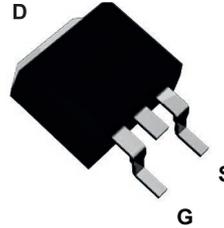
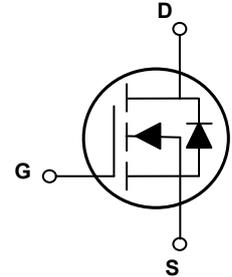


Main Product Characteristics

| | |
|---------------|----------------------|
| $V_{(BR)DSS}$ | 60V |
| $R_{DS(ON)}$ | 1.7m Ω (Typ.) |
| I_D | 172A |



TO-263 (D²PAK)



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery
- AEC-Q101 qualified

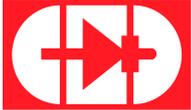


Description

The GSGT2R206AU utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supplies and a wide variety of other applications.

Absolute Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise specified)

| Parameter | Symbol | Max. | Unit |
|---|-----------------|-------------|----------------|
| Drain-Source Voltage | V_{DS} | 60 | V |
| Gate-to-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current, @ Steady-State ($T_C=25^{\circ}C$) | I_D | 172 | A |
| Continuous Drain Current, @ Steady-State ($T_C=100^{\circ}C$) | | 109 | A |
| Pulsed Drain Current | I_{DM} | 688 | A |
| Power Dissipation ($T_C=25^{\circ}C$) | P_D | 119 | W |
| | | 0.79 | W/ $^{\circ}C$ |
| Single Pulse Avalanche Energy ¹ | E_{AS} | 756 | mJ |
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 1.26 | $^{\circ}C/W$ |
| Operating Junction and Storage Temperature Range | T_J/T_{STG} | -55 to +175 | $^{\circ}C$ |


Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---------------|--|------|------|------|------------|
| On/Off Characteristics | | | | | | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 60 | - | - | V |
| Drain-to-Source Leakage Current | I_{DSS} | $V_{DS}=60V, V_{GS}=0V$ | - | - | 1.0 | μA |
| | | $V_{DS}=60V, V_{GS}=0V, T_J=125^\circ\text{C}$ | - | - | 100 | μA |
| Gate-to-Source Forward Leakage | I_{GSS} | $V_{GS}=20V$ | - | - | 100 | nA |
| | | $V_{GS}=-20V$ | - | - | -100 | |
| Static Drain-to-Source On- Resistance | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=20A$ | - | 1.7 | 2.2 | m Ω |
| | | $V_{GS}=4.5V, I_D=20A$ | - | 2.5 | 3.4 | m Ω |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.0 | - | 2.8 | V |
| Dynamic and Switching Characteristics | | | | | | |
| Total Gate Charge ^{2,3} | Q_g | $I_D=20A, V_{DS}=30V, V_{GS}=10V$ | - | 94.4 | - | nC |
| Gate-Source Charge ^{2,3} | Q_{gs} | | - | 17.2 | - | |
| Gate-Drain Charge ^{2,3} | Q_{gd} | | - | 13.2 | - | |
| Turn-On Delay Time ^{2,3} | $t_{d(on)}$ | $V_{GS}=10V, V_{DS}=30V, R_G=1.5\Omega, R_{GEN}=6\Omega$ | - | 19.8 | - | nS |
| Rise Time ^{2,3} | t_r | | - | 14.8 | - | |
| Turn-Off Delay Time ^{2,3} | $t_{d(off)}$ | | - | 77.2 | - | |
| Fall Time ^{2,3} | t_f | | - | 20.4 | - | |
| Input Capacitance | C_{iss} | $V_{GS}=0V, V_{DS}=30V, f=1\text{MHz}$ | - | 6312 | - | pF |
| Output Capacitance | C_{oss} | | - | 1679 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 39.6 | - | |
| Gate resistance | R_g | $f=1\text{MHz}$ | - | 1.8 | - | Ω |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| Continuous Source Current (Body Diode) | I_S | MOSFET symbol showing the integral reverse p-n junction diode. | - | - | 172 | A |
| Diode Forward Voltage | V_{SD} | $I_S=20A, V_{GS}=0V$ | - | - | 1.2 | V |
| Reverse Recovery Time | T_{rr} | $V_{GS}=0V, I_F=20A, di_F/dt=100A/\mu s$ | - | 65.8 | - | nS |
| Reverse Recovery Charge | Q_{rr} | | - | 82.3 | - | nC |

Note:

1. $L=0.5\text{mH}, R_G=25\Omega, V_G=10V, V_{DD}=40V, T_J=25^\circ\text{C}$.
2. Pulse test: Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Basically unaffected by operating temperature.

Typical Electrical and Thermal Characteristic Curves

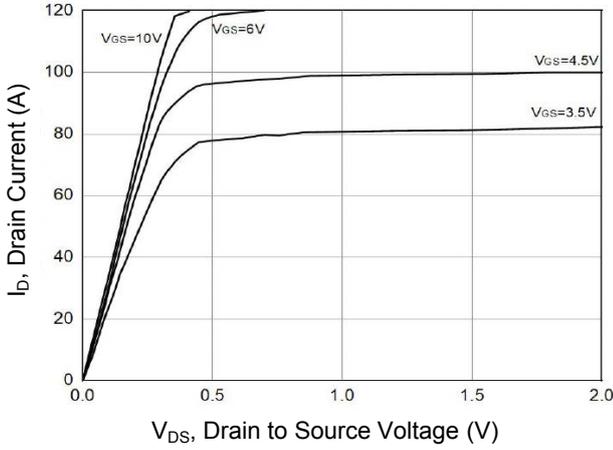


Figure 1. Typical Output Characteristics

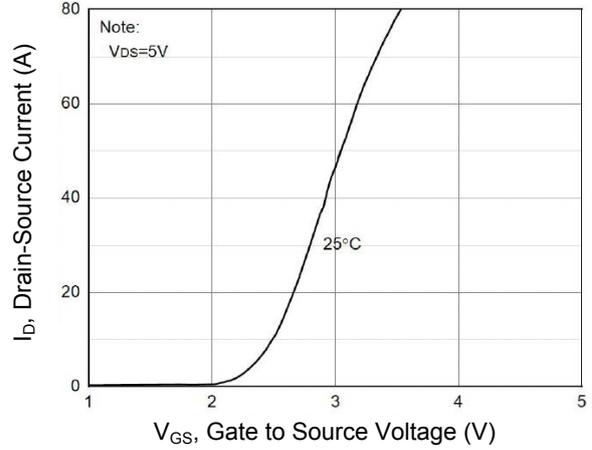


Figure 2. Typical Transfer Characteristics

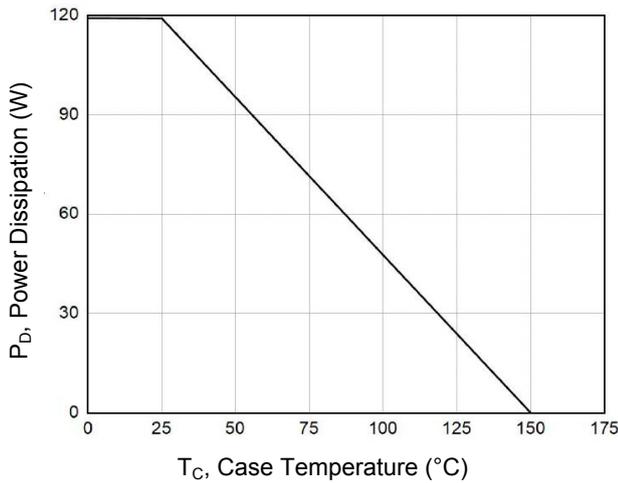


Figure 3. Power Dissipation

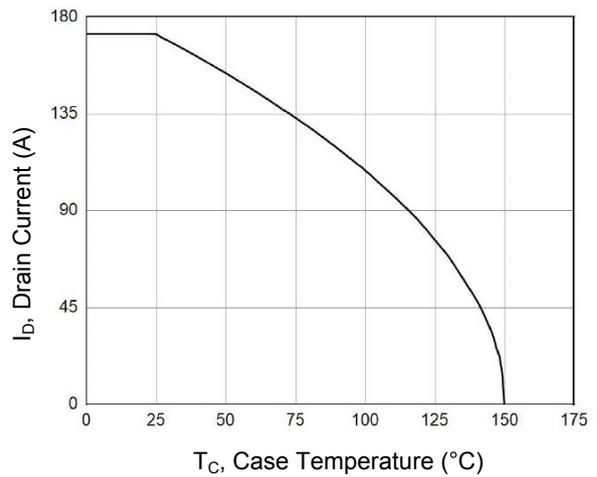


Figure 4. Drain Current vs. T_C

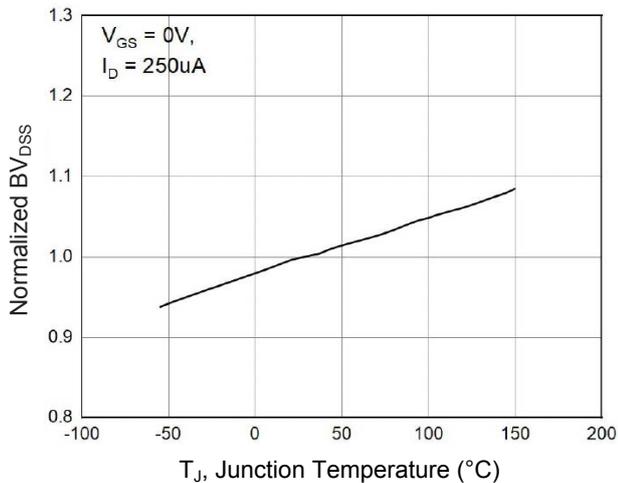


Figure 5. Normalized BV_{DSS} vs. T_J

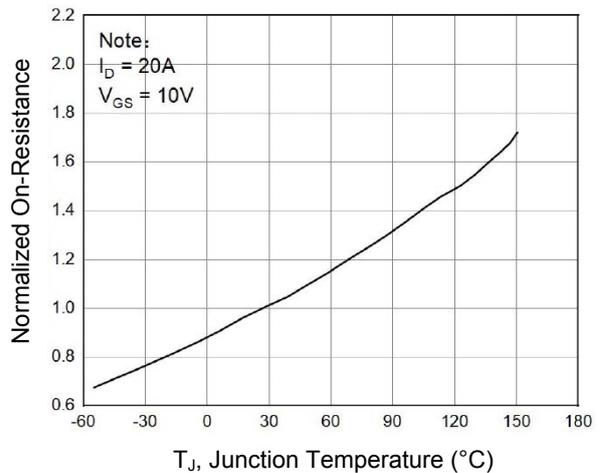


Figure 6. Normalized On-Resistance Vs. T_J

Typical Electrical and Thermal Characteristic Curves

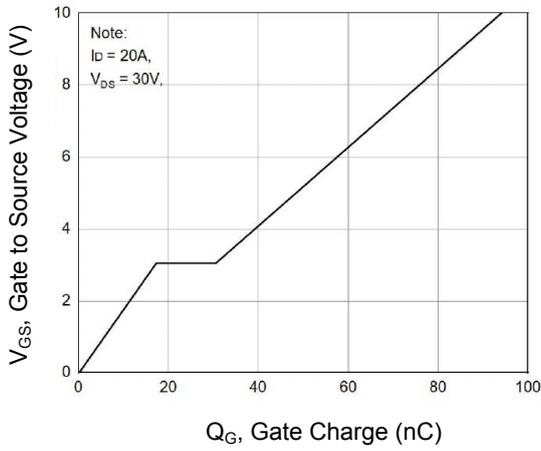


Figure 7. Gate Charge

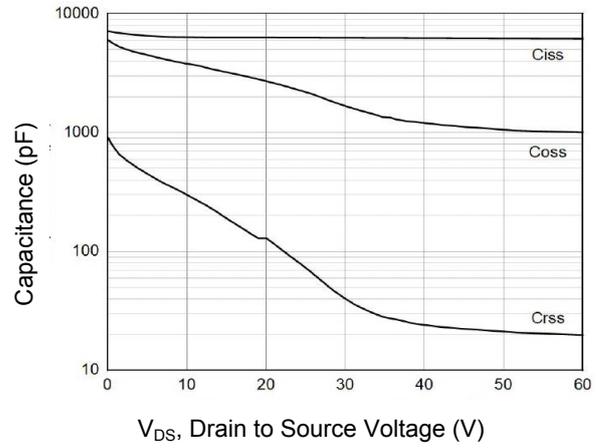


Figure 8. Capacitance Characteristics

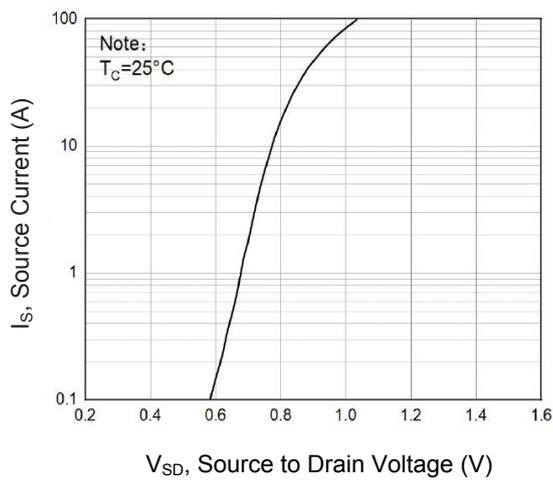


Figure 9. Body-Diode Characteristics

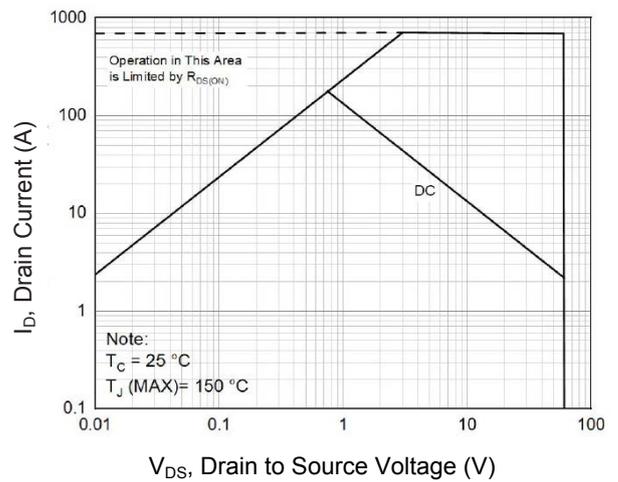
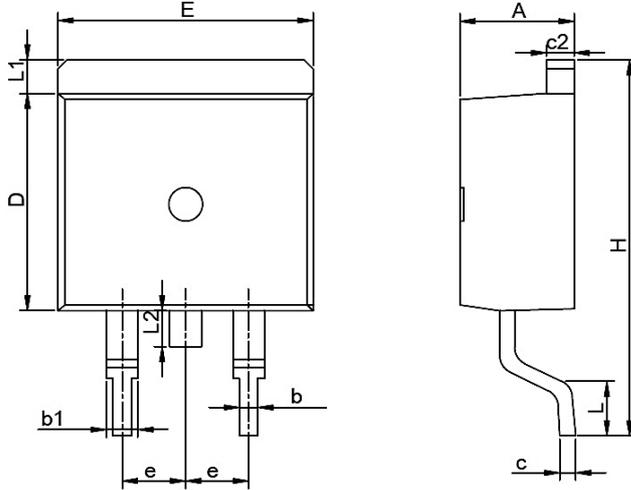


Figure 10. Safe Operation Area

Package Outline Dimensions TO-263 (D²PAK)



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.30 | 4.90 | 0.169 | 0.193 |
| b | 0.70 | 0.95 | 0.028 | 0.037 |
| b1 | 1.07 | 1.50 | 0.042 | 0.059 |
| c | 0.28 | 0.60 | 0.011 | 0.024 |
| c2 | 1.17 | 1.37 | 0.046 | 0.054 |
| D | 8.40 | 9.35 | 0.331 | 0.368 |
| E | 9.80 | 10.45 | 0.386 | 0.411 |
| e | 2.54 BSC | | 0.100 BSC | |
| H | 14.70 | 16.30 | 0.579 | 0.642 |
| L | 2.00 | 3.80 | 0.079 | 0.150 |
| L1 | 0.97 | 1.42 | 0.038 | 0.056 |
| L2 | - | 1.75 | - | 0.069 |

Order Information

| Device | Package | Marking | Carrier | Quantity |
|-------------|-----------------------------|---------|-------------|----------------|
| GSGT2R206AU | TO-263 (D ² PAK) | T2R206 | Tape & Reel | 800 Pcs / Reel |