

# PRODUCT INFORMATION PACKET

**marathon®**  
Motors

Model No: TCA0223A3111GACD01

Catalog No: TCA0223A3111GACD01

22.0 kW General Purpose Low Voltage IEC Motor, 3 phase, 1000 RPM, 415 V, 200L Frame, TEFC  
Cast Iron IE3 Efficiency Motors



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**REGAL**

### Nameplate Specifications

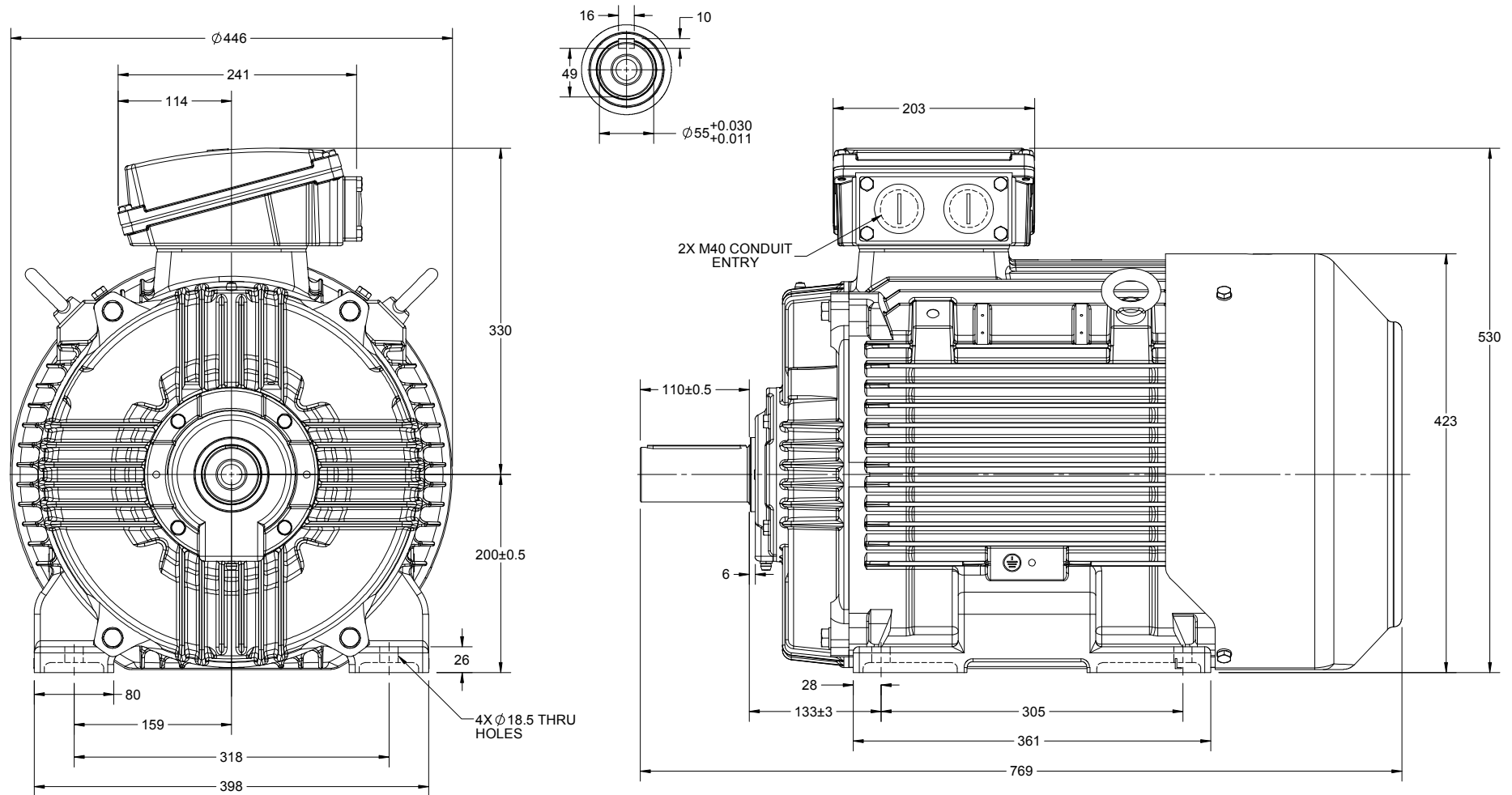
|                            |        |                        |                             |
|----------------------------|--------|------------------------|-----------------------------|
| Output HP                  | 30 Hp  | Output KW              | 22.0 kW                     |
| Frequency                  | 50 Hz  | Voltage                | 415 V                       |
| Current                    | 42.0 A | Speed                  | 987 rpm                     |
| Service Factor             | 1      | Phase                  | 3                           |
| Efficiency                 | 92.2 % | Power Factor           | 0.79                        |
| Duty                       | S1     | Insulation Class       | F                           |
| Frame                      | 200L   | Enclosure              | Totally Enclosed Fan Cooled |
| Ambient Temperature        | 50 °C  | Drive End Bearing Size | 6312                        |
| Opp Drive End Bearing Size | 6212   | UL                     | No                          |
| CSA                        | No     | CE                     | Yes                         |
| IP Code                    | 55     |                        |                             |

### Technical Specifications

|                       |               |                       |                |
|-----------------------|---------------|-----------------------|----------------|
| Electrical Type       | Squirrel Cage | Starting Method       | Direct On Line |
| Poles                 | 6             | Rotation              | Bi-Directional |
| Mounting              | B3            | Motor Orientation     | Horizontal     |
| Drive End Bearing     | C3            | Opp Drive End Bearing | C3             |
| Frame Material        | Cast Iron     | Shaft Type            | Keyed          |
| Overall Length        | 769 mm        | Frame Length          | 370 mm         |
| Shaft Diameter        | 55 mm         | Shaft Extension       | 110 mm         |
| Assembly/Box Mounting | Top           |                       |                |
| Connection Drawing    | 8442000085    | Outline Drawing       | 0220000342     |

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## OUTLINE

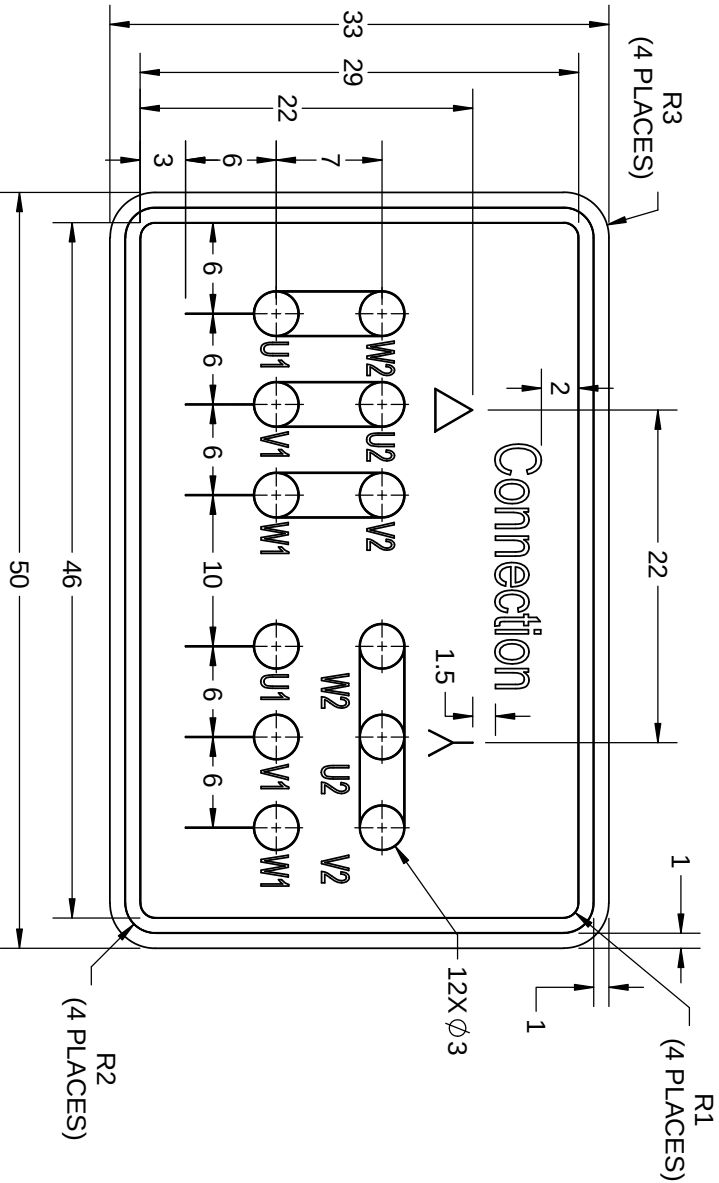


|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    |                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|
| DRAWING REVISION<br>D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | REVISION BY<br>NIV | DATE<br>16/04/2019 |
| ECO<br>ECO-0165600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | APPROVED BY<br>SR  | DATE<br>16/04/2019 |
| ECO DESCRIPTION<br>UPDATED MODEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |
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|                           |                                                                                       |                              |
|---------------------------|---------------------------------------------------------------------------------------|------------------------------|
| DRAWN BY<br>SDV           |  |                              |
| DATE<br>17/04/2014        |                                                                                       |                              |
| APPROVED BY<br>SBD        | <b>OUTLINE</b><br>200L FR-B3 MTG. MOTOR TYPE: TCA/QCA                                 |                              |
| DATE<br>17/04/2014        |                                                                                       |                              |
| REFERENCE                 | MATERIAL                                                                              | PROCESS/FINISH               |
| THIRD ANGLE<br>PROJECTION | SIZE<br>B                                                                             | DRAWING NUMBER<br>0220000342 |
|                           |                                                                                       | SHEET<br>1 OF 1              |

| DRAWING REVISION    |             | REVISION BY | DATE       |
|---------------------|-------------|-------------|------------|
| A                   |             | SN          | 13/01/2017 |
| ECO                 | ECO-0116390 | APPROVED BY | DATE       |
|                     |             | SBD         | 13/01/2017 |
| ECO DESCRIPTION     |             |             |            |
| NEW DRAWING RELEASE |             |             |            |

| GEOMETRIC TOLERANCE |  |      |
|---------------------|--|------|
| LINEAR DIM          |  |      |
| >0-6                |  | ±0.1 |
| >6-30               |  | ±0.2 |
| >30-120             |  | ±0.3 |



NOTES:

1. PRESSURE-SENSITIVE ADHESIVE COATED PAPER ON THE BACK OF SELF-ADHESIVE.
2. AT THE END OF YELLOW, WORDS, SYMBOLS, LETTERS ARE BLACK, BORDER IS BLACK.
3. THE TOLERANCE OF THE LINEAR SIZE OF THE TOLERANCE WITHOUT THE TOLERANCE BY THE TABLE.

|                        |  |            |                                                                   |  |
|------------------------|--|------------|-------------------------------------------------------------------|--|
| DRAWN BY               |  | SN         | <div><div>REGAL™</div><div>Regal Beloit America, Inc.</div></div> |  |
| DATE                   |  | 16/12/2016 |                                                                   |  |
| APPROVED BY            |  | SBD        |                                                                   |  |
| DATE                   |  | 16/12/2016 |                                                                   |  |
| REFERENCE              |  | 16/12/2016 | DESCRIPTION                                                       |  |
|                        |  |            | CONN DIAGRAM-NAMEPLATE                                            |  |
| MATERIAL               |  |            | PROCESS/FINISH                                                    |  |
| THIRD ANGLE PROJECTION |  |            | SIZE                                                              |  |
|                        |  |            | DRAWING NUMBER                                                    |  |
|                        |  |            | 8442000085                                                        |  |
|                        |  |            | SHEET                                                             |  |
|                        |  |            | 1 OF 1                                                            |  |

**Model No.** TCA0223A3111GACD01

| U<br>(V) | Δ / Y<br>Conn | f<br>(Hz) | P<br>[kW] | P<br>[hp] | I<br>[A] | n<br>[RPM] | T<br>[Nm] | IE<br>Class | % EFF at __ load |    |       |       | PF at __ load |       |       | I <sub>a</sub> /I <sub>N</sub><br>[pu] | T <sub>a</sub> /T <sub>N</sub><br>[pu] | T <sub>b</sub> /T <sub>N</sub><br>[pu] |
|----------|---------------|-----------|-----------|-----------|----------|------------|-----------|-------------|------------------|----|-------|-------|---------------|-------|-------|----------------------------------------|----------------------------------------|----------------------------------------|
| 415      | Δ             | 50        | 22        | 30        | 42.0     | 987        | 216.43    | IE3         | 5/4FL            | FL | 3/4FL | 1/2FL | FL            | 3/4FL | 1/2FL | 7.1                                    | 2.6                                    | 3.0                                    |
|          |               |           |           |           |          |            |           |             |                  |    |       |       |               |       |       |                                        |                                        |                                        |

|                                  |                                   |                                           |                                            |
|----------------------------------|-----------------------------------|-------------------------------------------|--------------------------------------------|
| Motor type                       | TCA                               | Degree of protection                      | IP 55                                      |
| Enclosure                        | TEFC                              | Mounting type                             | IM B3                                      |
| Frame Material                   | Cast Iron                         | Cooling method                            | IC 411                                     |
| Frame size                       | 200L                              | Motor weight - approx.                    | 318 kg                                     |
| Duty                             | S1                                | Gross weight - approx.                    | 348 kg                                     |
| Voltage variation *              | ± 10%                             | Motor inertia                             | 0.7703 kgm <sup>2</sup>                    |
| Frequency variation *            | ± 5%                              | Load inertia                              | Customer to Provide                        |
| Combined variation *             | 10%                               | Vibration level                           | 2.2 mm/s                                   |
| Design                           | N                                 | Noise level ( 1meter distance from motor) | 62 dB(A)                                   |
| Service factor                   | 1.0                               | No. of starts hot/cold/Equally spread     | 2/3/4                                      |
| Insulation class                 | F                                 | Starting method                           | DOL                                        |
| Ambient temperature              | -20 to +50 °C                     | Type of coupling                          | Direct                                     |
| Temperature rise (by resistance) | 70 [ Class B ] K                  | LR withstand time (hot/cold)              | 15/30 s                                    |
| Altitude above sea level         | 1000 meter                        | Direction of rotation                     | Bi-directional                             |
| Hazardous area classification    | NA                                | Standard rotation                         | Clockwise form DE                          |
| Zone classification              | NA                                | Paint shade                               | RAL 5014                                   |
| Gas group                        | NA                                | Accessories                               |                                            |
| Temperature class                | NA                                | Accessory - 1                             | -                                          |
| Rotor type                       | Aluminum Die cast                 | Accessory - 2                             | -                                          |
| Bearing type                     | Anti-friction ball bearing        | Accessory - 3                             | -                                          |
| DE / NDE bearing                 | 6312 C3 / 6212 C3                 | Terminal box position                     | TOP                                        |
| Lubrication method               | Regreasable                       | Maximum cable size/conduit size           | 1R x 3C x 50mm <sup>2</sup> /2 x M40 x 1.5 |
| Type of grease                   | Shell Gadus S5 V100 or Equivalent | Auxiliary terminal box                    | NA                                         |

I<sub>a</sub>/I<sub>N</sub> - Locked Rotor Current / Rated CurrentT<sub>b</sub>/T<sub>N</sub> - Breakdown Torque / Rated TorqueT<sub>a</sub>/T<sub>N</sub> - Locked Rotor Torque / Rated Torque**NOTE**

All performance values at rated voltage and frequency.

All performance parameters are subjected to standard tolerance as per IEC 60034-1

\* Voltage, Frequency and combine variation are as per IEC60034-1

Technical data are subject to change. There may be discrepancies between calculated and name plate values.

| Efficiency Standards | Europe | China | India           | Aus/Nz | Brazil | Global IEC |
|----------------------|--------|-------|-----------------|--------|--------|------------|
|                      | -      | -     | IS 12615 : 2018 | -      | -      | -          |

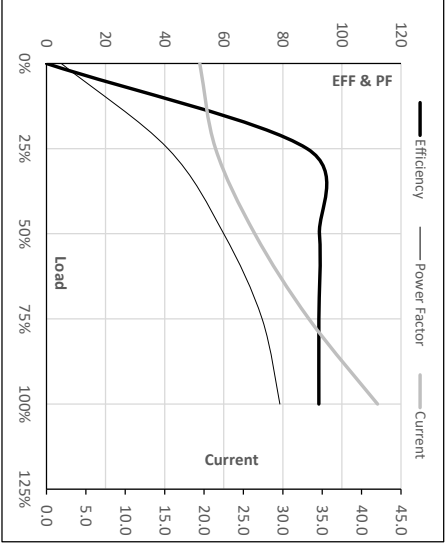
Model No. TCA0223A3111GACD01

| Enclosure | U<br>[V] | $\Delta$ / Y<br>Com | f<br>[Hz] | P<br>[kW] | P<br>[hp] | I<br>[A] | n<br>[RPM] | T<br>[kgm] | T<br>[Nm] | IE<br>Class | Amb<br>[°C] | Duty | Elevation<br>[m] | Inertia<br>[kg·m <sup>2</sup> ] | Weight<br>[kg] |
|-----------|----------|---------------------|-----------|-----------|-----------|----------|------------|------------|-----------|-------------|-------------|------|------------------|---------------------------------|----------------|
| TEFC      | 415      | $\Delta$            | 50        | 22        | 30        | 42.0     | 987        | 22.07      | 216.43    | IE3         | 50          | S1   | 1000             | 0.7703                          | 318            |

Motor Load Data

| Load Point   | NL    | 1/4FL | 1/2FL | 3/4FL | FL    | 5/4FL |
|--------------|-------|-------|-------|-------|-------|-------|
| Current      | A     | 19.5  | 21.5  | 26.4  | 33.3  | 42.0  |
| Torque       | Nm    | 0.0   | 53.6  | 107.5 | 161.8 | 216.4 |
| Speed        | r/min | 1000  | 997   | 994   | 991   | 987   |
| Efficiency   | %     | 0.0   | 88.2  | 92.4  | 92.2  | 92.2  |
| Power Factor | %     | 5.0   | 41.1  | 60.0  | 73.0  | 79.0  |

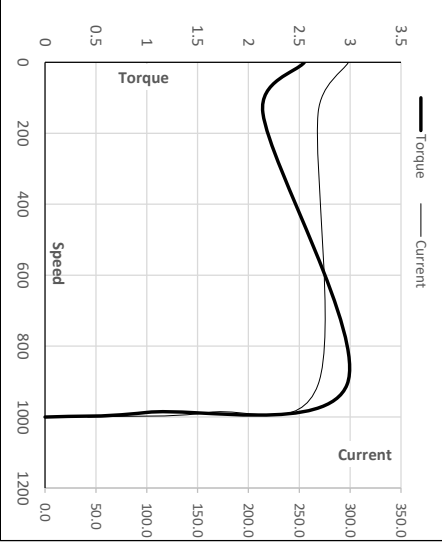
Performance vs Load Chart



Motor Speed Torque Data

| Load Point | LR    | P-Up  | BD    | Rated | NL   |      |
|------------|-------|-------|-------|-------|------|------|
| Speed      | r/min | 0     | 143   | 908   | 987  | 1000 |
| Current    | A     | 298.4 | 268.5 | 161.3 | 42.0 | 19.5 |
| Torque     | pu    | 2.6   | 2.1   | 3.0   | 1    | 0    |

Starting Characteristics Chart



**NOTE** Refer data sheet for applicable standard and tolerances on performance parameters

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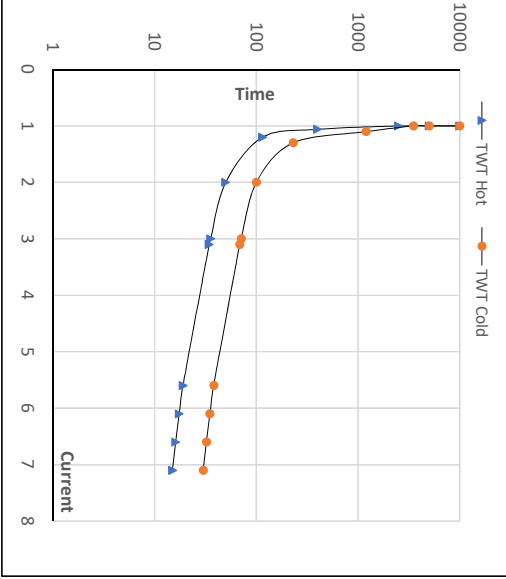
**Model No.** TCA0223A3111GACD01

| Enclosure | U<br>[V] | Δ / Y<br>Conn | f<br>[Hz] | P<br>[kW] | P<br>[hp] | I<br>[A] | n<br>[rpm] | T<br>[kgm] | T<br>[Nm] | IE<br>Class | Amb<br>[°C] | Duty | Elevation<br>[m] | Inertia<br>[kg·m <sup>2</sup> ] | Weight<br>[kg] |
|-----------|----------|---------------|-----------|-----------|-----------|----------|------------|------------|-----------|-------------|-------------|------|------------------|---------------------------------|----------------|
| TEFC      | 415      | Δ             | 50        | 22        | 30        | 42.0     | 987        | 22.05      | 216.43    | IE3         | 50          | S1   | 1000             | 0.7703                          | 318            |

**Motor Speed Torque Data**

| Load     | FL      | I <sub>1</sub> | I <sub>2</sub> | I <sub>3</sub> | I <sub>4</sub> | I <sub>5</sub> | LR  |
|----------|---------|----------------|----------------|----------------|----------------|----------------|-----|
| TWT Hot  | s 10000 | 50             | 36             | 30             | 25             | 20             | 15  |
| TWT Cold | s 10000 | 100            | 71             | 60             | 50             | 40             | 30  |
| Current  | pu 1    | 2              | 3              | 4              | 5              | 5.5            | 7.1 |

**Thermal Characteristics Chart**



**NOTE** Refer data sheet for applicable standard and tolerances on performance parameters

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