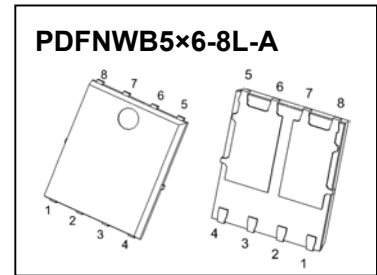


**PDFNWB5×6-8L-A Plastic-Encapsulate MOSFETS**

**CJAC1214M03 N-Channel + P-Channel MOSFET**

| $V_{(BR)DSS}$ | $R_{DS(on) TYP}$ | $I_D$ |
|---------------|------------------|-------|
| 30V           | 6.8mΩ@10V        | 30A   |
|               | 8.3mΩ@4.5V       |       |
| -30V          | 11mΩ@-10V        | -30A  |
|               | 15mΩ@-4.5V       |       |



**DESCRIPTION**

The CJAC1214M03 provides excellent  $R_{DS(ON)}$  with low gate charge. It can be used in a wide variety of applications

**FEATURES**

- High density cell design for ultra low  $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

**APPLICATIONS**

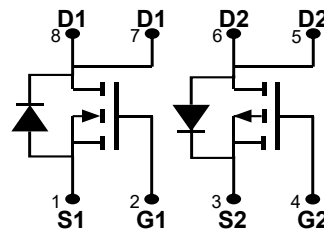
- DC/DC converter
- High-frequency switching and synchronous rectification

**MARKING**



CJAC1214M03=Part No.  
Solid dot=Pin1 indicator  
XX=Date Code

**EQUIVALENT CIRCUIT**



**MAXIMUM RATINGS (  $T_a=25^{\circ}C$  unless otherwise noted )**

| Parameter   | Symbol    | Limit | Unit |
|---|-----------|-------|------|
| <b>N-MOSFET</b>   |           |       |      |
| Drain-Source Voltage (V <sub>GS</sub> =0V, I <sub>D</sub> =0A)                    | $V_{DS}$  | 30    | V    |
| Drain-Source Voltage (V <sub>GS</sub> =0V, I <sub>D</sub> =30A)                   | $V_{DS}$  | 10    | V    |
| Drain Current (V <sub>GS</sub> =0V, V <sub>DS</sub> =0V)                          | $I_D$     | 30    | A    |
| Drain Current (V <sub>GS</sub> =0V, V <sub>DS</sub> =30V)                         | $I_{DM}$  | 120   | A    |
| Drain Current (V <sub>GS</sub> =0V, V <sub>DS</sub> =30V, t <sub>AV</sub> ≤100μs) | $I_{DM}$  | 45    | { R  |
| <b>P-MOSFET</b>   |           |       |      |
| Drain-Source Voltage (V <sub>GS</sub> =0V, I <sub>D</sub> =0A)                    | $V_{DS}$  | 30    | V    |
| Drain-Source Voltage (V <sub>GS</sub> =0V, I <sub>D</sub> =30A)                   | $V_{DS}$  | 10    | V    |
| Drain Current (V <sub>GS</sub> =0V, V <sub>DS</sub> =0V)                          | $I_D$     | 30    | A    |
| Drain Current (V <sub>GS</sub> =0V, V <sub>DS</sub> =30V)                         | $I_{DM}$  | 120   | A    |
| Drain Current (V <sub>GS</sub> =0V, V <sub>DS</sub> =30V, t <sub>AV</sub> ≤100μs) | $I_{DM}$  | 45    | { R  |
| <b>Temperature and Thermal Resistance</b>   |           |       |      |
| Power Dissipation (V <sub>GS</sub> =0V, V <sub>DS</sub> =0V)                      | $P_{RCE}$ | 180   | mW   |
| Power Dissipation (V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, Case)                | $P_{RC}$  | 5.0   | mW   |
| Storage Temperature   | $T_{STG}$ | 25    | °C   |
| Operating Temperature   | $V_{FAV}$ | 100   | °C   |

# MOSFET ELECTRICAL CHARACTERISTICS

## N-Channel MOSFET ELECTRICAL CHARACTERISTICS, $T_a=25^\circ\text{C}$ unless otherwise specified

| Parameter                                 | Symbol       | Test Condition                      | Min | Typ | Max | Unit     |
|---|--------------|-------------------------------------|-----|-----|-----|----------|
| <b>Off characteristics</b>                |              |                                     |     |     |     |          |
| Drain current (at $V_{GS}=0V$ )           | $I_{DSS}$    | $V_{DS}=30V$                        | 3   | -   | -   | $\mu A$  |
| Static drain current (at $V_{GS}=0V$ )    | $I_{D0}$     | $V_{DS}=30V, V_{GS}=0V$             | -   | -   | 1   | $\mu A$  |
| Reverse current (at $V_{GS}=0V$ )         | $I_{SS}$     | $V_{DS}=30V, V_{GS}=0V$             | -   | -   | 1   | $\mu A$  |
| <b>On characteristics</b>                 |              |                                     |     |     |     |          |
| Drain current (at $V_{GS}=10V$ )          | $I_{D(on)}$  | $V_{DS}=30V, V_{GS}=10V$            | 1.0 | 1.6 | 2.5 | X        |
| Switching time (at $V_{GS}=10V$ )         | $t_{d(on)}$  | $V_{DS}=30V, I_{D(on)}$             | -   | 6.8 | 12  | $\mu s$  |
|   |              | $V_{DS}=30V, I_{D(on)}$             | -   | 8.3 | 16  | $\mu s$  |
| <b>Dynamic characteristics</b>            |              |                                     |     |     |     |          |
| Turn-on delay time                        | $t_{d(on)}$  | $V_{GS}=10V, V_{DS}=30V, I_{D(on)}$ | -   | 951 | -   | $\mu s$  |
| Turn-off delay time                       | $t_{d(off)}$ |                                     | -   | 147 | -   |          |
| Storage time                              | $t_{s(off)}$ |                                     | -   | 114 | -   |          |
| Gate resistance                           | $R_g$        | $f=1MHz$                            | -   | 4   | -   | $\Omega$ |
| <b>Switching characteristics</b>          |              |                                     |     |     |     |          |
| Switching voltage (at $V_{GS}=10V$ )      | $V_{DS(on)}$ | $V_{GS}=10V, I_{D(on)}$             | -   | 8.6 | -   | $\mu A$  |
| Switching voltage (at $V_{GS}=10V$ )      | $V_{DS(on)}$ |                                     | -   | 19  | -   |          |
| Switching voltage (at $V_{GS}=10V$ )      | $V_{DS(on)}$ |                                     | -   | 3   | -   |          |
| Switching voltage (at $V_{GS}=10V$ )      | $V_{DS(on)}$ |                                     | -   | 5   | -   |          |
| Switching current (at $V_{GS}=10V$ )      | $I_{D(on)}$  | $V_{GS}=10V, V_{DS}=15A, I_{D(on)}$ | -   | 6   | -   | $\mu A$  |
| Switching current (at $V_{GS}=10V$ )      | $I_{D(on)}$  |                                     | -   | 93  | -   |          |
| Switching current (at $V_{GS}=10V$ )      | $I_{D(on)}$  |                                     | -   | 29  | -   |          |
| Switching current (at $V_{GS}=10V$ )      | $I_{D(on)}$  |                                     | -   | 29  | -   |          |
| <b>Drain-Source Diode Characteristics</b> |              |                                     |     |     |     |          |
| Reverse current (at $V_{GS}=0V$ )         | $I_{RS}$     | $V_{DS}=30V, V_{GS}=0V$             | -   | -   | 1   | $\mu A$  |
| Reverse recovery time (at $V_{GS}=0V$ )   | $t_{rr}$     | $V_{DS}=30V, V_{GS}=0V$             | -   | -   | 30  | $\mu s$  |
| Forward current (at $V_{GS}=0V$ )         | $I_{FS}$     | $V_{DS}=30V, V_{GS}=0V$             | -   | -   | 120 | $\mu A$  |

# MOSFET ELECTRICAL CHARACTERISTICS

## P-Channel MOSFET ELECTRICAL CHARACTERISTICS, $T_a=25^\circ\text{C}$ unless otherwise specified

| Parameter                                 | Symbol       | Test Condition | Min | Typ  | Max | Unit       |
|---|--------------|----------------|-----|------|-----|------------|
| <b>Off characteristics</b>                |              |                |     |      |     |            |
| Off-state drain current                   | $I_{DSS}$    | $V_{GS}=0V$    | -   | -    | -   | $\mu A$    |
| Substrate current                         | $I_{S1}$     | $V_{GS}=0V$    | -   | -    | 1   | $\mu A$    |
| On characteristics                        |              |                |     |      |     |            |
| On-state drain current                    | $I_{D(on)}$  | $V_{GS}=10V$   | 0   | 5    | 25  | A          |
| On-state drain current (at $V_{GS}=10V$ ) | $I_{D(on)}$  | $V_{GS}=10V$   | -   | 11   | 15  | { $\delta$ |
| On-state drain current (at $V_{GS}=10V$ ) | $I_{D(on)}$  | $V_{GS}=10V$   | -   | 15   | 25  | { $\delta$ |
| <b>Dynamic characteristics</b>            |              |                |     |      |     |            |
| Turn-on delay time                        | $t_{d(on)}$  | $V_{GS}=10V$   | -   | 2280 | -   | $\mu s$    |
| Turn-off delay time                       | $t_{d(off)}$ | $V_{GS}=10V$   | -   | 330  | -   | $\mu s$    |
| Storage time                              | $t_{s(off)}$ | $V_{GS}=10V$   | -   | 310  | -   | $\mu s$    |
| Gate resistance                           | $R_g$        | $f=1MHz$       | -   | 5    | -   | $\Omega$   |
| <b>Switching characteristics</b>          |              |                |     |      |     |            |
| Switching time (at $V_{GS}=10V$ )         | $t_{sw}$     | $V_{GS}=10V$   | -   | 22   | -   | $\mu s$    |
| Switching time (at $V_{GS}=10V$ )         | $t_{sw}$     | $V_{GS}=10V$   | -   | 48   | -   | $\mu s$    |
| Switching time (at $V_{GS}=10V$ )         | $t_{sw}$     | $V_{GS}=10V$   | -   | 6    | -   | $\mu s$    |
| Switching time (at $V_{GS}=10V$ )         | $t_{sw}$     | $V_{GS}=10V$   | -   | 12   | -   | $\mu s$    |
| Switching time (at $V_{GS}=10V$ )         | $t_{sw}$     | $V_{GS}=10V$   | -   | 8    | -   | $\mu s$    |
| Switching time (at $V_{GS}=10V$ )         | $t_{sw}$     | $V_{GS}=10V$   | -   | 125  | -   | $\mu s$    |
| Switching time (at $V_{GS}=10V$ )         | $t_{sw}$     | $V_{GS}=10V$   | -   | 94   | -   | $\mu s$    |
| Switching time (at $V_{GS}=10V$ )         | $t_{sw}$     | $V_{GS}=10V$   | -   | 107  | -   | $\mu s$    |
| <b>Drain-Source Diode Characteristics</b> |              |                |     |      |     |            |
| Reverse current                           | $I_{RS}$     | $V_{GS}=0V$    | -   | -    | 1   | $\mu A$    |
| Reverse recovery time                     | $t_{rr}$     | $V_{GS}=0V$    | -   | -    | 30  | $\mu s$    |
| Reverse recovery charge                   | $Q_{rr}$     | $V_{GS}=0V$    | -   | -    | 20  | $\mu C$    |

$P \leq 1W$

$F_{SW} \leq 10kHz$  Limited only by maximum temperature allowed.

2.  $P_{avg} \leq 10\mu s$ , Duty cycle  $\leq 1\%$ .

3. EAS condition:  $V_{DD}=15V, V_{GS}=10V, L=0.5mH, R_g=25\Omega$  Starting  $T_j = 25^\circ C$ .

4. EAS condition:  $V_{DD}=-25V, V_{GS}=-10V, L=0.5mH, R_g=25\Omega$  Starting  $T_j = 25^\circ C$ .

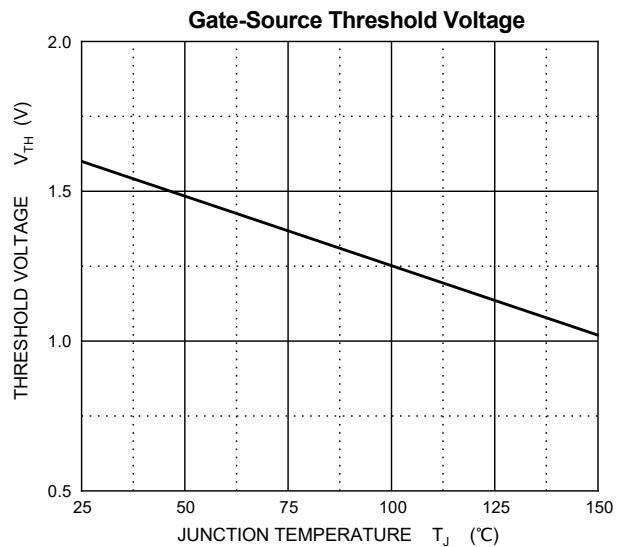
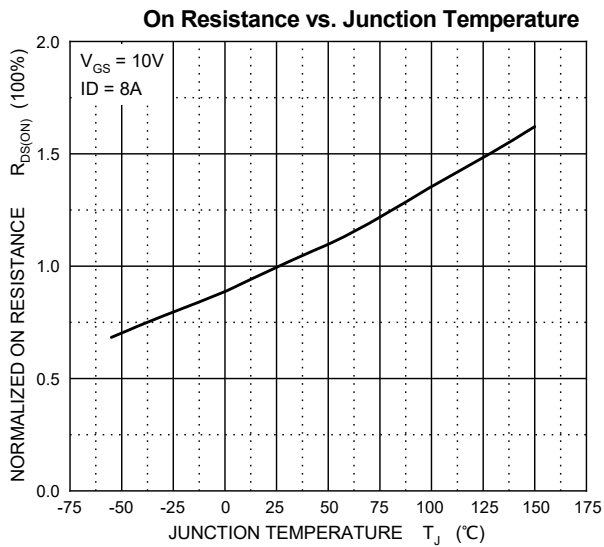
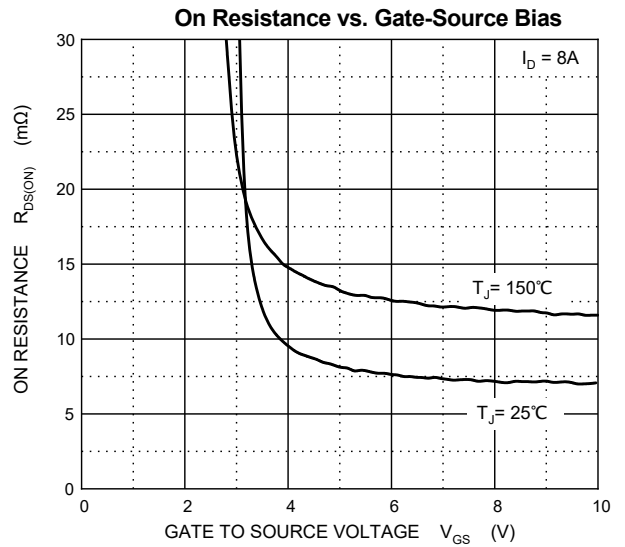
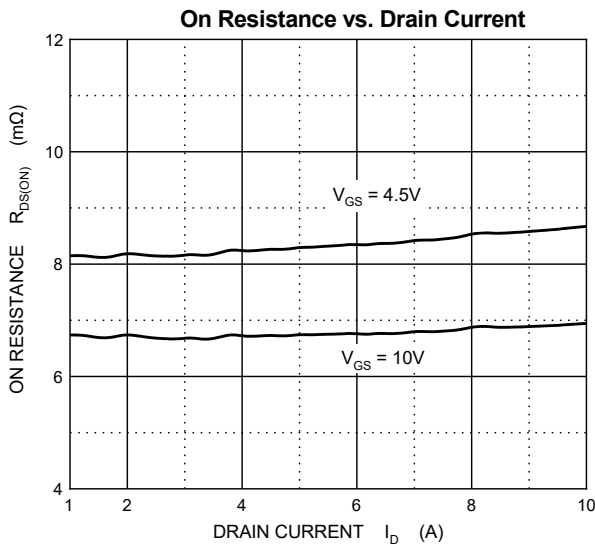
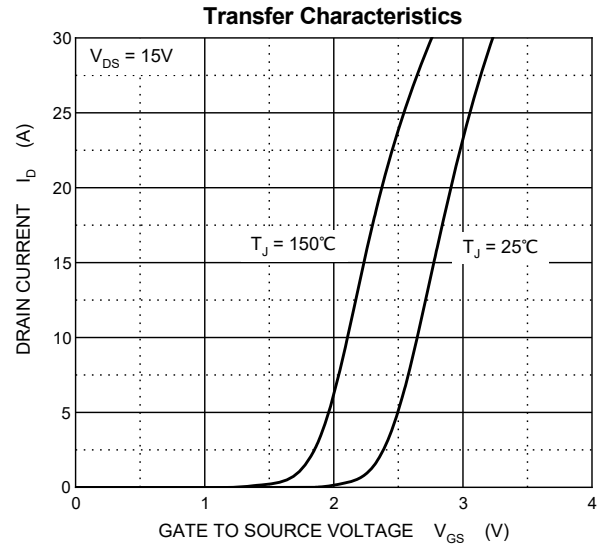
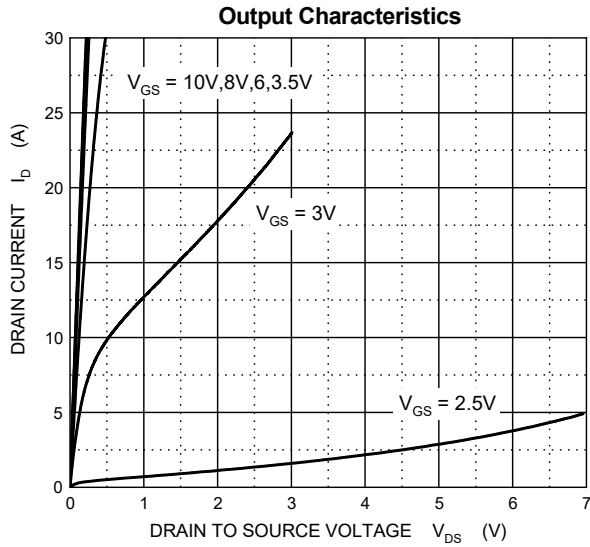
5. Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

6. Guaranteed by design, not subject to production.

7. The value of  $R_{\theta JA}$  is measured with the device in a still air environment with  $T_a=25^\circ C$ .

# Typical Characteristics

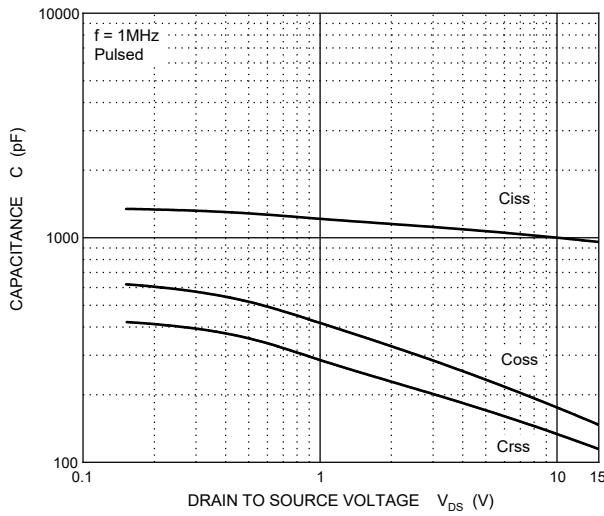
N-Channel MOS



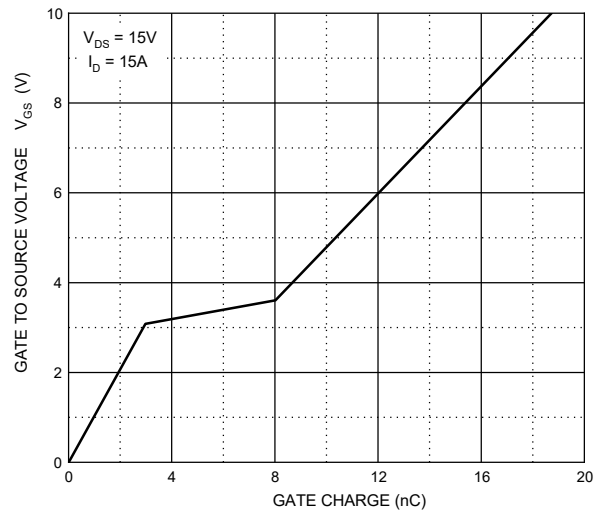
# Typical Characteristics

## N-Channel MOS

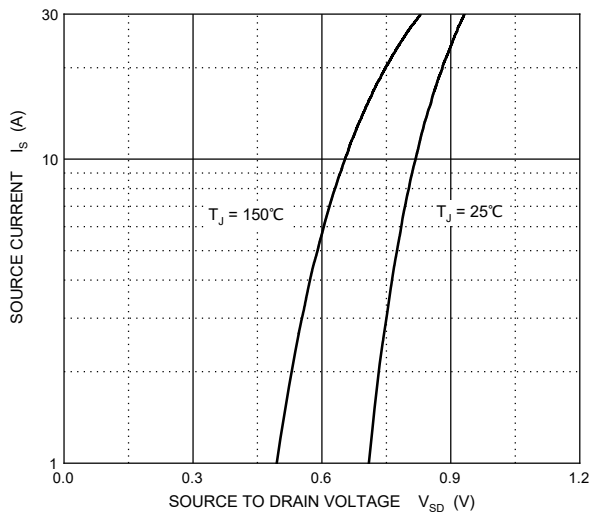
Typical Capacitances



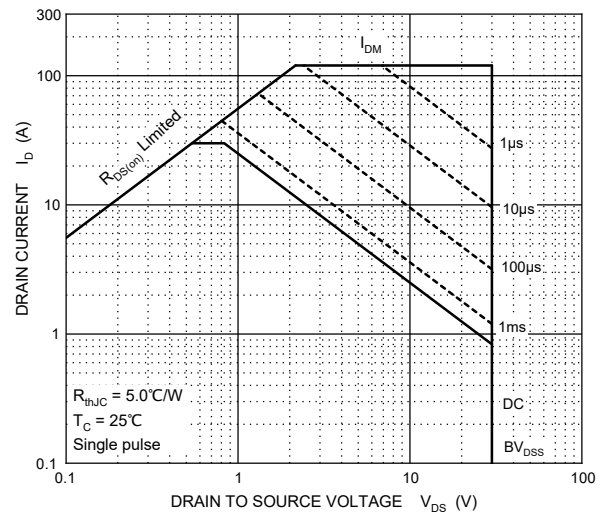
Gate Charge



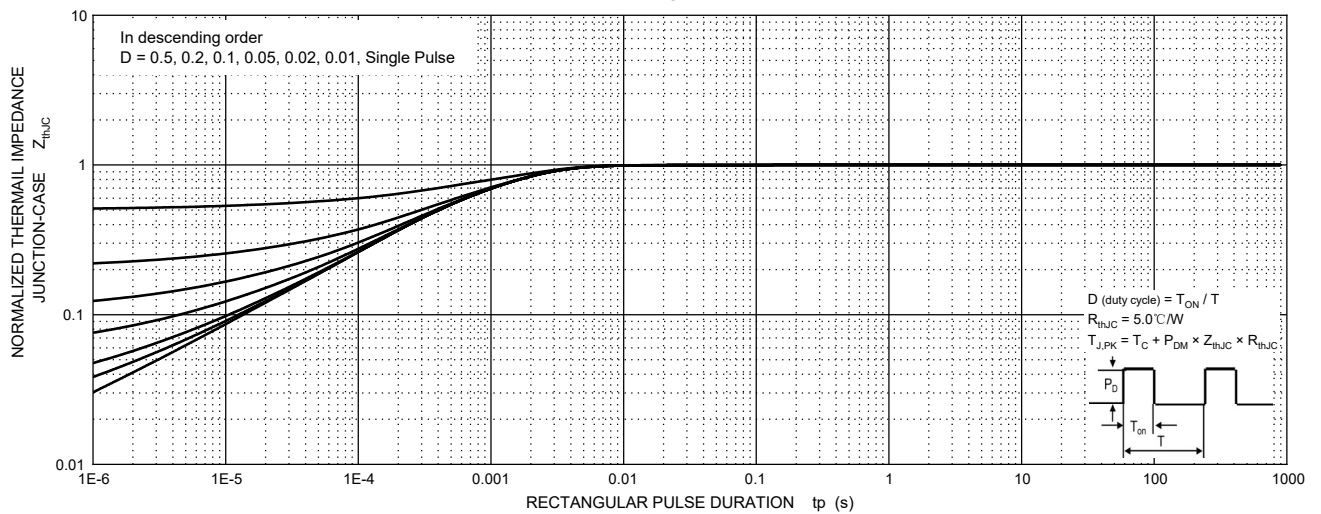
Source-Drain Diode Forward Characteristics



Maximum Safe Operating Area

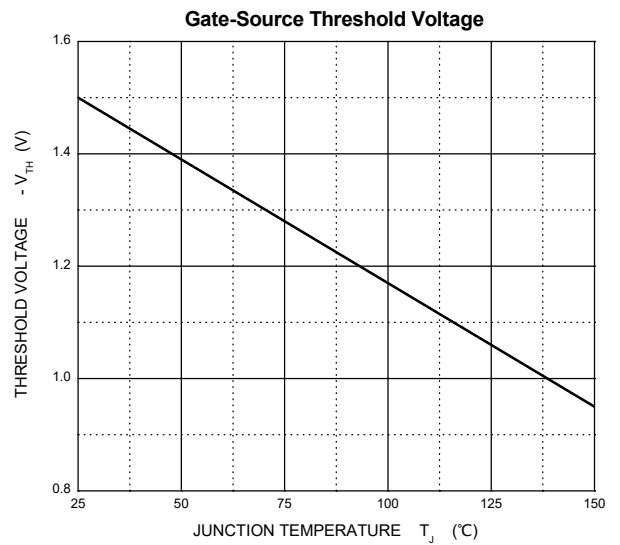
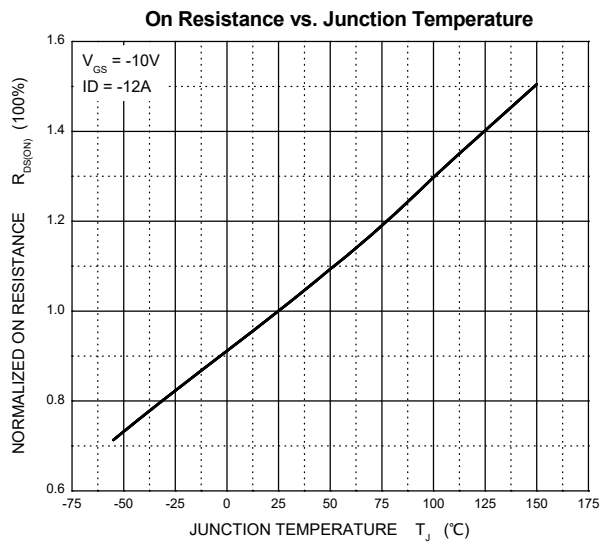
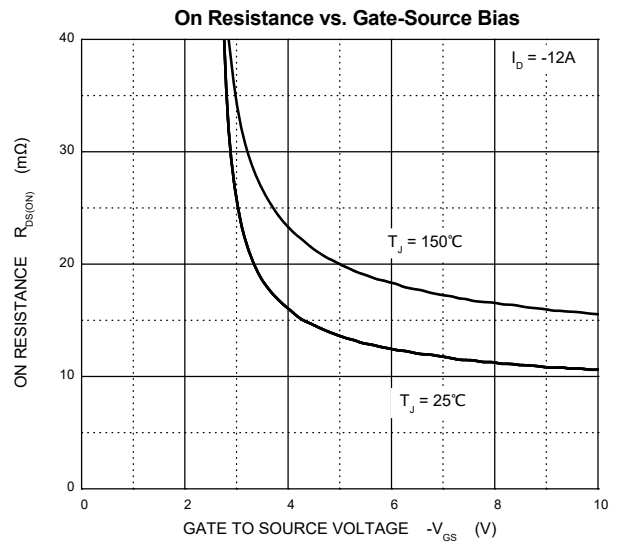
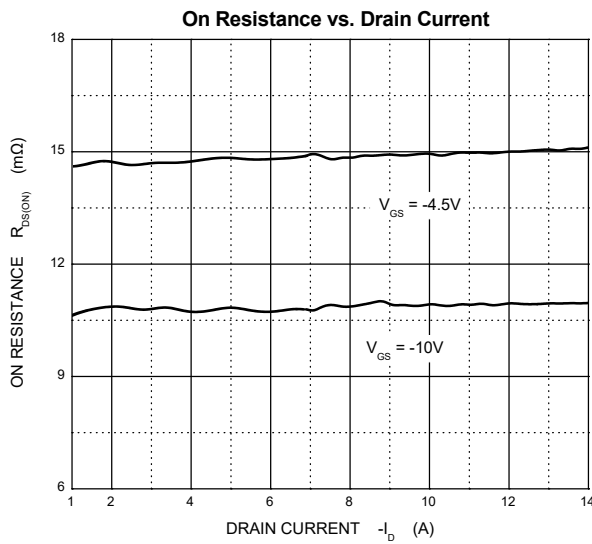
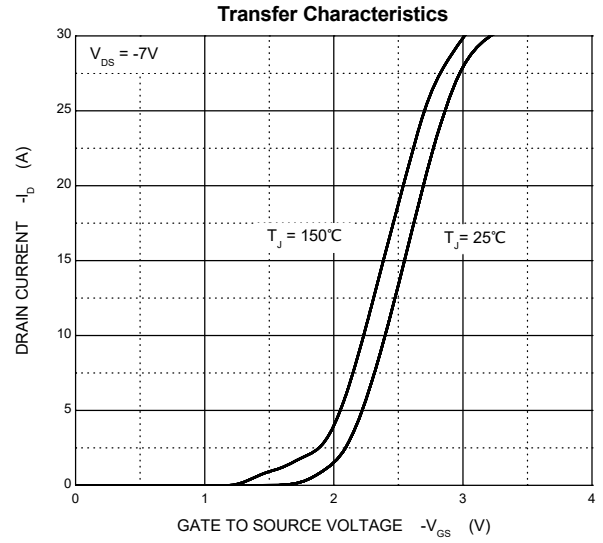
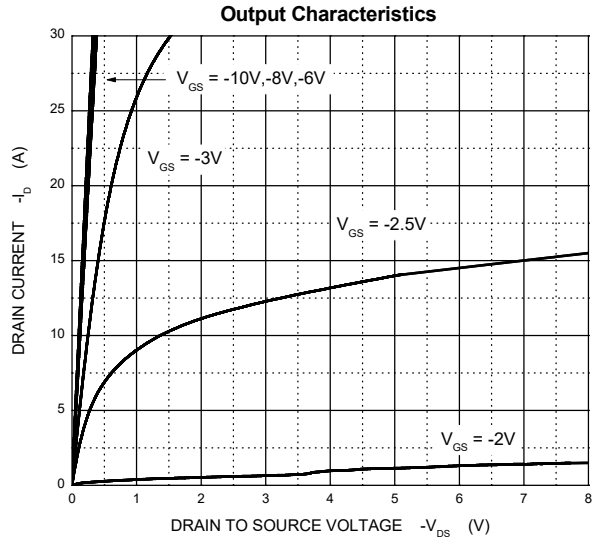


Transient Thermal Impedance, Junction-Case



# Typical Characteristics

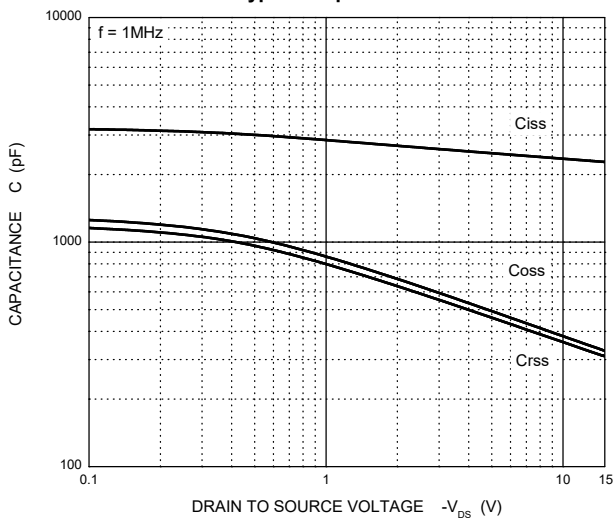
P-Channel MOS



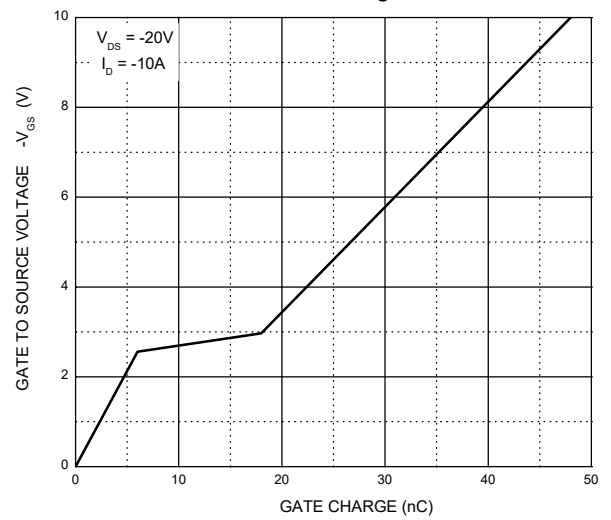
# Typical Characteristics

P-Channel MOS

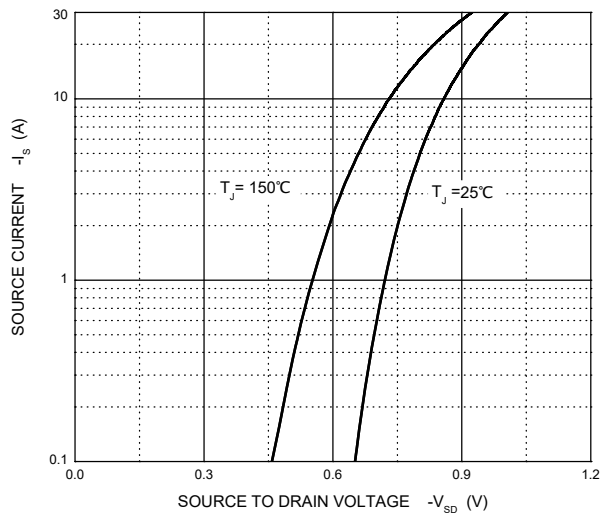
Typical Capacitances



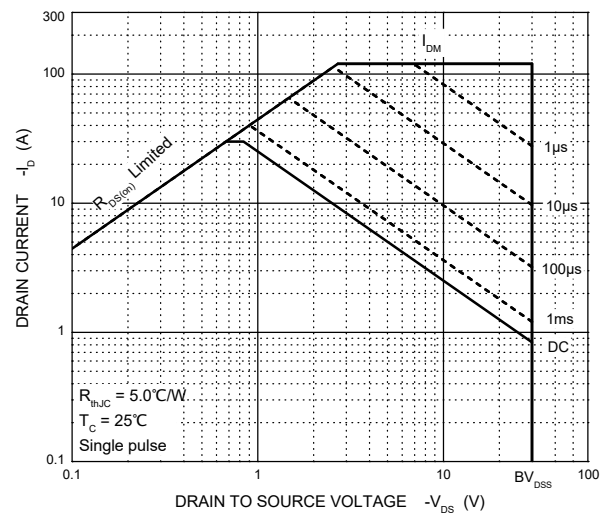
Gate Charge



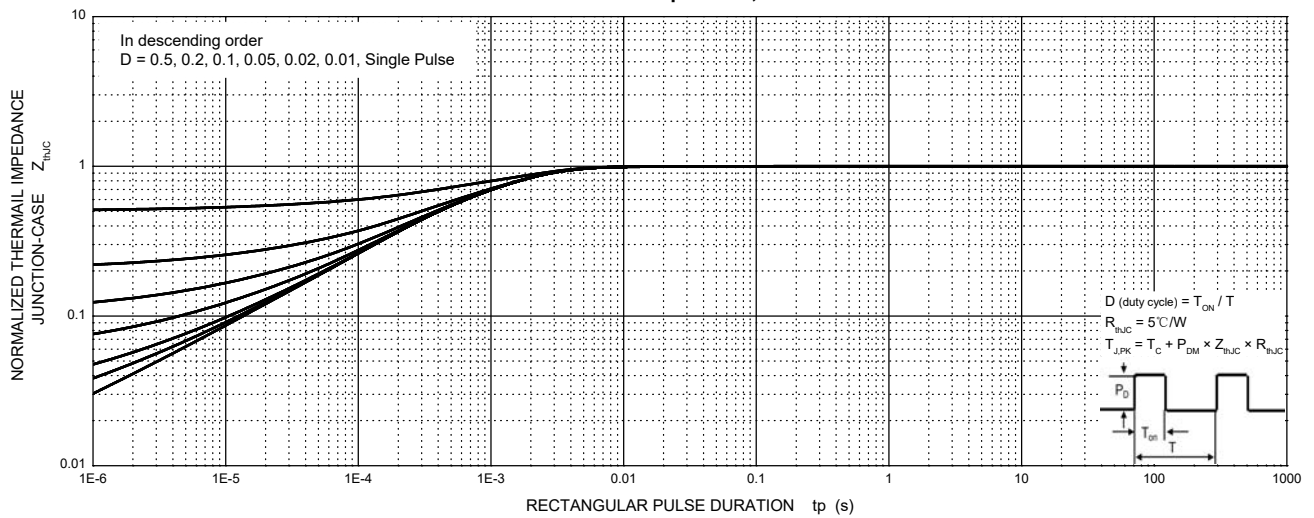
Source-Drain Diode Forward Characteristics



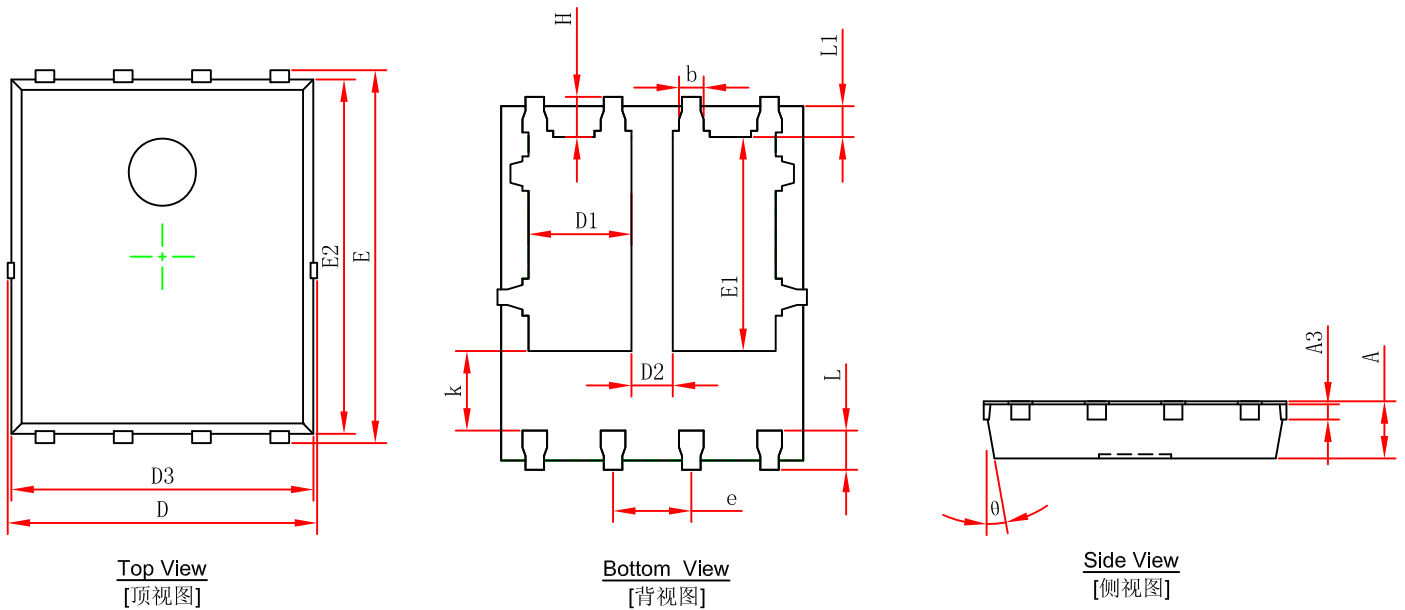
Maximum Safe Operating Area



Transient Thermal Impedance, Junction-Case



## PDFNWB5×6-8L-A Package Outline Dimensions



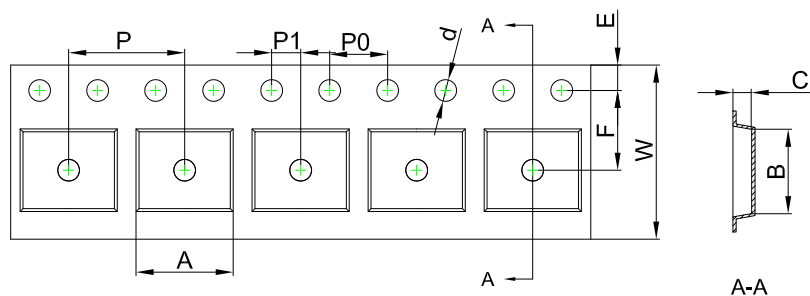
| Symbol   | Dimensions In Millimeters |       | Dimensions In Inches |       |
|----------|---------------------------|-------|----------------------|-------|
|          | Min.                      | Max.  | Min.                 | Max.  |
| A        | 0.900                     | 1.000 | 0.035                | 0.039 |
| A3       | 0.254 REF.                |       | 0.010REF.            |       |
| D        | 4.944                     | 5.096 | 0.195                | 0.201 |
| E        | 5.974                     | 6.126 | 0.235                | 0.241 |
| D1       | 1.470                     | 1.870 | 0.058                | 0.074 |
| D2       | 0.470                     | 0.870 | 0.019                | 0.034 |
| E1       | 3.375                     | 3.575 | 0.133                | 0.141 |
| D3       | 4.824                     | 4.976 | 0.190                | 0.196 |
| E2       | 5.674                     | 5.826 | 0.223                | 0.229 |
| k        | 1.190                     | 1.390 | 0.047                | 0.055 |
| b        | 0.350                     | 0.450 | 0.014                | 0.018 |
| 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 |
| $\theta$ | 10°                       | 12°   | 10°                  | 12°   |

### NOTICE

JSCJ reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JSCJ does not assume any liability arising out of the application or use of any product described herein.

# PDFNWB5×6-8L-A Tape and Reel

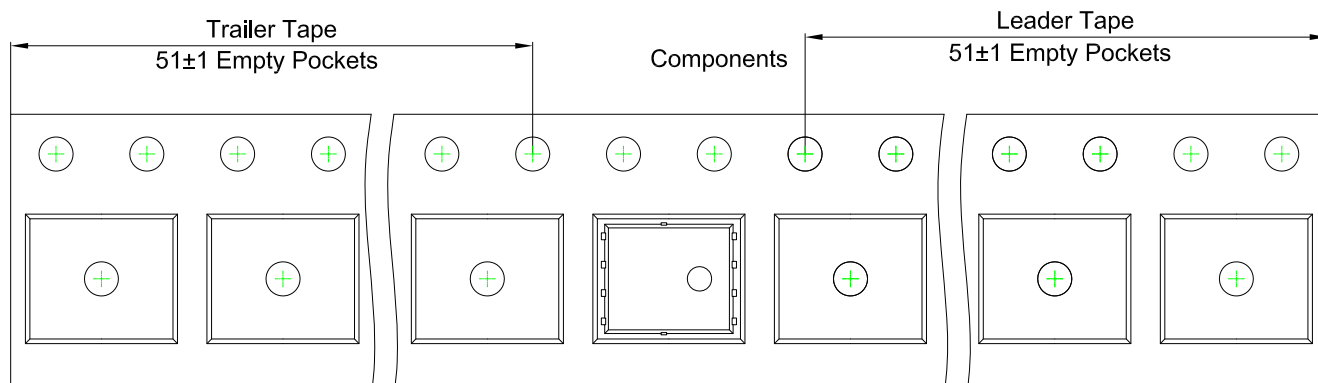
## PDFNWB5×6-8L-A Embossed Carrier Tape



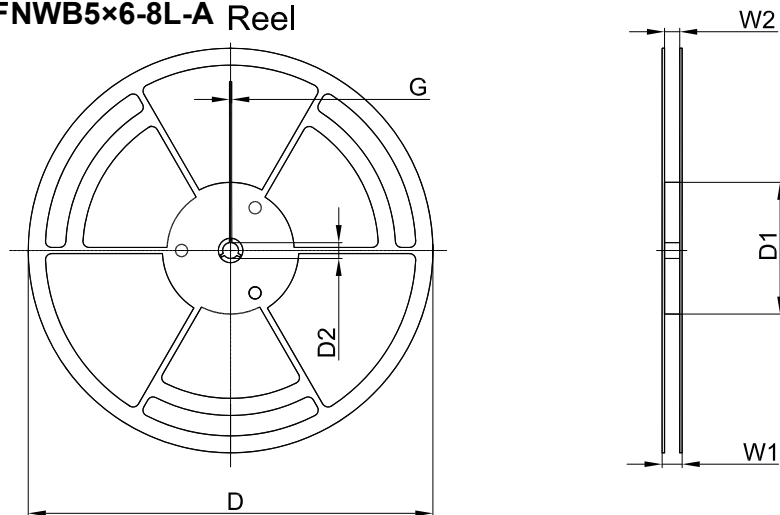
**Packaging Description:**  
**PDFNWB5×6-8L-A** parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 5,000 units per 13" or 33.0 cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

| Dimensions are in millimeter |      |      |      |       |      |      |      |      |      |       |
|------------------------------|------|------|------|-------|------|------|------|------|------|-------|
| Pkg type                     | A    | B    | C    | d     | E    | F    | P0   | P    | P1   | W     |
| <b>PDFNWB5×6-8L-A</b>        | 6.30 | 5.30 | 1.10 | Ø1.50 | 1.75 | 5.50 | 4.00 | 8.00 | 2.00 | 12.00 |

## PDFNWB5×6-8L-A Tape Leader and Trailer



## PDFNWB5×6-8L-A Reel



| Dimensions are in millimeter |         |        |       |      |       |       |
|------------------------------|---------|--------|-------|------|-------|-------|
| Reel Option                  | D       | D1     | D2    | G    | W1    | W2    |
| 13" Dia                      | Ø330.00 | 100.00 | 13.00 | 1.90 | 17.60 | 12.40 |

| REEL      | Reel Size | Box       | Box Size(mm) | Carton     | Carton Size(mm) |
|-----------|-----------|-----------|--------------|------------|-----------------|
| 5,000 pcs | 13 inch   | 5,000 pcs | 340×336×29   | 50,000 pcs | 353×346×365     |