



# PJM07DN40PA

## Dual N-Channel Enhancement Mode Power MOSFET

### Product Summary

- $V_{DS} = 40V, I_D = 7A$
- $R_{DS(on)} < 23m\Omega @ V_{GS} = 10V$
- $R_{DS(on)} < 36m\Omega @ V_{GS} = 4.5V$

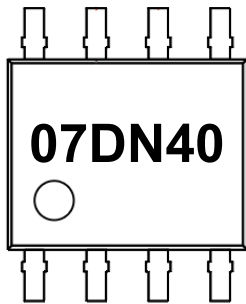
### Features

- Advanced Trench Technology
- 100% Avalanche Tested
- RoHS and Reach Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 3

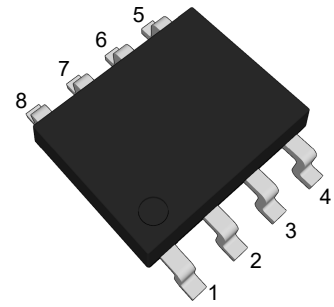
### Application

- Battery Powered System
- Power Management
- Industrial DC/DC Conversion Circuits

### Marking Code



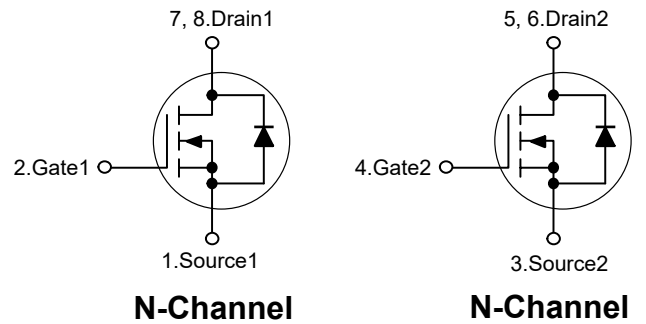
### SOP-8



(Top View)

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | Source1     | 4   | Gate2       |
| 2   | Gate1       | 5,6 | Drain2      |
| 3   | Source2     | 7,8 | Drain1      |

### Schematic Diagram



### Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter                                      | Symbol    | Value       | Unit |
|--|-----------|-------------|------|
| Drain-Source Voltage                           | $V_{DS}$  | 40          | V    |
| Gate-Source Voltage                            | $V_{GS}$  | $\pm 20$    | V    |
| Drain Current-Continuous                       | $I_D$     | 7           | A    |
| Drain Current-Pulsed <sup>Note1</sup>          | $I_{DM}$  | 28          | A    |
| Maximum Power Dissipation                      | $P_D$     | 2           | W    |
| Single Pulse Avalanche Energy <sup>Note2</sup> | $E_{AS}$  | 18          | mJ   |
| Junction Temperature                           | $T_J$     | 150         | °C   |
| Storage Temperature Range                      | $T_{STG}$ | -55 to +150 | °C   |

### Thermal Characteristics

|  |                 |      |      |
|--|-----------------|------|------|
| Thermal Resistance, Junction-to-Ambient <sup>Note3</sup> | $R_{\theta JA}$ | 62.5 | °C/W |
|--|-----------------|------|------|



# PJM07DN40PA

## Dual N-Channel Enhancement Mode Power MOSFET

### Electrical Characteristics

( $T_J=25^\circ\text{C}$  unless otherwise specified)

| Parameter                                   | Symbol        | Test Condition                                    | Min. | Typ. | Max.      | Unit       |
|---|---------------|---|------|------|-----------|------------|
| <b>Static Characteristics</b>               |               |   |      |      |           |            |
| Drain-Source Breakdown Voltage              | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$                         | 40   | --   | --        | V          |
| Zero Gate Voltage Drain Current             | $I_{DSS}$     | $V_{DS}=40V, V_{GS}=0V$                           | --   | --   | 1         | $\mu A$    |
| Gate-Body Leakage Current                   | $I_{GSS}$     | $V_{GS}=\pm 20V, V_{DS}=0V$                       | --   | --   | $\pm 100$ | nA         |
| Gate Threshold Voltage <sup>Note4</sup>     | $V_{GS(th)}$  | $V_{DS}=V_{GS}, I_D=250\mu A$                     | 1    | 1.6  | 2.5       | V          |
| Drain-Source On-Resistance <sup>Note4</sup> | $R_{DS(on)}$  | $V_{GS}=10V, I_D=6A$                              | --   | 16   | 23        | m $\Omega$ |
|   |               | $V_{GS}=4.5V, I_D=5A$                             | --   | 23   | 36        | m $\Omega$ |
| Forward Transconductance <sup>Note4</sup>   | $g_{FS}$      | $V_{DS}=5V, I_D=1A$                               | --   | 6    | --        | S          |
| <b>Dynamic Characteristics</b>              |               |   |      |      |           |            |
| Input Capacitance                           | $C_{iss}$     | $V_{DS}=20V, V_{GS}=0V, f=1\text{MHz}$            | --   | 828  | --        | pF         |
| Output Capacitance                          | $C_{oss}$     |   | --   | 68   | --        | pF         |
| Reverse Transfer Capacitance                | $C_{rss}$     |   | --   | 57   | --        | pF         |
| Gate Resistance                             | $R_g$         | $V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$             | --   | 1.1  | --        | $\Omega$   |
| Total Gate Charge                           | $Q_g$         | $V_{DS}=20V, I_D=6A, V_{GS}=10V$                  | --   | 1.2  | --        | nC         |
| Gate-Source Charge                          | $Q_{gs}$      |   | --   | 3.2  | --        | nC         |
| Gate-Drain Charge                           | $Q_{gd}$      |   | --   | 3.1  | --        | nC         |
| <b>Switching Characteristics</b>            |               |   |      |      |           |            |
| Turn-on Delay Time                          | $t_{d(on)}$   | $V_{DD}=20V, I_D=6A, V_{GS}=10V, R_{GEN}=3\Omega$ | --   | 4    | --        | nS         |
| Turn-on Rise Time                           | $t_r$         |   | --   | 3    | --        | nS         |
| Turn-off Delay Time                         | $t_{d(off)}$  |   | --   | 15   | --        | nS         |
| Turn-off Fall Time                          | $t_f$         |   | --   | 2    | --        | nS         |
| <b>Source-Drain Diode Characteristics</b>   |               |   |      |      |           |            |
| Diode Forward Voltage <sup>Note4</sup>      | $V_{SD}$      | $V_{GS}=0V, I_S=7A$                               | --   | --   | 1.2       | V          |
| Diode Forward Current <sup>Note3</sup>      | $I_S$         |   | --   | --   | 7         | A          |

Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. EAS Condition:  $T_J=25^\circ\text{C}, V_{DD}=20V, V_G=10V, R_G=25\Omega, L=0.5\text{mH}, I_{AS}=8.5A$ .

3. Surface Mounted on FR4 Board,  $t \leq 10$  sec.

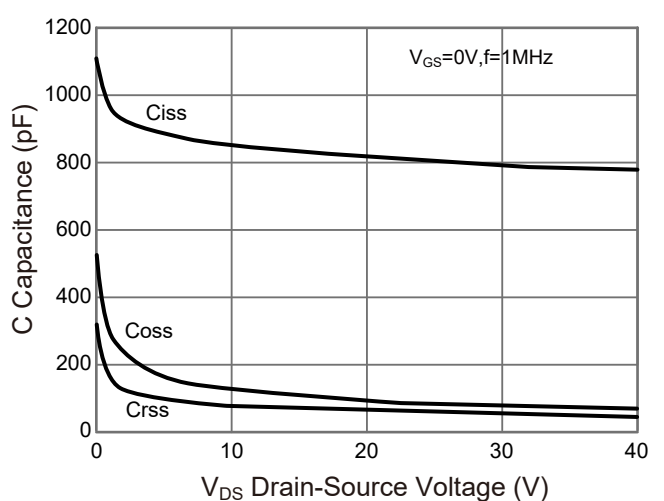
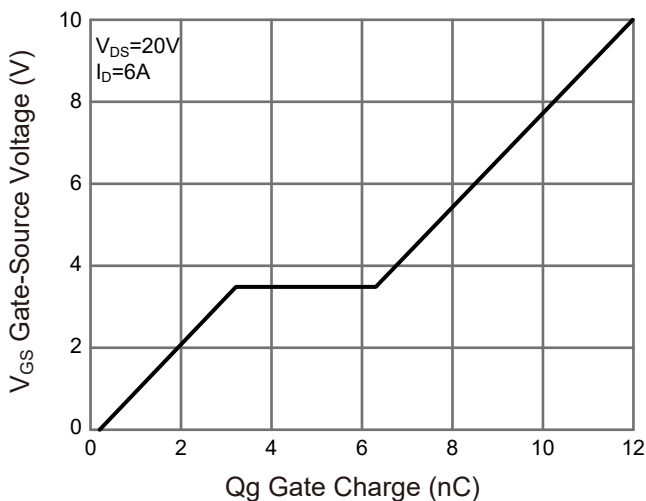
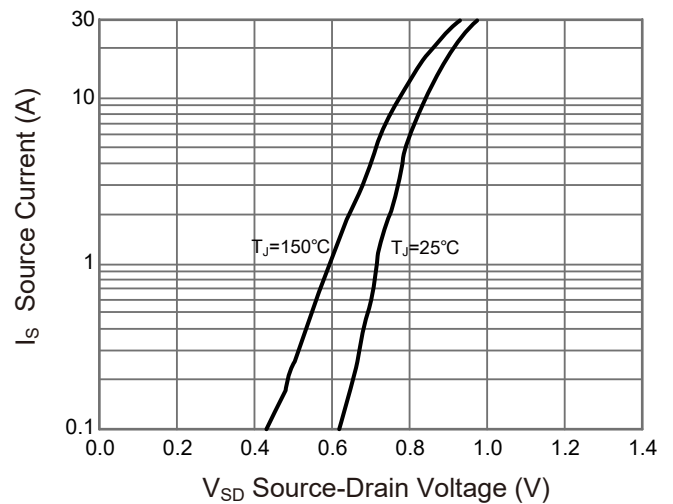
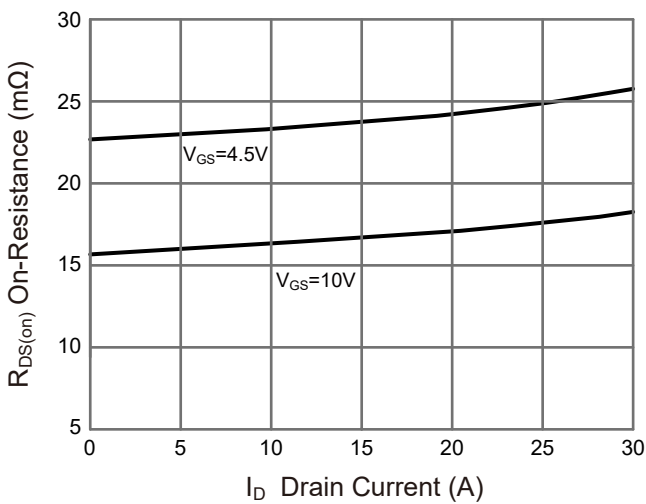
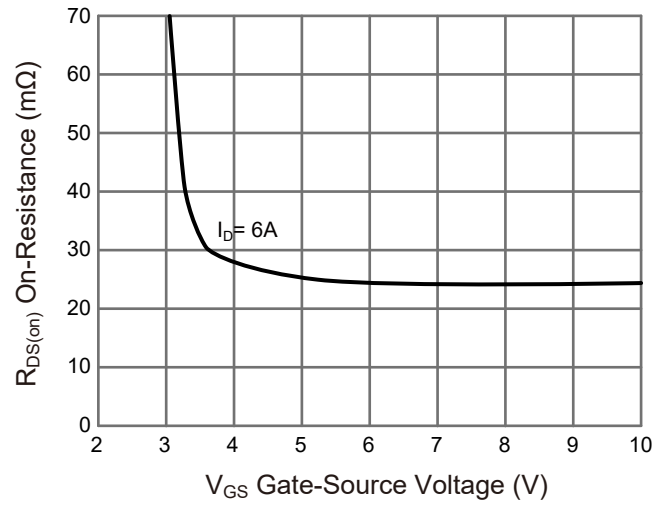
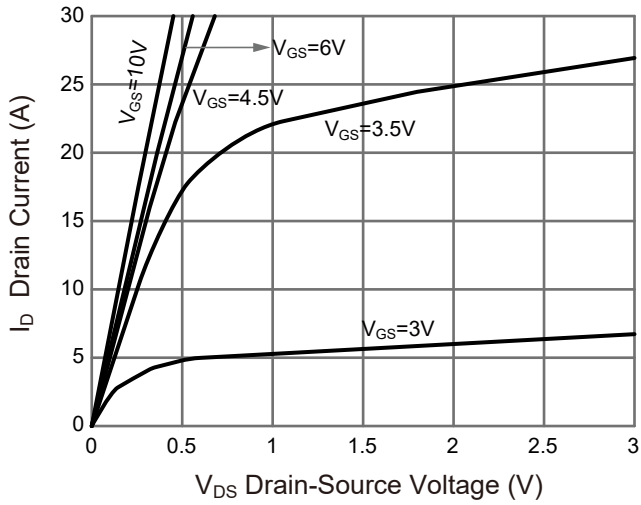
4. Pulse Test: Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .



# PJM07DN40PA

## Dual N-Channel Enhancement Mode Power MOSFET

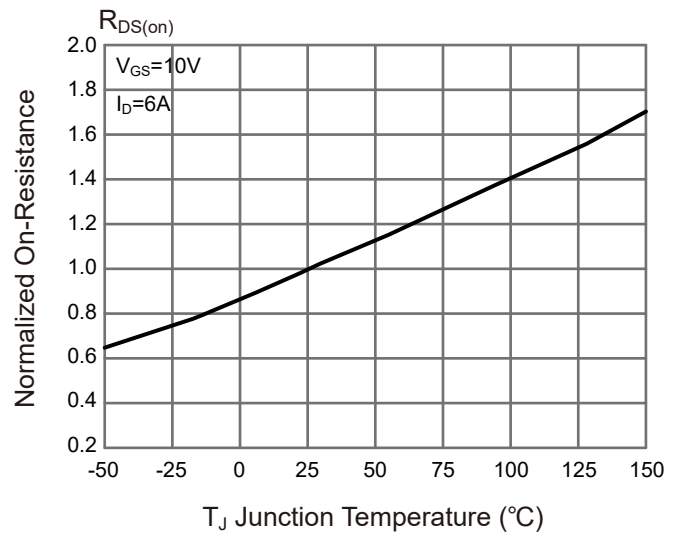
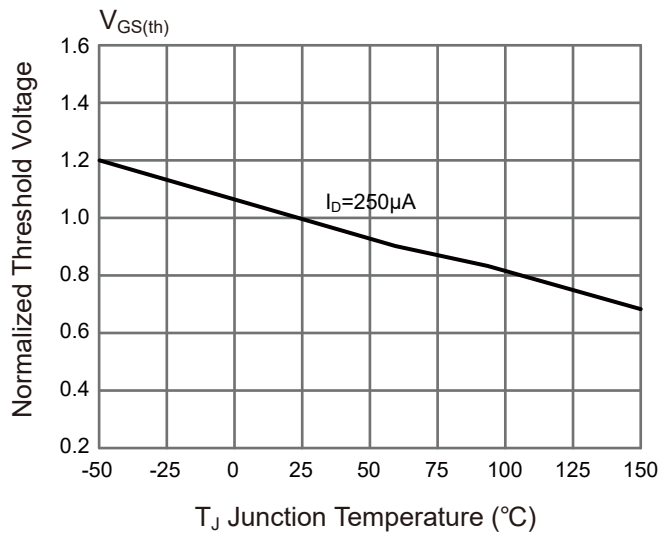
### Typical Characteristic Curves





# PJM07DN40PA

## Dual N-Channel Enhancement Mode Power MOSFET





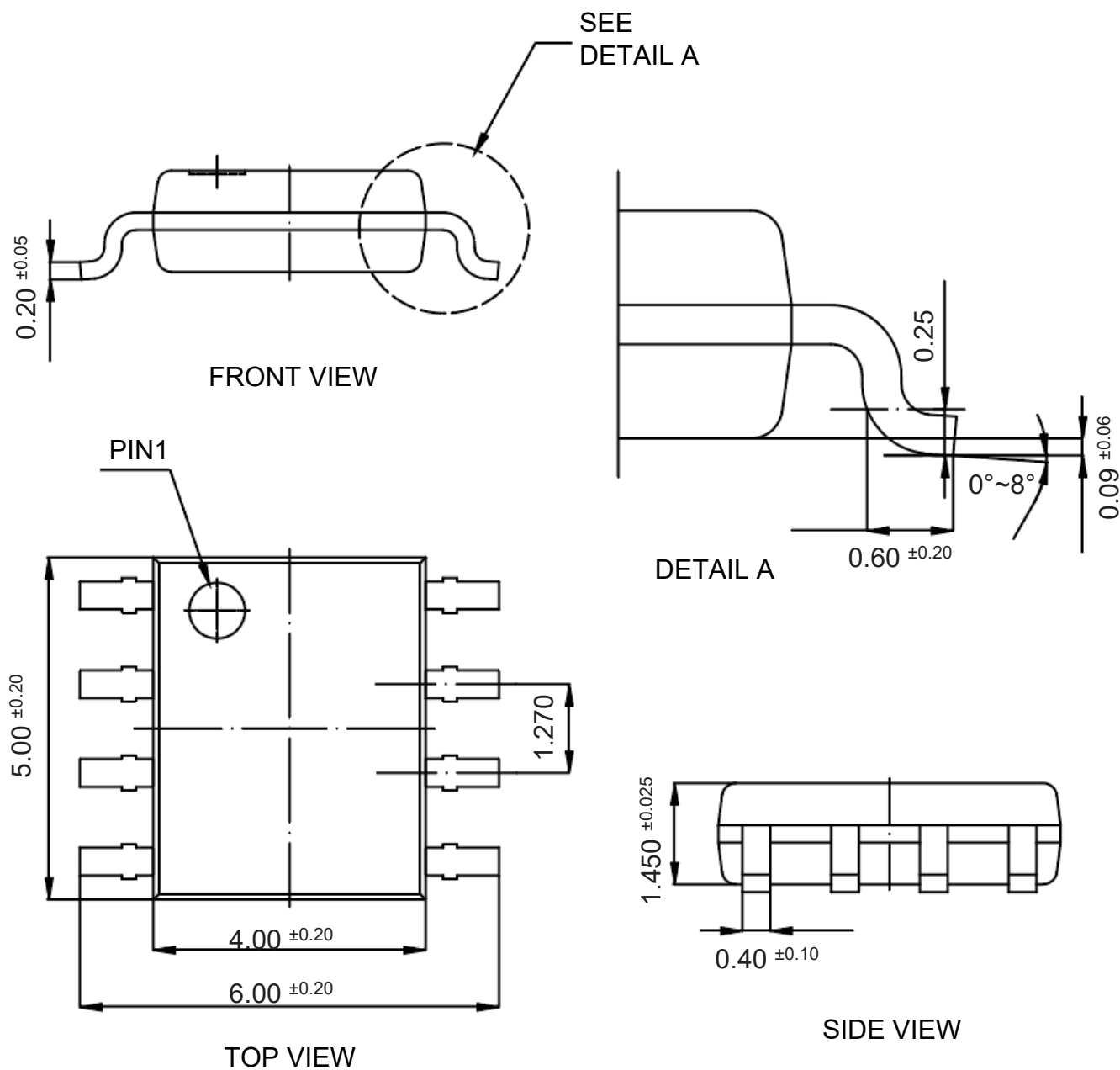
# PJM07DN40PA

## Dual N-Channel Enhancement Mode Power MOSFET

### Package Outline

SOP-8

Dimensions in mm



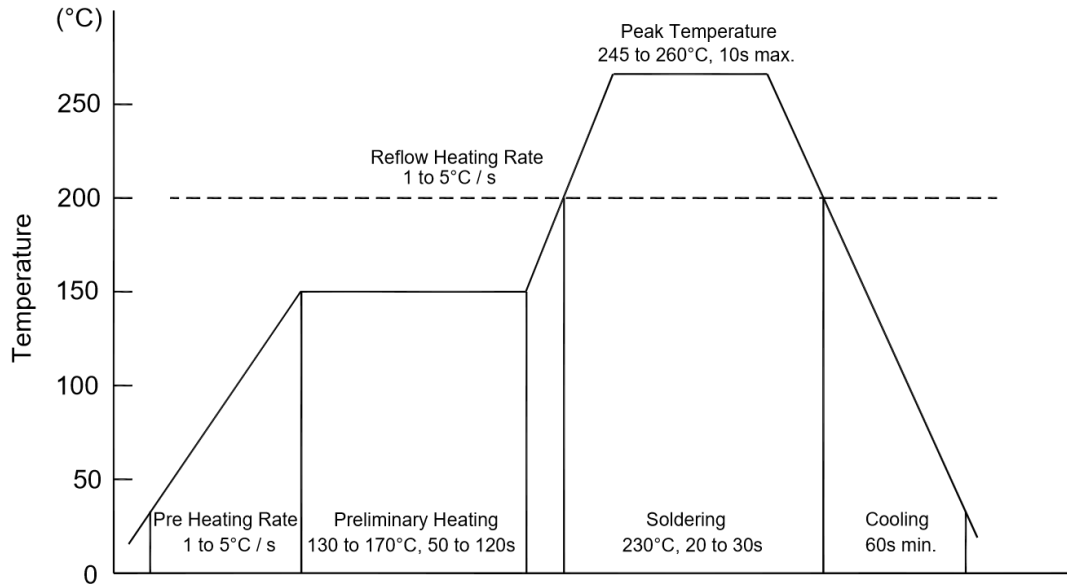
### Ordering Information

| Device      | Package | Shipping               |
|-------------|---------|------------------------|
| PJM07DN40PA | SOP-8   | 4,000PCS/Reel&13inches |



### Conditions of Soldering and Storage

#### ◆ Recommended condition of reflow soldering



Recommended peak temperature is over 245°C. If peak temperature is below 245°C, you may adjust the following parameters:

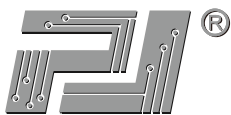
- Time length of peak temperature (longer)
- Time length of soldering (longer)
- Thickness of solder paste (thicker)

#### ◆ Conditions of hand soldering

- Temperature: 300°C
- Time: 3s max.
- Times: one time

#### ◆ Storage conditions

- **Temperature**  
5 to 40°C
- **Humidity**  
30 to 80% RH
- **Recommended period**  
One year after manufacturing

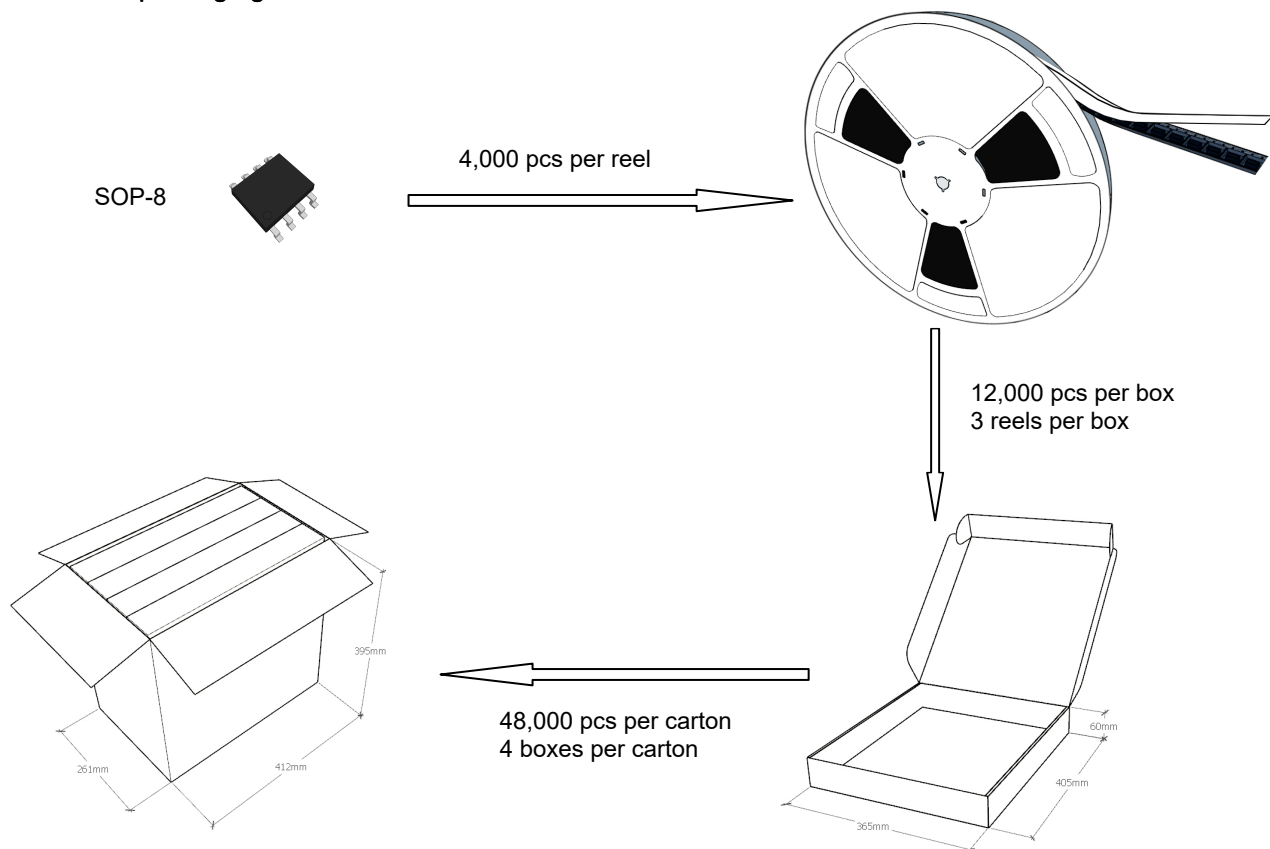


# PJM07DN40PA

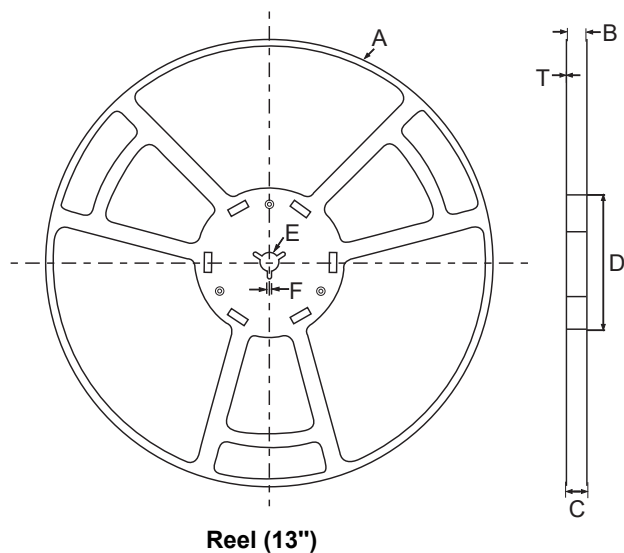
## Dual N-Channel Enhancement Mode Power MOSFET

### Package Specifications

- The method of packaging



### ◆ Embossed tape and reel data



| symbol | Value(unit:mm)      |
|--------|---------------------|
| A      | $\phi 330 \pm 1$    |
| B      | $12.7 \pm 0.5$      |
| C      | $16.5 \pm 0.3$      |
| D      | $\phi 99.5 \pm 0.5$ |
| E      | $\phi 13.6 \pm 0.3$ |
| F      | $2.8 \pm 0.3$       |
| T      | $1.9 \pm 0.2$       |

