

250V N-Ch Power MOSFET

| | | | |
|------------------|---------------|-----|-----------|
| V_{DS} | | 250 | V |
| $R_{DS(on),typ}$ | $V_{GS}=10V$ | 180 | $m\Omega$ |
| $R_{DS(on),typ}$ | $V_{GS}=4.5V$ | 190 | $m\Omega$ |
| I_D | | 13 | A |

| | | |
|-------------|---------|------------|
| Part Number | Package | Marking |
| HGP2K4N25ML | TO-220 | GP2K4N25ML |

| Absolute Maximum Ratings at $T_J=25$ (unless otherwise specified) | | | | | |
|---|----------------|-------------------|------------|------|---|
| Parameter | Symbol | Conditions | Value | Unit | |
| Gate to Source Voltage | V_{GS} | - | ± 20 | | |
| | | | 18 | | A |
| Avalanche Energy, Single Pulse | E_{AS} | $L=0.4mH, T_C=25$ | 1.8 | | |
| Power Dissipation | P_D | $T_C=25$ | 88 | | W |
| Operating and Storage Temperature | T_J, T_{stg} | - | -55 to 175 | | |

Absolute Maximum Ratings

| Parameter | Symbol | Max | Unit |
|-------------------------------------|--------|-----|------|
| Thermal Resistance Junction-Case | R | 1.7 | /W |
| Thermal Resistance Junction-Ambient | R | 65 | /W |

Electrical Characteristics at $T_j=25$ (unless otherwise specified)

Static Characteristics

| Parameter | Symbol | Conditions | Value | | | Unit |
|--|--------|---------------------------|-------|-----|-----|-----------|
| | | | min | typ | max | |
| Drain to Source Breakdown Voltage | | $V_{GS}=0V, I_D=250\mu A$ | 250 | - | - | V |
| | | | | 2.1 | 3 | |
| $V_{AS} = V_{AS} - V_{DS} - V_{GS} - V_{th}$ | | | - | | | $m\Omega$ |
| | | | - | 190 | 280 | $m\Omega$ |

Fig 1. Typical Output Characteristics

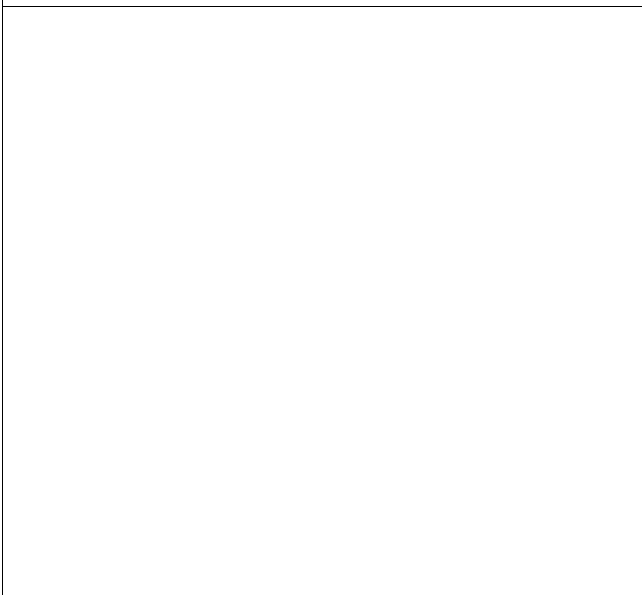


Figure 2. On-Resistance vs. Gate-Source Voltage

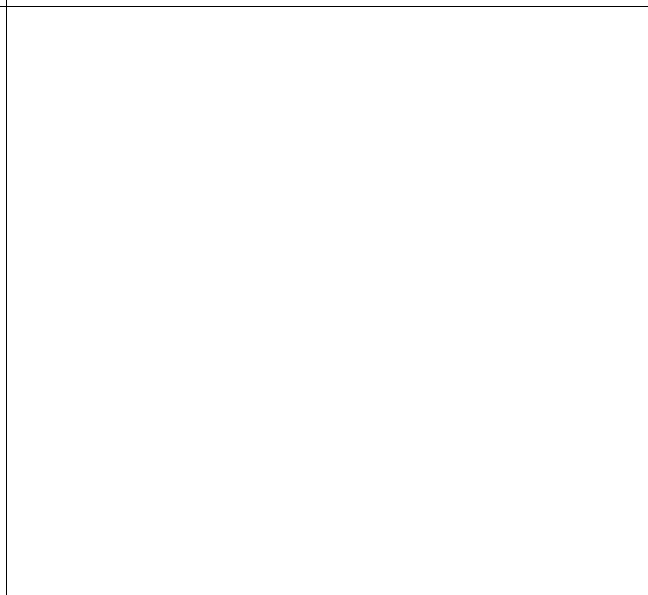


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

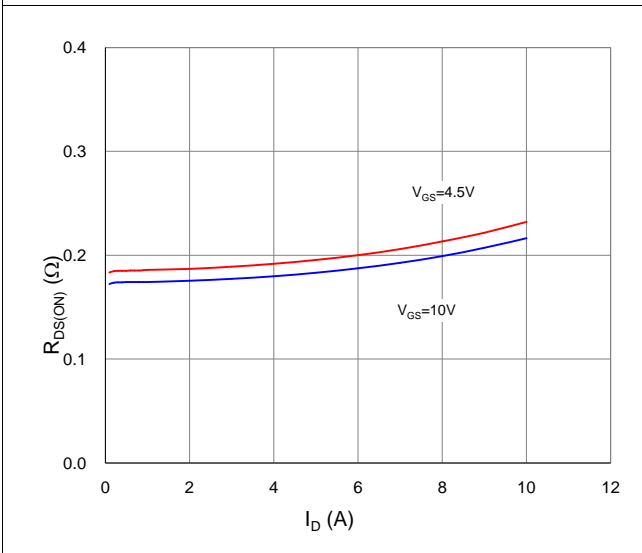


Figure 4. Normalized On-Resistance vs. Junction Temperature

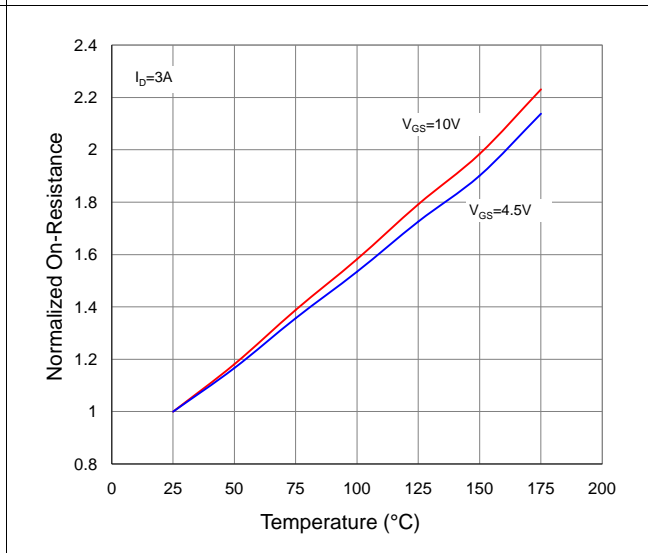


Figure 5. Typical Transfer Characteristics

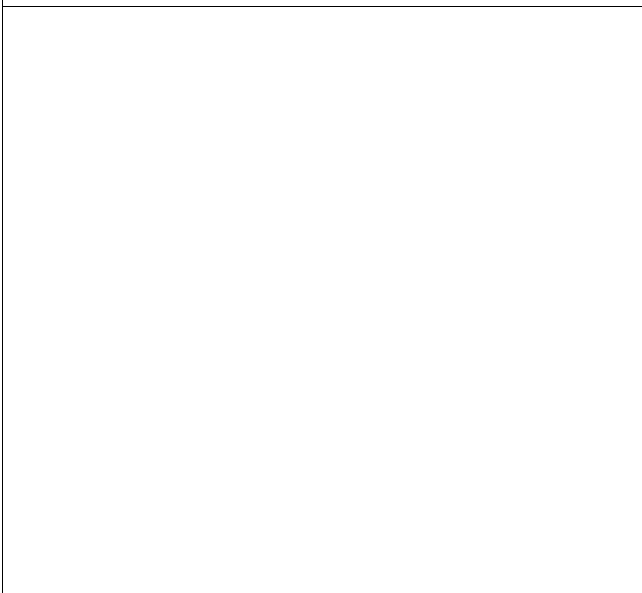


Figure 6. Typical Source-Drain Diode Forward Voltage

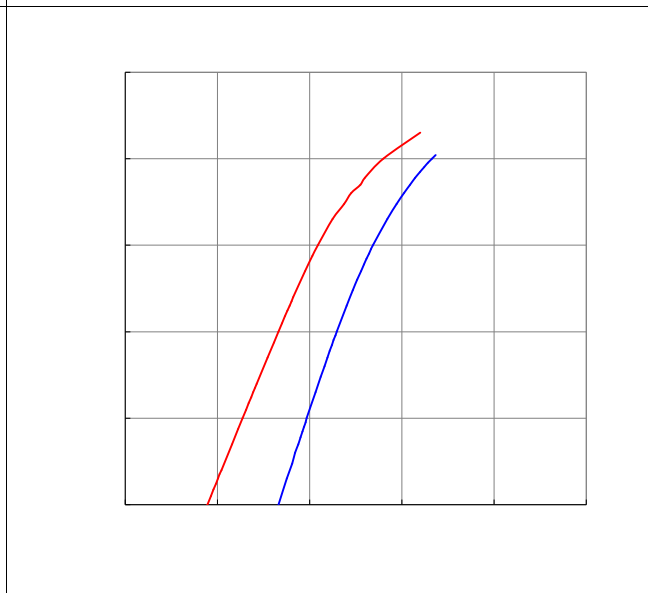


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

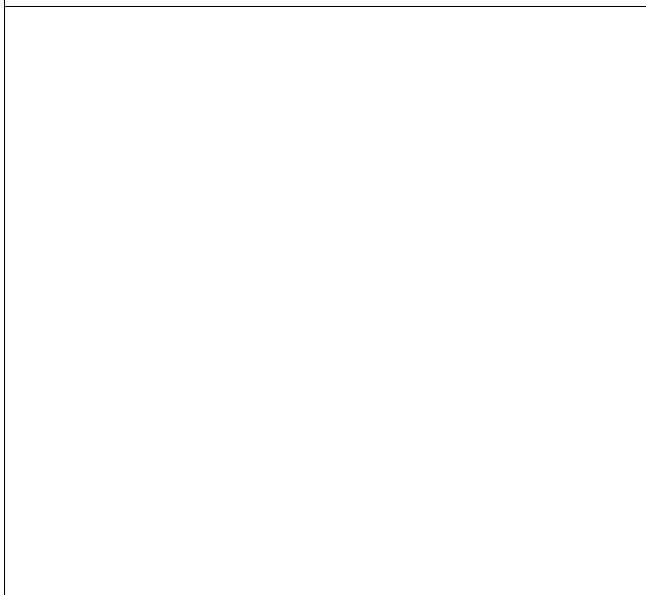


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

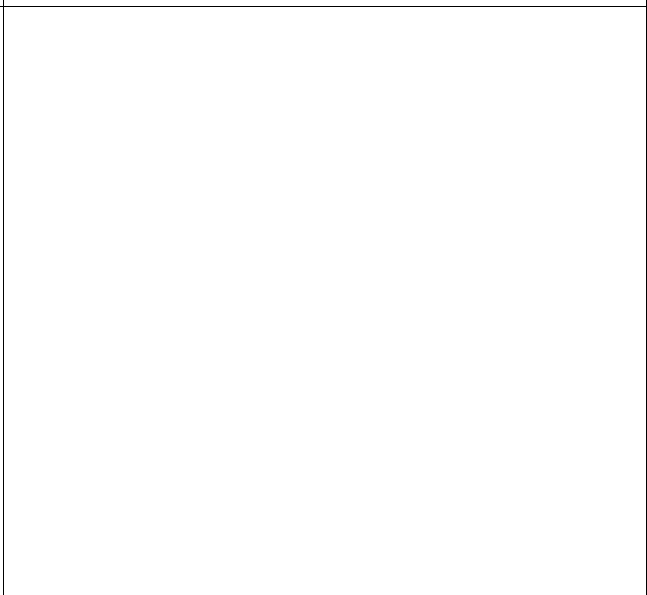


Figure 9. Maximum Safe Operating Area

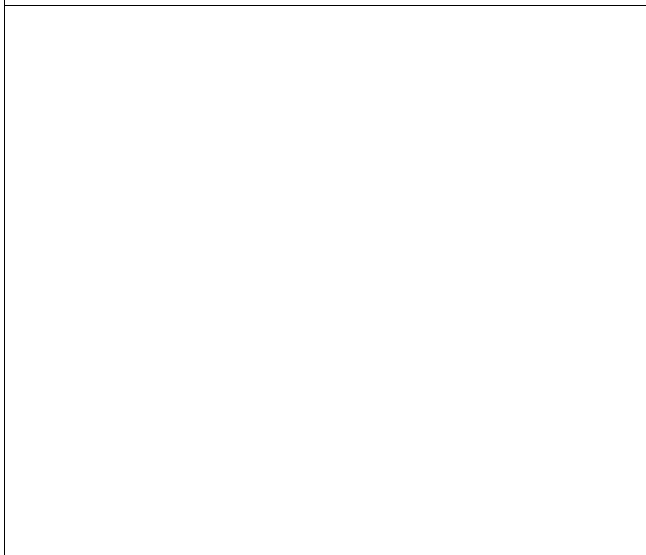


Figure 10. Maximun Drain Current vs. Case Temperature

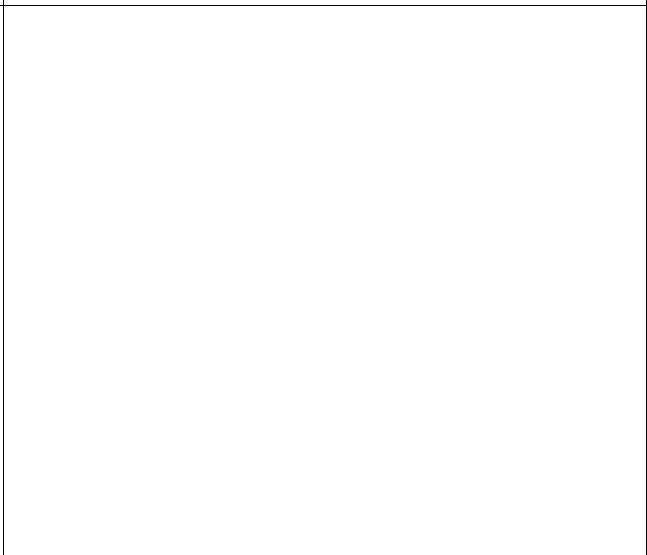
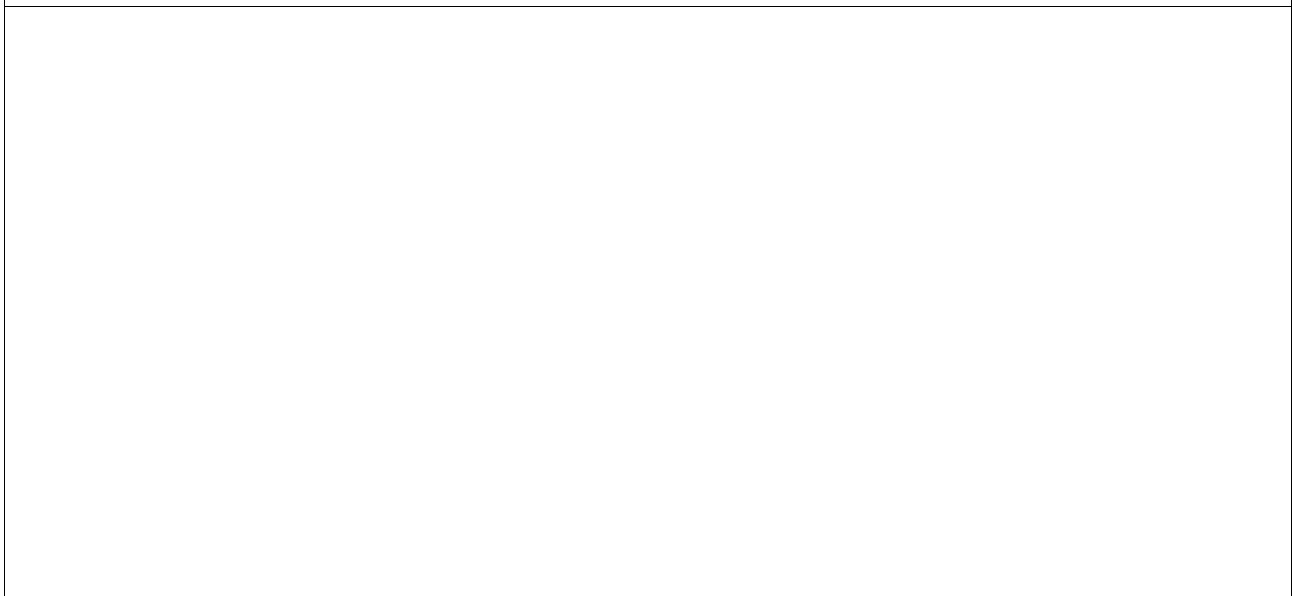
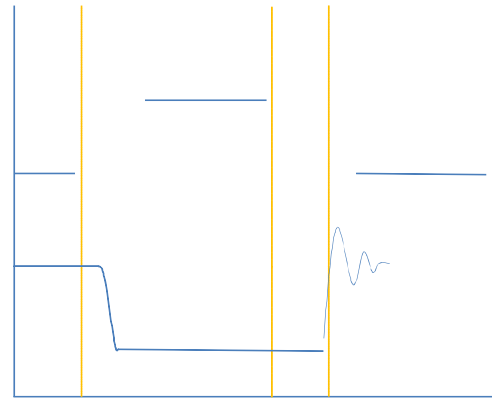


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case

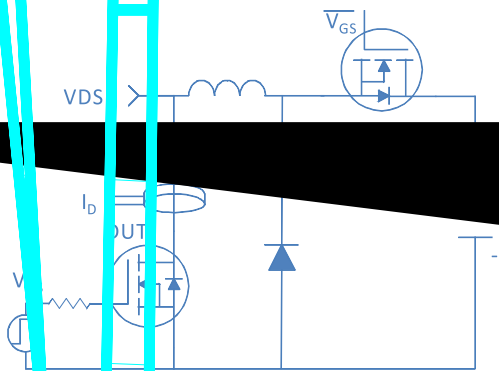


Inductive switching Test



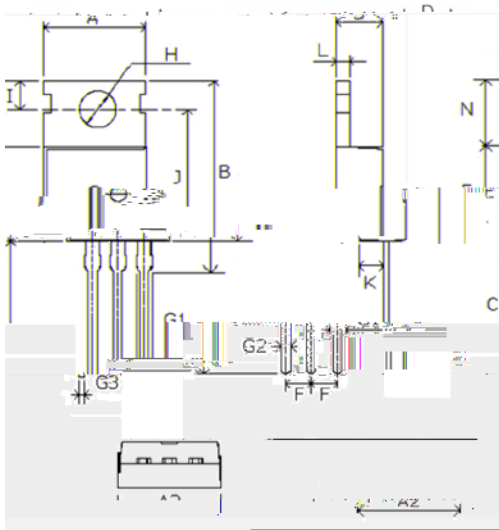
Gate Charge Test

Uclamped Inductive Switching (UIS) Test



Diode Recovery Test

TO-220, 3 leads



Dimensions in mm unless otherwise specified

| Symbol | Min | Nom | Max |
|--------|-------|-------|-------|
| A | 9.66 | 9.97 | 10.28 |
| A2 | 9.80 | 10.00 | 10.20 |
| B | 15.60 | 15.70 | 15.80 |
| C | 12.70 | 13.48 | 14.27 |
| D | 4.30 | 4.50 | 4.70 |
| E | 9.00 | 9.20 | 9.40 |
| F | | 2.54 | |
| G1 | 1.32 | 1.52 | 1.72 |
| G2 | 0.70 | 0.82 | 0.95 |
| G3 | 0.45 | 0.52 | 0.60 |
| H | 3.50 | 3.60 | 3.70 |
| I | 2.70 | 2.80 | 2.90 |
| J | 15.70 | 15.97 | 16.25 |
| K | 2.20 | 2.40 | 2.60 |
| L | 1.15 | 1.27 | 1.40 |
| N | 6.40 | 6.60 | 6.80 |