

Description

The HSSK6303 from WILLAS provide the best combination of fast switching, low on-resistance and cost-effectiveness.

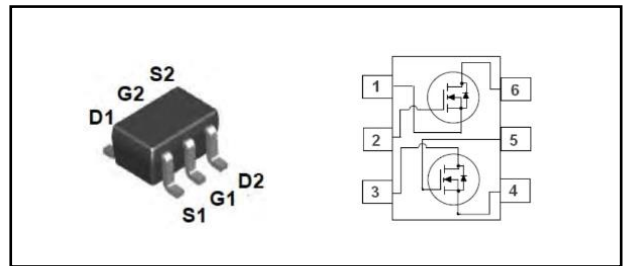
The HSSK6303 meet the RoHS and Green Product requirement with full function reliability approved.

Product Summary

| | | |
|------------------|-----|------------|
| V_{DS} | 20 | V |
| $R_{DS(ON),typ}$ | 340 | m Ω |
| I_D | 0.5 | A |

- Green Device Available
- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Advanced high cell density Trench technology

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 |
| $I_D@T_A=25^\circ C$ | Continuous Drain Current ₁ | 0.5 | A |
| I_{DM} | Pulsed Drain Current ₂ | 1.5 | A |
| $P_D@T_A=25^\circ C$ | Total Power Dissipation ₃ | 0.3 | W |
| T_{STG} | Storage Temperature Range | -55 to 150 | $^\circ C$ |
| T_J | Operating Junction Temperature Range | -55 to 150 | $^\circ C$ |

Thermal Data

| Symbol | Parameter | Typ. | Max. | Unit |
|-----------------|--|------|------|--------------|
| $R_{\theta JA}$ | Thermal Resistance Junction-ambient ₁ | --- | 415 | $^\circ C/W$ |



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

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---------------------|--|---|------|------|------|------|
| B _{VDS} | 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 =0.5A | --- | 340 | 450 | mΩ |
| | | V _{GS} =2.5V, I _D =0.2A | --- | 440 | 600 | |
| V _{GS(th)} | Gate Threshold Voltage | V _{GS} =V _{DS} , I _D =250uA | 0.65 | 0.8 | 1.5 | 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} =±12V, V _{DS} =0V | --- | --- | ±10 | uA |
| g _{fs} | Forward Transconductance | V _{DS} =5V, I _D =0.5A | --- | 1.45 | --- | S |
| Q _g | Total Gate Charge (4.5V) | V _{DS} =5V, V _{GS} =4.5V, I _D =0.5A | --- | 1.64 | --- | nC |
| Q _{gs} | Gate-Source Charge | | --- | 0.38 | --- | |
| Q _{gd} | Gate-Drain Charge | | --- | 0.45 | --- | |
| T _{d(on)} | Turn-On Delay Time | V _{DD} =5V, V _{GS} =4.5V, R _G =50Ω I _D =0.5A | --- | 3 | --- | ns |
| T _r | Rise Time | | --- | 8.2 | --- | |
| T _{d(off)} | Turn-Off Delay Time | | --- | 17 | --- | |
| T _f | Fall Time | | --- | 13 | --- | |
| C _{iss} | Input Capacitance | V _{DS} =10V, V _{GS} =0V, f=1MHz | --- | 50 | --- | pF |
| C _{oss} | Output Capacitance | | --- | 28 | --- | |
| C _{rss} | Reverse Transfer Capacitance | | --- | 9 | --- | |

Diode Characteristics

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|-----------------|--|---|------|------|------|------|
| I _S | Continuous Source Current ^{1,4} | V _G =V _D =0V, Force Current | --- | --- | 0.25 | A |
| 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.

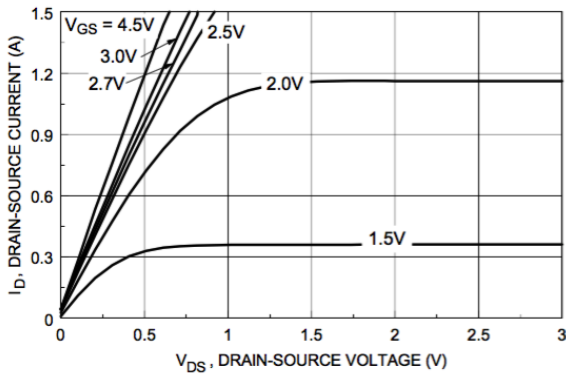


Figure 1. On-Region Characteristics.

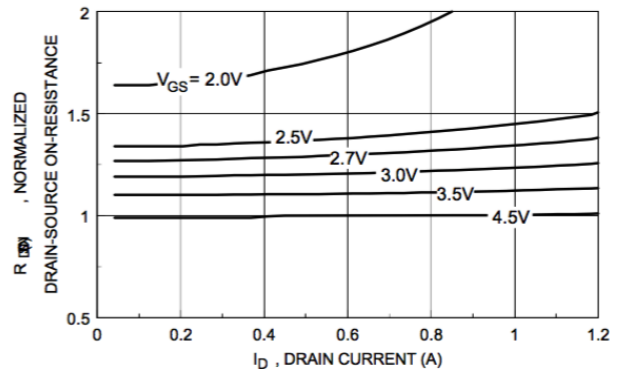


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

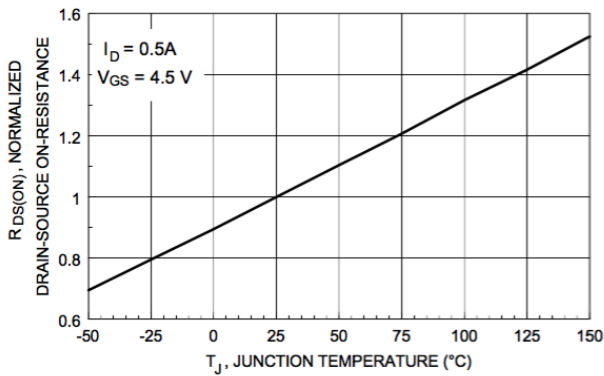


Figure 3. On-Resistance Variation with Temperature.

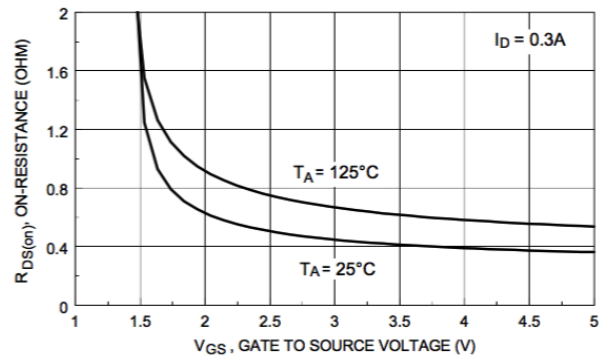


Figure 4. On-Resistance Variation with Gate-to-Source Voltage.

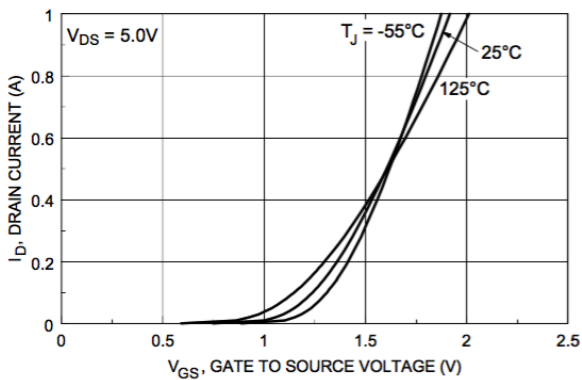


Figure 5. Transfer Characteristics.

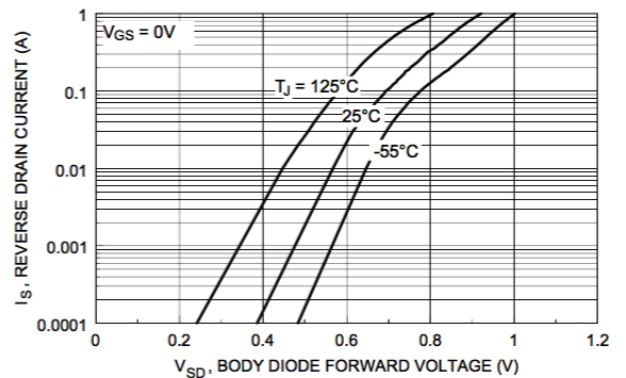


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature.

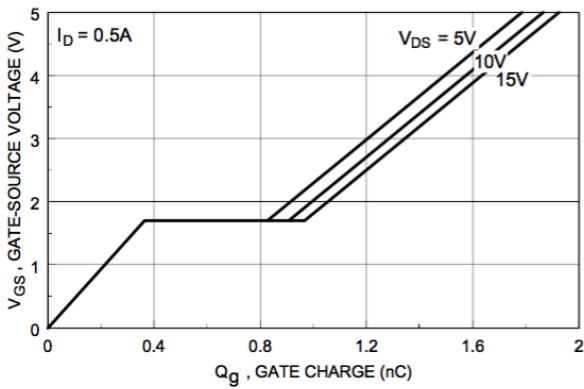


Figure 7. Gate Charge Characteristics.

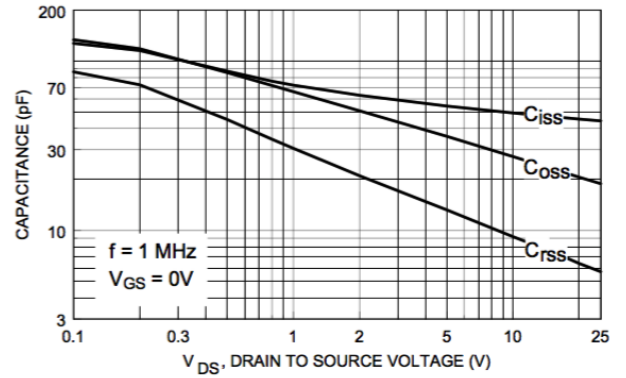


Figure 8. Capacitance Characteristics.

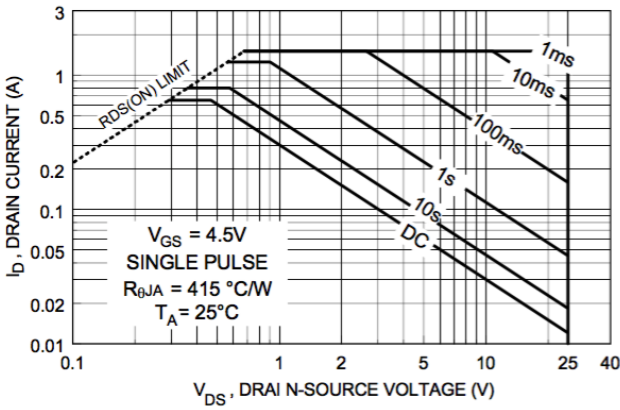


Figure 9. Maximum Safe Operating Area.

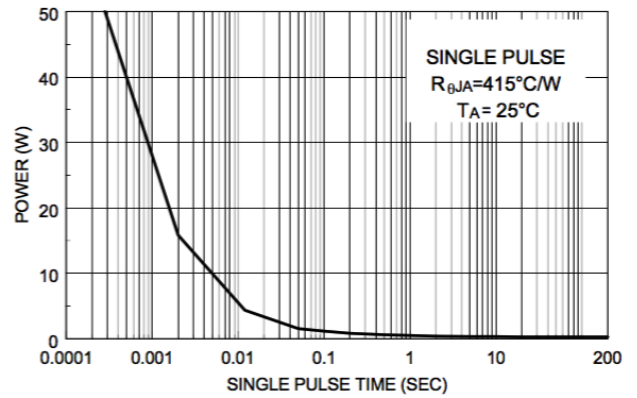


Figure 10. Single Pulse Maximum Power Dissipation.

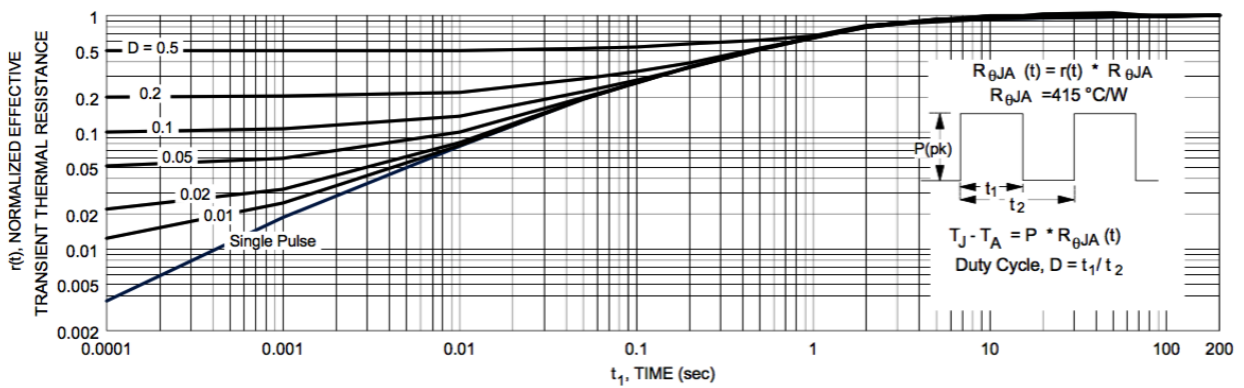


Figure 11. Transient Thermal Response Curve.

Thermal characterization performed using the conditions described in note 1.
Transient thermal response will change depending on the circuit board design.



Ordering Information

| Part Number | Package code | Packaging |
|-------------|--------------|----------------|
| HSSK6303 | SOT-363 | 3000/Tape&Reel |

