## Features

- Effectively lower down $T_j$ and $R_{th}$, high anti-EMI ability
- High speed switching with low capacitances
- High blocking voltage with low $R_{DS(on)}$
- Easy to drive and parallel
- RoHS compliant

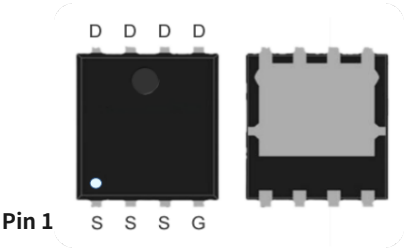
## Benefits

- Increased power density
- Higher operating frequency
- Reduced heat sink requirements
- Higher efficiency
- EMI reduction

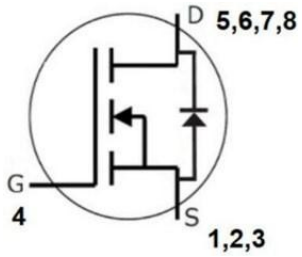
## Applications

- Power factor correction modules
- Switch mode power supplies
- Power inverters
- High voltage converters

| Parameter | Rating | Units |
|---|---|---|
| $V_{DS}$ | **800** | V |
| $I_{D\ @\ 25°C}$ | **15** | A |
| $R_{DS(on)}$ | **260** | mΩ |




**PDFN 5×6 Package**




| Part Number | Package | Marking |
|---|---|---|
| GC3M026065P | PDFN 5×6 | GC3M026065 |

## Maximum Ratings ($T_j$ = 25°C unless otherwise specified)

| Symbol | Parameter | Test conditions | Value | Unit |
|---|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | VGS= 0 V, ID= 100 uA | 800 | V |
| $I_D$ | Continuous Drain Current | Tc=25°C Tc=100°C | 15 12 | A |
| $I_{DM}$ | Peak Drain Current | Pulse width tp limited by Tjmax | 39 | A |
| $V_{GS}$ max | Gate-Source Voltage | | -5/ 26 | V |
| $V_{GS}$ op | Recommend Gate-Source Voltage | | 0/ 18 | V |
| $P_{tot}$ | Power Dissipation | Tc=25°C Tc=100°C | 52 25 | W |
| $T_j$ | Operating Junction Temperature | | -55~175 | °C |
| $T_{stg}$ | Storage Temperature | | -55~175 | °C |

## Electrical Characteristics ($T_c$ = 25°C unless otherwise specified)

| Symbol | Parameter | Min. | Typ. | Max. | Unit | Test Conditions | Note |
|---|---|---|---|---|---|---|---|
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage | 800 | | | V | VGS = 0 V, ID = 1 mA | |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | | 1 | 15 | uA | VGS = 0 V, VDS = 850 V | |
| $I_{GSS}$ | Gate-Source Leakage Current | | | 50 | nA | VDS = 0 V, VGS = 18 V | |
| $V_{GS(th)}$ | Gate Threshold Voltage | | 3.5 | 4.0 | V | VGS = VDS, IDS = 1 mA, TJ = 25°C | Fig. 14 |
| | | | 2.8 | | | VGS = VDS, IDS = 1 mA, TJ = 175°C | |
| $R_{DS(on)}$ | Static Drain-Source On-Resistance | | 260<br>180 | 300<br>220 | mΩ | VGS = 15 V, ID = 4.5 A, TJ = 25°C VGS = 18 V, ID = 4.5 A, TJ = 25°C | Fig. 15 |
| | | | 295<br>205 | | | VGS = 15 V, ID = 4.5 A, TJ = 175°C VGS = 18 V, ID = 4.5 A, TJ = 175°C | |
| $C_{iss}$ | Input Capacitance | | 180 | | pF | VDS = 400 V, f = 1 MHz, VGS = 0 V | Fig. 8 |
| $C_{oss}$ | Output Capacitance | | 20 | | | | |
| $C_{rss}$ | Reverse Transfer Capacitance | | 0.9 | | | | |
| $Q_{gs}$ | Gate-Source Charge | | 2.3 | | nC | VDD = 400 V, ID = 5 A, RG = 10 Ω, VGS = 0/15 V | Fig. 7 |
| $Q_{gd}$ | Gate-Drain Charge | | 1.1 | | | | |
| $Q_g$ | Total Gate Charge | | 11.2 | | | | |
| $E_{on}$ | Turn-On Switching Energy | | 25 | | | | |
| $E_{off}$ | Turn-Off Switching Energy | | 10 | | µJ | | Fig. 12 |
| $t_{d(on)}$ | Turn-On Delay Time | | 5 | | | | |
| $t_r$ | Rise Time | | 17 | | ns | VDD = 400 V, ID = 5 A, RG = 10 Ω, VGS = -5/18 V | |
| $t_{d(off)}$ | Turn-Off Delay Time | | 8 | | | | |
| $t_f$ | Fall Time | | 10 | | | | |

## Reverse SiC Diode Characteristics

| Symbol | Parameter | Typ. | Max. | Unit | Test Conditions | Note |
|---|---|---|---|---|---|---|
| $V_{SD}$ | Diode Forward Voltage | 4.0 | | V | VGS = -4V, ISD = 2.5A, TJ = 25 °C | Fig. 16 |
| | | 3.6 | | | VGS = -4 V, ISD = 2.5 A, TJ = 175°C | Fig. 17 |
| *$I_{SD}$ | Continuous Diode Forward Current | | 15 | A | TC = 25°C | |
| | | | 12 | | TC = 175°C | |
| $t_{rr}$ | Reverse Recovery Time | 50 | | ns | ISD = 5 A, di/dt = 1000 A/µs, VDD = 400 V, VGS = -5 V | |
| $Q_{rr}$ | Reverse Recovery Charge | 38 | | nC | | |
| $I_{RRM}$ | Peak Reverse Recovery Current | 2.4 | | A | | |

## Thermal Characteristics

| Symbol | Parameter | Typ. | Unit | Test Conditions | Note |
|---|---|---|---|---|---|
| $R_{thJC}$ | Thermal Resistance from Junction to Case | 2.88 | °C/W | | Fig. 2 |
| $R_{thJA}$ | Thermal Resistance From Junction to Ambient | 40 | | | |

## Typical Characteristics

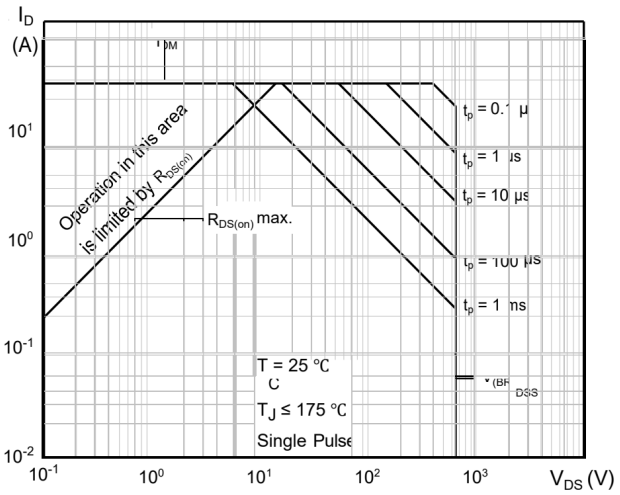



Figure 1. Safe Operating Area

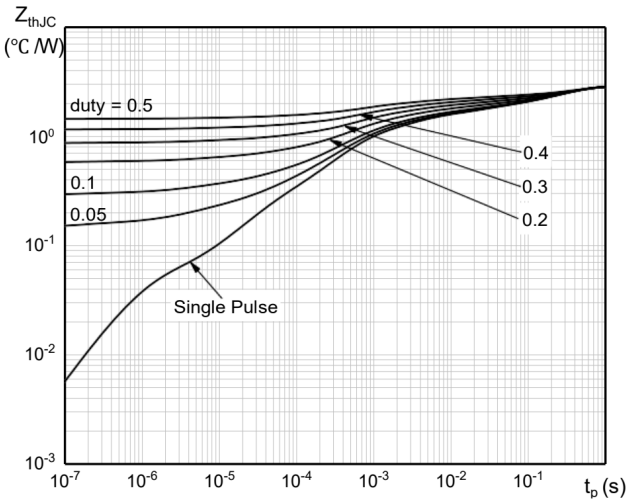



Figure 2. Maximum Transient Thermal Impedance

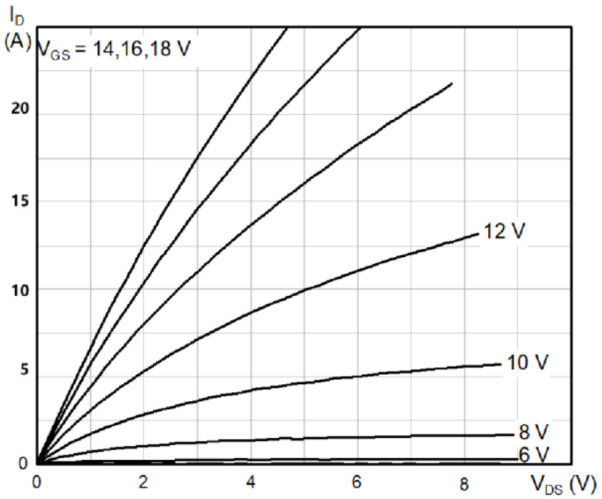



Figure 3. Typical Output Characteristics, $T_J$ = 25°C

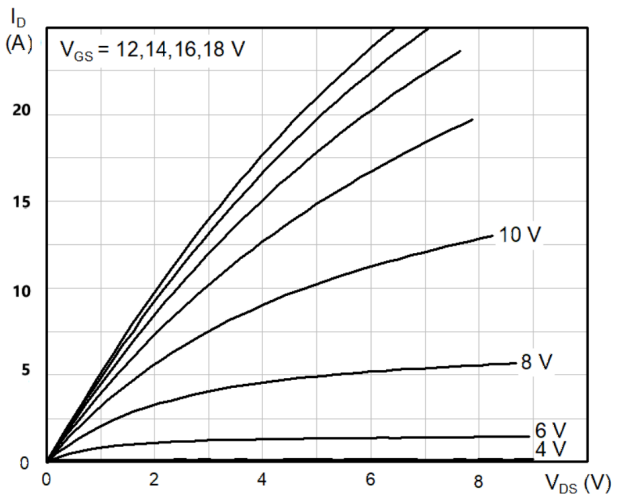



Figure 4. Typical Output Characteristics, $T_J$ = 175°C

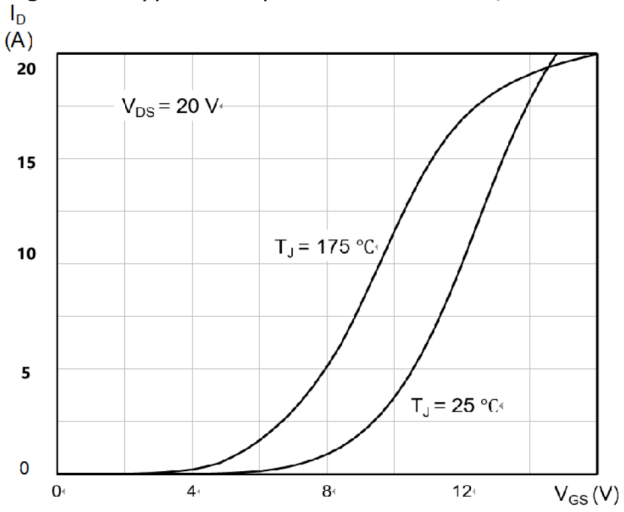



Figure 5. Typical Transfer Characteristics

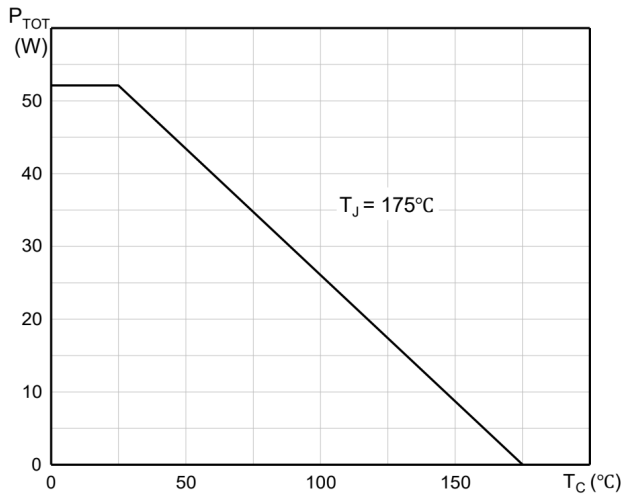



Figure 6. Total Power Dissipation

Figure 5. Typical Transfer Characteristics

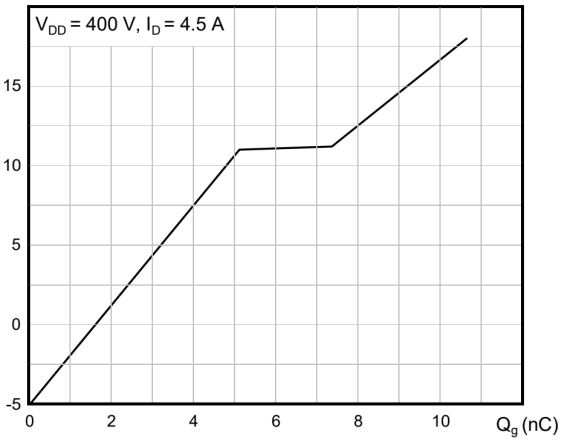



Figure 6. Total Power Dissipation

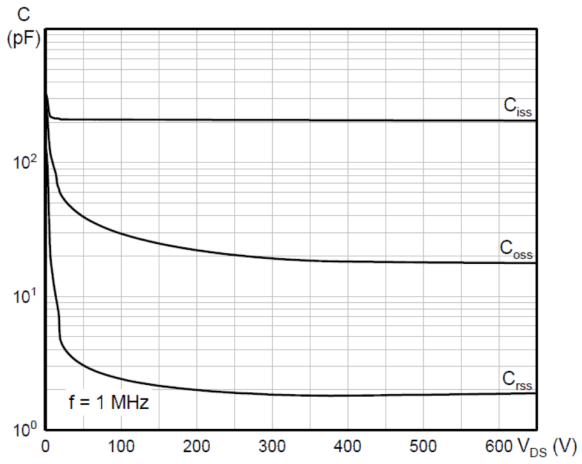
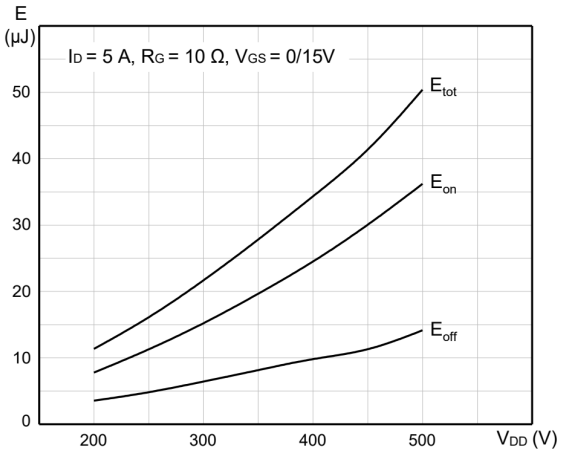



Figure 7. Typical Gate Charge Characteristics

Figure 8. Typical Capacitance Characteristics



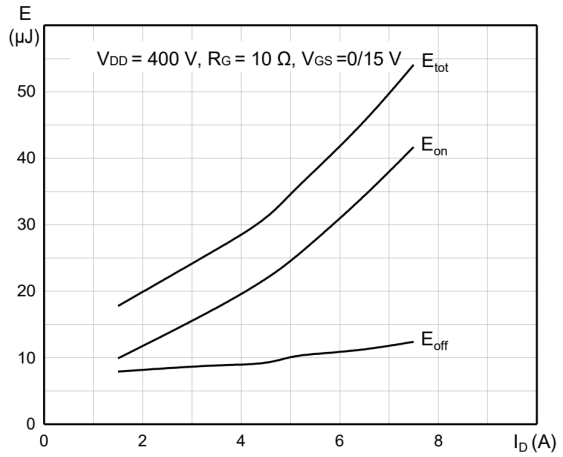
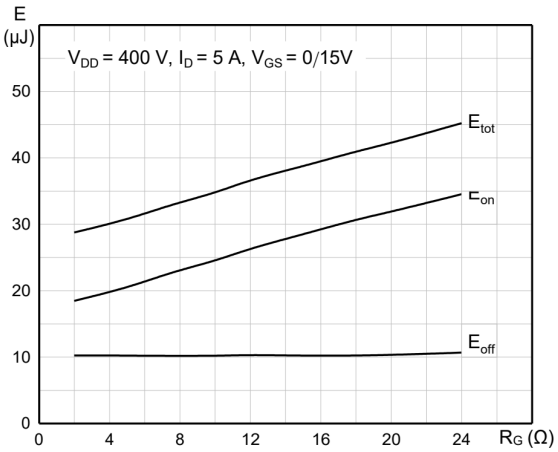




Figure 9. Typical Switching Energy vs. Supply Voltage

Figure 10. Typical Switching Energy vs. Drain Current



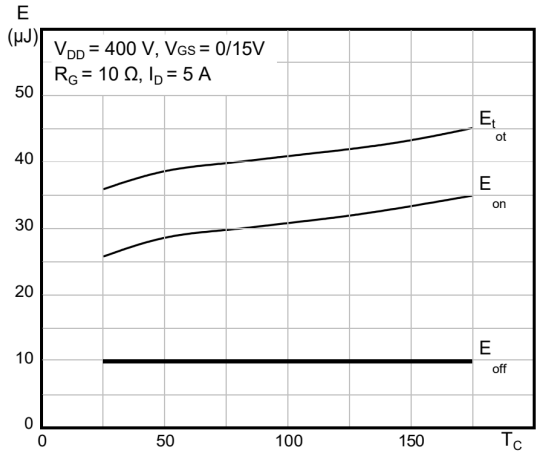




Figure 11. Switching Energy vs. Gate Resistance

Figure 12. Typical Switching Energy vs. Temperature

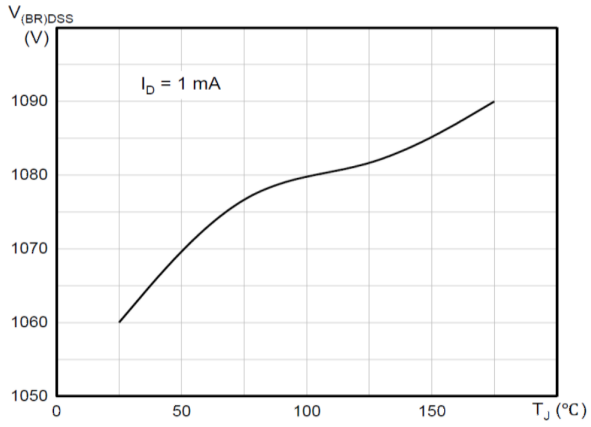



Figure 13. Breakdown Voltage vs. Temperature

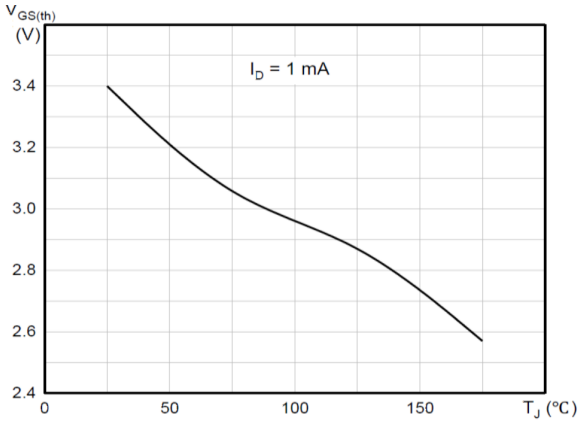



Figure 14. Gate Threshold vs. Temperature

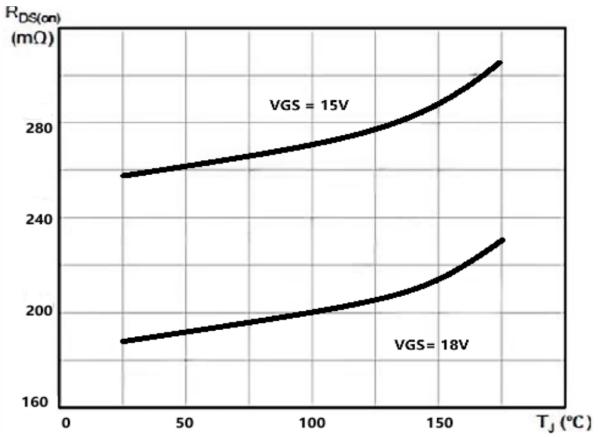



Figure 15. On-Resistance vs. Temperature

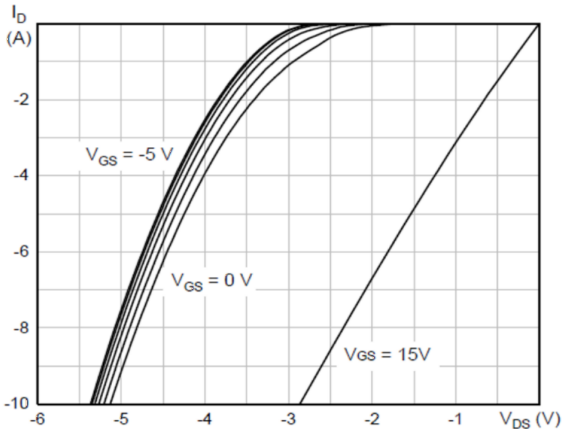



Figure 16. Body Diode Characteristics, $T_J$ = 25°C

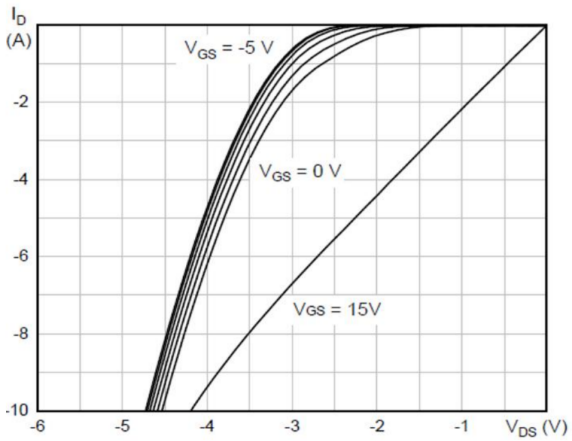
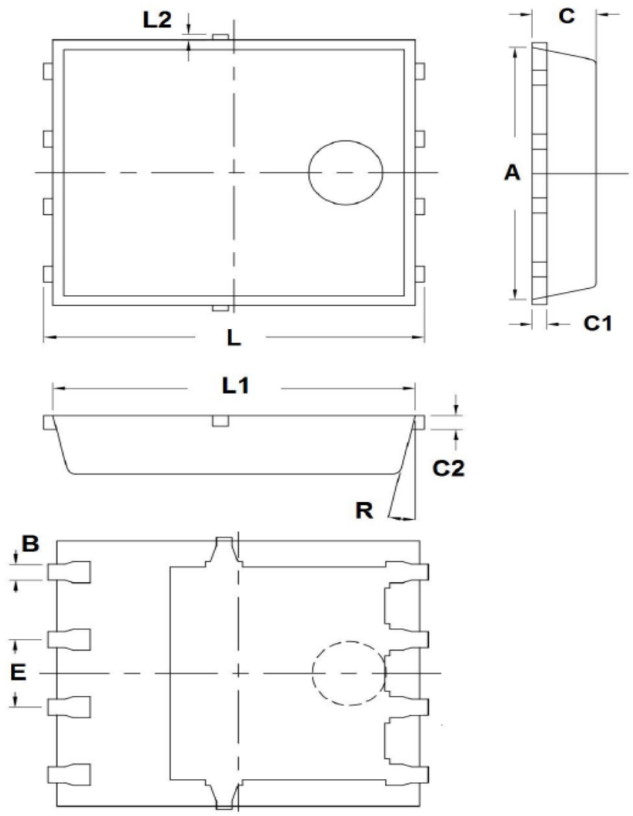



Figure 17. Body Diode Characteristics, $T_J$ = 175°C

## Package Outline Dimension: PDFN 5×6




| Dim. | Min. | Max. |
|---|---|---|
| A | 4.8 | 5.2 |
| B | 0.25 | 0.35 |
| C | 1.0 | 1.2 |
| C1 | Typ 0.254 | |
| C2 | Typ 0.254 | |
| E | Typ 1.27 | |
| L | 6.0 | 6.3 |
| L1 | 5.7 | 6.0 |
| L2 | MAX 0.2 | |
| R | Typ 13° | |

All Dimensions in millimeter

## Revision History

| Revision | Date of Release | Description of Changes |
|---|---|---|
| Preliminary | 16.Sep.2025 | Initial Release with NMC |

## Information

For further information on technology, delivery terms and conditions and prices, please contact SUPSiC.

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