



## Features

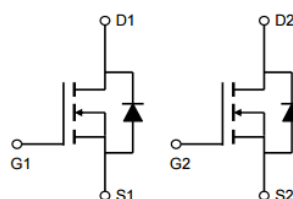
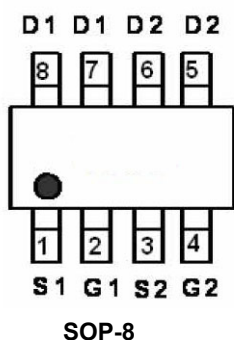
- Dual N-Channel, 5V Logic Level Control
- Enhancement mode
- Fast Switching
- High Effective

## Application

- Power Management in Inverter System
- Synchronous Rectification

## Product Summary

|                                |     |    |
|--------------------------------|-----|----|
| $V_{DS}$                       | 60  | V  |
| $R_{DS(on), Typ} @ V_{GS}=10V$ | 16  | mΩ |
| $I_D$                          | 8.5 | A  |



Dual N-Channel MOSFET

## Absolute Maximum Ratings

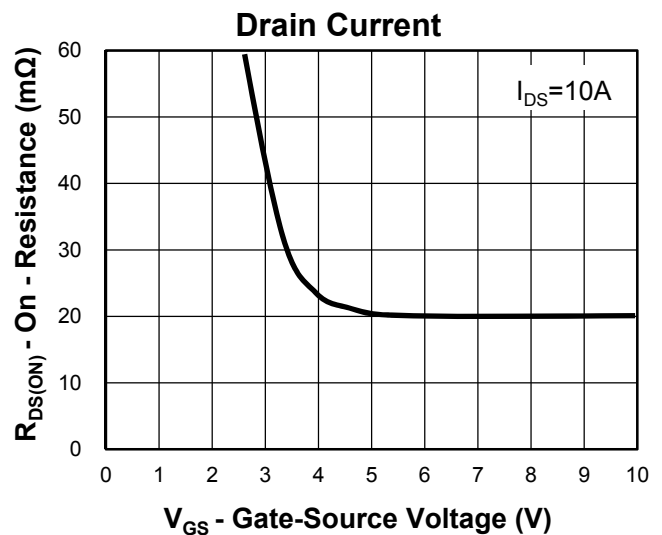
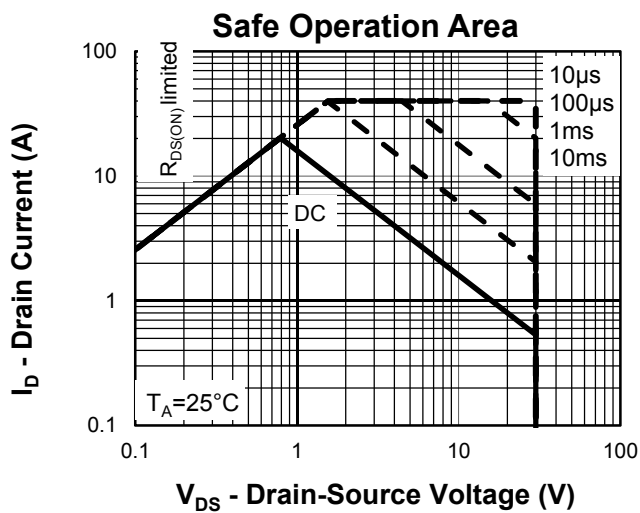
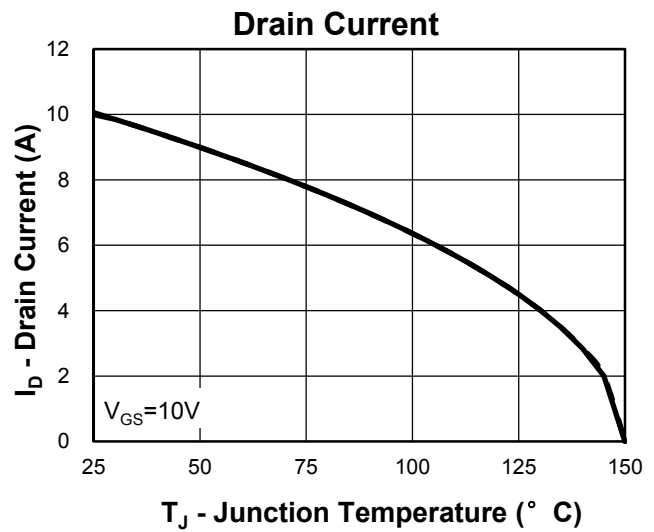
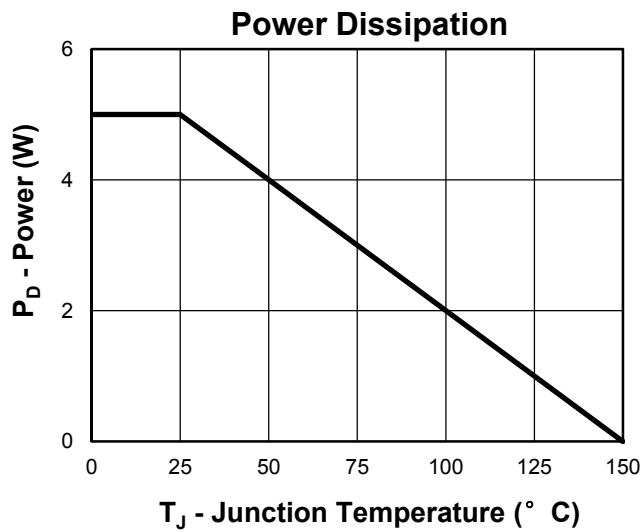
| Symbol                                                                   | Parameter                                 | Rating                          | Unit                 |
|--------------------------------------------------------------------------|-------------------------------------------|---------------------------------|----------------------|
| <b>Common Ratings</b> ( $T_A=25^{\circ}\text{C}$ Unless Otherwise Noted) |                                           |                                 |                      |
| $V_{DSS}$                                                                | Drain-Source Voltage                      | 60                              | V                    |
| $V_{GSS}$                                                                | Gate-Source Voltage                       | $\pm 20$                        |                      |
| $T_J$                                                                    | Maximum Junction Temperature              | 150                             | $^{\circ}\text{C}$   |
| $T_{STG}$                                                                | Storage Temperature Range                 | -55 to 150                      | $^{\circ}\text{C}$   |
| $I_S$                                                                    | Diode Continuous Forward Current          | $T_A=25^{\circ}\text{C}$<br>8.5 | A                    |
| <b>Mounted on Large Heat Sink</b>                                        |                                           |                                 |                      |
| $I_{DP}^{①}$                                                             | 300μs Pulse Drain Current Tested          | $T_A=25^{\circ}\text{C}$<br>35  | A                    |
| $I_D^{②}$                                                                | Continuous Drain Current ( $V_{GS}=10V$ ) | $T_A=25^{\circ}\text{C}$<br>8.5 | A                    |
|                                                                          |                                           | $T_A=70^{\circ}\text{C}$<br>7.0 |                      |
| $P_D$                                                                    | Maximum Power Dissipation                 | $T_A=25^{\circ}\text{C}$<br>5   | W                    |
|                                                                          |                                           | $T_A=70^{\circ}\text{C}$<br>2.6 |                      |
| $R_{\theta JC}$                                                          | Thermal Resistance-Junction to Case       | 24                              | $^{\circ}\text{C/W}$ |
| $R_{\theta JA}^{③}$                                                      | Thermal Resistance-Junction to Ambient    | 85                              | $^{\circ}\text{C/W}$ |
| <b>Drain-Source Avalanche Ratings</b>                                    |                                           |                                 |                      |
| $E_{AS}^{④}$                                                             | Avalanche Energy, Single Pulsed           | -                               | mJ                   |

**Electrical Characteristics** ( $T_A=25^{\circ}\text{C}$  Unless Otherwise Noted)

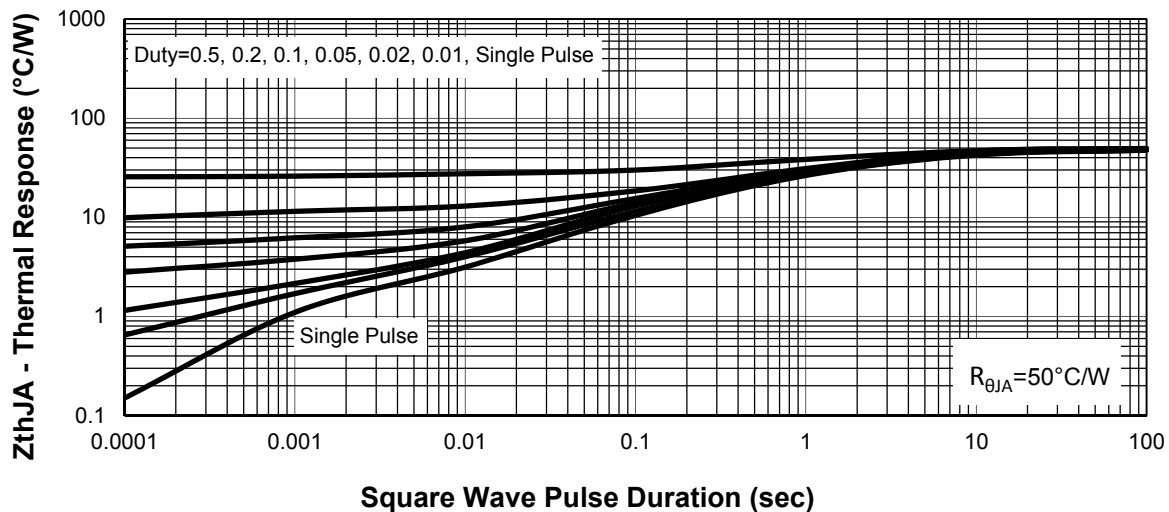
| Symbol                                   | Parameter                        | Test Condition                                                                            | Min. | Typ. | Max. | Unit |
|------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------|------|------|------|------|
| Static Characteristics                   |                                  |                                                                                           |      |      |      |      |
| BV <sub>DSS</sub>                        | Drain-Source Breakdown Voltage   | V <sub>GS</sub> =0V, I <sub>DS</sub> =250μA                                               | 60   |      |      | V    |
| I <sub>DSS</sub>                         | Zero Gate Voltage Drain Current  | V <sub>DS</sub> =60V, V <sub>GS</sub> =0V                                                 |      |      | 1    | μA   |
|                                          |                                  | T <sub>J</sub> =125°C                                                                     |      |      | 30   |      |
| V <sub>GS(th)</sub>                      | Gate Threshold Voltage           | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250μA                                 | 1    | 1.7  | 2.5  | V    |
| I <sub>GSS</sub>                         | Gate Leakage Current             | V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V                                                |      |      | ±100 | nA   |
| R <sub>DS(ON)</sub> <sup>⑤</sup>         | Drain-Source On-state Resistance | V <sub>GS</sub> =10V, I <sub>DS</sub> =8.0A                                               |      | 16   | 18   | mΩ   |
|                                          |                                  | V <sub>GS</sub> =4.5V, I <sub>DS</sub> =6A                                                |      | 20   | 23   | mΩ   |
| Diode Characteristics                    |                                  |                                                                                           |      |      |      |      |
| V <sub>SD</sub> <sup>⑤</sup>             | Diode Forward Voltage            | I <sub>SD</sub> =10A, V <sub>GS</sub> =0V                                                 |      | 0.72 | 1.3  | V    |
| t <sub>rr</sub>                          | Reverse Recovery Time            | I <sub>SD</sub> =10A, dI <sub>SD</sub> /dt=100A/μs                                        |      | 25   |      | ns   |
| Q <sub>rr</sub>                          | Reverse Recovery Charge          |                                                                                           |      | 14   |      | nC   |
| Dynamic Characteristics <sup>⑥</sup>     |                                  |                                                                                           |      |      |      |      |
| R <sub>G</sub>                           | Gate Resistance                  | V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, F=1MHz                                          |      | 0.84 |      | Ω    |
| C <sub>iSS</sub>                         | Input Capacitance                | V <sub>GS</sub> =0V,<br>V <sub>DS</sub> =30V,<br>Frequency=1.0MHz                         |      | 1756 |      | pF   |
| C <sub>oss</sub>                         | Output Capacitance               |                                                                                           |      | 201  |      |      |
| C <sub>rSS</sub>                         | Reverse Transfer Capacitance     |                                                                                           |      | 89   |      |      |
| t <sub>d(ON)</sub>                       | Turn-on Delay Time               | V <sub>DD</sub> =30V, I <sub>DS</sub> =8.0A,<br>V <sub>GEN</sub> =10V, R <sub>G</sub> =3Ω |      | 10   |      | ns   |
| t <sub>r</sub>                           | Turn-on Rise Time                |                                                                                           |      | 45   |      |      |
| t <sub>d(OFF)</sub>                      | Turn-off Delay Time              |                                                                                           |      | 24   |      |      |
| t <sub>f</sub>                           | Turn-off Fall Time               |                                                                                           |      | 17   |      |      |
| Gate Charge Characteristics <sup>⑥</sup> |                                  |                                                                                           |      |      |      |      |
| Q <sub>g</sub>                           | Total Gate Charge                | V <sub>DS</sub> =48V, V <sub>GS</sub> =10V,<br>I <sub>DS</sub> =8.0A                      |      | 25   |      | nC   |
| Q <sub>gs</sub>                          | Gate-Source Charge               |                                                                                           |      | 4.5  |      |      |
| Q <sub>gd</sub>                          | Gate-Drain Charge                |                                                                                           |      | 6.5  |      |      |

- Notes:
- ① Pulse width limited by safe operating area.
  - ② Calculated continuous current based on maximum allowable junction temperature.
  - ③ When mounted on 1 inch square copper board,  $t \leq 10\text{sec}$ . The value in any given application depends on the user's specific board design.
  - ④ Limited by  $T_{Jmax}$ . Starting  $T_J = 25^{\circ}\text{C}$ .
  - ⑤ Pulse test; Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
  - ⑥ Guaranteed by design, not subject to production testing.

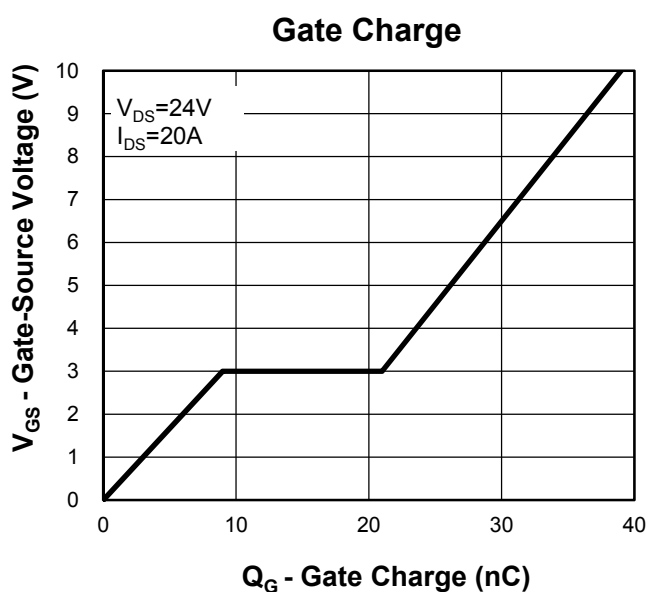
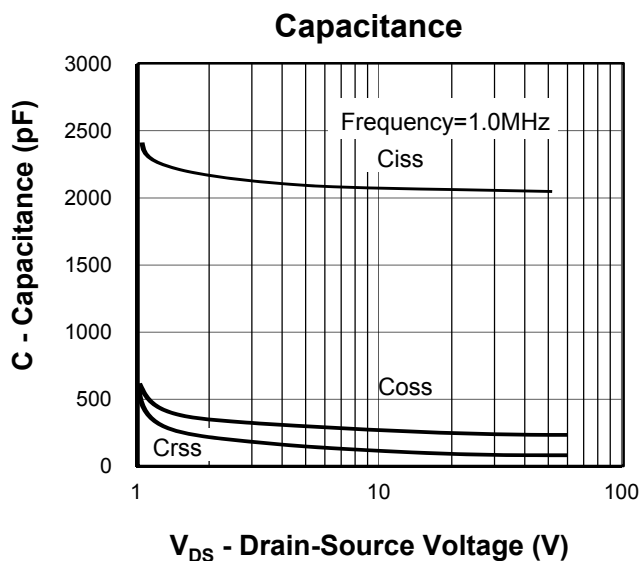
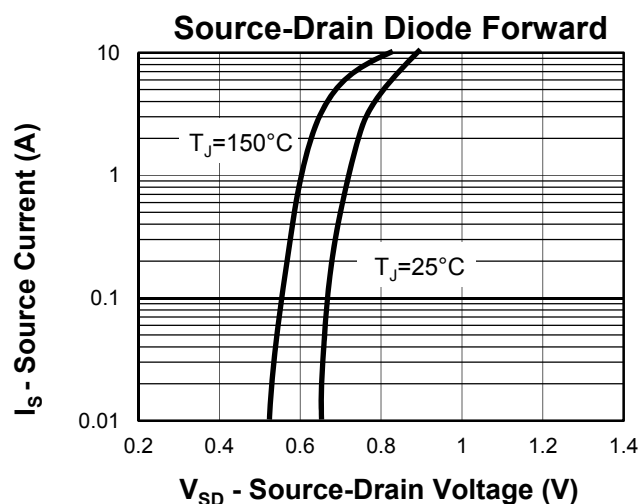
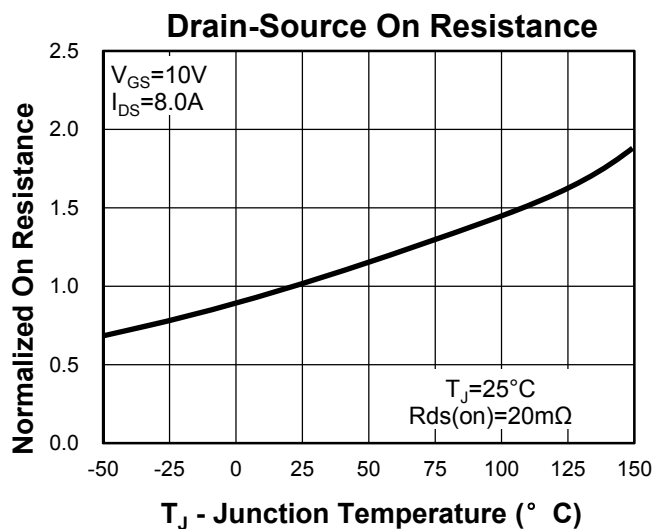
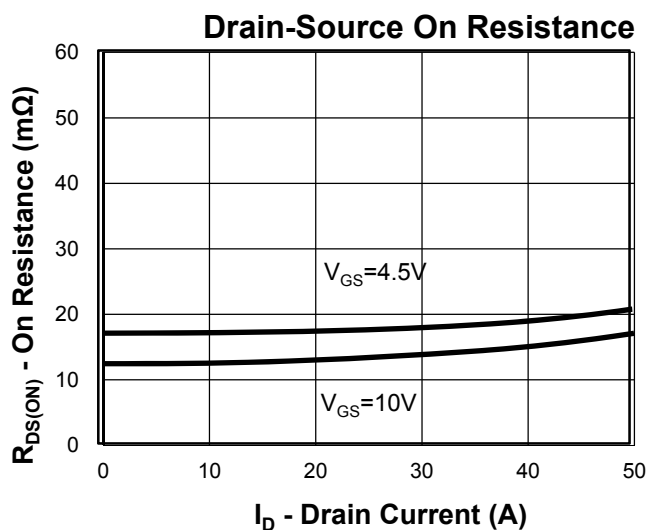
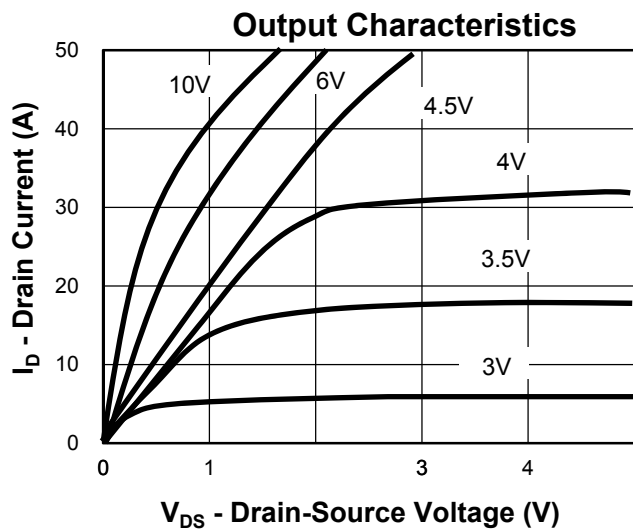
## Typical Characteristics



## Thermal Transient Impedance

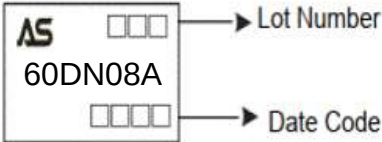


## Typical Characteristics



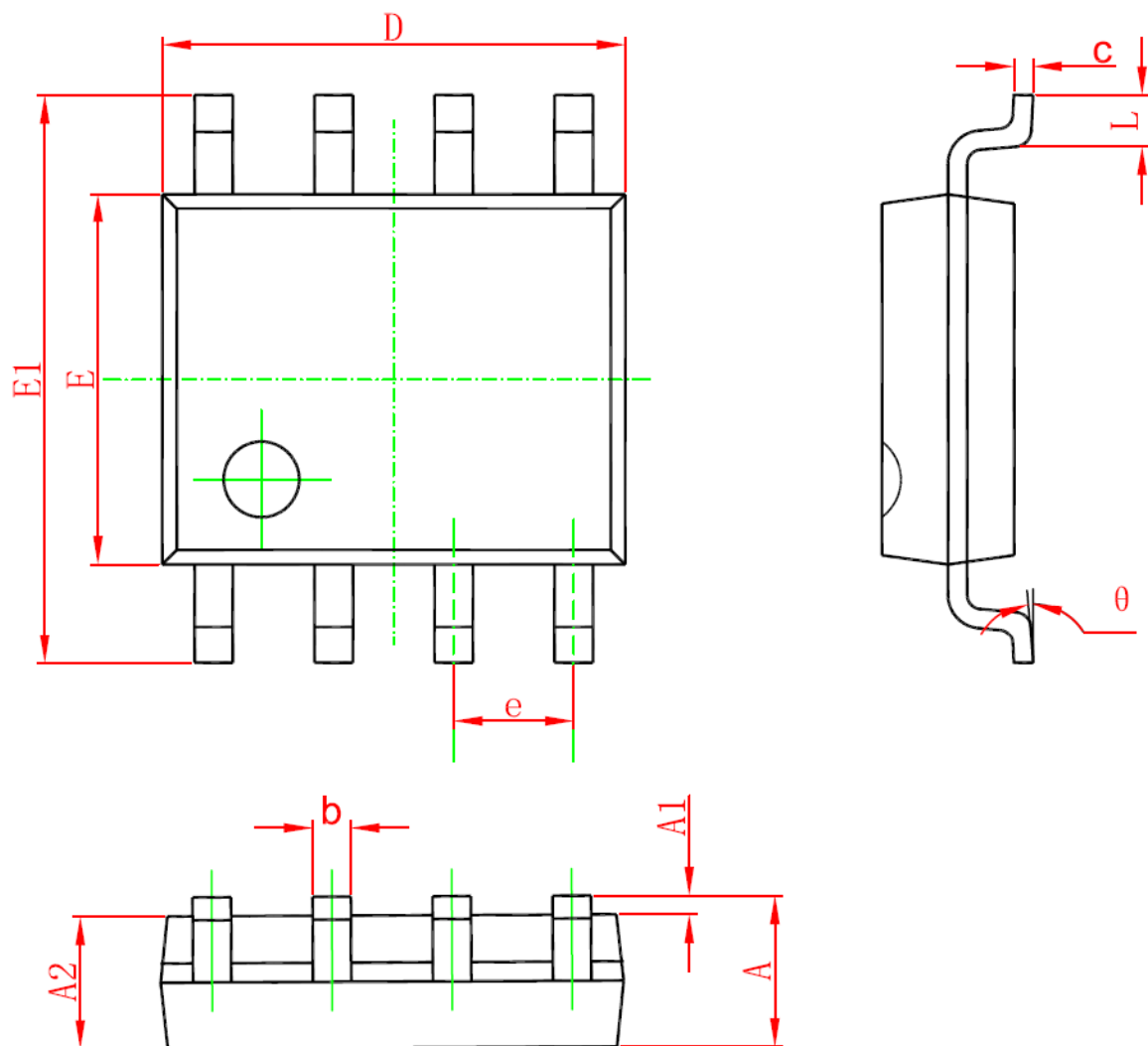
## Ordering and Marking Information

| Ordering Device No. | Marking | Package | Packing   | Quantity  |
|---------------------|---------|---------|-----------|-----------|
| ASDM60DN08AS-R      | 60DN08A | SOP-8   | Tape&Reel | 4000/Reel |

| PACKAGE | MARKING                                                                            |
|---------|------------------------------------------------------------------------------------|
| SOP-8   |  |

## Package Description

### SOP-8 PACKAGE IN FORMATION



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 1.350                     | 1.750 | 0.053                | 0.069 |
| A1     | 0.100                     | 0.250 | 0.004                | 0.010 |
| A2     | 1.350                     | 1.550 | 0.053                | 0.061 |
| b      | 0.330                     | 0.510 | 0.013                | 0.020 |
| c      | 0.170                     | 0.250 | 0.006                | 0.010 |
| D      | 4.700                     | 5.100 | 0.185                | 0.200 |
| E      | 3.800                     | 4.000 | 0.150                | 0.157 |
| E1     | 5.800                     | 6.200 | 0.228                | 0.244 |
| e      | 1.270 (BSC)               |       | 0.050 (BSC)          |       |
| L      | 0.400                     | 1.270 | 0.016                | 0.050 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

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