

G3401

P-CHANNEL ENHANCEMENT MODE POWER MOSFET

| | |
|---------------------|-------|
| BV _{DSS} | -30V |
| R _{DS(ON)} | 50mΩ |
| I _D | -4.2A |

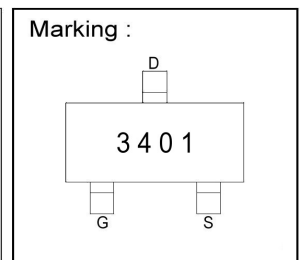
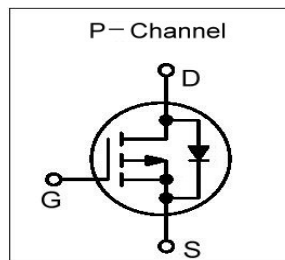
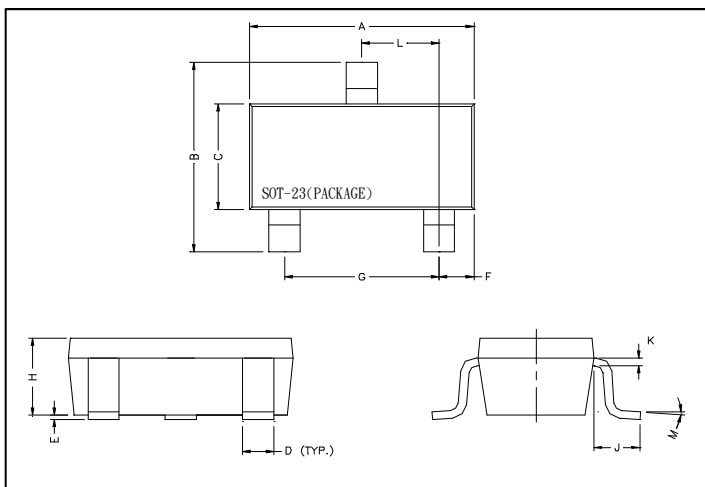
Description

The G3401 uses advanced trench technology to provide excellent on-resistance extremely efficient and cost-effectiveness device.
The G3401 is universally used for all commercial-industrial applications.

Features

- *Lower Gate Charge
- *Small Package Outline
- *RoHS Compliant

Package Dimensions



| REF. | Millimeter | | REF. | Millimeter | |
|------|------------|------|------|------------|------|
| | Min. | Max. | | Min. | Max. |
| A | 2.70 | 3.10 | G | 1.90 | REF. |
| B | 2.40 | 2.80 | H | 1.00 | 1.30 |
| C | 1.40 | 1.60 | K | 0.10 | 0.20 |
| D | 0.35 | 0.50 | J | 0.40 | - |
| E | 0 | 0.10 | L | 0.85 | 1.15 |
| F | 0.45 | 0.55 | M | 0° | 10° |

Absolute Maximum Ratings

| Parameter | Symbol | Ratings | Unit |
|--|-----------------------------------|------------|------|
| Drain-Source Voltage | V _{DS} | -30 | V |
| Gate-Source Voltage | V _{GS} | ±12 | V |
| Continuous Drain Current ³ | I _D @TA=25°C | -4.2 | A |
| Continuous Drain Current ³ | I _D @TA=70°C | -3.5 | A |
| Pulsed Drain Current ¹ | I _{DM} | -30 | A |
| Power Dissipation | P _D @TA=25°C | 1.38 | W |
| Linear Derating Factor | | 0.01 | W/°C |
| Operating Junction and Storage Temperature Range | T _j , T _{stg} | -55 ~ +150 | °C |

Thermal Data

| Parameter | Symbol | Ratings | Unit |
|---|--------------------|---------|------|
| Thermal Resistance Junction-ambient ³ Max. | R _{thj-a} | 90 | °C/W |

Electrical Characteristics (T_j = 25°C unless otherwise specified)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|--|---------------------|------|------|------|------|--|
| Drain-Source Breakdown Voltage | BV _{DSS} | -30 | - | - | V | V _{GS} =0, I _D =-250uA |
| Gate Threshold Voltage | V _{GS(th)} | -0.7 | - | -1.3 | V | V _{DS} =V _{GS} , I _D =-250uA |
| Forward Transconductance | g _{fs} | - | 11 | - | S | V _{DS} =-5V, I _D =-5A |
| Gate-Source Leakage Current | I _{GSS} | - | - | ±100 | nA | V _{GS} = ±12V |
| Drain-Source Leakage Current(T _j =25°C) | I _{DSS} | - | - | -1 | uA | V _{DS} =-24V, V _{GS} =0 |
| Drain-Source Leakage Current(T _j =55°C) | | - | - | -5 | uA | V _{DS} =-24V, V _{GS} =0 |
| Static Drain-Source On-Resistance | R _{DS(ON)} | - | - | 50 | mΩ | V _{GS} =-10V, I _D =-4.2A |
| | | - | - | 65 | | V _{GS} =-4.5V, I _D =-4.0A |
| | | - | - | 120 | | V _{GS} =-2.5V, I _D =-1.0A |
| Total Gate Charge ² | Q _g | - | 9.4 | - | nC | I _D =-4A V _{DS} =-15V V _{GS} =-4.5V |
| Gate-Source Charge | Q _{gs} | - | 2 | - | | |
| Gate-Drain ("Miller") Charge | Q _{gd} | - | 3 | - | | |
| Turn-on Delay Time ² | T _{d(on)} | - | 6.3 | - | ns | V _{DS} =-15V V _{GS} =-10V R _G =6Ω R _L =3.6Ω |
| Rise Time | T _r | - | 3.2 | - | | |
| Turn-off Delay Time | T _{d(off)} | - | 38.2 | - | | |
| Fall Time | T _f | - | 12 | - | | |
| Input Capacitance | C _{iss} | - | 954 | - | pF | V _{GS} =0V V _{DS} =-15V f=1.0MHz |
| Output Capacitance | C _{oss} | - | 115 | - | | |
| Reverse Transfer Capacitance | C _{rss} | - | 77 | - | | |
| Gate Resistance | R _g | - | 6 | - | | |

Source-Drain Diode

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|--|-----------------|------|------|------|------|---|
| Forward On Voltage ² | V _{SD} | - | - | -1.0 | V | I _S =-1.0A, V _{GS} =0V |
| Reverse Recovery Time ² | T _{rr} | - | 20.2 | - | ns | I _S =-4A, V _{GS} =0V di/dt=100A/μs |
| Reverse Recovery Charge | Q _{rr} | - | 11.2 | - | nC | |
| Continuous Source Current (Body Diode) | I _S | - | - | -2.2 | A | V _D =V _G =0V, V _S =-1.0V |

Notes: 1. Pulse width limited by Max. junction temperature.

2. Pulse width ≤ 300us, duty cycle ≤ 2%.

3. Surface mounted on 1 in² copper pad of FR4 board; 270°C/W when mounted on Min. copper pad.

Characteristics Curve

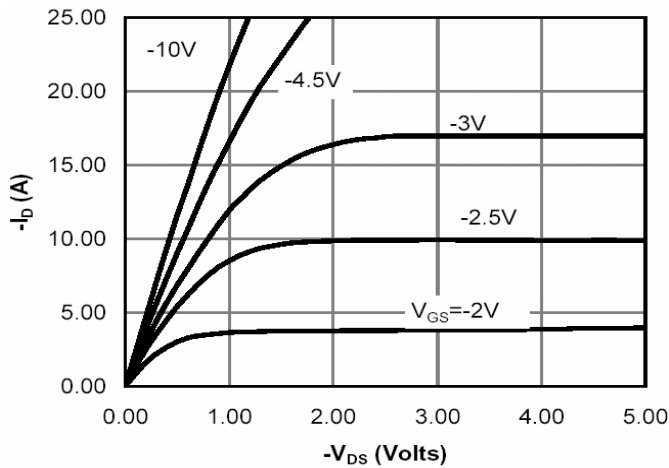


Fig 1. Typical Output Characteristics

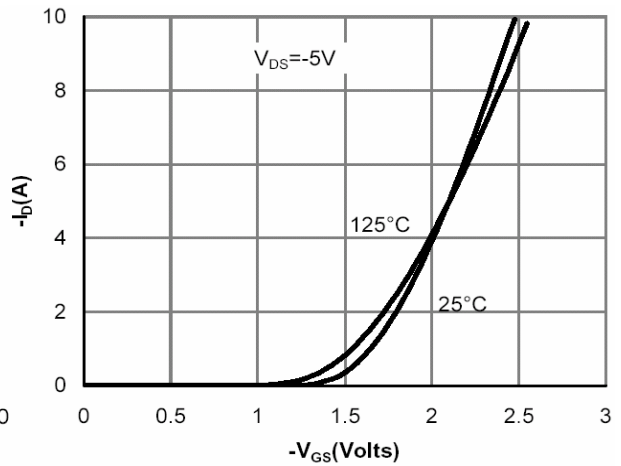


Fig 2. Transfer Characteristics

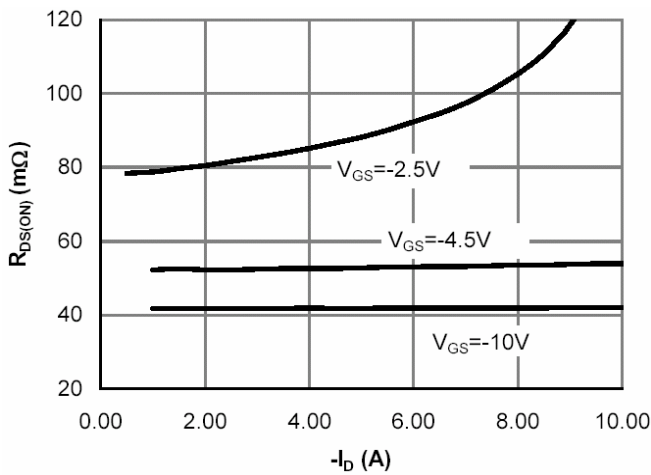


Fig 3. On-Resistance v.s. Drain Current and Gate Voltage

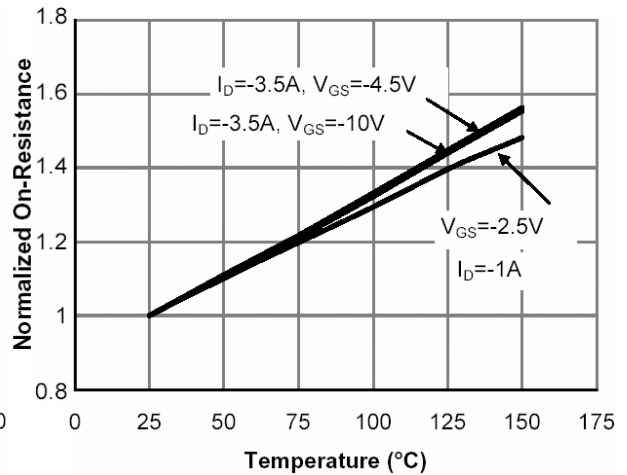


Fig 4. On-Resistance v.s. Junction Temperature

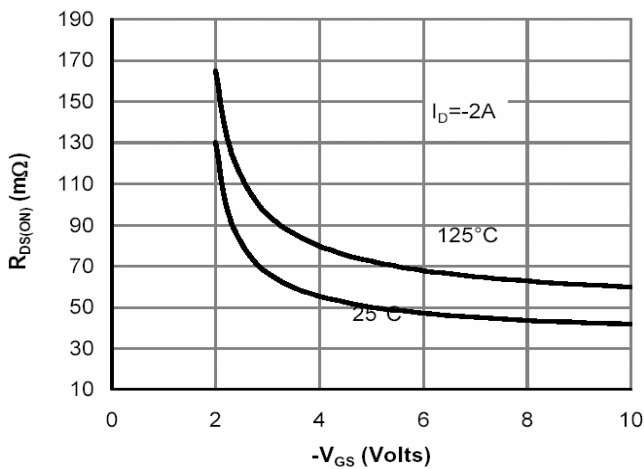


Fig 5. On-Resistance v.s. Gate-Source Voltage

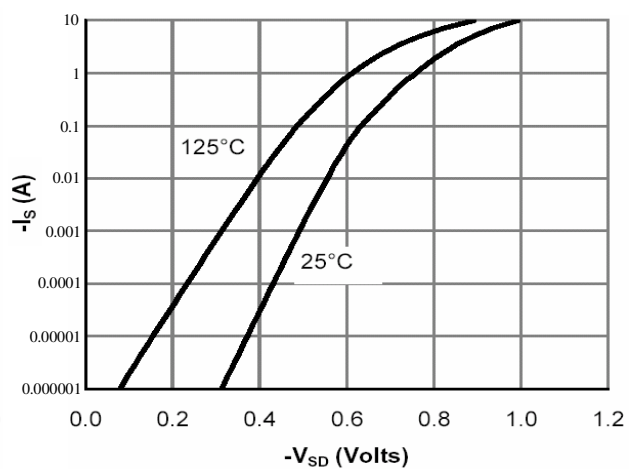


Fig 6. Body Diode Characteristics

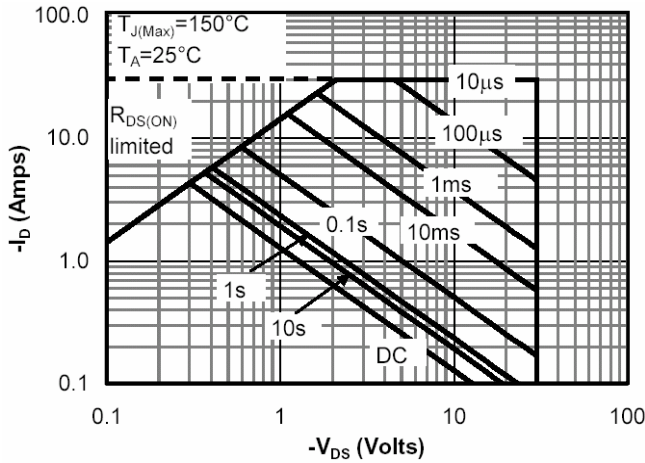


Fig 7. Maximum Safe Operating Area

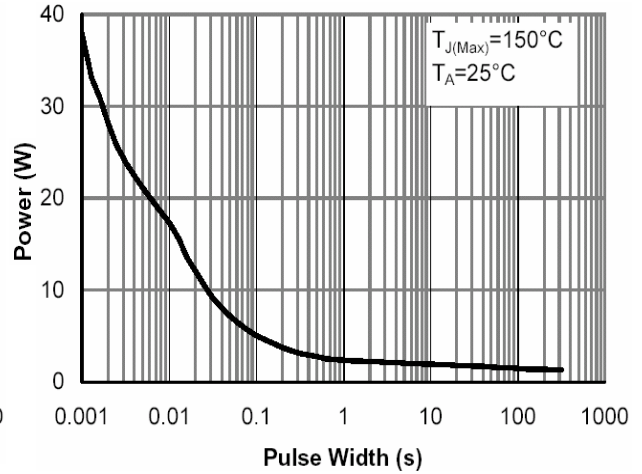


Fig 8. Single Pulse Power Rating Junction-to-Ambient

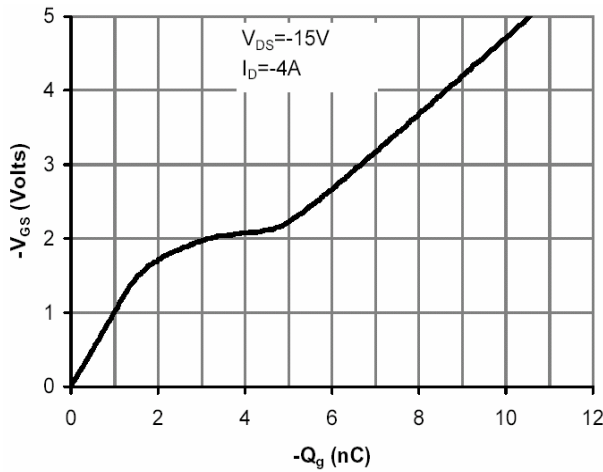


Fig 9. Gate Charge Characteristics

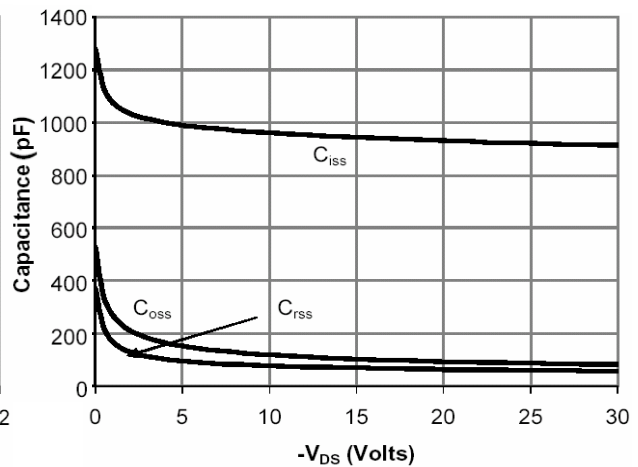


Fig 10. Typical Capacitance Characteristics

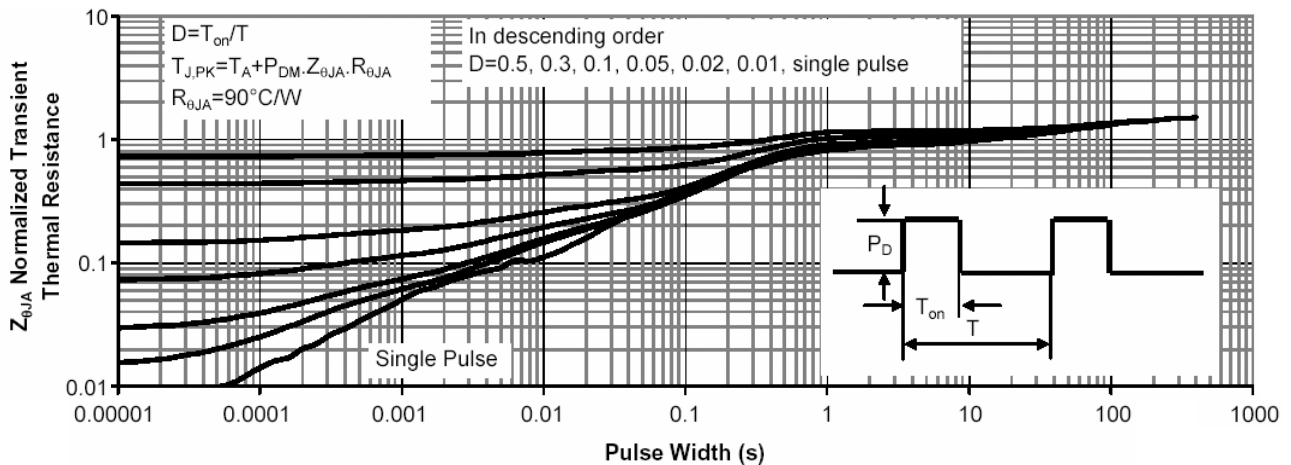


Fig 11. Normalized Maximum Transient Thermal Impedance

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