

**Description**

The G07P03L uses advanced trench technology to provide excellent  $R_{DS(on)}$ , low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a load switch or in Power management.

**General Features**

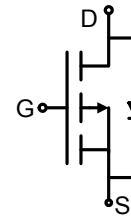
●

| $V_{DS}$ | $R_{DS(on)}$<br>@ -10V (Typ) | $R_{DS(on)}$<br>@ -4.5V (Typ) | $I_D$ |
|----------|------------------------------|-------------------------------|-------|
| -30V     | 20.5 mΩ                      | 26mΩ                          | -7 A  |

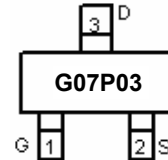
- High power and current handling capability
- RoHS Compliant
- Surface mount package

**Application**

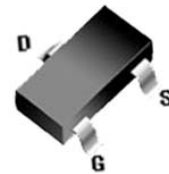
- Load switch
- Power management
- Battery Switch



Schematic diagram



Marking and Pin Assignment



SOT-23-3L

**Ordering Information**

| Part Number | Marking | Case      | Packaging    |
|-------------|---------|-----------|--------------|
| G07P03L     | G07P03  | SOT-23-3L | 3000pcs/Reel |

**Absolute Maximum Ratings (TA=25°C unless otherwise noted)**

| Parameter                                        | Symbol         | Limit      | Unit |
|--------------------------------------------------|----------------|------------|------|
| Drain-Source Voltage                             | $V_{DS}$       | -30        | V    |
| Gate-Source Voltage                              | $V_{GS}$       | ±20        | V    |
| Drain Current-Continuous                         | $I_D$          | -7         | A    |
| Drain Current-Pulsed (Note 1)                    | $I_{DM}$       | -21        | A    |
| Maximum Power Dissipation                        | $P_D$          | 3.1        | W    |
| Operating Junction and Storage Temperature Range | $T_J, T_{STG}$ | -55 To 150 | °C   |

**Thermal Characteristic**

|                                                  |                 |    |      |
|--------------------------------------------------|-----------------|----|------|
| Thermal Resistance, Junction-to-Ambient (Note 2) | $R_{\theta JA}$ | 40 | °C/W |
|--------------------------------------------------|-----------------|----|------|

**Electrical Characteristics (TA=25°C unless otherwise noted)**

| Parameter                       | Symbol     | Condition                 | Min | Typ | Max | Unit |
|---------------------------------|------------|---------------------------|-----|-----|-----|------|
| <b>Off Characteristics</b>      |            |                           |     |     |     |      |
| Drain-Source Breakdown Voltage  | $BV_{DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | -30 | -34 | -   | V    |
| Zero Gate Voltage Drain Current | $I_{DSS}$  | $V_{DS}=-30V, V_{GS}=0V$  | -   | -   | -1  | μA   |

|                                    |                     |                                                                                         |      |      |      |    |
|------------------------------------|---------------------|-----------------------------------------------------------------------------------------|------|------|------|----|
| Gate-Body Leakage Current          | I <sub>GSS</sub>    | V <sub>GS</sub> =±20V,V <sub>DS</sub> =0V                                               | -    | -    | ±100 | nA |
| On Characteristics (Note 3)        |                     |                                                                                         |      |      |      |    |
| Gate Threshold Voltage             | V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> ,I <sub>D</sub> =-250μA                                | -1.0 | -1.6 | -2.5 | V  |
| Drain-Source On-State Resistance   | R <sub>DS(ON)</sub> | V <sub>GS</sub> =-10V, I <sub>D</sub> =-7A                                              | -    | 20.5 | 23   | mΩ |
|                                    |                     | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-5A                                             | -    | 26   | 34   | mΩ |
| Forward Transconductance           | g <sub>FS</sub>     | V <sub>DS</sub> =-15V,I <sub>D</sub> =-7A                                               | 10   | -    | -    | S  |
| Dynamic Characteristics (Note4)    |                     |                                                                                         |      |      |      |    |
| Input Capacitance                  | C <sub>ISS</sub>    | V <sub>DS</sub> =-15V,V <sub>GS</sub> =0V,<br>F=1.0MHz                                  | -    | 1600 | -    | PF |
| Output Capacitance                 | C <sub>OSS</sub>    |                                                                                         | -    | 350  | -    | PF |
| Reverse Transfer Capacitance       | C <sub>rss</sub>    |                                                                                         | -    | 300  | -    | PF |
| Switching Characteristics (Note 4) |                     |                                                                                         |      |      |      |    |
| Turn-on Delay Time                 | t <sub>d(on)</sub>  | V <sub>DD</sub> =-15V,I <sub>D</sub> =-1A<br>V <sub>GS</sub> =-10V,R <sub>GEN</sub> =6Ω | -    | 10   | -    | nS |
| Turn-on Rise Time                  | t <sub>r</sub>      |                                                                                         | -    | 15   | -    | nS |
| Turn-Off Delay Time                | t <sub>d(off)</sub> |                                                                                         | -    | 110  | -    | nS |
| Turn-Off Fall Time                 | t <sub>f</sub>      |                                                                                         | -    | 70   | -    | nS |
| Total Gate Charge                  | Q <sub>g</sub>      | V <sub>DS</sub> =-15V,I <sub>D</sub> =-7A<br>V <sub>GS</sub> =-10V                      | -    | 30   | -    | nC |
| Gate-Source Charge                 | Q <sub>gs</sub>     |                                                                                         | -    | 5.5  | -    | nC |
| Gate-Drain Charge                  | Q <sub>gd</sub>     |                                                                                         | -    | 8    | -    | nC |
| Drain-Source Diode Characteristics |                     |                                                                                         |      |      |      |    |
| Diode Forward Voltage (Note 3)     | V <sub>SD</sub>     | V <sub>GS</sub> =0V,I <sub>S</sub> =-5A                                                 | -    | -    | -1.2 | V  |
| Diode Forward Current (Note 2)     | I <sub>S</sub>      |                                                                                         | -    | -    | -10  | A  |

**Notes:**

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production

## Typical Electrical And Thermal Characteristics

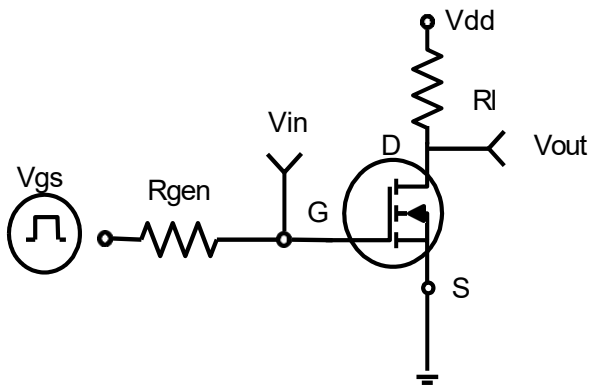


Figure 1: Switching Test Circuit

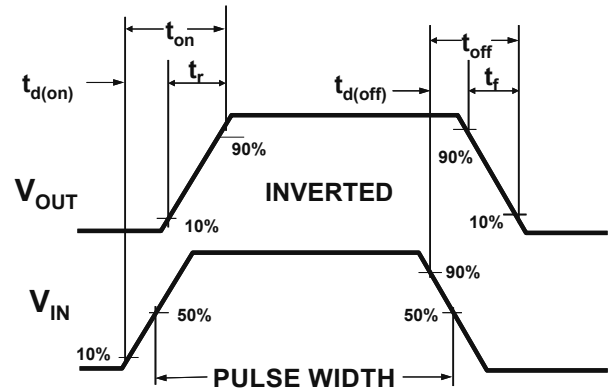


Figure 2: Switching Waveforms

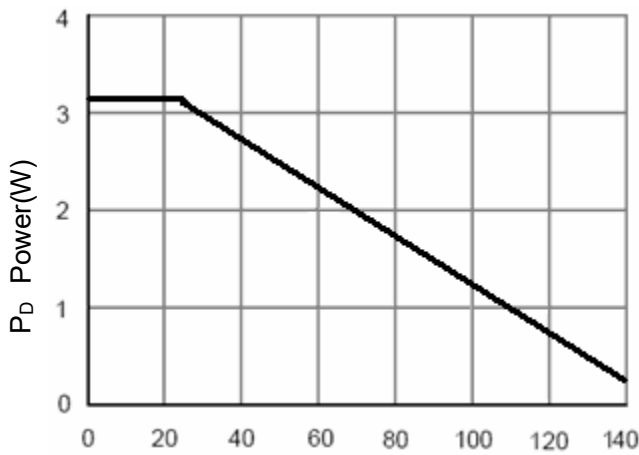


Figure 3 Power Dissipation

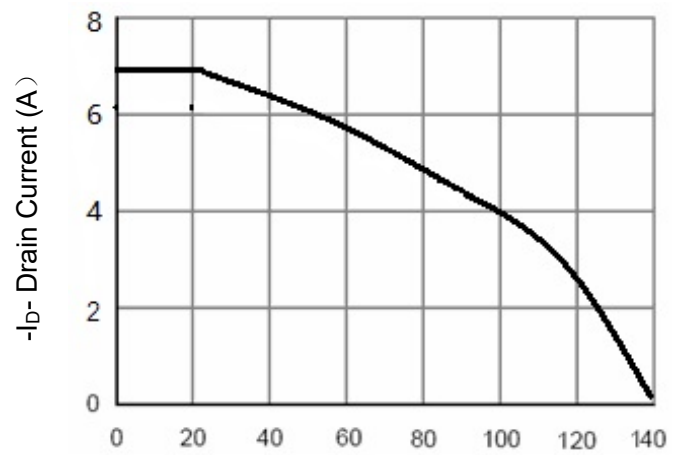


Figure 4 Drain Current

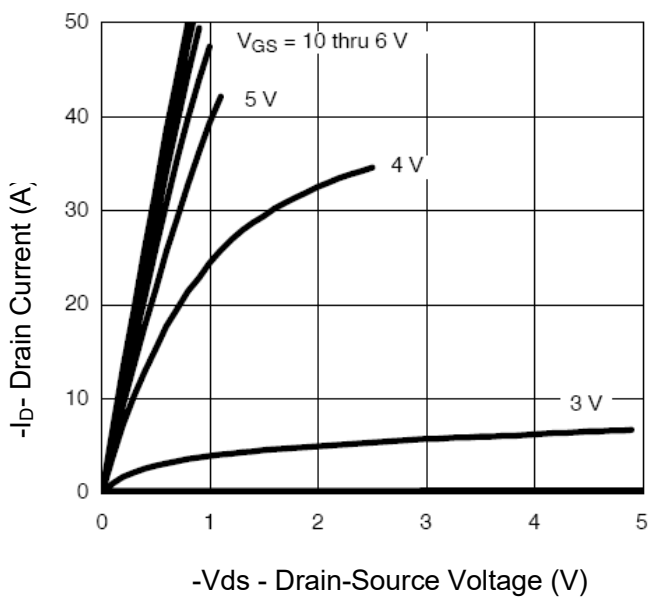


Figure 5 Output Characteristics

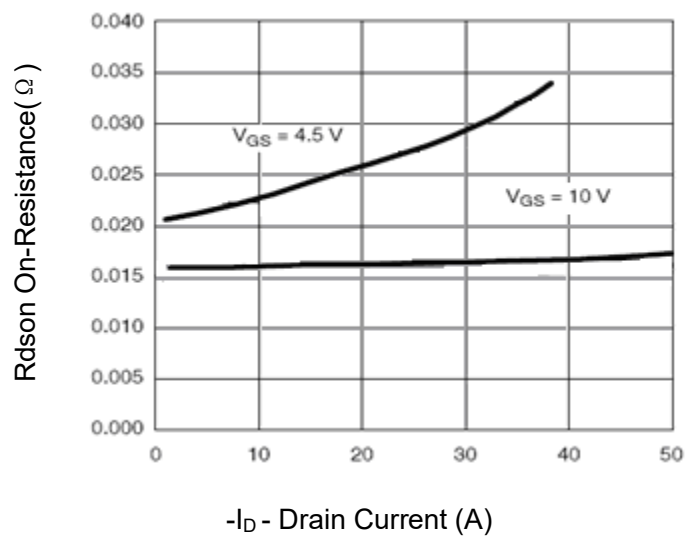
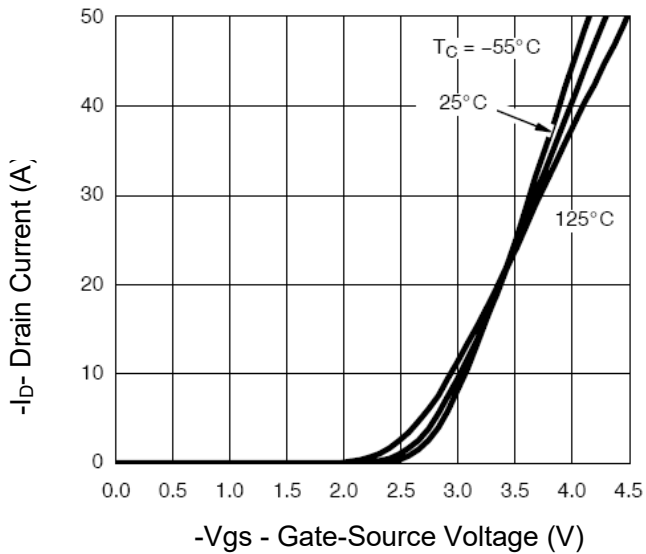
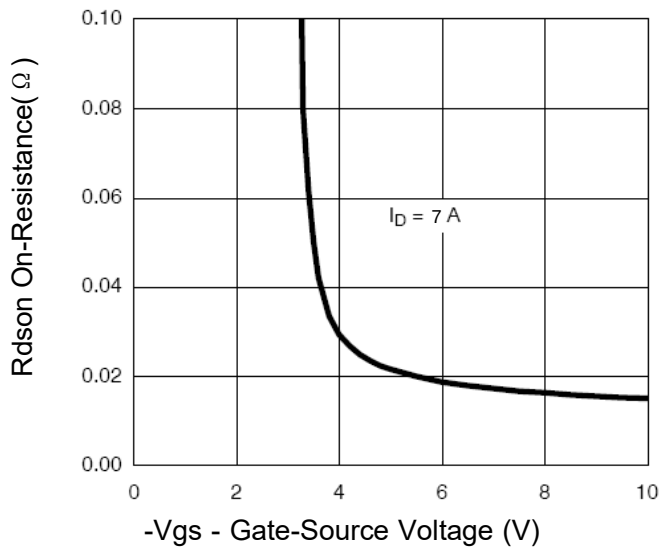


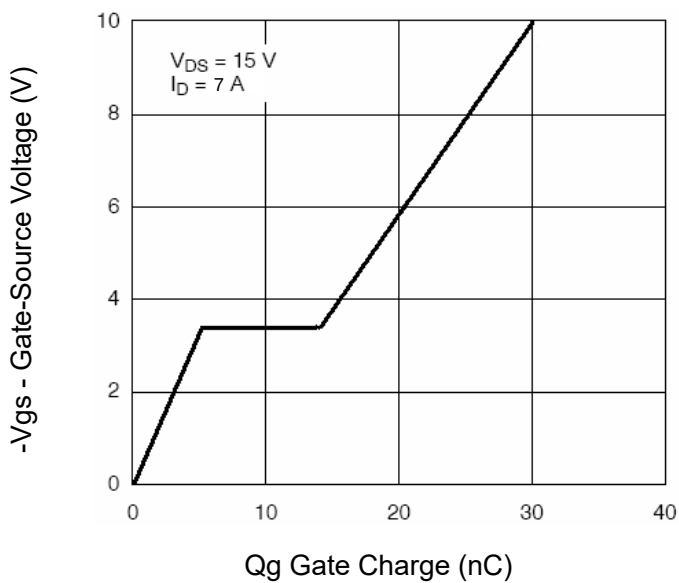
Figure 6 Drain-Source On-Resistance



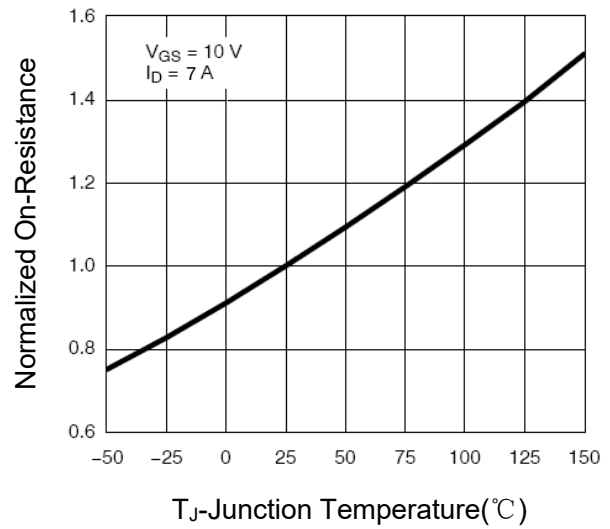
**Figure 7 Transfer Characteristics**



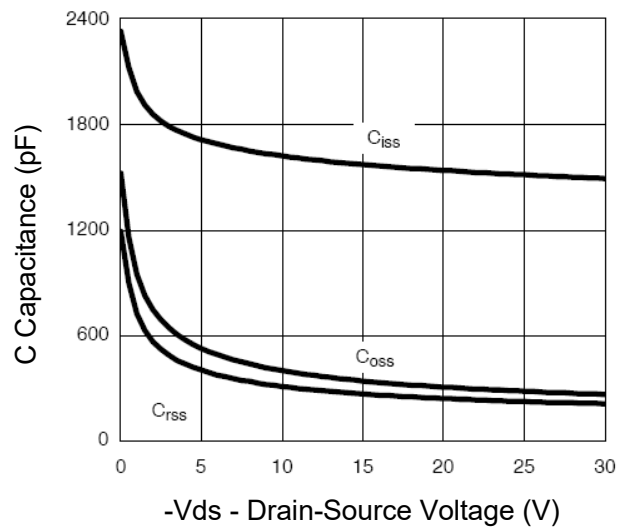
**Figure 9 Rdson vs Vgs**



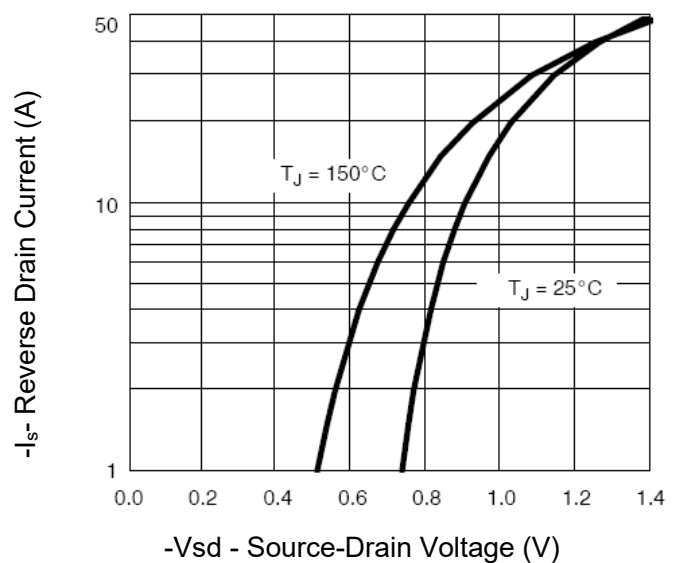
**Figure 11 Gate Charge**



**Figure 8 Drain-Source On-Resistance**



**Figure 10 Capacitance vs Vds**



**Figure 12 Source- Drain Diode Forward**

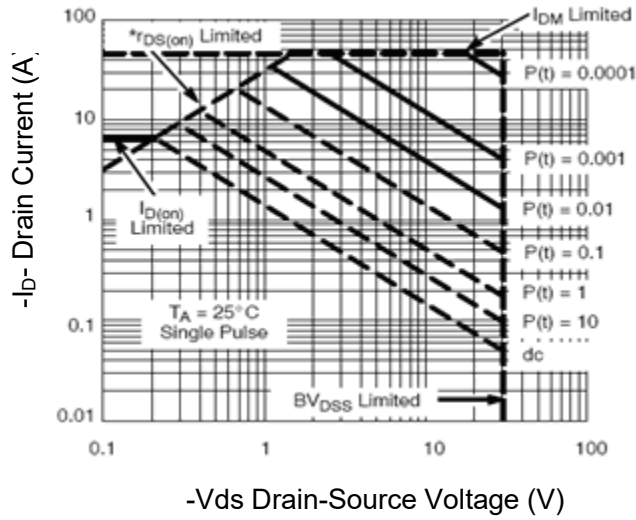


Figure 13 Safe Operation Area

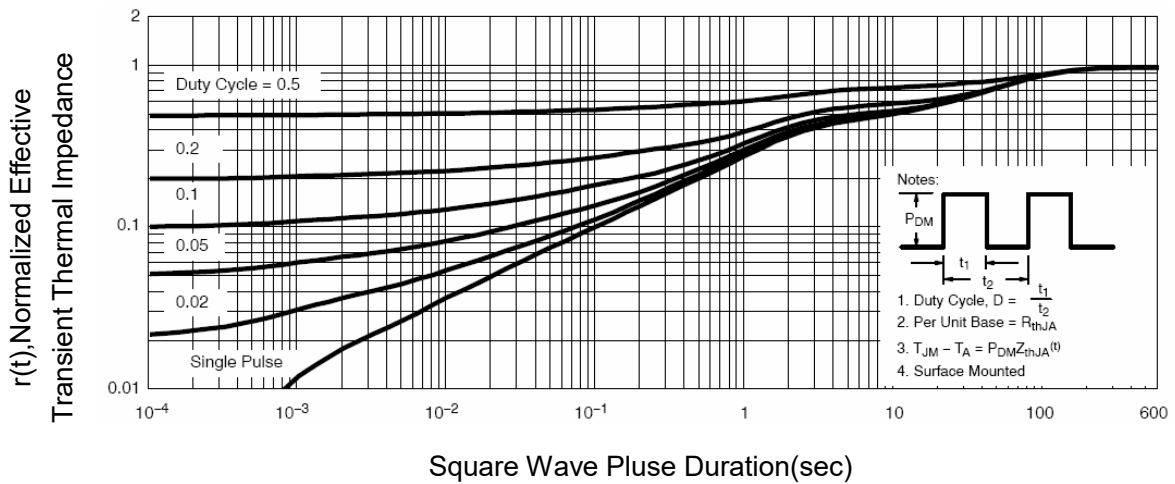
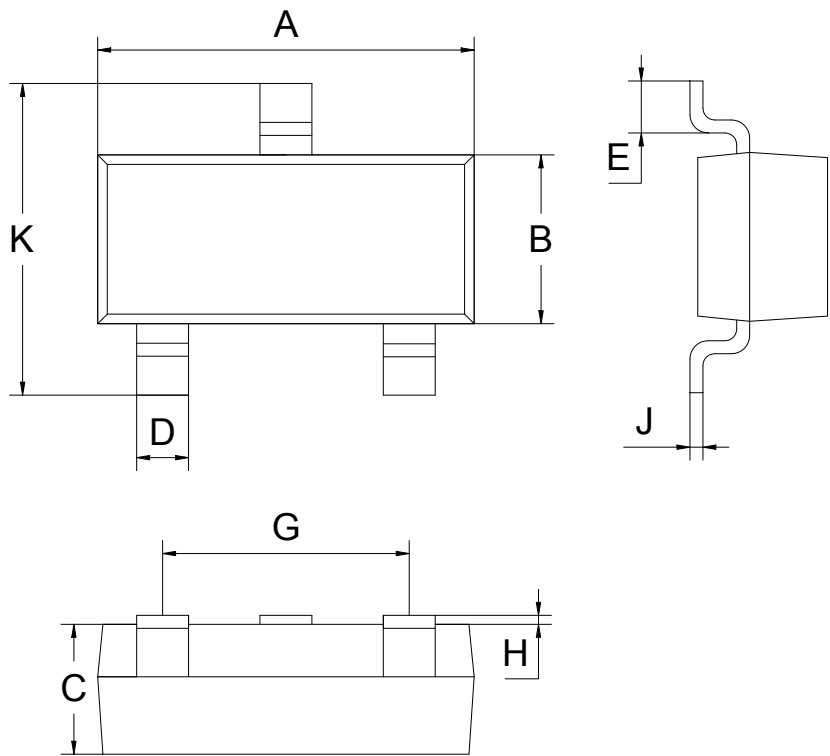


Figure 14 Normalized Maximum Transient Thermal Impedance

SOT-23-3L Package information



| SOT-23-3L            |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | MIN   | NOM   | MAX   |
| A                    | 2.80  | 2.90  | 3.00  |
| B                    | 1.50  | 1.60  | 1.70  |
| C                    | 1.00  | 1.10  | 1.20  |
| D                    | 0.30  | 0.40  | 0.50  |
| E                    | 0.25  | 0.40  | 0.55  |
| G                    | 1.90  |       |       |
| H                    | 0.00  | -     | 0.10  |
| J                    | 0.047 | 0.127 | 0.207 |
| K                    | 2.60  | 2.80  | 3.00  |
| All Dimensions in mm |       |       |       |