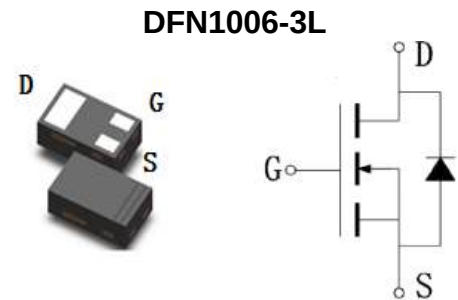


## 20V/2.3A N-Channel MOSFET

|                |      |    |
|----------------|------|----|
| BVDSS          | 20   | V  |
| ID             | 2.3  | A  |
| RDSON@VGS=4.5V | 47.0 | mΩ |
| RDSON@VGS=2.5V | 58.0 | mΩ |



### Features

- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance
- Humidity sensitivity Class:MSL-3

### Ordering Information:

| Product    | Package    | Marking | Packing       |
|------------|------------|---------|---------------|
| AM20NN020T | DFN1006-3L | N02     | 10000PCS/Reel |

### Absolute Max Ratings at Ta=25°C

| Parameter                                 | Symbol    | Maximum     | Units |
|-------------------------------------------|-----------|-------------|-------|
| Drain to Source Voltage                   | $V_{DSS}$ | 20          | V     |
| Gate to Source Voltage                    | $V_{GSS}$ | ±12         | V     |
| Drain Current (DC)                        | $I_D$     | 2.3         | A     |
| Drain Current (Pulse), $PW \leq 300\mu s$ | $I_{DP}$  | 11          | A     |
| Total Dissipation                         | $P_D$     | 0.77        | W     |
| Junction Temperature                      | $T_j$     | 150         | °C    |
| Storage Temperature                       | $T_{stg}$ | -55 to +150 | °C    |

Note 1: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

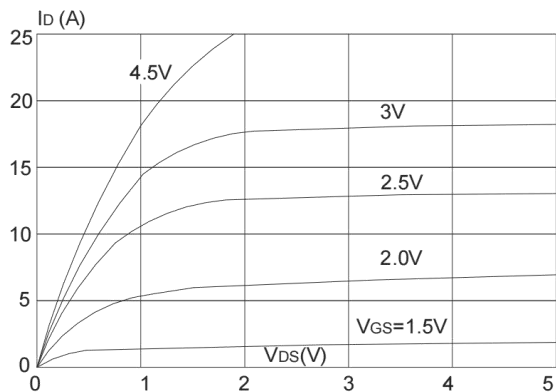
**20V/2.3A N-Channel MOSFET**
**Electrical Characteristics(Ta=25 °C)**

| Parameter                                  | Symbol        | Test Conditions                                               | Min. | Typ. | Max.      | Units      |
|--------------------------------------------|---------------|---------------------------------------------------------------|------|------|-----------|------------|
| Drain to Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D = 250\mu A, V_{GS} = 0V$                                 | 20   | 22   |           | V          |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS} = 20V, V_{GS} = 0V$                                   |      |      | 1         | $\mu A$    |
| Gate to Source Leakage Current             | $I_{GSS}$     | $V_{GS} = \pm 12V, V_{DS} = 0V$                               |      |      | $\pm 100$ | nA         |
| Gate Threshold Voltage                     | $V_{GS(th)}$  | $V_{DS}=V_{GS}, I_{DS}=250\mu A$                              | 0.5  | 0.7  | 1.2       | V          |
| Static Drain to Source On-State Resistance | $R_{DS(on)}$  | $I_D = 2.3A, V_{GS} = 4.5V$                                   |      | 47   | 55        | m $\Omega$ |
|                                            |               | $I_D = 2A, V_{GS} = 2.5V$                                     |      | 58   | 65        | m $\Omega$ |
| Input Capacitance                          | $C_{iss}$     | $V_{GS}=0V,$<br>$V_{DS}=10V,$<br>Frequency=1.0MHz             |      | 184  |           | pF         |
| Output Capacitance                         | $C_{oss}$     |                                                               |      | 38   |           | pF         |
| Reverse Transfer Capacitance               | $C_{rss}$     |                                                               |      | 28   |           | pF         |
| Turn-ON Delay Time                         | $t_{d(on)}$   | $V_{DD} = 10V, I_D = 2.3A,$<br>$R_G = 3\Omega, V_{GS} = 4.5V$ |      | 8    |           | ns         |
| Rise Time                                  | $t_r$         |                                                               |      | 27   |           | ns         |
| Turn-OFF Delay Time                        | $t_{d(off)}$  |                                                               |      | 26   |           | ns         |
| Fall Time                                  | $t_f$         |                                                               |      | 33   |           | ns         |
| Total Gate Charge                          | $Q_g$         | $V_{DS} = 10V,$<br>$V_{GS} = 4.5V,$<br>$I_D = 2.3A$           |      | 2.7  |           | nC         |
|                                            | $Q_{gs}$      |                                                               |      | 0.4  |           | nC         |
|                                            | $Q_{gd}$      |                                                               |      | 0.5  |           | nC         |
| Diode Forward Voltage                      | $V_{FSD}$     | $I_D = 2.3A, V_{GS} = 0$                                      |      | 0.9  | 1.2       | V          |

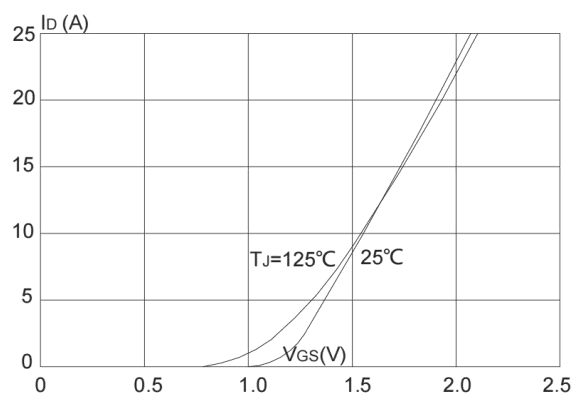
Note 3 : Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

## 20V/2.3A N-Channel MOSFET

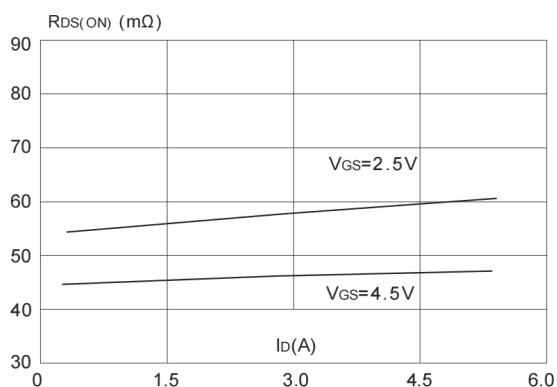
### Electrical Characteristic Curve



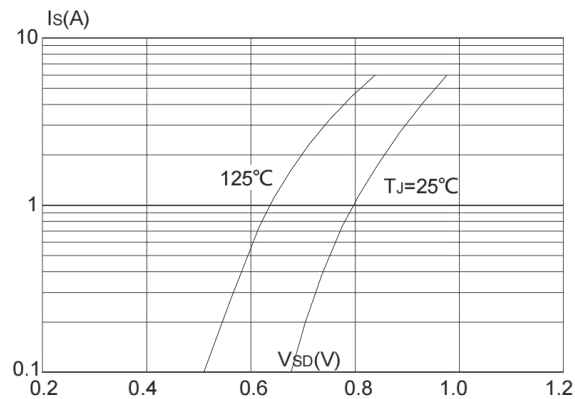
Output Characteristics



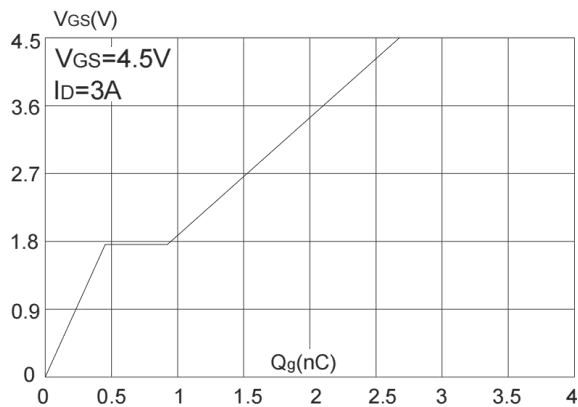
Typical Transfer Characteristics



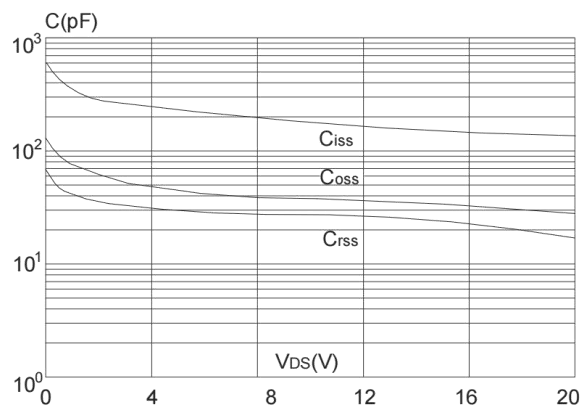
On-resistance vs . Drain Current



Body Diode Characteristics



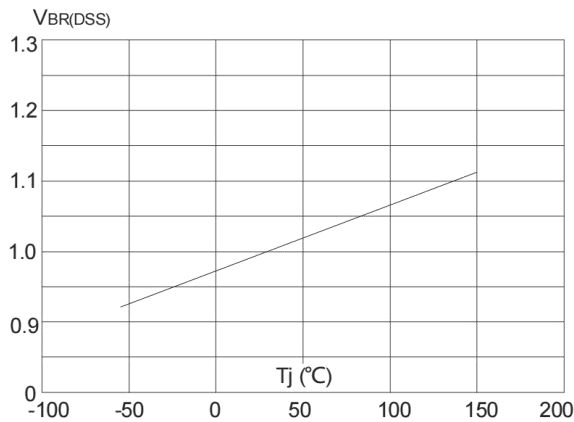
Gate Charge Characteristics



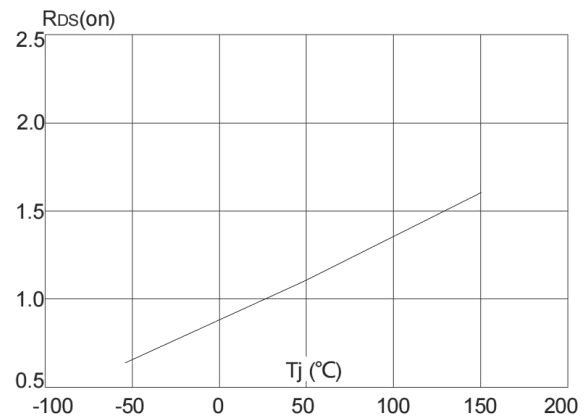
Capacitance Characteristics

## 20V/2.3A N-Channel MOSFET

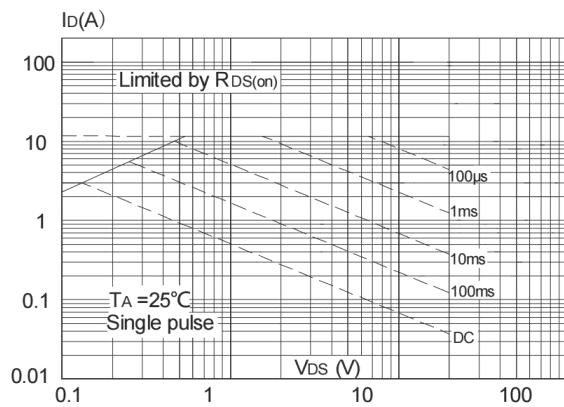
### Electrical Characteristic Curve



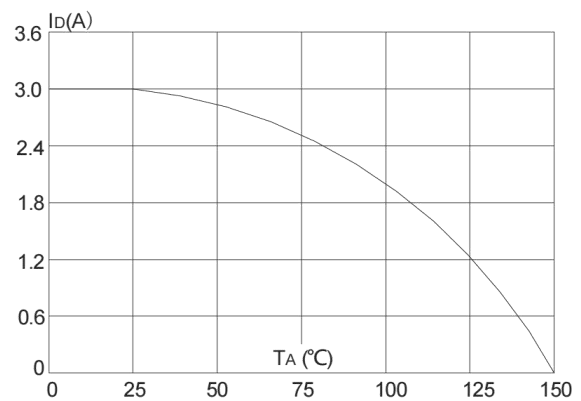
Normalized Breakdown Voltage vs .  
Junction Temperature



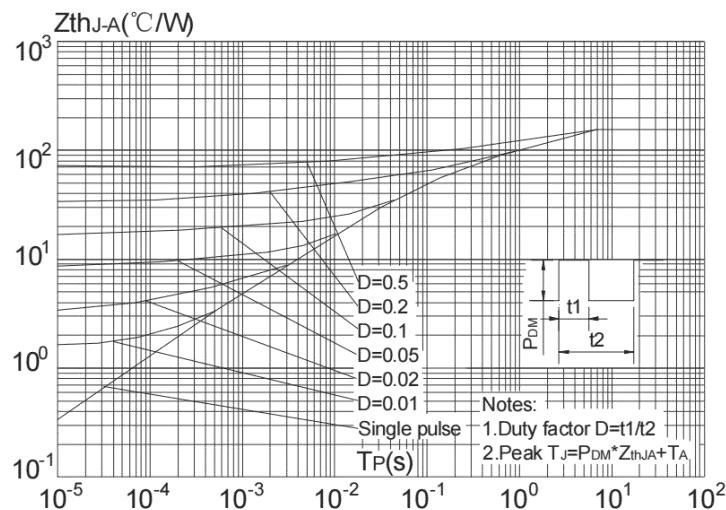
Normalized on Resistance vs .  
Junction Temperature



Maximum Safe Operating Area



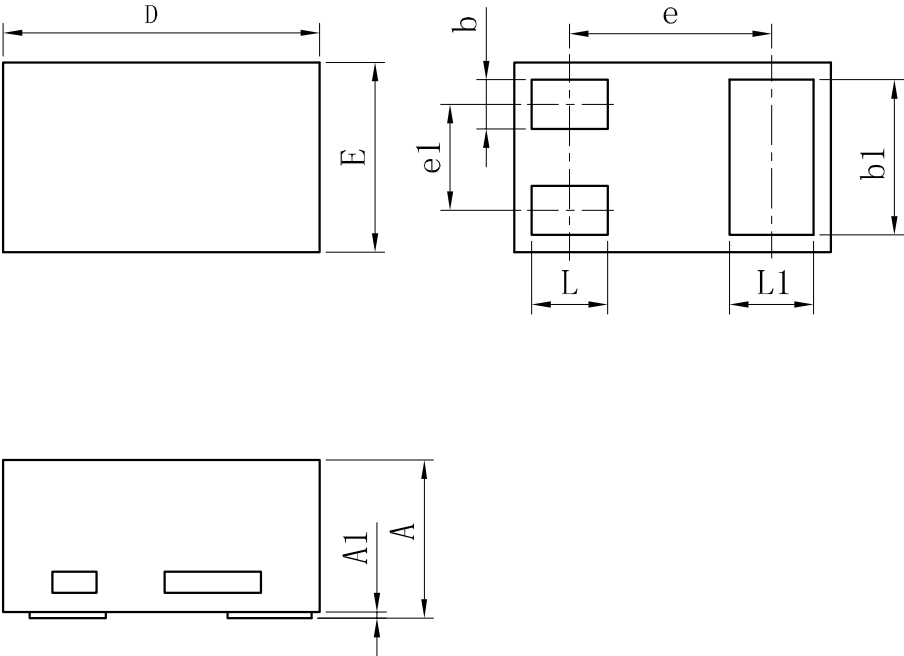
Maximum Continuous Drain Current vs.  
Case Temperature



Maximum Continuous Drain Current vs.  
Case Temperature

20V/2.3A N-Channel MOSFET

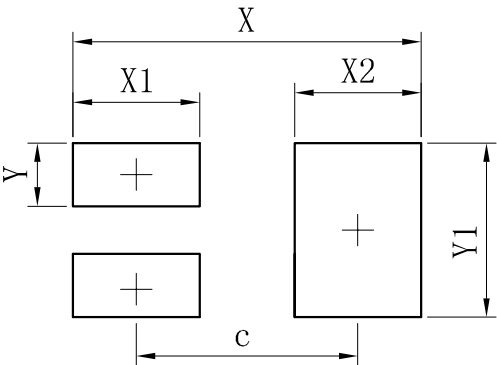
Dimension outline



Unit:mm

| DFN1006-3L |      |      |      |
|------------|------|------|------|
| Dim        | Min  | Typ  | Max  |
| D          | 0.95 | 1.00 | 1.05 |
| E          | 0.55 | 0.60 | 0.65 |
| e          | –    | 0.64 | –    |
| e1         | –    | 0.34 | –    |
| L          | 0.19 | 0.24 | 0.29 |
| L1         | 0.22 | 0.27 | 0.32 |
| b          | 0.10 | 0.15 | 0.20 |
| b1         | 0.44 | 0.49 | 0.54 |
| A          | 0.43 | 0.48 | 0.53 |
| A1         | 0    | –    | 0.05 |

Recommended Mounting Pad Layout Unit:mm

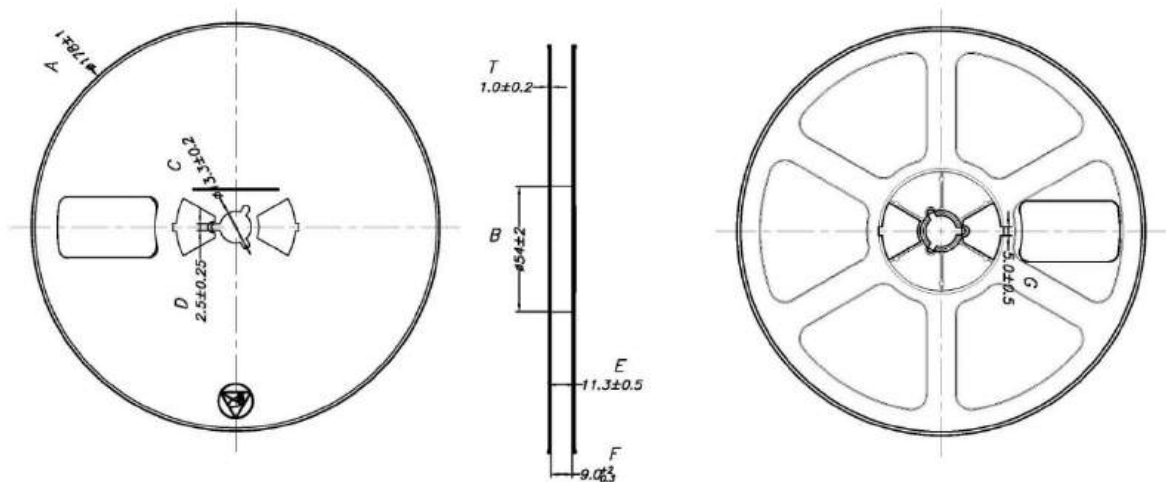
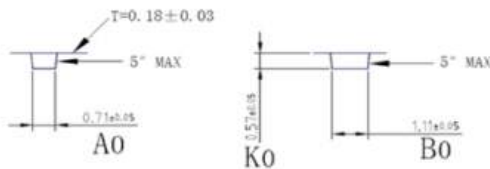
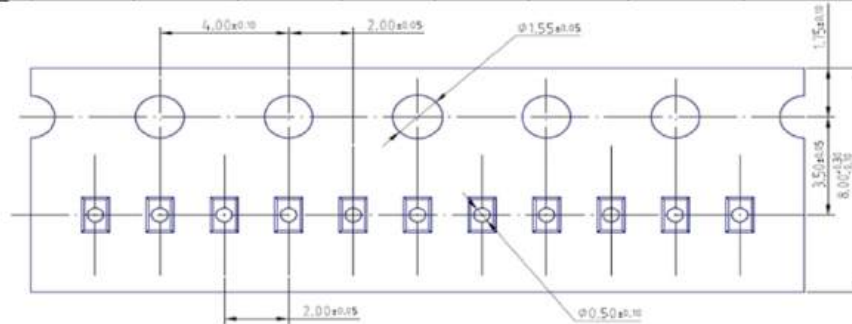


| Dimensions | (mm) |
|------------|------|
| c          | 0.70 |
| X          | 1.10 |
| X1         | 0.40 |
| X2         | 0.40 |
| Y          | 0.20 |
| Y1         | 0.55 |

## 20V/2.3A N-Channel MOSFET

### Packaging Information

| 项目 | W        | E     | T     | F     | P1    | P0    | P2    | D0    | A0    | B0    | K0    |
|----|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 标准 | 8.0 ±    | 1.75  | 0.18  | 3.5   | 2.0   | 4.0 ± | 2.0   | 1.55  | 0.71  | 1.11  | 0.57  |
| 值  | 0.3/-0.1 | ±0.10 | ±0.03 | ±0.05 | ±0.05 | 0.1   | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 |



|       |       |         |          |         |                                 |         |         |
|-------|-------|---------|----------|---------|---------------------------------|---------|---------|
| A ± 1 | B ± 2 | C ± 0.2 | D ± 0.25 | E ± 0.5 | F <sub>-0.3</sub> <sup>+2</sup> | G ± 0.5 | T ± 0.2 |
| Ø178  | Ø54   | Ø13.3   | 2.5      | 11.3    | 9.0                             | 5.0     | 1.0     |