



WANSEMI
万芯半导体

WP8804KS6

Enhancement Mode N-Channel Power MOSFET

SOT23-6/NMOS/20V/ ± 12 V/0.8V/5.5A/17m Ω

Rev0.7

20V, 17mΩ, 5.5A, N-Channel MOSFET

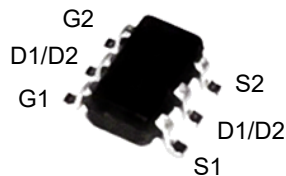
1.Features

- ◆ High Power and current handing capability
- ◆ Lead free product is acquired
- ◆ Surface Mount Package

| V _{DS} Typ. | R _{DS(on)} Typ. | I _D Max. |
|----------------------|--------------------------|---------------------|
| 20V | 17mΩ @ 4.5V | 5.5A |
| | 25mΩ @ 2.5V | |

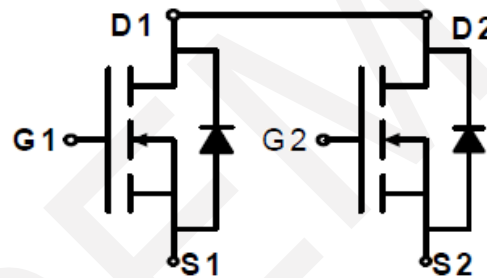
2.Applications

- ◆ Battery Protection
- ◆ Battery Powered Systems
- ◆ Power Management in Notebook Computer
- ◆ Portable Equipment



Pin Description

SOT23-6



Schematic Diagram

3.Package Marking and Ordering Information

| Part no. | Marking | Package | PCS/Reel | PCS/CTN. |
|-----------|---------|---------|----------|----------|
| WP8804KS6 | 8804K | SOT23-6 | 3,000 | 180,000 |

4.Absolute Max Ratings at Ta=25°C (Note1)

| Parameter | Symbol | Maximum | Units |
|--|-----------------------------------|-------------|-------|
| Drain to Source Voltage | V _{DSS} | 20 | V |
| Gate to Source Voltage | V _{GSS} | ±12 | V |
| Drain Current-Continuous | I _D | 5.5 | A |
| Drain Current (Pulse) | I _{DM} | 22 | A |
| Maximum Power Dissipation | P _D | 1.9 | W |
| Operating Junction and Storage Temperature Range | T _j , T _{stg} | -55 to +150 | °C |
| Lead Temperature for Soldering Purposes (1/8" from case for 10 s) | T _L | 260 | °C |

Note 1: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

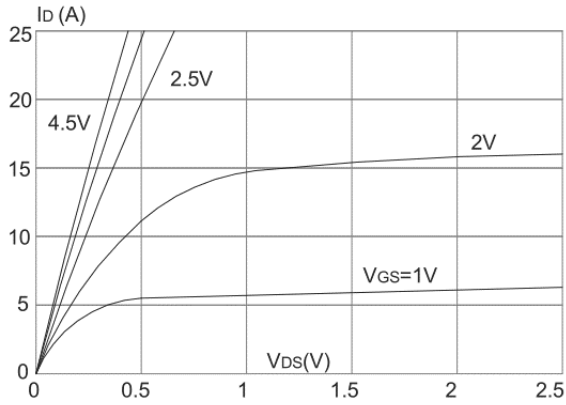
5. Electrical Characteristics at Ta=25°C (Note 2)

| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|-------------------------------------|---------------|--|------|------|-----------|------------|
| Drain to Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D = 250\mu A, V_{GS} = 0V$ | 20 | 21 | - | V |
| Zero-Gate Voltage Drain Current | I_{DSS} | $V_{DS} = 20V, V_{GS} = 0V$ | - | - | 1 | μA |
| Gate-Body Leakage Current | I_{GSS} | $V_{GS} = \pm 12V, V_{DS} = 0V$ | - | - | ± 100 | nA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_{DS} = 250\mu A$ | 0.5 | 0.8 | 1.2 | V |
| Drain to Source On-State Resistance | $R_{DS(on)}$ | $I_D = 5.5A, V_{GS} = 4.5V$ | - | 17 | 25 | m Ω |
| | | $I_D = 4A, V_{GS} = 2.5V$ | - | 25 | 35 | m Ω |
| Input Capacitance | C_{iss} | $V_{GS} = 0V,$ $V_{DS} = 10V,$ Frequency=1.0MHz | - | 370 | - | pF |
| Output Capacitance | C_{oss} | | - | 89 | - | pF |
| Reverse Transfer Capacitance | C_{rss} | | - | 10 | - | pF |
| Turn-ON Delay Time | $t_{d(on)}$ | $V_{DD} = 10V, I_D = 3A,$ $V_{GS} = 4.5V, R_{GEN} = 10\Omega$ | - | 200 | - | ns |
| Turn-ON Rise Time | t_r | | - | 236 | - | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | | - | 36 | - | ns |
| Turn-ON Fall Time | t_f | | - | 165 | - | ns |
| Total Gate Charge | Q_g | $V_{DS} = 10V,$ $V_{GS} = 4.5V,$ $I_D = 1A$ | - | 7.5 | - | nC |
| Gate-Source Charge | Q_{gs} | | - | 3.0 | - | nC |
| Gate-Drain Charge | Q_{gd} | | - | 1.5 | - | nC |
| Diode Forward Voltage | V_{SD} | $I_S = 5.5A, V_{GS} = 0V$ | - | 0.9 | 1.4 | V |

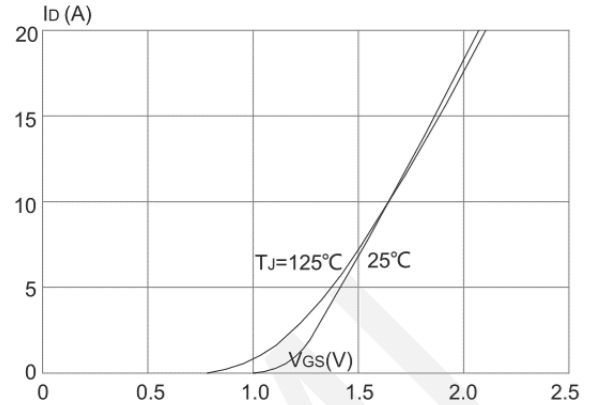
Note 2: Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



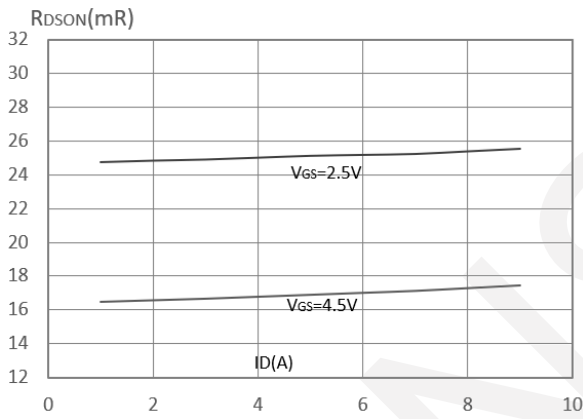
6. Typical electrical and thermal characteristics



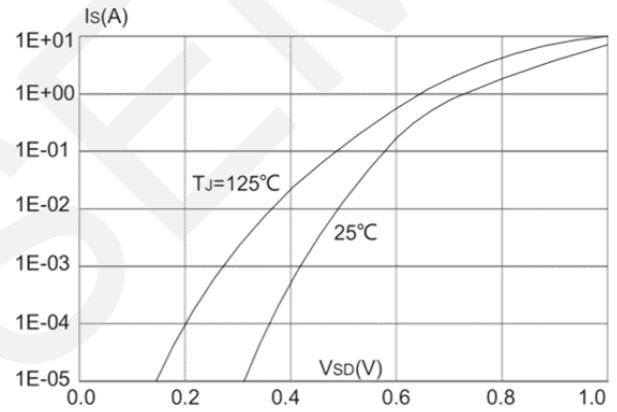
Output Characteristics



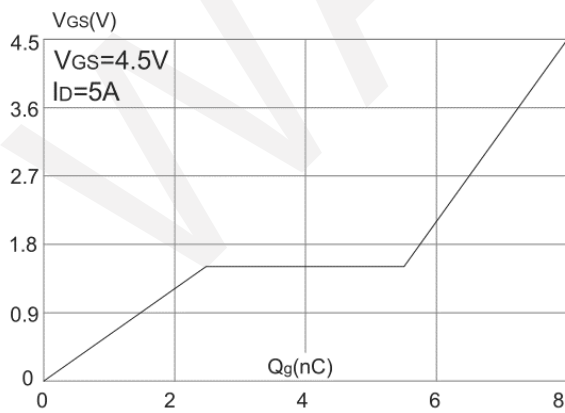
Typical Transfer Characteristics



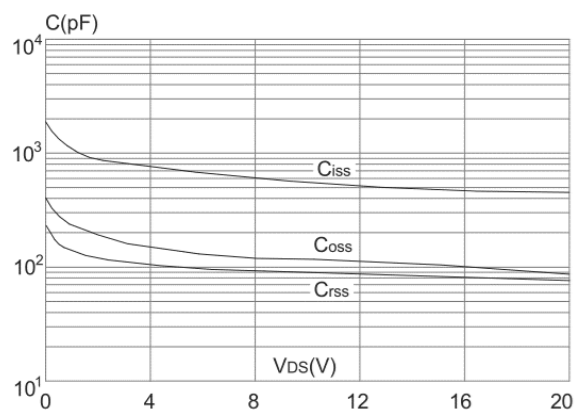
On-resistance vs. Drain Current



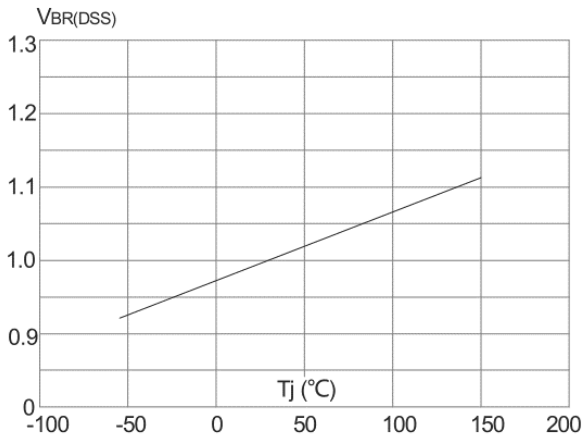
Body Diode Characteristics



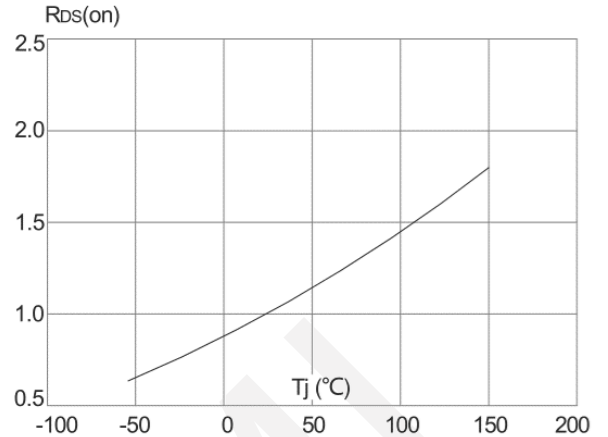
Gate Charge Characteristics



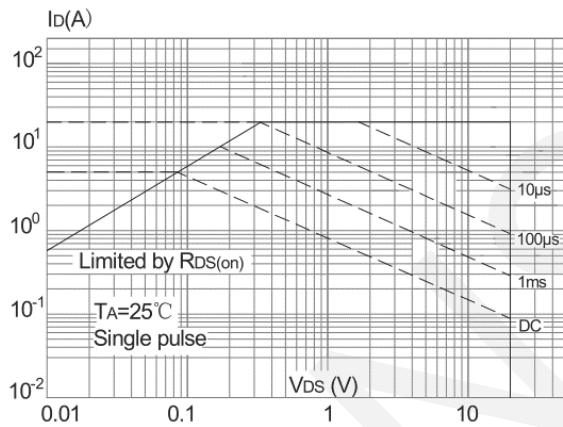
Capacitance Characteristics



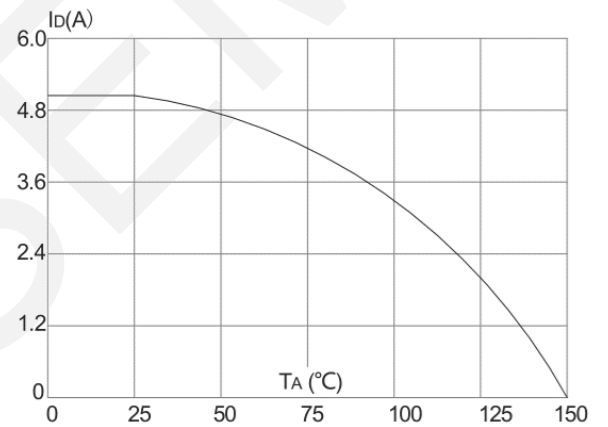
Normalized Breakdown voltage vs. Junction Temperature



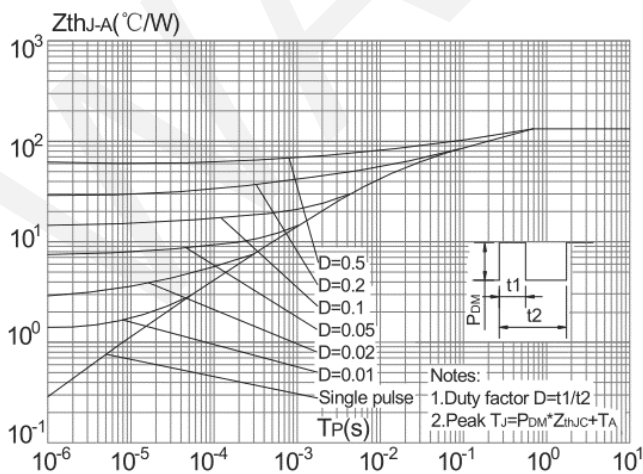
Normalized on Resistance vs. Junction Temperature



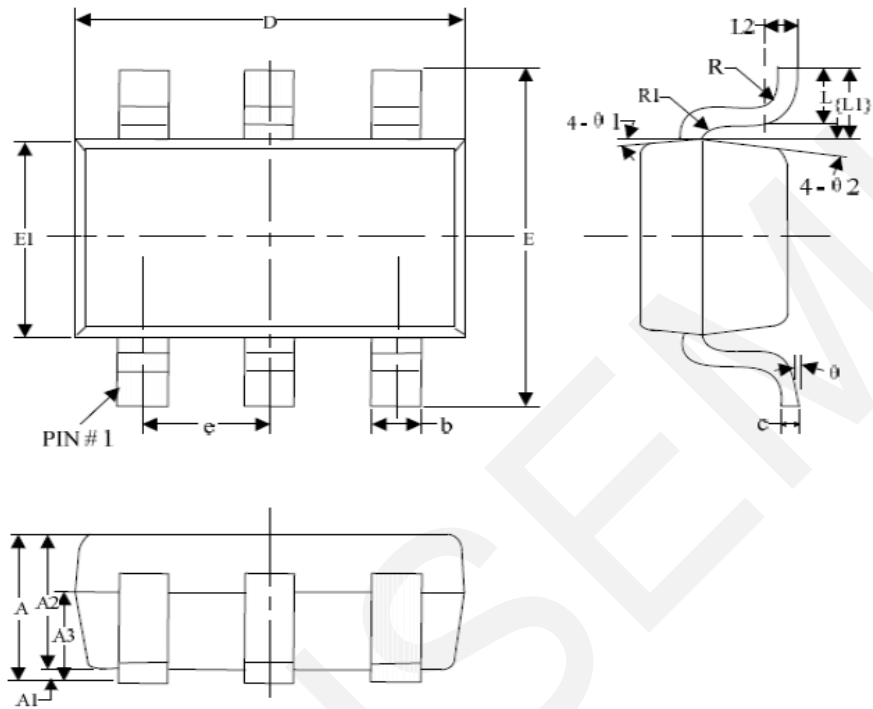
Maximum Safe Operating Area



Maximum Continuous Drain Current vs. Ambient Temperature



Normalized Maximum Transient Thermal Impedance

7.Package Dimensions
SOT23-6

Dimensions (unit: mm)

| SYMBOL | MIN | NOM | MAX | SYMBOL | MIN | NOM | MAX |
|--------|------|------|------|--------|---------|------|------|
| A | - | - | 1.30 | e | 0.85 | 0.95 | 1.05 |
| A1 | 0 | - | 0.15 | L | 0.35 | 0.45 | 0.60 |
| A2 | 0.90 | 1.10 | 1.30 | L1 | 0.59REF | | |
| A3 | 0.60 | 0.65 | 0.70 | L2 | 0.25BSC | | |
| b | 0.39 | - | 0.49 | R | 0.05 | - | - |
| c | 0.12 | - | 0.19 | R1 | 0.05 | - | 0.02 |
| D | 2.85 | 2.95 | 3.15 | θ | 0° | - | 8° |
| E | 2.60 | 2.80 | 3.00 | θ1 | 3° | 5° | 7° |
| E1 | 1.55 | 1.65 | 1.75 | θ2 | 6° | 8° | 10° |

8.Important Notice

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