

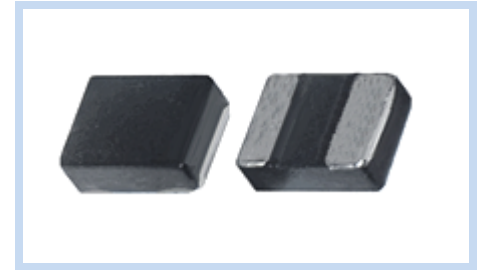
# SMD Power Inductor High Current Molded Type

SIM-2520BAE series

MERITEK

## FEATURE

- High Saturation Current, Low DCR, High Efficiency
- Low Acoustic Noise and Shielded Construction Design
- High Resolution In EMC Protection
- Application: DC/DC Converters, Smart Phone, PAD, Power Supply



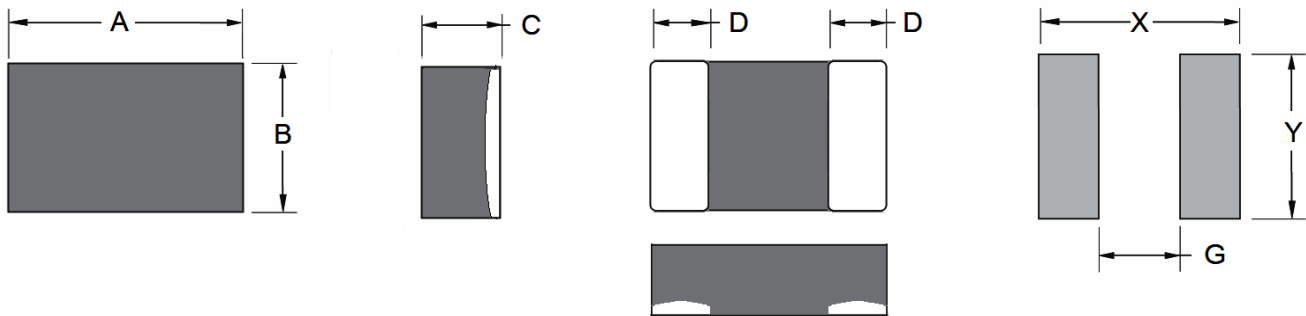
## ELECTRICAL CHARACTERISTICS



Part Number	Inductance (μH)	Tolerance (%)	I <sub>rms</sub> (A)		I <sub>sat</sub> (A)		DCR (mΩ)	
			Typ	Max	Typ	Max	Typ	Max
SIMR33M2520BAE	0.33	±20%	7.0	6.5	7.8	7.5	11.0	13.2
SIMR47M2520BAE	0.47	±20%	6.2	5.6	6.2	5.6	15.0	18.0
SIMR68M2520BAE	0.68	±20%	5.3	4.9	5.5	5.0	23.0	27.6
SIM1R0M2520BAE	1.00	±20%	4.5	4.2	5.0	4.2	33.0	39.6
SIM1R5M2520BAE	1.50	±20%	3.7	3.4	4.0	3.5	43.0	51.6
SIM2R2M2520BAE	2.20	±20%	3.1	2.8	3.4	3.1	66.0	79.2

Notes: 1. Test frequency: Ls:100KHz/1.0V. 2. Heat Rating Current (I<sub>rms</sub>) will cause the temperature rise approximately ΔT of 40°C.  
3. Saturation Current (I<sub>sat</sub>) will cause L<sub>0</sub> to drop approximately 30%. 4. Operating Temperature: -40 ~ +125°C (Including self-temperature rise)

## DIMENSIONS



(Unit: mm)

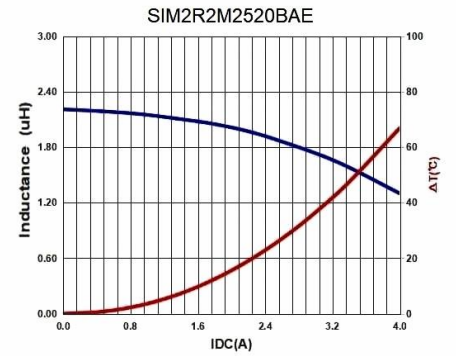
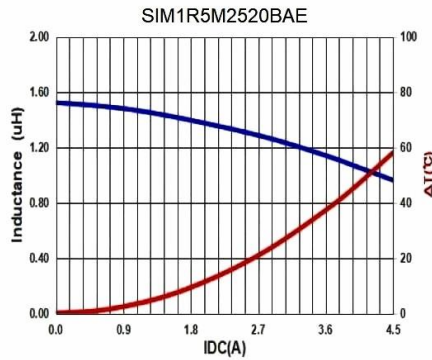
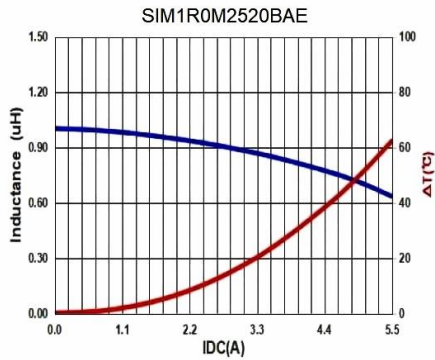
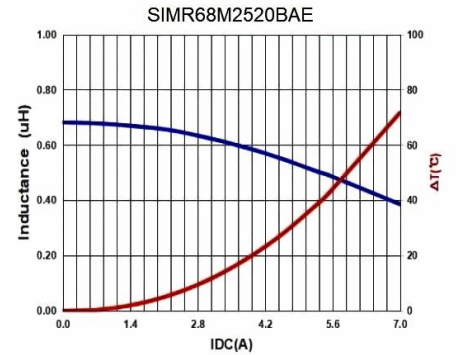
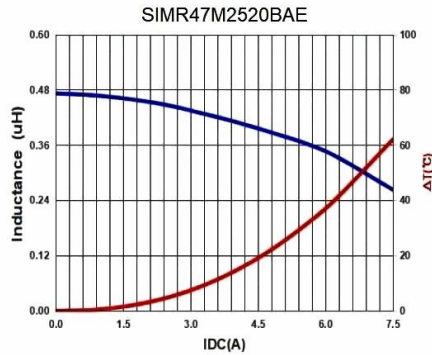
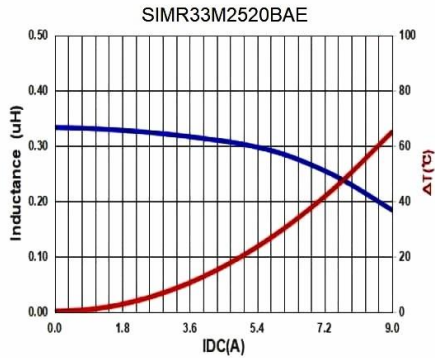
Size Code	A	B	C	D	X	G	Y
2520B	2.5±0.3	2.0±0.3	1.0±0.2	0.9±0.3	2.9 Ref	0.5 Ref	2.3 Ref

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## CHARICTERISTIC CURVES



## PART NUMBERING SYSTEM

SIM 2R2 M 2520B AE  
(1) (2) (3) (4) (5)

No	item	Code	Description	
(1)	Product Code	SIM	SMD Power Inductor Series, High current Molded type	
(2)	Inductance	2R2	2R2: 2.2μH	R denotes decimal point
(3)	Tolerance	M	M: ±20%	-20% ~ +20%
(4)	Size Code	2520B	2520B: 2.5x2.0x1.0mm	W x L x H (mm)
(5)	Series Code	AE	High current molded series	Internal Control or Project Reference

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## RELIABILITY TEST CONDITON AND REQUIREMENT

Item	Test Standards / Conditions	Requirement															
<b>Solderability</b>	a. Method B: 4hrs at 155°C, dry heat at 235±5°C. Test time: 5+0/-0.5 sec. b. Method D category 3: Steam aging 8hrs±15min at 260±5°C. Test time: 30+0/-0.5sec.	More than 95% of the terminal electrode should be covered with solder.															
<b>Resistance to Soldering Heat</b>	Solder temperature: 260±5°C for 10±1 seconds. Temperature ramp/immersion and emersion rate: 25mm/s ±6 mm/s. Depth: Completely cover the termination. Number of heat cycles: 1	Appearance: no damage. Inductance: within±10%of initial value. Q: Shall not exceed specification value. RDC: within±15%of initial value and shall not exceed specification value.															
<b>Vibration</b>	Preconditioning: Run through IR reflow for 3 times. Oscillation Frequency: 10~2K~10 Hz for 20 minutes Equipment: Vibration checker; Total Amplitude:10g Testing Time: 12 hours (20 minutes, 12 cycles each of 3 orientations)																
<b>Shock</b>	Test condition: <table border="1"> <thead> <tr> <th>Type</th> <th>Peak Value (g's)</th> <th>Normal duration (ms)</th> <th>Wave From</th> <th>Velocity change (ft/sec)</th> </tr> </thead> <tbody> <tr> <td>SMD</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> <tr> <td>Lead</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> </tbody> </table>		Type	Peak Value (g's)	Normal duration (ms)	Wave From	Velocity change (ft/sec)	SMD	50	11	Half-sine	11.3	Lead	50	11	Half-sine	11.3
Type	Peak Value (g's)		Normal duration (ms)	Wave From	Velocity change (ft/sec)												
SMD	50	11	Half-sine	11.3													
Lead	50	11	Half-sine	11.3													
<b>Terminal Strength</b>	Preconditioning: Run through IR reflow for 3 times. With component mounted on a PCB apply a force >0.805inch(2012mm):1kg; ≤0.805inch(2012mm):0.5kg to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to shock the component being tested.																
<b>Thermal Shock</b>	Preconditioning: Run through IR reflow for 2 times. Number of cycles: 500. Condition for 1 cycle: <table border="1"> <thead> <tr> <th>No.</th> <th>Temp. (°C)</th> <th>Time (min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±2°C</td> <td>30±5</td> </tr> <tr> <td>2</td> <td>25±2°C</td> <td>≤30 seconds</td> </tr> <tr> <td>3</td> <td>+125±2°C</td> <td>30±5</td> </tr> </tbody> </table> Measured at room temperature after placing for 24±2 hrs.	No.	Temp. (°C)	Time (min.)	1	-40±2°C	30±5	2	25±2°C	≤30 seconds	3	+125±2°C	30±5	Appearance: no damage. Inductance: within±10%of initial value. Q: Shall not exceed specification value. RDC: within±15%of initial value and shall not exceed specification value.			
No.	Temp. (°C)	Time (min.)															
1	-40±2°C	30±5															
2	25±2°C	≤30 seconds															
3	+125±2°C	30±5															
<b>Bending</b>	Shall be mounted on a FR4 substrate of the following dimensions: <table border="1"> <thead> <tr> <th>Dimensions</th> <th>Bending depth</th> </tr> </thead> <tbody> <tr> <td>≥0.805inch(2012mm):40x100x1.2mm</td> <td>1.2mm</td> </tr> <tr> <td>&lt;0.805inch(2012mm):40x100x0.8mm</td> <td>0.8mm</td> </tr> </tbody> </table> Duration of 10 sec for a min.	Dimensions	Bending depth	≥0.805inch(2012mm):40x100x1.2mm	1.2mm	<0.805inch(2012mm):40x100x0.8mm	0.8mm	Appearance: no damage. Inductance: within±10%of initial value. Q: Shall not exceed specification value. RDC: within±15%of initial value and shall not exceed specification value.									
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≥0.805inch(2012mm):40x100x1.2mm	1.2mm																
<0.805inch(2012mm):40x100x0.8mm	0.8mm																
<b>Moisture Resistance</b>	Preconditioning: Run through IR reflow for 3 times. 1. Baked at 50°C for 25hrs, measured at room temperature after 4 hrs. 2. Raise temperature to 65±2°C 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs. 3. Raise temperature to 65±2°C 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs, keep at 25°C for 2hrs then keep at -10°C for 3hrs. 4. Keep at 25°C 80-100%RH for 15min and vibrate at the frequency of 10~55~10 Hz, measure at room temperature after placing for 1~2 hrs.	Appearance: no damage. Inductance: within±10%of initial value. Q: Shall not exceed specification value. RDC: within±15%of initial value and shall not exceed specification value.															
<b>Load Humidity</b>	Preconditioning: Run through IR reflow for 3 times. Humidity: 85±2%R.H.; Temperature: 85±2°C. Duration: 1000hrs Min. with 100% rated current. Measured at room temperature after placing for 24±2 hrs.	Appearance: no damage. Inductance: within±10%of initial value. Q: Shall not exceed specification value. RDC: within±15%of initial value and shall not exceed specification value.															
<b>Life Test</b>	Preconditioning: Run through IR reflow for 3 times. Temperature: 125±2°C; Applied current: rated current. Duration: 1000±12 Hrs. Measured at room temperature after placing for 24±2 Hrs.	Appearance: no damage. Inductance: within±10%of initial value. Q: Shall not exceed specification value. RDC: within±15%of initial value and shall not exceed specification value.															

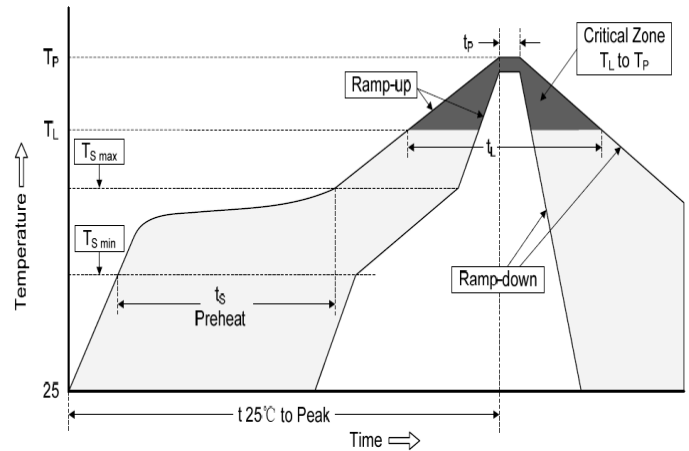
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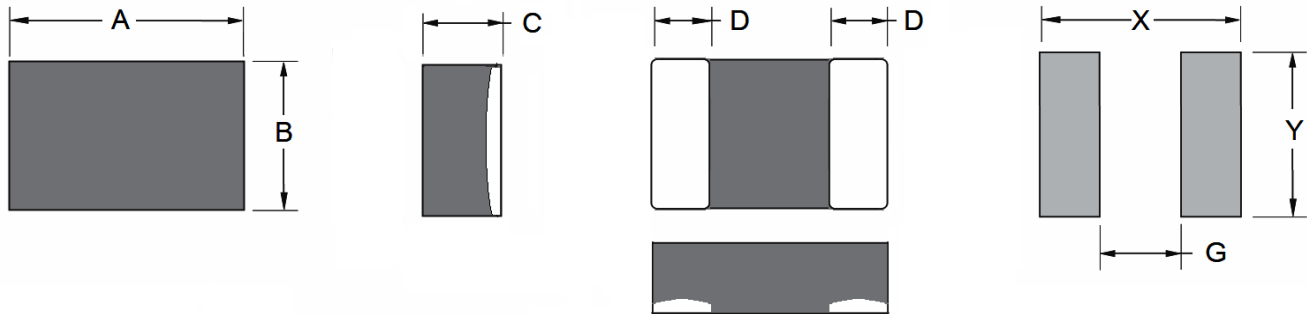
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## RECOMMENDED SOLDERING PROFILES

Reflow Condition		
Pre Heat	Temp. Min $T_{s(min)}$	150°C
	Temp. Max $T_{s(max)}$	200°C
	Time (min. to max.) ( $t_s$ )	60~120 seconds
Average ramp up rate $T_L$ to peak		3°C/second max.
Reflow	Temp. ( $T_L$ )	217°C
	Time (min. to max.) ( $t_L$ )	60~150 seconds
Peak Temperature ( $T_P$ )		245~260°C
Time within 5°C of actual peak Temperature ( $t_p$ )		<30 seconds
Ramp-down Rate		6°C/second max.
Reflow Times		3 times max.



## DIMENSIONS



(Unit: mm)

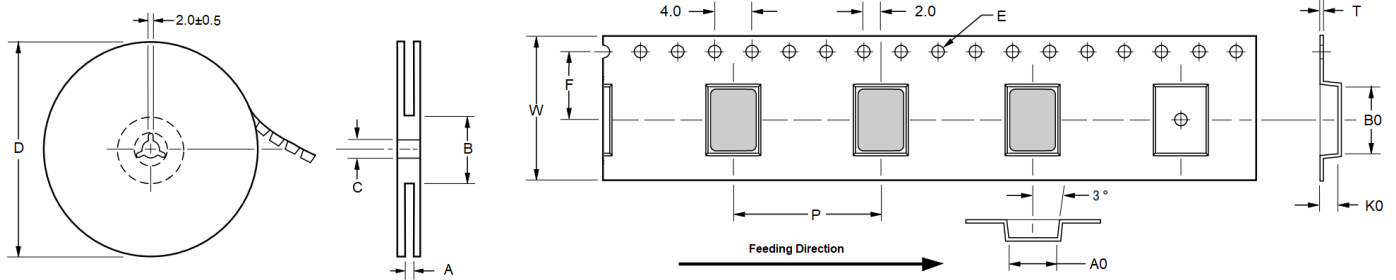
Size Code	A	B	C	D	X	G	Y
2016A	2.0±0.3	1.6±0.3	0.8±0.2	0.7±0.3	2.5 Ref	0.5 Ref	1.9 Ref
2520A	2.5±0.3	2.0±0.3	0.8±0.2	0.9±0.3	2.9 Ref	0.5 Ref	2.3 Ref
2520B	2.5±0.3	2.0±0.3	1.0±0.2	0.9±0.3	2.9 Ref	0.5 Ref	2.3 Ref
3225B	3.2±0.3	2.5±0.3	1.0±0.2	1.1±0.3	3.7 Ref	0.7 Ref	2.8 Ref
3225C	3.2±0.3	2.5±0.3	1.8±0.2	1.1±0.3	3.7 Ref	0.7 Ref	2.8 Ref

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## PACKAGING DIMENSION



(Unit: mm)

Size Code	Reel Dimension (mm)				Tape Dimensions (mm)								Qty 7" Reel
	A ±1.0	B ±0.5	C ±0.5	D	W ±0.1	F ±0.01	P ±0.1	E ±0.1	A0 ±0.10	B0 ±0.1	K0 ±0.10	T ±0.05	
2016A	8.4	50	13.0	178.0	8.00	3.5	4.0	1.50	2.00	2.50	1.20	0.23	2000
2520A	8.4	50	13.0	178.0	8.00	3.5	4.0	1.50	2.45	2.90	1.35	0.24	2000
2520B	8.4	50	13.0	178.0	8.00	3.5	4.0	1.50	2.45	2.90	1.35	0.24	2000
3225B	8.4	50	13.0	178.0	8.00	3.5	4.0	1.50	2.90	3.60	1.40	0.22	2000
3225C	8.4	50	13.0	178.0	8.00	3.5	4.0	1.50	2.90	3.60	2.20	0.22	2000

\*Specifications subject to change without notice.