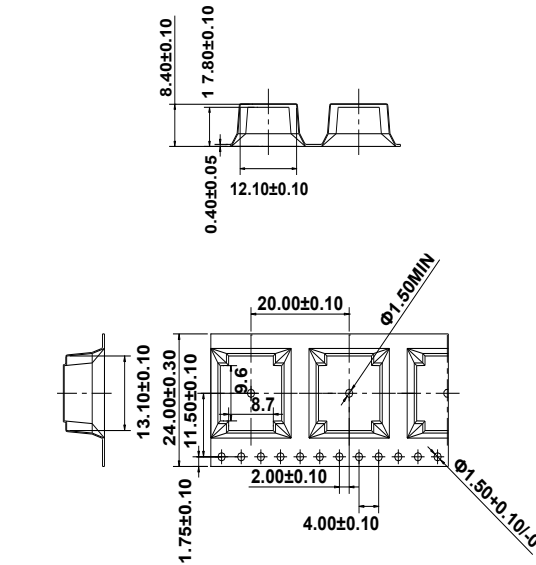


Step#	Profile Feature	Condition / Duration
Step1	Temperature (Tsmmin to Tsmmax)	150 - 200°C
	The Time (ts)	60 - 120sec
Step2	Ramp-up rate (TL to Tp)	3°C/sec max
Step3	Liquidous Temperature (TL)	217°C
	The Time (tL)	60 - 150sec
Step4	Peak package body temperature (Tp)	See classification temp in Table 1
	The Time (tp)	30sec max
Step5	Ramp-down rate	6°C/sec max
Note1	All temperatures refer to topside of the package, measured on the package body surface.	
Note2	Time 25°C to peak temperature: 8 minutes max	
Note3	It is not allowed to make a forced cooling in temperature falling range.	
Note4	The applicable condition refers to IPC/JEDEC J-STD-020E standard	

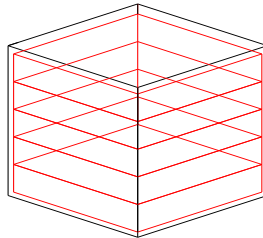
Table 1 Pb-Free Process - Classification Temperatures (Tp)			
Package Thickness	Volume mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >2000
<1.6 mm	260°C	260°C	260°C
1.6 mm - 2.5 mm	260°C	250°C	245°C
>2.5 mm	250°C	245°C	245°C

Carton Package

SA1-□□S□□ LF (Single Output Model for Isolation Voltage 1000VDC)



Inner Carton: 347*347*82mm



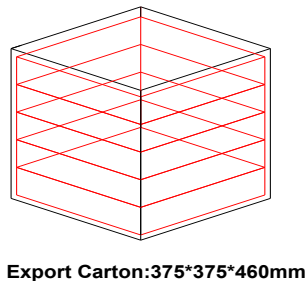
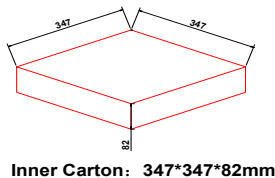
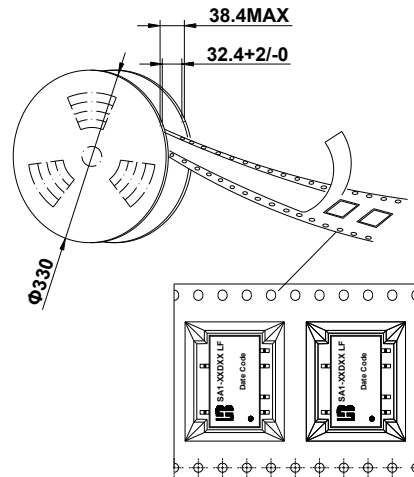
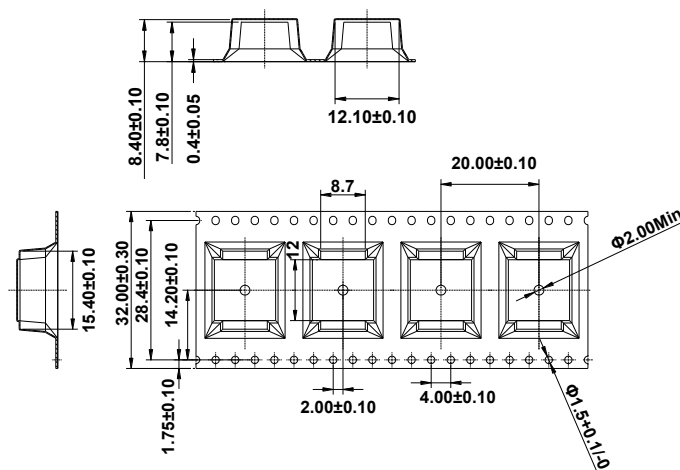
Export Carton: 375*375*460mm

Packaging Number of 13": 350 PCS/Reel
Inner Carton = 1 Reel = 1*350 = 350 PCS
Export Carton = 5 Inner Carton = 5*350 = 1750 PCS

SA1-□□D□□ LF (Dual Output Model for Isolation Voltage 1000VDC)

SA1-□□S□□H LF (Single Output Model for Isolation Voltage 3000VDC)

SA1-□□D□□H LF (Dual Output Model for Isolation Voltage 3000VDC)



Packaging Number of 13": 350 PCS/Reel
Inner Carton = 1 Reel = 1*350 = 350 PCS
Export Carton = 5 Inner Carton = 5*350 = 1750 PCS

For More Information:

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