

### Features

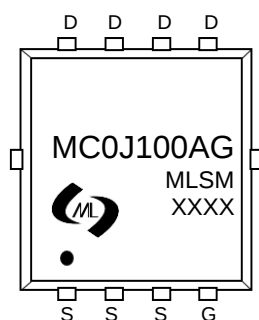
- Shielded-Gate Trench(SGT) Power LV MOSFET technology
- Ultra low gate charge
- Low reverse transfer capacitance
- Fast switching capability
- Avalanche energy specified

### Application

- Power switching application

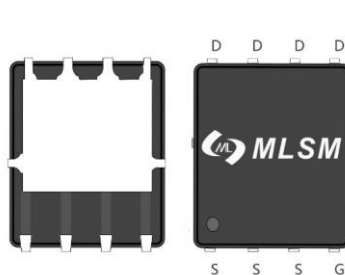
### Product Summary

| $V_{DS}$ | $R_{DS(ON)}$ TYP | $I_D$ |
|----------|------------------|-------|
| 80V      | 4.6mΩ@10V        | 100A  |

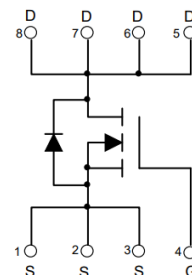


Marking and pin assignment

MC0J100AG : Device code  
XXXX : Code



PDFN5X6-8L view



Schematic diagram



Halogen-Free

### Absolute Maximum Ratings (TA=25°C unless otherwise noted)

| Symbol | Parameter | Rating | Unit |
|--------|-----------|--------|------|
|--------|-----------|--------|------|

### Common Ratings (TC=25°C Unless Otherwise Noted)

|                  |                                  |         |            |    |
|------------------|----------------------------------|---------|------------|----|
| V <sub>DS</sub>  | Drain-Source Breakdown Voltage   |         | 80         | V  |
| V <sub>GS</sub>  | Gate-Source Voltage              |         | ±20        | V  |
| T <sub>J</sub>   | Maximum Junction Temperature     |         | 150        | °C |
| T <sub>STG</sub> | Storage Temperature Range        |         | -50 to 155 | °C |
| I <sub>S</sub>   | Diode Continuous Forward Current | Tc=25°C | 400        | A  |

### Mounted on Large Heat Sink

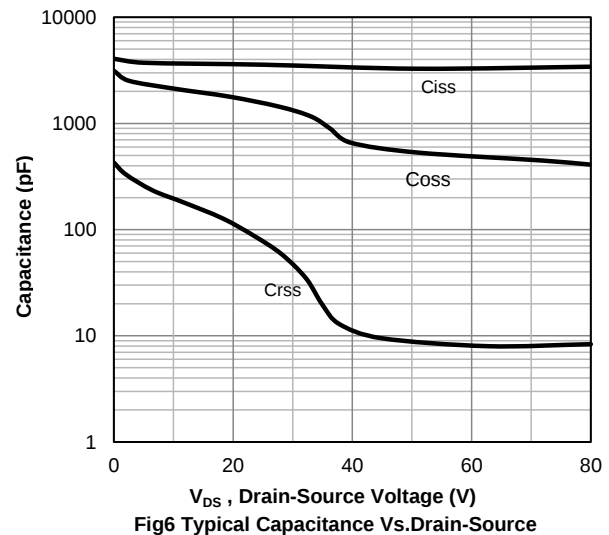
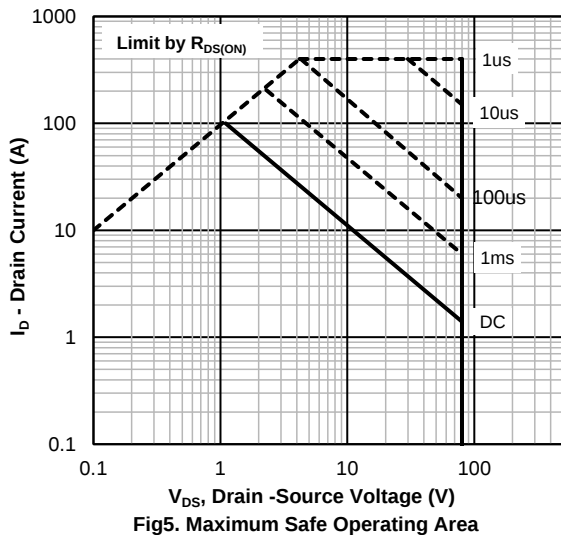
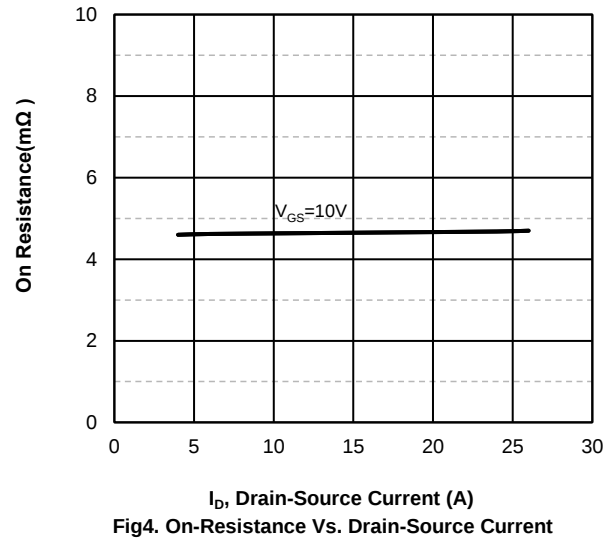
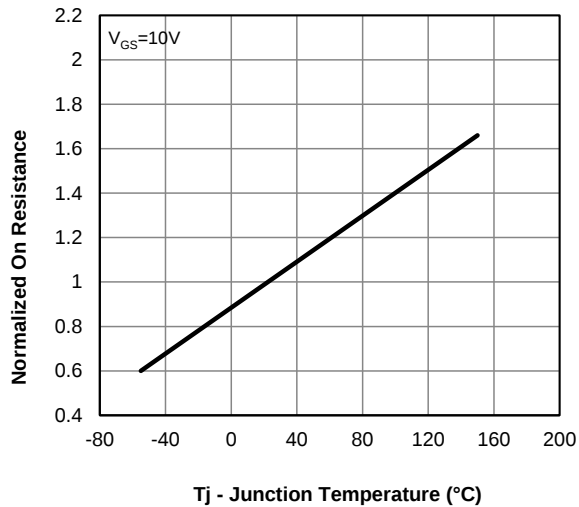
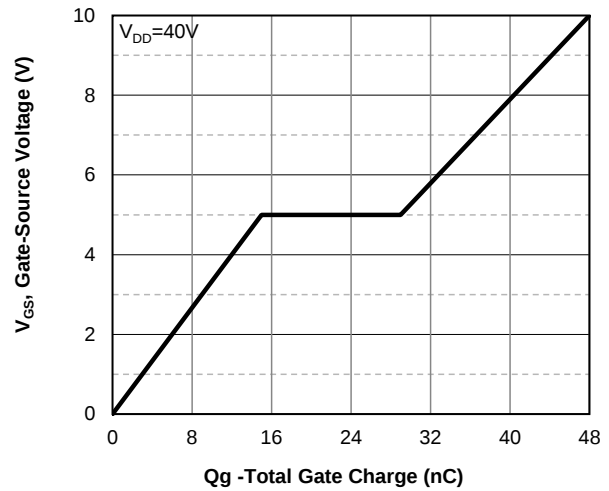
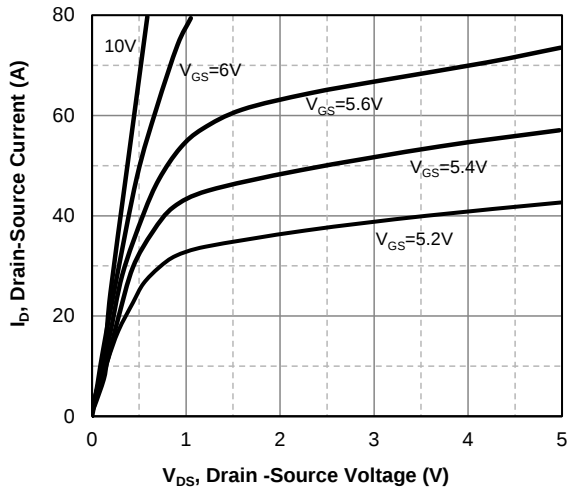
|                  |                                     |         |     |      |
|------------------|-------------------------------------|---------|-----|------|
| I <sub>DM</sub>  | Pulse Drain Current Tested          | Tc=25°C | 400 | A    |
| I <sub>D</sub>   | Continuous Drain Current            | Tc=25°C | 100 | A    |
| P <sub>D</sub>   | Maximum Power Dissipation           | Tc=25°C | 75  | W    |
| R <sub>θJA</sub> | Thermal Resistance Junction-Ambient |         | 60  | °C/W |

### Ordering Information (Example)

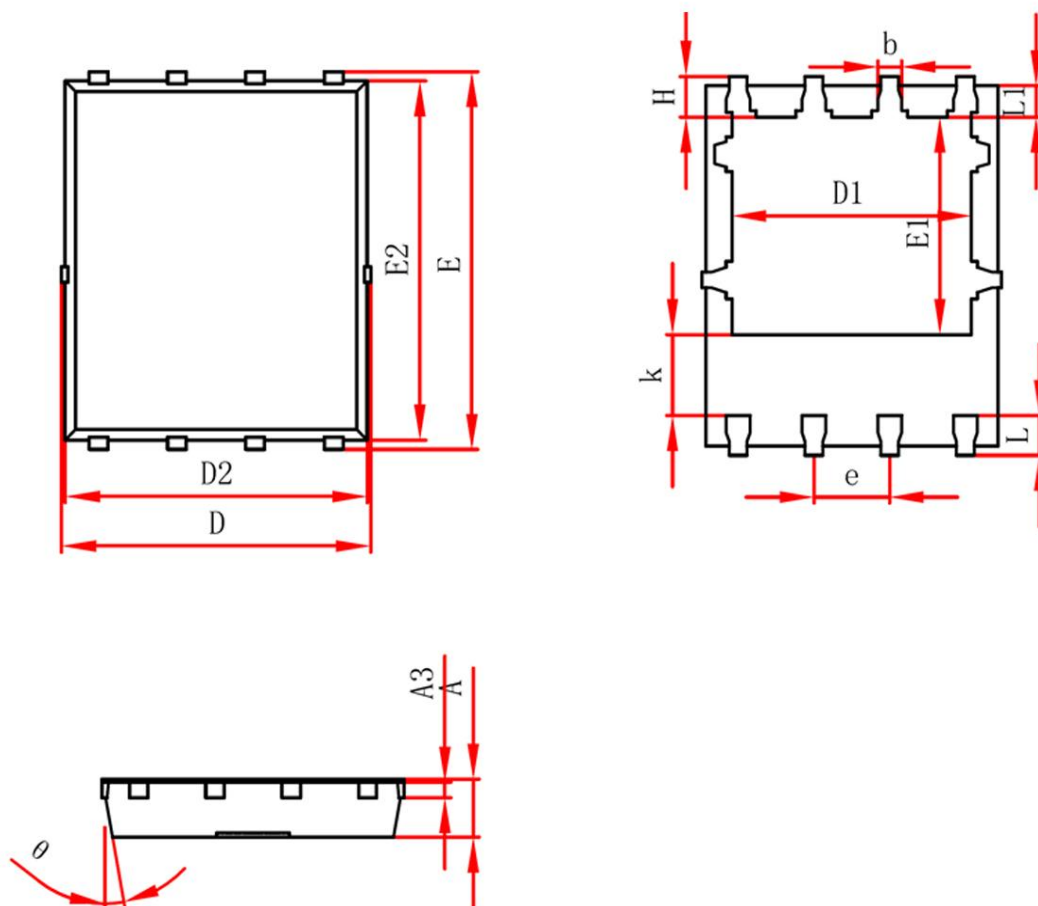
| Type      | Package    | Marking   | Minimum Package(pcs) | Inner Box Quantity(pcs) | Outer Carton Quantity(pcs) | Delivery Mode |
|-----------|------------|-----------|----------------------|-------------------------|----------------------------|---------------|
| MC0J100AG | PDFN5X6-8L | MC0J100AG | 5,000                | 10,000                  | 70,000                     | 13"reel       |

| Electrical Characteristics (TJ=25℃ unless otherwise noted)              |                                  |                                                                                       |     |      |      |      |
|-------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------|-----|------|------|------|
| Symbol                                                                  | Parameter                        | Condition                                                                             | Min | Typ  | Max  | Unit |
| Static Electrical Characteristics @ TJ = 25℃ (unless otherwise stated)  |                                  |                                                                                       |     |      |      |      |
| BV <sub>(BR)DSS</sub>                                                   | Drain-Source Breakdown Voltage   | V <sub>GS</sub> =0V, I <sub>D</sub> =250μA                                            | 80  | --   | --   | V    |
| I <sub>DSS</sub>                                                        | Zero Gate Voltage Drain Current  | V <sub>DS</sub> =80V, V <sub>GS</sub> =0V                                             | --  | --   | 1    | μA   |
| I <sub>GSS</sub>                                                        | Gate-Body Leakage Current        | V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V                                            | --  | --   | ±100 | nA   |
| V <sub>GS(th)</sub>                                                     | Gate Threshold Voltage           | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA                              | 2.0 | --   | 4.0  | V    |
| R <sub>DS(on)</sub>                                                     | Drain-Source On-State Resistance | V <sub>GS</sub> =10V, I <sub>D</sub> =20A                                             | --  | 4.6  | 6.0  | mΩ   |
| Dynamic Electrical Characteristics @ TJ = 25℃ (unless otherwise stated) |                                  |                                                                                       |     |      |      |      |
| C <sub>ISS</sub>                                                        | Input Capacitance                | V <sub>DS</sub> =40V, V <sub>GS</sub> =0V, f=1MHz                                     | --  | 3468 | --   | pF   |
| C <sub>OSS</sub>                                                        | Output Capacitance               |                                                                                       | --  | 660  | --   | pF   |
| C <sub>RSS</sub>                                                        | Reverse Transfer Capacitance     |                                                                                       | --  | 13   | --   | pF   |
| Switching Characteristics                                               |                                  |                                                                                       |     |      |      |      |
| Q <sub>g</sub>                                                          | Total Gate Charge                | V <sub>DS</sub> =40V, I <sub>D</sub> =55A, V <sub>GS</sub> =0 to 10V                  | --  | 48   | --   | nC   |
| Q <sub>gs</sub>                                                         | Gate Source Charge               |                                                                                       | --  | 15   | --   | nC   |
| Q <sub>gd</sub>                                                         | Gate Drain Charge                |                                                                                       | --  | 14   | --   | nC   |
| t <sub>d(on)</sub>                                                      | Turn-on Delay Time               | V <sub>DD</sub> =40V, I <sub>D</sub> =55A, V <sub>GS</sub> =10V, R <sub>G</sub> =1.6Ω | --  | 16   | --   | nS   |
| t <sub>r</sub>                                                          | Turn-on Rise Time                |                                                                                       | --  | 15   | --   | nS   |
| t <sub>d(off)</sub>                                                     | Turn-Off Delay Time              |                                                                                       | --  | 40   | --   | nS   |
| t <sub>f</sub>                                                          | Turn-Off Fall Time               |                                                                                       | --  | 12   | --   | nS   |
| Source- Drain Diode Characteristics                                     |                                  |                                                                                       |     |      |      |      |
| V <sub>SD</sub>                                                         | Forward on voltage               | Tj=25℃, Is=20A                                                                        | --  | --   | 1.2  | V    |

## Typical Operating Characteristics



PDFN5X6-8L Package information



| Symbol | Dimensions in Millimeters(mm) |       | Dimensions In Inches |       |
|--------|-------------------------------|-------|----------------------|-------|
|        | Min                           | Max   | Min                  | Max   |
| A      | 0.950                         | 1.050 | 0.035                | 0.039 |
| A3     | 0.254REF.                     |       | 0.010REF.            |       |
| D      | 4.950                         | 5.050 | 0.196                | 0.200 |
| E      | 5.950                         | 6.050 | 0.235                | 0.239 |
| D1     | 4.026                         | 4.126 | 0.159                | 0.163 |
| E1     | 3.510                         | 3.610 | 0.139                | 0.143 |
| D2     | 4.850                         | 4.950 | 0.192                | 0.196 |
| E2     | 5.700                         | 5.800 | 0.225                | 0.229 |
| k      | 1.190                         | 1.390 | 0.047                | 0.055 |
| b      | 0.300                         | 0.400 | 0.012                | 0.016 |
| e      | 1.270TYP.                     |       | 0.050TYP.            |       |
| L      | 0.559                         | 0.711 | 0.022                | 0.028 |
| L1     | 0.424                         | 0.576 | 0.017                | 0.023 |
| H      | 0.574                         | 0.726 | 0.023                | 0.029 |
| θ      | 10°                           | 12°   | 10°                  | 12°   |