



# PJM06C60PA

## N and P-Channel Complementary Power MOSFET

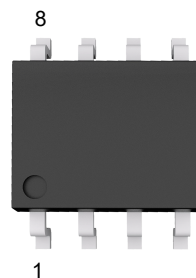
### Features

- **N-Channel**  
 $V_{DS}=60V, I_D=6A$   
 $R_{DS(on)} < 50m\Omega @ V_{GS}=10V$
- **P-Channel**  
 $V_{DS}=-60V, I_D=-6A$   
 $R_{DS(on)} < 70m\Omega @ V_{GS}=-10V$
- Low On-Resistance
- Advanced Trench Technology
- Fast Switching Speed

### Applications

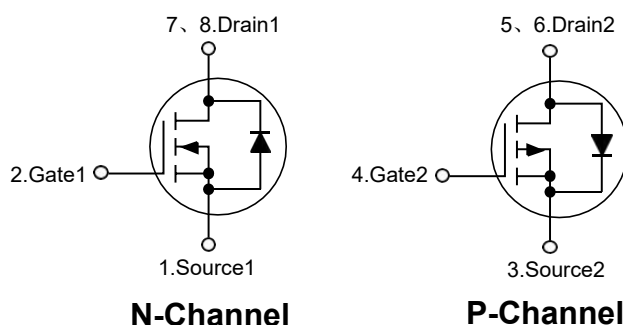
- High Power and Current Handling Capability
- Lead Free Product is Acquired
- Surface Mount Package

### SOP-8



Marking Code:06C60

### Schematic Diagram



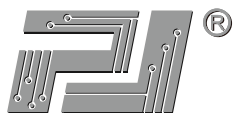
### Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter                                      | Symbol    | N-Channel   | P-Channel | Unit |
|------------------------------------------------|-----------|-------------|-----------|------|
| Drain-Source Voltage                           | $V_{DS}$  | 60          | -60       | V    |
| Gate-Source Voltage                            | $V_{GS}$  | $\pm 20$    |           | V    |
| Drain Current-Continuous                       | $I_D$     | 6           | -6        | A    |
| Drain Current-Pulsed <sup>Note1</sup>          | $I_{DM}$  | 30          | -25       | A    |
| Maximum Power Dissipation                      | $P_D$     | 2           |           | W    |
| Single pulse avalanche energy <sup>Note4</sup> | $E_{AS}$  | 16          | 30        | mJ   |
| Junction Temperature                           | $T_J$     | 150         |           | °C   |
| Storage Temperature Range                      | $T_{STG}$ | -55 to +150 |           | °C   |

### Thermal Characteristics

|                                                         |                 |      |      |
|---------------------------------------------------------|-----------------|------|------|
| Thermal Resistance,Junction-to-Ambient <sup>Note2</sup> | $R_{\theta JA}$ | 62.5 | °C/W |
|---------------------------------------------------------|-----------------|------|------|



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## N and P-Channel Complementary Power MOSFET

### N-Channel

#### Electrical Characteristics

(T<sub>J</sub>=25°C unless otherwise specified)

| Parameter                                   | Symbol               | Test Condition                                                                         | Min. | Typ. | Max. | Unit |
|---------------------------------------------|----------------------|----------------------------------------------------------------------------------------|------|------|------|------|
| Static Characteristics                      |                      |                                                                                        |      |      |      |      |
| Drain-Source Breakdown Voltage              | V <sub>(BR)DSS</sub> | V <sub>GS</sub> =0V,I <sub>D</sub> =250μA                                              | 60   | --   | --   | V    |
| Zero Gate Voltage Drain Current             | I <sub>DSS</sub>     | V <sub>DS</sub> =60V,V <sub>GS</sub> =0V                                               | --   | --   | 1    | μA   |
| Gate-Body Leakage Current                   | I <sub>GSS</sub>     | V <sub>GS</sub> =±20V,V <sub>DS</sub> =0V                                              | --   | --   | ±100 | nA   |
| Gate Threshold Voltage <sup>Note3</sup>     | V <sub>GS(th)</sub>  | V <sub>DS</sub> =V <sub>GS</sub> ,I <sub>D</sub> =250μA                                | 1    | 1.6  | 2.5  | V    |
| Drain-Source On-Resistance <sup>Note3</sup> | R <sub>DS(on)</sub>  | V <sub>GS</sub> =10V,I <sub>D</sub> =8A                                                | --   | 39   | 50   | mΩ   |
|                                             |                      | V <sub>GS</sub> =4.5V,I <sub>D</sub> =6A                                               | --   | 46   | 70   | mΩ   |
| Forward Transconductance <sup>Note3</sup>   | g <sub>FS</sub>      | V <sub>DS</sub> =5V,I <sub>D</sub> =1A                                                 | --   | 4.2  | --   | S    |
| Dynamic Characteristics                     |                      |                                                                                        |      |      |      |      |
| Input Capacitance                           | C <sub>iss</sub>     | V <sub>DS</sub> =30V,V <sub>GS</sub> =0V,f=1MHz                                        | --   | 830  | --   | pF   |
| Output Capacitance                          | C <sub>oss</sub>     |                                                                                        | --   | 44.6 | --   | pF   |
| Reverse Transfer Capacitance                | C <sub>rss</sub>     |                                                                                        | --   | 36   | --   | pF   |
| Gate Resistance                             | R <sub>g</sub>       | V <sub>DS</sub> =0V,V <sub>GS</sub> =0V,f =1MHz                                        | --   | 0.65 | --   | Ω    |
| Switching Characteristics                   |                      |                                                                                        |      |      |      |      |
| Turn-on Delay Time                          | t <sub>d(on)</sub>   | V <sub>DD</sub> =30V,R <sub>L</sub> =2.5Ω<br>V <sub>GS</sub> =10V,R <sub>GEN</sub> =3Ω | --   | 5    | --   | nS   |
| Turn-on Rise Time                           | t <sub>r</sub>       |                                                                                        | --   | 2.6  | --   | nS   |
| Turn-off Delay Time                         | t <sub>d(off)</sub>  |                                                                                        | --   | 16.1 | --   | nS   |
| Turn-off Fall Time                          | t <sub>f</sub>       |                                                                                        | --   | 2.3  | --   | nS   |
| Total Gate Charge                           | Q <sub>g</sub>       | V <sub>DS</sub> =30V,I <sub>D</sub> =6A, V <sub>GS</sub> =10V                          | --   | 14   | --   | nC   |
| Gate-Source Charge                          | Q <sub>gs</sub>      |                                                                                        | --   | 2.9  | --   | nC   |
| Gate-Drain Charge                           | Q <sub>gd</sub>      |                                                                                        | --   | 5.2  | --   | nC   |
| Source-Drain Diode Characteristics          |                      |                                                                                        |      |      |      |      |
| Diode Forward Voltage <sup>Note3</sup>      | V <sub>SD</sub>      | V <sub>GS</sub> =0V,I <sub>S</sub> =6A                                                 | --   | --   | 1.2  | V    |
| Diode Forward Current                       | I <sub>S</sub>       |                                                                                        | --   | --   | 6    | A    |

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

2. Surface Mounted on FR4 Board, t ≤ 10 sec.

3. Pulse Test: Pulse width ≤ 300μs, duty cycles ≤ 2%.

4. EAS Condition: T<sub>J</sub>=25°C, V<sub>DD</sub>=30V, V<sub>G</sub>=10V, L=0.5mH, R<sub>G</sub>=25Ω, I<sub>AS</sub>=8A.



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## N and P-Channel Complementary Power MOSFET

### P-Channel

#### Electrical Characteristics

(T<sub>J</sub>=25°C unless otherwise specified)

| Parameter                                   | Symbol                | Test Condition                                                                              | Min. | Typ. | Max. | Unit |
|---------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------|------|------|------|------|
| Static Characteristics                      |                       |                                                                                             |      |      |      |      |
| Drain-Source Breakdown Voltage              | -V <sub>(BR)DSS</sub> | V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA                                                 | 60   | --   | --   | V    |
| Zero Gate Voltage Drain Current             | -I <sub>DSS</sub>     | V <sub>DS</sub> =-60V, V <sub>GS</sub> =0V                                                  | --   | --   | 1    | μA   |
| Gate-Body Leakage Current                   | I <sub>GSS</sub>      | V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V                                                  | --   | --   | ±100 | nA   |
| Gate Threshold Voltage <sup>Note3</sup>     | -V <sub>GS(th)</sub>  | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA                                   | 1    | 1.6  | 2.5  | V    |
| Drain-Source On-Resistance <sup>Note3</sup> | R <sub>DS(on)</sub>   | V <sub>GS</sub> =-10V, I <sub>D</sub> =-6A                                                  | --   | 52   | 70   | mΩ   |
|                                             |                       | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-6A                                                 | --   | 60   | 90   | mΩ   |
| Forward Transconductance <sup>Note3</sup>   | g <sub>FS</sub>       | V <sub>DS</sub> =-5V, I <sub>D</sub> =-1A                                                   | --   | 5.5  | --   | S    |
| Dynamic Characteristics                     |                       |                                                                                             |      |      |      |      |
| Input Capacitance                           | C <sub>iss</sub>      | V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V, f=1MHz                                          | --   | 1070 | --   | pF   |
| Output Capacitance                          | C <sub>oss</sub>      |                                                                                             | --   | 69   | --   | pF   |
| Reverse Transfer Capacitance                | C <sub>rss</sub>      |                                                                                             | --   | 59   | --   | pF   |
| Gate Resistance                             | R <sub>g</sub>        | V <sub>DS</sub> =0V, V <sub>GS</sub> =0V, f =1MHz                                           | --   | 3.7  | --   | Ω    |
| Switching Characteristics                   |                       |                                                                                             |      |      |      |      |
| Turn-on Delay Time                          | t <sub>d(on)</sub>    | V <sub>DD</sub> =-30V, R <sub>L</sub> =3.75Ω<br>V <sub>GS</sub> =-10V, R <sub>GEN</sub> =3Ω | --   | 8    | --   | nS   |
| Turn-on Rise Time                           | t <sub>r</sub>        |                                                                                             | --   | 4    | --   | nS   |
| Turn-off Delay Time                         | t <sub>d(off)</sub>   |                                                                                             | --   | 32   | --   | nS   |
| Turn-off Fall Time                          | t <sub>f</sub>        |                                                                                             | --   | 7    | --   | nS   |
| Total Gate Charge                           | Q <sub>g</sub>        | V <sub>DS</sub> =-30V, I <sub>D</sub> =-8A, V <sub>GS</sub> =-10V                           | --   | 23.4 | --   | nC   |
| Gate-Source Charge                          | Q <sub>gs</sub>       |                                                                                             | --   | 4.1  | --   | nC   |
| Gate-Drain Charge                           | Q <sub>gd</sub>       |                                                                                             | --   | 4.8  | --   | nC   |
| Source-Drain Diode Characteristics          |                       |                                                                                             |      |      |      |      |
| Diode Forward Voltage <sup>Note3</sup>      | -V <sub>SD</sub>      | V <sub>GS</sub> =0V, I <sub>S</sub> =-6A                                                    | --   | --   | 1.2  | V    |
| Diode Forward Current                       | -I <sub>S</sub>       |                                                                                             | --   | --   | 6    | A    |

- Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.  
2. Surface Mounted on FR4 Board, t ≤ 10 sec.  
3. Pulse Test: Pulse width ≤ 300μs, duty cycle ≤ 2%.  
4. EAS Condition: T<sub>J</sub>=25°C, V<sub>DD</sub>=-30V, V<sub>G</sub>=-10V, L=0.5mH, R<sub>G</sub>=25Ω, I<sub>AS</sub>=-11A.

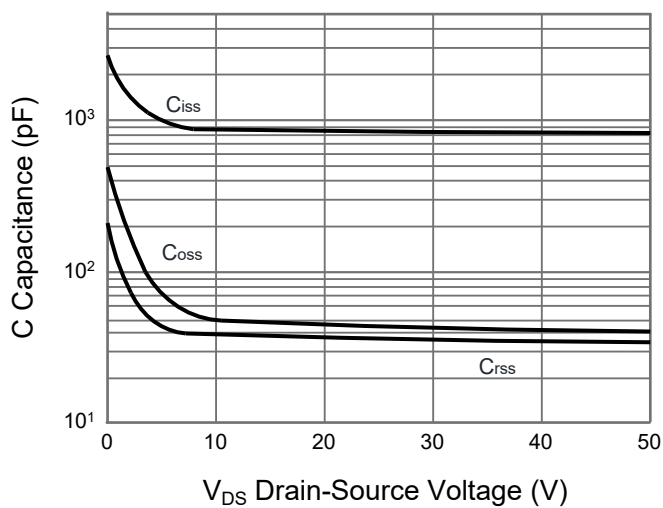
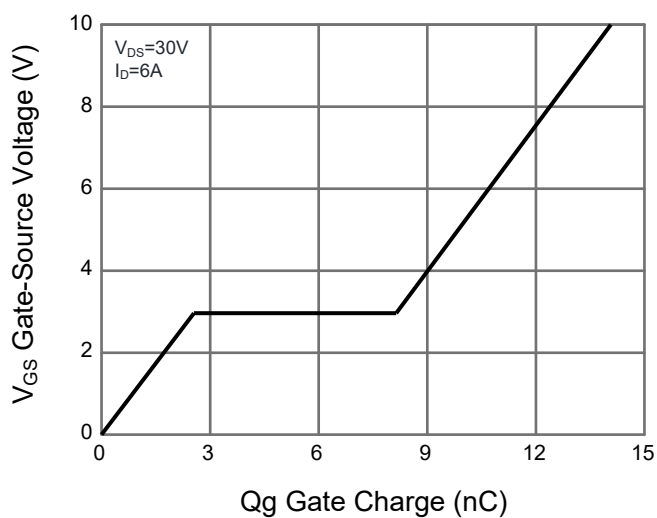
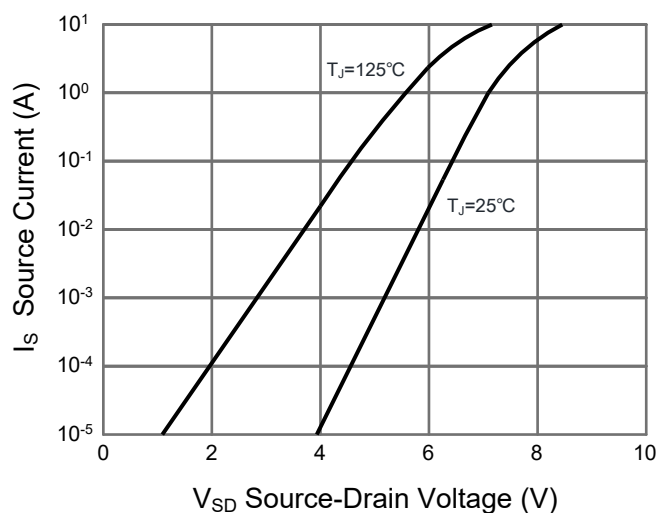
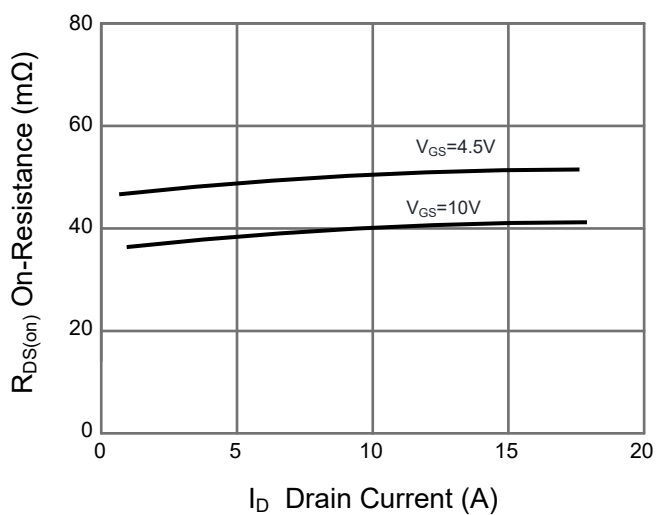
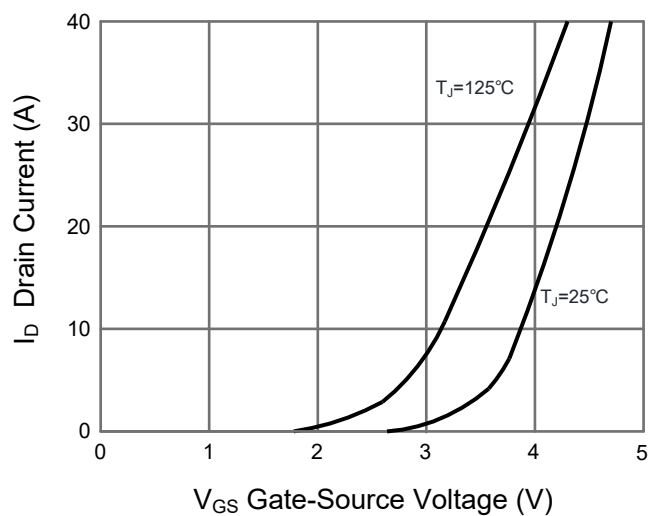
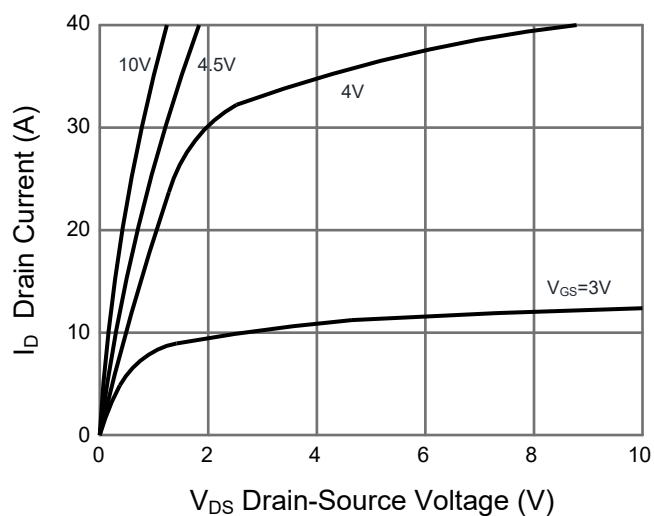


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### N-Channel

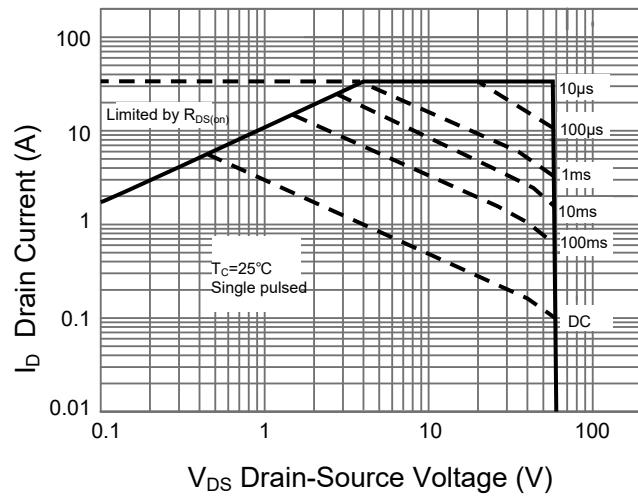
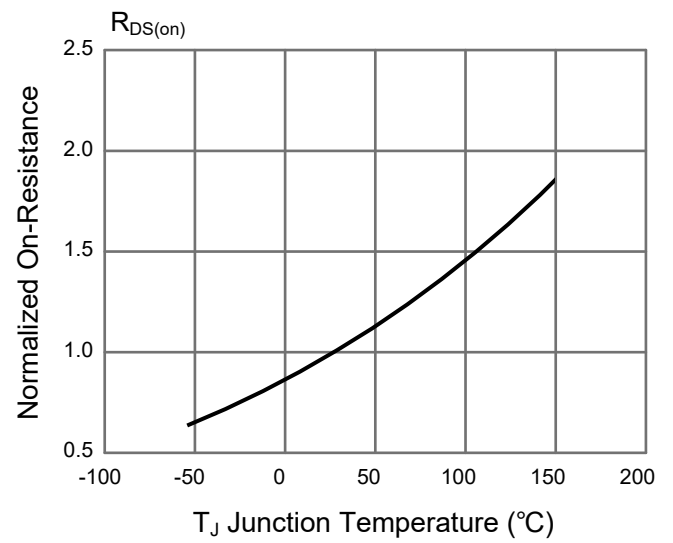
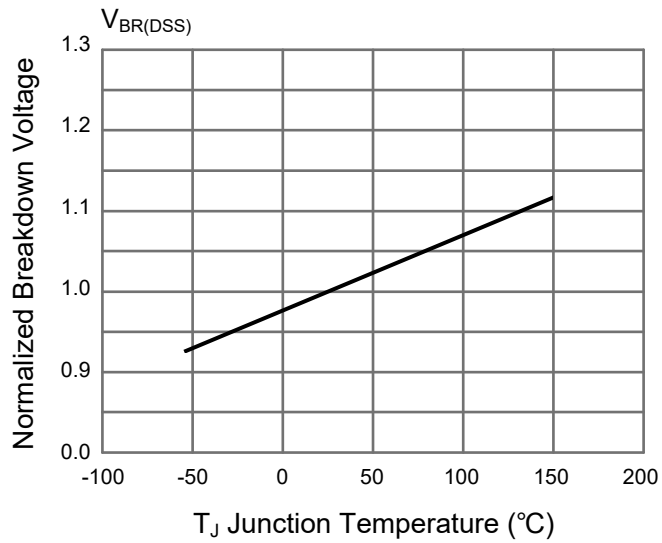
#### Typical Characteristics Curves





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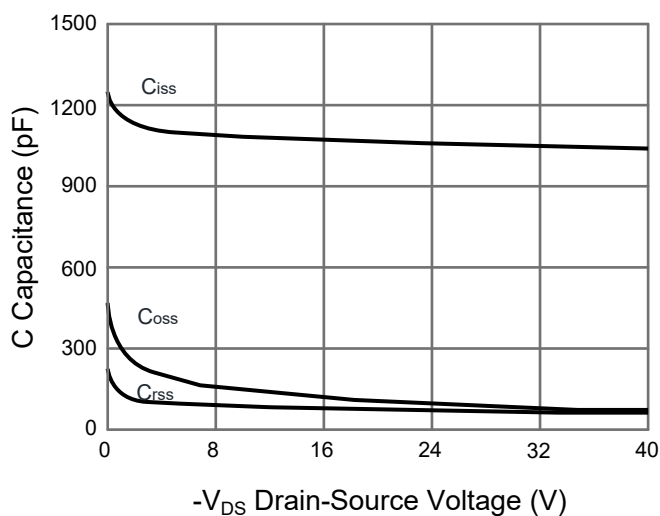
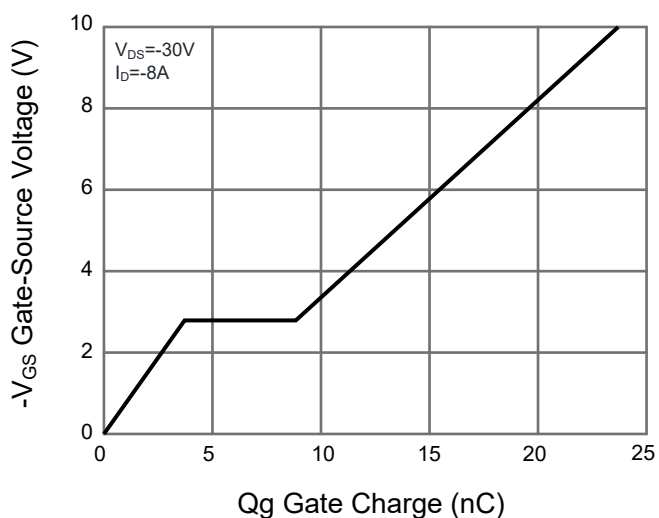
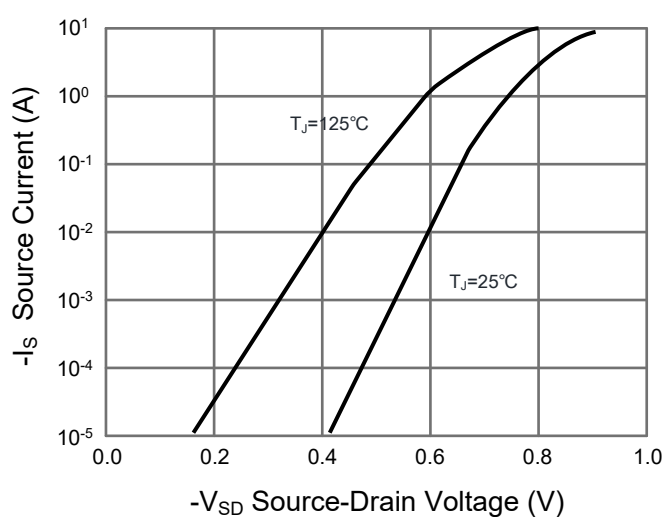
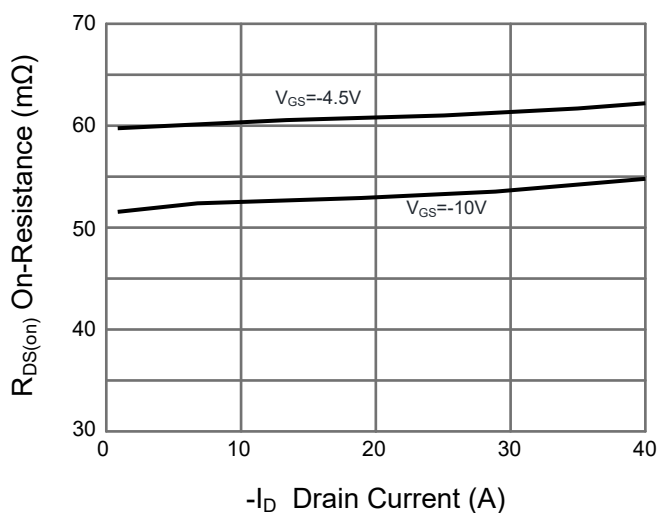
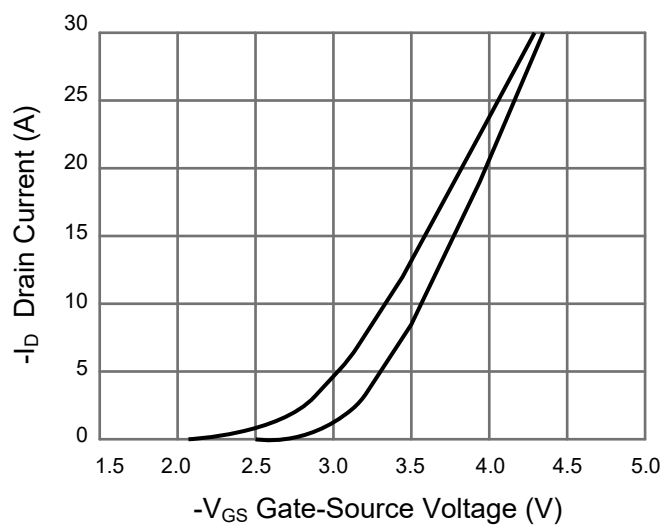
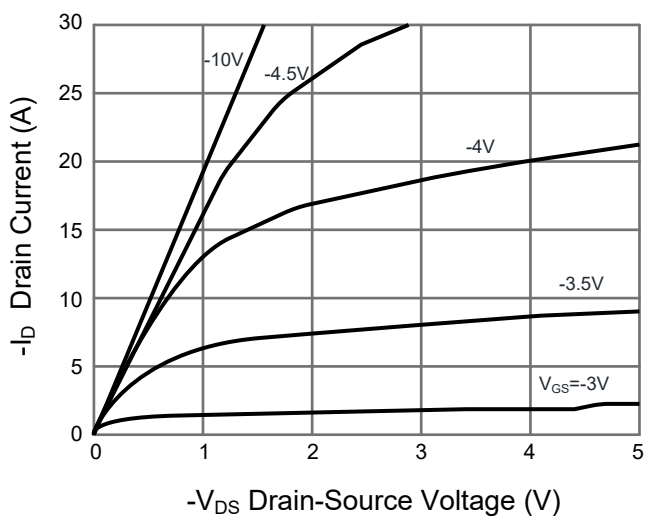


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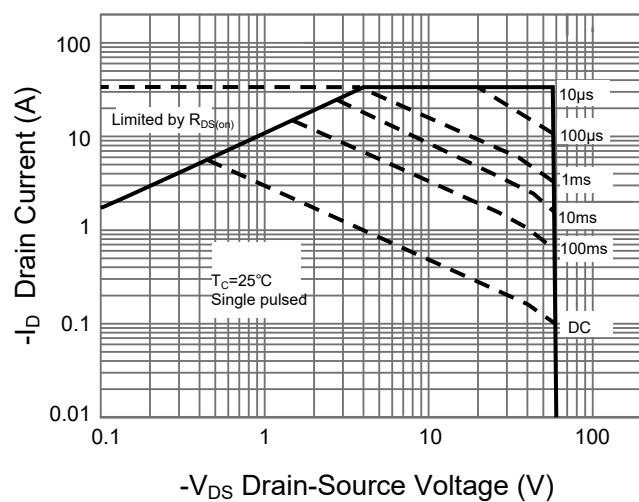
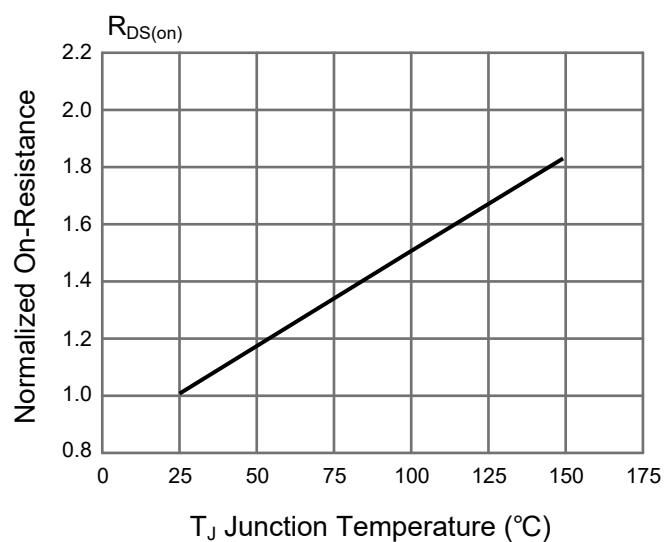
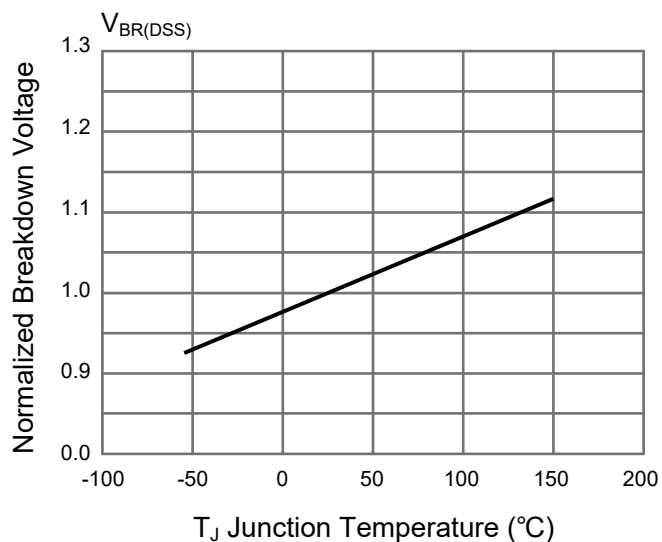
#### Typical Characteristics Curves





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## N and P-Channel Complementary Power MOSFET





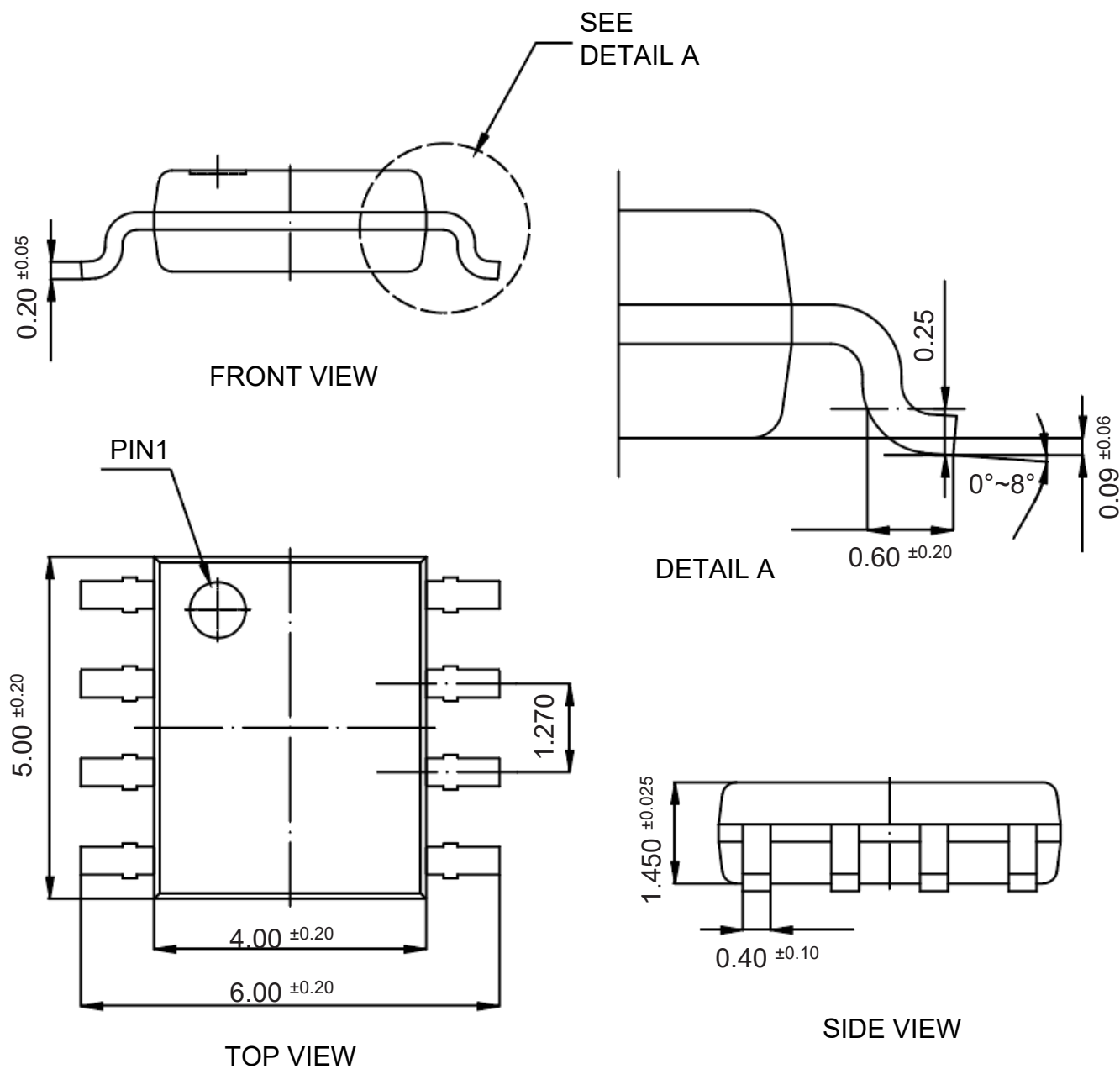
# PJM06C60PA

## N and P-Channel Complementary Power MOSFET

### Package Outline

SOP-8

Dimensions in mm



### Ordering Information

| Device     | Package | Shipping               |
|------------|---------|------------------------|
| PJM06C60PA | SOP-8   | 4,000PCS/Reel&13inches |