



Description

The HSSK7800 from WILLAS provide the best combination of fast switching, low on-resistance and cost-effectiveness.

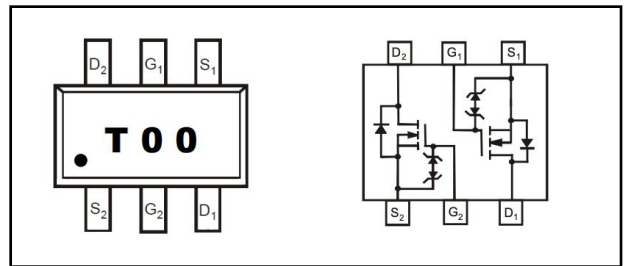
The HSS7800 meet the RoHS and Green Product requirement with full function reliability approved.

Product Summary

| | | |
|------------------|-----|------------|
| V_{DS} | 20 | V |
| $R_{DS(ON),typ}$ | 160 | m Ω |
| I_D | 1 | A |

- PWM applications
- Load switch
- ESD Rating: >2000V HBM

SOT-363 Pin Configuration



Absolute Maximum Ratings

| Symbol | Parameter | Rating | Units |
|----------------------------|---------------------------------------|------------|------------------|
| V_{DS} | Drain-Source Voltage | 20 | V |
| V_{GS} | Gate-Source Voltage | ± 8 | V |
| $I_D@T_A=25^\circ\text{C}$ | Continuous Drain Current ¹ | 1 | A |
| I_{DM} | Pulsed Drain Current ² | 4 | A |
| $P_D@T_A=25^\circ\text{C}$ | Total Power Dissipation ³ | 0.35 | W |
| T_{STG} | Storage Temperature Range | -55 to 150 | $^\circ\text{C}$ |
| T_J | Operating Junction Temperature Range | -55 to 150 | $^\circ\text{C}$ |

Thermal Data

| Symbol | Parameter | Typ. | Max. | Unit |
|-----------------|--|------|------|--------------------|
| $R_{\theta JA}$ | Thermal Resistance Junction-ambient ¹ | --- | 360 | $^\circ\text{C/W}$ |



Electrical Characteristics (T_J=25 °C, unless otherwise noted)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---------------------|--|---|------|------|-------|------|
| BV _{DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250uA | 20 | --- | --- | V |
| R _{DS(ON)} | Static Drain-Source On-Resistance ² | V _{GS} =4.5V, I _D =1A | --- | 120 | 160 | mΩ |
| | | V _{GS} =2.5V, I _D =0.5A | --- | 200 | 280 | |
| V _{GS(th)} | Gate Threshold Voltage | V _{GS} =V _{DS} , I _D =250uA | 0.5 | 0.7 | 1.2 | V |
| I _{DSS} | Drain-Source Leakage Current | V _{DS} =20V, V _{GS} =0V, T _J =25°C | --- | --- | 1 | uA |
| I _{GSS} | Gate-Source Leakage Current | V _{GS} = ± 8V, V _{DS} =0V | --- | --- | ± 100 | nA |
| Q _g | Total Gate Charge (4.5V) | V _{DS} =5V, V _{GS} =4.5V, I _D =1A | --- | 1.5 | --- | nC |
| Q _{gs} | Gate-Source Charge | | --- | 0.5 | --- | |
| Q _{gd} | Gate-Drain Charge | | --- | 0.3 | --- | |
| T _{d(on)} | Turn-On Delay Time | V _{DD} =5V, V _{GS} =4.5V, R _G =50Ω I _D =1A | --- | 6 | --- | ns |
| T _r | Rise Time | | --- | 28 | --- | |
| T _{d(off)} | Turn-Off Delay Time | | --- | 47 | --- | |
| T _f | Fall Time | | --- | 33 | --- | |
| C _{iss} | Input Capacitance | V _{DS} =10V, V _{GS} =0V, f=1MHz | --- | 90 | --- | pF |
| C _{oss} | Output Capacitance | | --- | 28 | --- | |
| C _{rss} | Reverse Transfer Capacitance | | --- | 9.5 | --- | |

Diode Characteristics

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|-----------------|------------------------------------|---|------|------|------|------|
| V _{SD} | Diode Forward Voltage ² | V _{GS} =0V, I _S =1A, T _J =25°C | --- | --- | 1.2 | V |

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The power dissipation is limited by 150°C junction temperature
- 4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

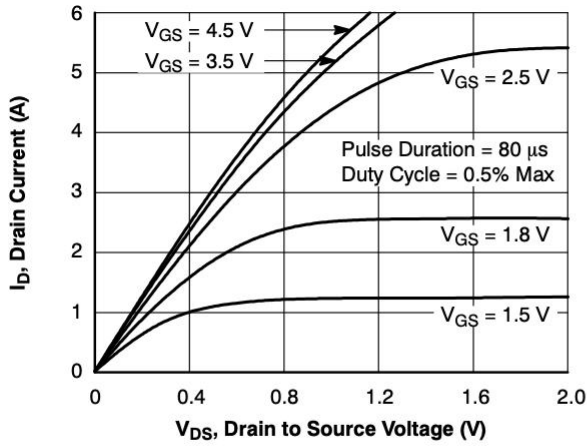


Figure 1. On-Region Characteristics

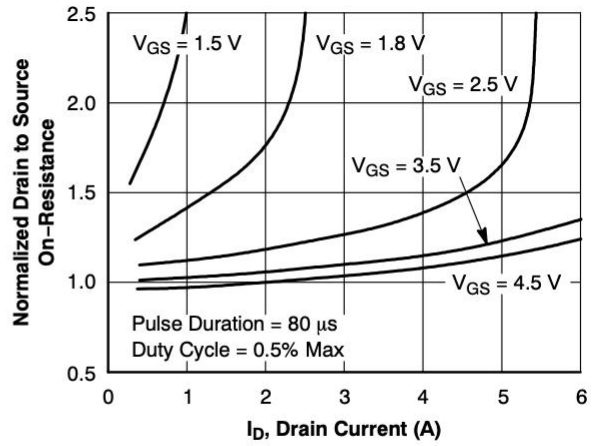


Figure 2. Normalized On-Resistance vs. Drain Current and Gate Voltage

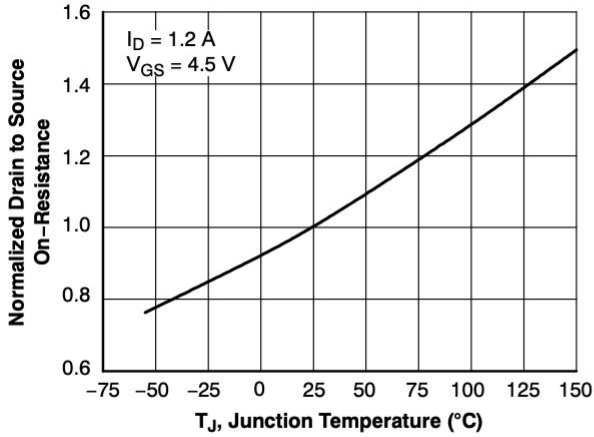


Figure 3. Normalized On-Resistance vs. Junction Temperature

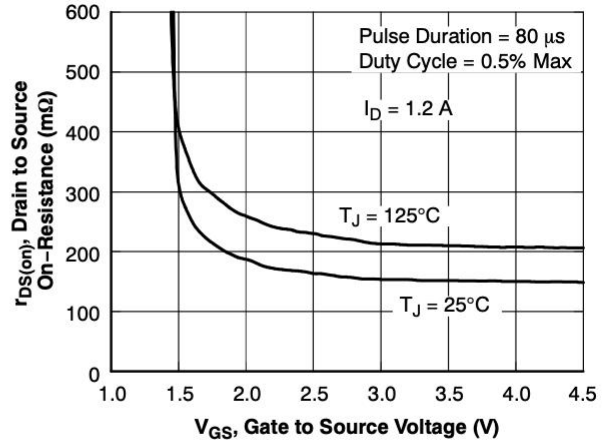


Figure 4. On-Resistance vs. Gate to Source Voltage

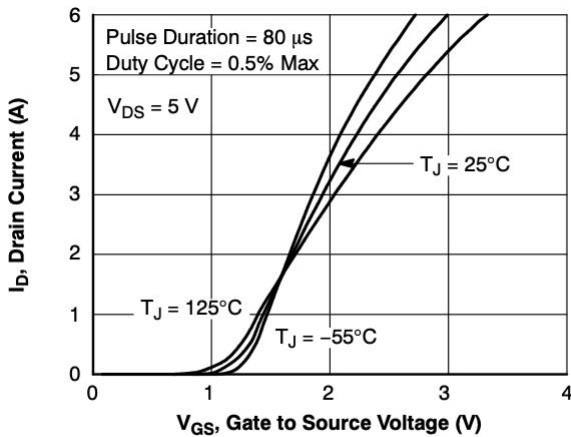


Figure 5. Transfer Characteristics

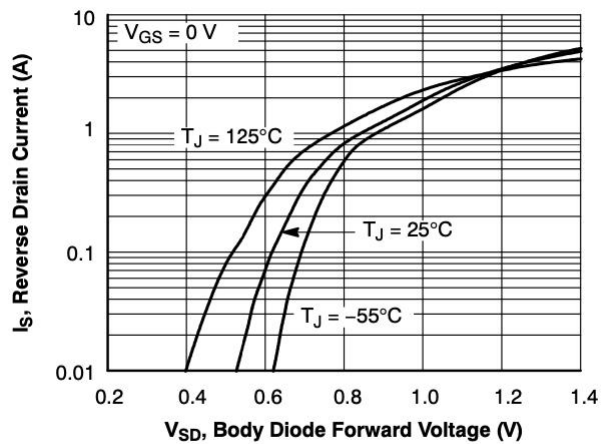


Figure 6. Source to Drain Diode Forward Voltage vs. Source Current

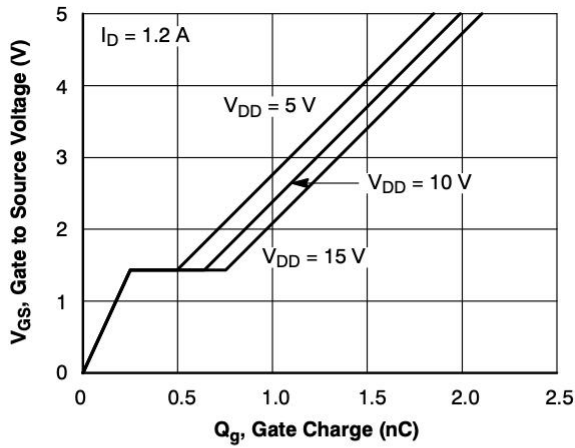


Figure 7. Gate Charge Characteristics

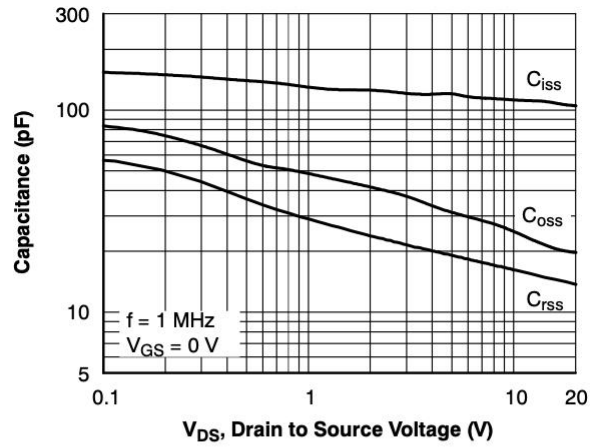


Figure 8. Capacitance vs. Drain to Source Voltage

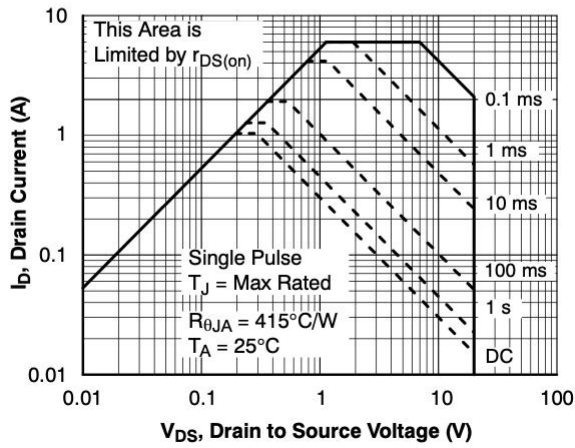


Figure 9. Forward Bias Safe Operating Area

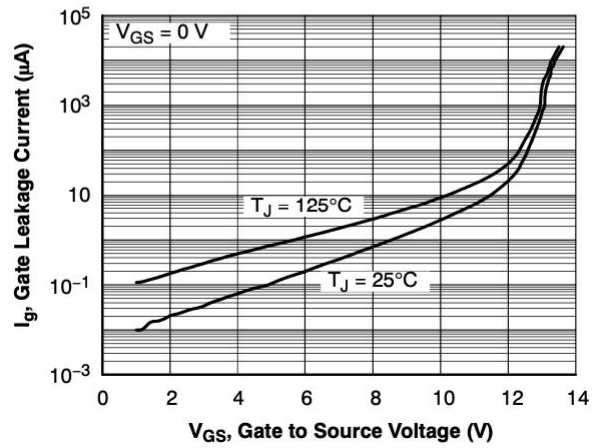


Figure 10. Gate Leakage Current vs. Gate to Source Voltage

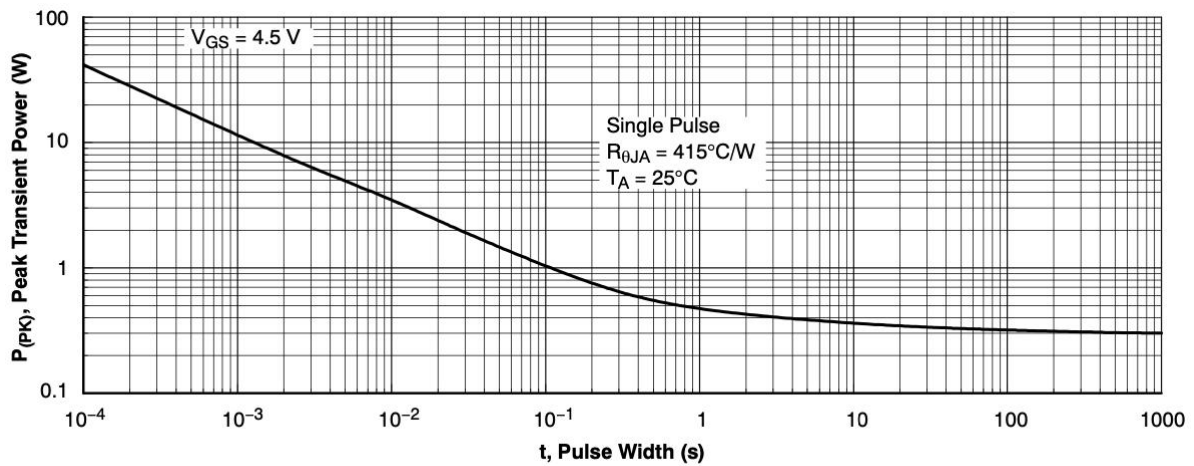
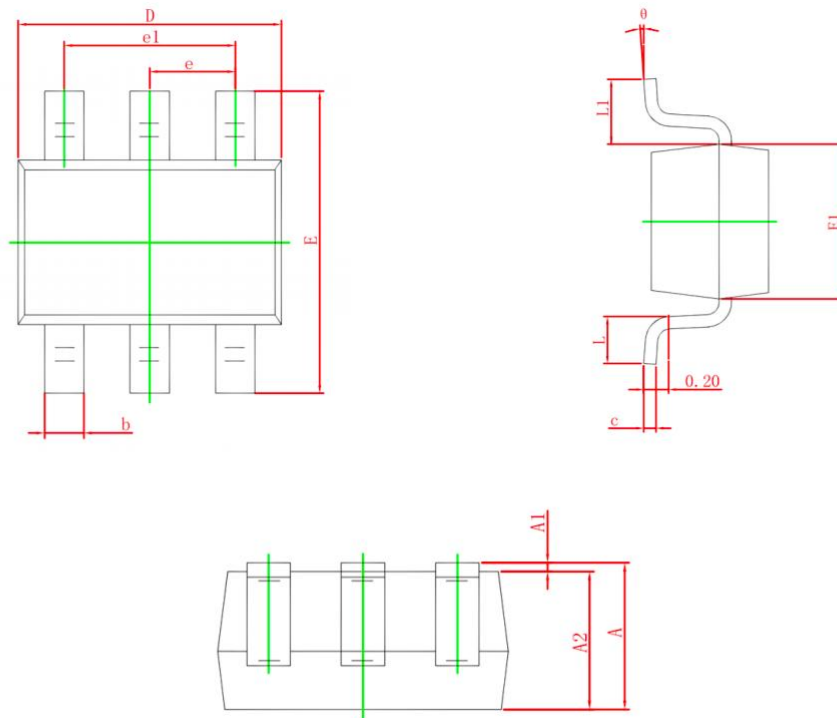


Figure 11. Single Pulse Maximum Power Dissipation



Ordering Information

| Part Number | Package code | Packaging |
|-------------|--------------|----------------|
| HSSK7800 | SOT-363 | 3000/Tape&Reel |



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|----------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.900 | 1.100 | 0.035 | 0.043 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.000 | 0.035 | 0.039 |
| b | 0.150 | 0.350 | 0.006 | 0.014 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.000 | 2.200 | 0.079 | 0.087 |
| E | 2.150 | 2.450 | 0.085 | 0.096 |
| E1 | 1.150 | 1.350 | 0.045 | 0.053 |
| e | 0.650 TYP. | | 0.026 TYP. | |
| e1 | 1.200 | 1.400 | 0.047 | 0.055 |
| L | 0.260 | 0.460 | 0.010 | 0.018 |
| L1 | 0.525 REF. | | 0.021 REF. | |
| θ | 0° | 8° | 0° | 8° |

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