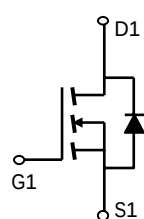
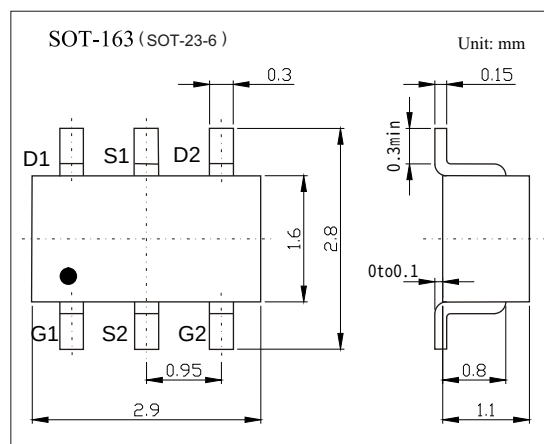


## Dual Enhancement Mode MOSFET

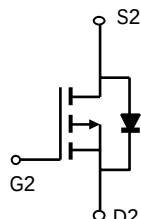
## APM2701CG

## ■ Features

- N-Channel :  $V_{DS}=20V$   $I_D=3A$
- $R_{DS(ON)} < 70m\Omega$  ( $V_{GS} = 4.5V$ )
- $R_{DS(ON)} < 110m\Omega$  ( $V_{GS} = 2.5V$ )
- P-Channel :  $V_{DS}=-20V$   $I_D=-1.5A$
- $R_{DS(ON)} < 190m\Omega$  ( $V_{GS} = -4.5V$ )
- $R_{DS(ON)} < 235m\Omega$  ( $V_{GS} = -2.5V$ )



n-channel



p-channel

■ Absolute Maximum Ratings  $T_A = 25^\circ C$ 

| Parameter                                                          | Symbol                            | N-Channel  | P-Channel | Unit |
|--------------------------------------------------------------------|-----------------------------------|------------|-----------|------|
| Drain-Source Voltage                                               | V <sub>DS</sub>                   | 20         | -20       | V    |
| Gate-Source Voltage                                                | V <sub>GS</sub>                   | ± 10       | ± 10      |      |
| Continuous Drain Current                                           | I <sub>D</sub>                    | 3          | -1.5      | A    |
| Pulsed Drain Current                                               | I <sub>DM</sub>                   | 10         | -6        |      |
| Power Dissipation<br>T <sub>A</sub> =25°C<br>T <sub>A</sub> =100°C | P <sub>D</sub>                    | 0.83       |           | W    |
|                                                                    |                                   | 0.3        |           |      |
| Diode Continuous Forward Current                                   | I <sub>S</sub>                    | 1          | -1        | A    |
| Thermal Resistance Junction- to-Ambient                            | R <sub>thJA</sub>                 | 150        |           | °C/W |
| Junction and Storage Temperature Range                             | T <sub>J</sub> , T <sub>STG</sub> | -55 to 150 |           | °C   |

## APM2701CG

## ■ Electrical Characteristics Ta = 25°C

| Parameter                         | Symbol              | Testconditons                                                                                                                                                                                                                                     | Type | Min   | Typ  | Max  | Unit |
|-----------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|------|------|------|
| Drain-Source Breakdown Voltage    | V <sub>DSS</sub>    | I <sub>D</sub> =250 μ A, V <sub>GS</sub> =0V                                                                                                                                                                                                      | N-CH | 20    |      |      | V    |
|                                   |                     | I <sub>D</sub> =-250 μ A, V <sub>GS</sub> =0V                                                                                                                                                                                                     | P-CH | -20   |      |      |      |
| Zero Gate Voltage Drain Current   | I <sub>DSS</sub>    | V <sub>DS</sub> =16V, V <sub>GS</sub> =0V                                                                                                                                                                                                         | N-CH |       |      | 1    | μ A  |
|                                   |                     | V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V                                                                                                                                                                                                        | P-CH |       |      | -1   |      |
| Gate-Body leakage current         | I <sub>GSS</sub>    | V <sub>DS</sub> =0V, V <sub>GS</sub> =±10V                                                                                                                                                                                                        | N-CH |       |      | ±100 | nA   |
|                                   |                     | V <sub>DS</sub> =0V, V <sub>GS</sub> =±10V                                                                                                                                                                                                        | P-CH |       |      | ±100 |      |
| Gate Threshold Voltage            | V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =250 μ A                                                                                                                                                                                          | N-CH | 0.45  | 0.6  | 1    | V    |
|                                   |                     | V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =-250 μ A                                                                                                                                                                                         | P-CH | -0.45 | -0.6 | -1   |      |
| Static Drain-Source On-Resistance | R <sub>DS(On)</sub> | V <sub>GS</sub> =4.5V, I <sub>D</sub> =3A                                                                                                                                                                                                         | N-CH |       | 50   | 70   | m Ω  |
|                                   |                     | V <sub>GS</sub> =2.5V, I <sub>D</sub> =1.7A                                                                                                                                                                                                       |      |       | 90   | 110  |      |
|                                   |                     | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-1.5A                                                                                                                                                                                                     | P-CH |       | 145  | 190  |      |
|                                   |                     | V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-1A                                                                                                                                                                                                       |      |       | 180  | 235  |      |
| Input Capacitance                 | C <sub>iss</sub>    | N-Channel:<br>P-Channel:<br>V <sub>GS</sub> =0V, V <sub>DS</sub> =10V, f=1MHz<br>P-Channel:<br>V <sub>GS</sub> =0V, V <sub>DS</sub> =-10V, f=1MHz                                                                                                 | N-CH |       | 270  |      | pF   |
| Output Capacitance                | C <sub>oss</sub>    |                                                                                                                                                                                                                                                   | P-CH |       | 300  |      |      |
|                                   |                     |                                                                                                                                                                                                                                                   | N-CH |       | 70   |      |      |
| Reverse Transfer Capacitance      | C <sub>rss</sub>    |                                                                                                                                                                                                                                                   | P-CH |       | 50   |      |      |
|                                   |                     |                                                                                                                                                                                                                                                   | N-CH |       | 50   |      |      |
|                                   |                     |                                                                                                                                                                                                                                                   | P-CH |       | 30   |      |      |
| Total Gate Charge                 | Q <sub>g</sub>      | N-Channel:<br>P-Channel:<br>V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V, I <sub>D</sub> =3A<br>P-Channel:<br>V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, I <sub>D</sub> =-1.5A                                                                 | N-CH |       | 5    | 6.5  | nC   |
| Gate Source Charge                | Q <sub>gs</sub>     |                                                                                                                                                                                                                                                   | P-CH |       | 4    | 6    |      |
|                                   |                     |                                                                                                                                                                                                                                                   | N-CH |       | 0.5  |      |      |
| Gate Drain Charge                 | Q <sub>gd</sub>     |                                                                                                                                                                                                                                                   | P-CH |       | 0.6  |      |      |
|                                   |                     |                                                                                                                                                                                                                                                   | N-CH |       | 1.6  |      |      |
|                                   |                     |                                                                                                                                                                                                                                                   | P-CH |       | 1    |      |      |
| Turn-On DelayTime                 | t <sub>d(on)</sub>  | N-Channel:<br>P-Channel:<br>V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V, I <sub>D</sub> =1A, R <sub>GEN</sub> =6Ω<br>RL=10 Ω<br>P-Channel:<br>V <sub>GS</sub> =-4.5V, V <sub>DS</sub> =-10V, I <sub>D</sub> =-1A, R <sub>GEN</sub> =6Ω<br>RL=10 Ω | N-CH |       | 6    | 12   | ns   |
| Turn-On Rise Time                 | t <sub>r</sub>      |                                                                                                                                                                                                                                                   | P-CH |       | 6    | 10   |      |
|                                   |                     |                                                                                                                                                                                                                                                   | N-CH |       | 5    | 10   |      |
|                                   |                     |                                                                                                                                                                                                                                                   | P-CH |       | 8    | 12   |      |
| Turn-Off DelayTime                | t <sub>d(off)</sub> |                                                                                                                                                                                                                                                   | N-CH |       | 12   | 23   |      |
|                                   |                     |                                                                                                                                                                                                                                                   | P-CH |       | 10   | 15   |      |
| Turn-Off Fall Time                | t <sub>f</sub>      |                                                                                                                                                                                                                                                   | N-CH |       | 6    | 12   |      |
|                                   |                     |                                                                                                                                                                                                                                                   | P-CH |       | 5    | 10   |      |
| Diode Forward Voltage             | V <sub>SD</sub>     | I <sub>S</sub> =0.5A,V <sub>GS</sub> =0V                                                                                                                                                                                                          | N-CH |       | 0.7  | 1.3  | V    |
|                                   |                     | I <sub>S</sub> =-0.5A,V <sub>GS</sub> =0V                                                                                                                                                                                                         | P-CH |       | -0.7 | -1.3 |      |

## ■ Marking

|         |       |
|---------|-------|
| Marking | 52907 |
|---------|-------|