

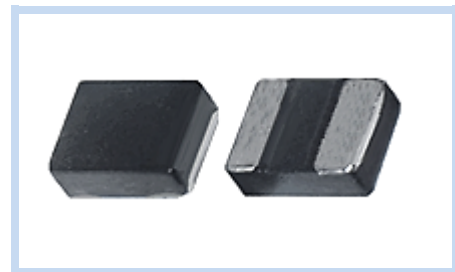
SMD Power Inductor High Current Molded Type

SIM10-12AE 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



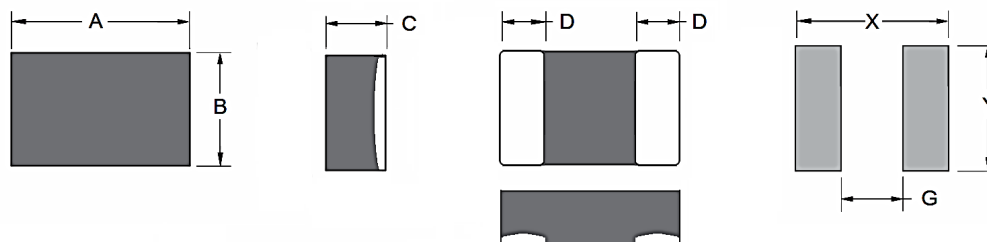
ELECTRICAL CHARACTERISTICS

| Part Number | Inductance (μH) | Tolerance (%) | I _{rms} (A) | | I _{sat} (A) | | DCR (m Ω) | |
|---------------|------------------------------|---------------|----------------------|-----|----------------------|-----|-------------------|-------|
| | | | Typ | Max | Typ | Max | Typ | Max |
| SIM10R22M12AE | 0.22 | $\pm 20\%$ | 9.5 | 9.0 | 9.3 | 8.7 | 7.4 | 8.5 |
| SIM10R33M12AE | 0.33 | $\pm 20\%$ | 8.5 | 8.0 | 9.1 | 8.5 | 10.0 | 13.0 |
| SIM10R47M12AE | 0.47 | $\pm 20\%$ | 7.0 | 6.5 | 8.2 | 7.4 | 16.0 | 19.2 |
| SIM10R68M12AE | 0.68 | $\pm 20\%$ | 6.2 | 5.7 | 7.3 | 6.8 | 20.0 | 24.0 |
| SIM101R0M12AE | 1.00 | $\pm 20\%$ | 5.5 | 5.0 | 6.5 | 5.7 | 26.0 | 32.0 |
| SIM101R5M12AE | 1.50 | $\pm 20\%$ | 4.4 | 3.9 | 5.0 | 4.5 | 44.0 | 53.0 |
| SIM102R2M12AE | 2.20 | $\pm 20\%$ | 4.0 | 3.6 | 4.8 | 4.3 | 61.0 | 73.0 |
| SIM103R3M12AE | 3.30 | $\pm 20\%$ | 3.1 | 2.8 | 3.4 | 3.0 | 87.0 | 101.0 |
| SIM104R7M12AE | 4.70 | $\pm 20\%$ | 2.2 | 1.9 | 2.8 | 2.4 | 122.0 | 146.0 |
| SIM105R6M12AE | 5.60 | $\pm 20\%$ | 1.9 | 1.6 | 2.2 | 1.9 | 170.0 | 204.0 |
| SIM106R8M12AE | 6.80 | $\pm 20\%$ | 1.7 | 1.4 | 1.8 | 1.5 | 183.0 | 220.0 |

Notes:

1. Test frequency: Ls:100KHz/1.0V.
2. Heat Rating Current (I_{rms}) will cause the temperature rise approximately ΔT of 40°C.
3. Saturation Current (I_{sat}) will cause L0 to drop approximately 30%.
4. Operating Temperature: -40 ~ +125°C (Including self-temperature rise)

DIMENSIONS



(Unit: mm)

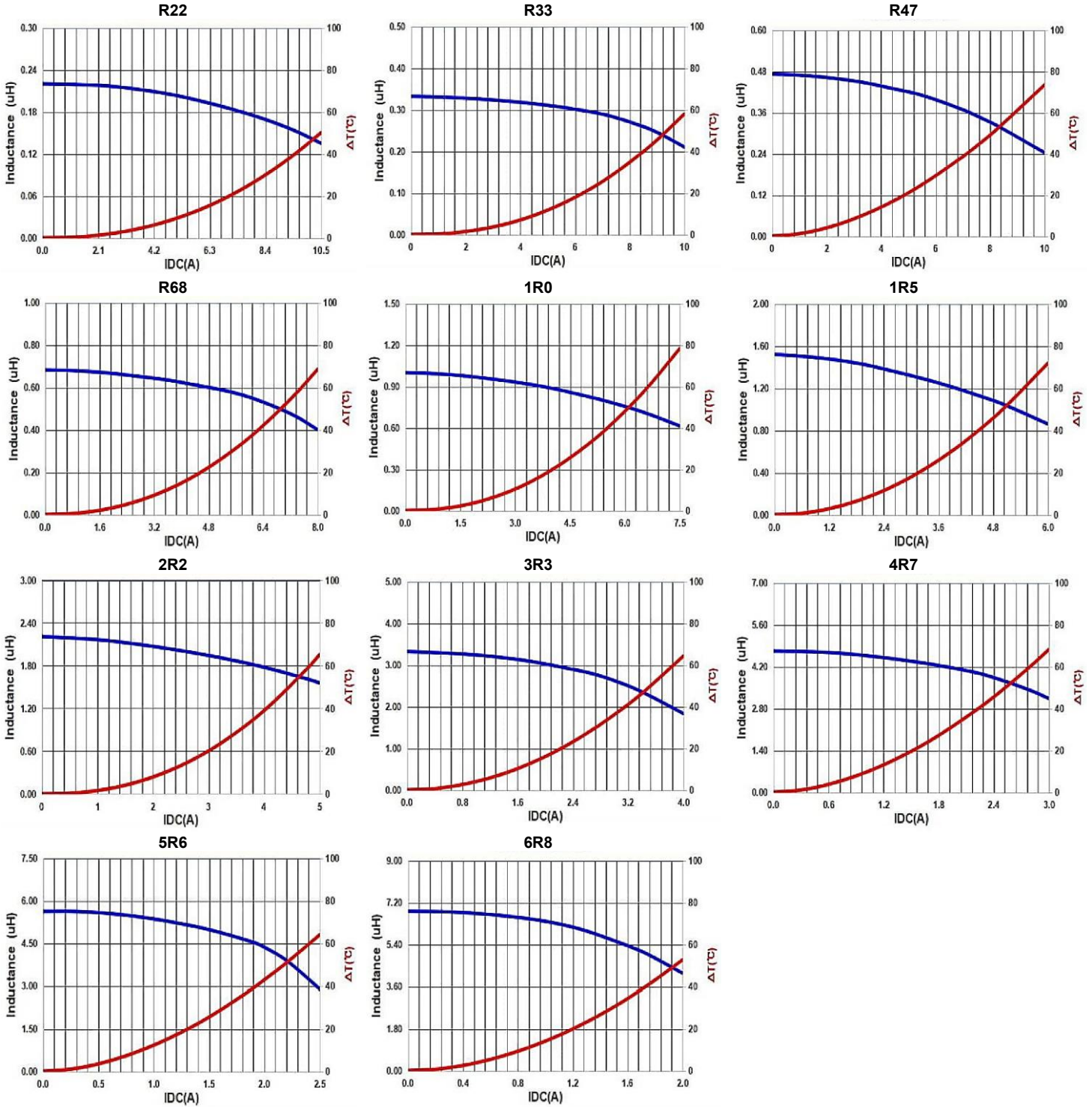
| Size Code | A | B | C | D | X | G | Y |
|-----------|---------------|---------------|---------------|---------------|---------|---------|---------|
| 1210 (10) | 3.2 \pm 0.3 | 2.5 \pm 0.3 | 1.0 \pm 0.2 | 1.1 \pm 0.3 | 3.7 Ref | 0.7 Ref | 2.8 Ref |

PART NUMBERING SYSTEM

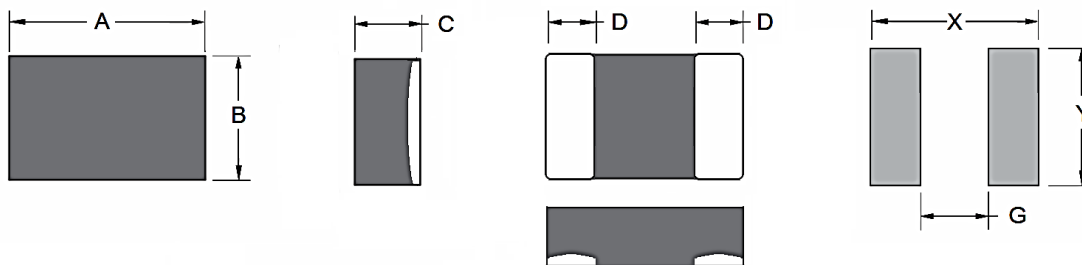
SIM **10** **R33M** **12** **AE**
(1) (2) (3) (4) (5)

| No | Item | Code | Description |
|-----|--------------|------|----------------------------------------------------------------------------------------------|
| (1) | Product Code | SIM | SMD Power Inductor Series, High current Molded type |
| (2) | Size Code | 10 | 1210: 3.2x2.5mm (W x L) |
| (3) | Inductance | R33M | 0.33 μH $\pm 20\%$ (M) R denotes decimal point |
| (4) | Thickness | 12 | Maximum 1.2mm 08: 0.8mm, 18: 1.8mm |
| (5) | Series Code | AE | High current molded series |

CHARACTERISTIC CURVES – SIM10-12AE SERIES



DIMENSIONS – SIM-AE SERIES

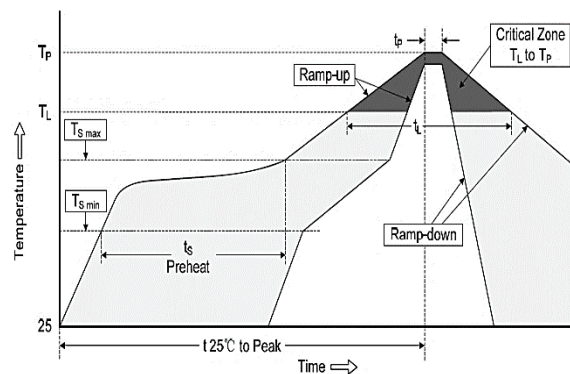


(Unit: mm)

| Size Code | A | B | C | D | X | G | Y |
|-----------|---------|---------|---------|---------|---------|---------|---------|
| 0806 (06) | 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 |
| 1008 (08) | 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 |
| 1008 (08) | 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 |
| 1210 (10) | 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 |
| 1212 (12) | 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 |

RECOMMENDED SOLDERING PROFILES

| Reflow Condition | | |
|------------------------------------------------|-------------------------------|-----------------|
| Pre Heat | Temperature Min $T_{s(min)}$ | 150°C |
| | Temperature Max $T_{s(max)}$ | 200°C |
| | Time (min. to max.) (t_s) | 60 ~120 seconds |
| Ramp up rate (T_L to T_P) | | 3°C/second max |
| $T_{s(max)}$ to T_L (Ramp-up rate) | | 3°C/second max |
| Reflow | Temperature (T_L) | 217°C |
| | Time (min. to max.) (t_L) | 60 ~150 seconds |
| Peak Temperature (T_P) | | See table below |
| t_p within 5°C of Peak Temperature (T_P) | | 30 seconds max |
| Ramp-down Rate | | 6°C/second max |
| Time 25°C to Peak Temperature | | 8 minutes max |



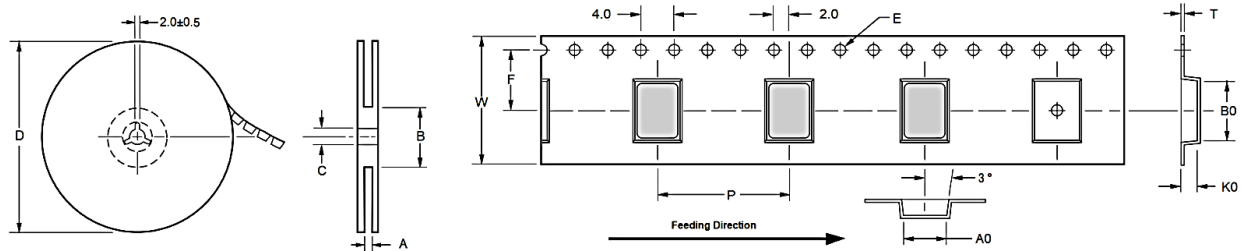
| Volume | Peak Temperature (T_P) | | |
|---------------------|----------------------------|-------------------------|-----------------------|
| | < 350mm ³ | 350-2000mm ³ | > 2000mm ³ |
| Thickness < 1.6mm | 260°C | 260°C | 260°C |
| Thickness 1.6-2.5mm | 260°C | 250°C | 245°C |
| Thickness ≥ 2.5mm | 250°C | 245°C | 245°C |

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PACKAGING DIMENSION



(Unit: mm)

| Size Code | Reel Dimension | | | | Tape Dimensions | | | | | | | | Qty |
|-----------|----------------|-----------|-----------|-------|-----------------|------------|-----------|-----------|-------------|------------|-------------|------------|---------|
| | 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 | 7" Reel |
| 0806 | 8.4 | 50 | 13.0 | 178.0 | 8.00 | 3.5 | 4.0 | 1.50 | 2.00 | 2.50 | 1.20 | 0.23 | 2000 |
| 1008 | 8.4 | 50 | 13.0 | 178.0 | 8.00 | 3.5 | 4.0 | 1.50 | 2.45 | 2.90 | 1.35 | 0.24 | 2000 |
| 1008 | 8.4 | 50 | 13.0 | 178.0 | 8.00 | 3.5 | 4.0 | 1.50 | 2.45 | 2.90 | 1.35 | 0.24 | 2000 |
| 1210 | 8.4 | 50 | 13.0 | 178.0 | 8.00 | 3.5 | 4.0 | 1.50 | 2.90 | 3.60 | 1.40 | 0.22 | 2000 |
| 1210 | 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