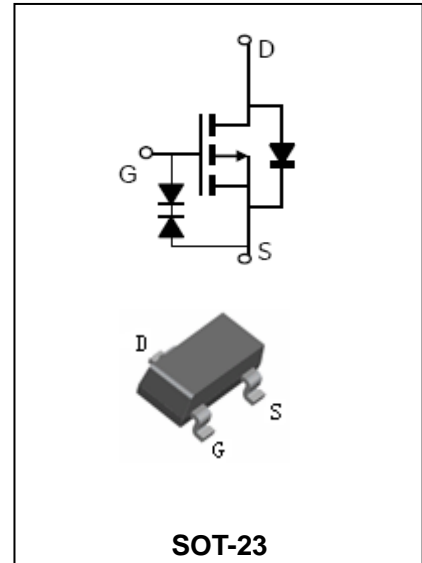


Dual P-Channel Enhancement Mode Field Effect Transistor BL3415

FEATURES

- Electrostatic Sensitive Devices.
- $V_{DS} (V) = -20V$
- $I_D = -4 A$
- $R_{DS(ON)} < 50m\Omega (V_{GS} = -4.5V)$
 $R_{DS(ON)} < 70m\Omega (V_{GS} = -2.5V)$
 $R_{DS(ON)} < 100m\Omega (V_{GS} = -1.8V)$



APPLICATIONS

- P-channel enhancement mode effect transistor.
- Switching application.

ORDERING INFORMATION

| Type No. | Marking | Package Code |
|----------|---------|--------------|
| BL3415 | 3415 | SOT-23 |

MAXIMUM RATING @ Ta=25°C unless otherwise specified

| Symbol | Parameter | Value | Units |
|-----------------|---|--|-------|
| V_{DSS} | Drain-Source voltage | -20 | V |
| V_{GSS} | Gate -Source voltage | ± 8 | V |
| I_D | Continuous Drain Current ^A | @ TA = 25 °C -4.0 @ TA = 70 °C -3.5 | A |
| I_{DM} | Pulsed Drain Current ^a | -30 | A |
| P_D | Power Dissipation | @ TA = 25 °C 1.4 @ TA = 70 °C 0.9 | W |
| $R_{\theta JA}$ | Thermal resistance, Junction-to-Ambient | 90 | °C/W |
| T_J, T_{stg} | Junction and Storage Temperature | -55 to +150 | °C |

Dual P-Channel Enhancement Mode Field Effect Transistor BL3415

ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

| Parameter | Symbol | Test conditions | MIN | TYP | MAX | UNIT |
|--|--------------|---|-------------|----------------|---------------------|-----------|
| STATIC PARAMETERS | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=-250\mu A$ | -20 | - | - | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=-20, V_{GS}=0V$ | - | - | -1 | μA |
| Gate-body Leakage | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 4.5V$ $V_{DS}=0V, V_{GS}=\pm 8V$ | - | - | ± 1 ± 10 | μA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=-250\mu A$ | -0.3 | -0.55 | -1 | V |
| On state drain current | I_{DON} | $V_{DS}=-5V, V_{GS}=-4.5V$ | -25 | - | - | A |
| Static drain-Source on-resistance | $R_{DS(on)}$ | $V_{GS}=-4.5V, I_D=-4A$ $V_{GS}=-2.5V, I_D=-4A$ $V_{GS}=-1.8V, I_D=-2A$ | - - - | 40 55 85 | 50 70 100 | $m\Omega$ |
| Forward Transconductance | g_{FS} | $V_{DS}=-5V, I_D=-4A$ | 8 | 16 | - | S |
| Drain-Source diode forward voltage | V_{SD} | $V_{GS}=0V, I_s=-1A$ | - | -0.78 | -1 | V |
| Maximum Body-Diode Continuous Current | I_s | | - | - | -2.2 | A |
| DYNAMIC CHARACTERISTICS^C | | | | | | |
| Input capacitance | C_{ISS} | $V_{DS}=-10V, V_{GS}=0V, f=1.0MHz$ | - | 1450 | - | μF |
| Output capacitance | C_{OSS} | | - | 205 | - | |
| Reverse transfer capacitance | C_{RSS} | | - | 160 | - | |
| Gate resistance | R_g | $V_{DS}=0V, V_{GS}=0V, f=1.0MHz$ | | 6.5 | | Ω |
| SWITCHING CHARACTERISTICS^C | | | | | | |
| Turn-On Delay Time | $t_{D(ON)}$ | $V_{DS} = -10V,$ | - | 9.5 | - | ns |
| Rise Time | t_r | $R_L = 2.5\Omega,$ | - | 17 | - | ns |
| Turn-Off Delay Time | $t_{D(OFF)}$ | $V_{GS} = -4.5V,$ | - | 94 | - | ns |
| Fall Time | t_f | $R_{GEN} = 3\Omega$ | - | 35 | - | ns |
| Total Gate Charge | Q_g | $V_{DS} = -10V$ | - | 17.2 | - | nC |
| Gate-Source Charge | Q_{gs} | $I_D = -4A$ | - | 1.3 | - | nC |
| Gate-Drain Charge | Q_{gd} | $V_{GS} = -4.5V,$ | - | 4.5 | - | nC |
| Body Diode Reverse Recovery Time | t_{rr} | $I_F = -4A, dI/dt = 100A/\mu s$ | - | 31 | - | ns |
| Body Diode Reverse Recovery Charge | Q_{rr} | $I_F = -4A, dI/dt = 100A/\mu s$ | - | 13.8 | - | nC |

Dual P-Channel Enhancement Mode Field Effect Transistor BL3415

TYPICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

Dual P-Channel Enhancement Mode Field Effect Transistor BL3415

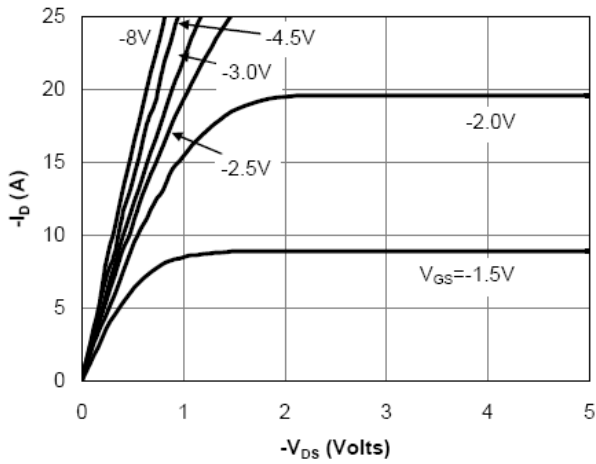


Fig 1: On-Region Characteristics

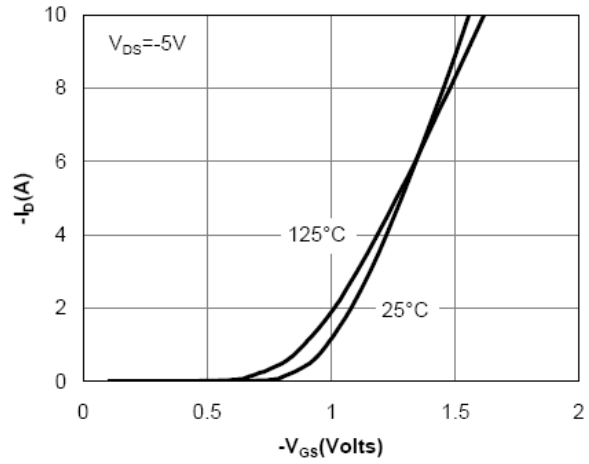


Figure 2: Transfer Characteristics

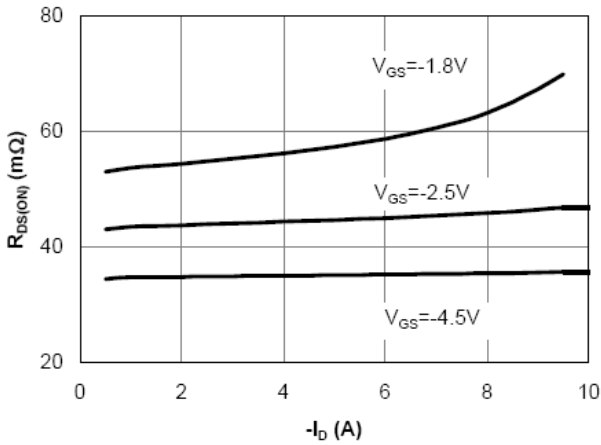


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

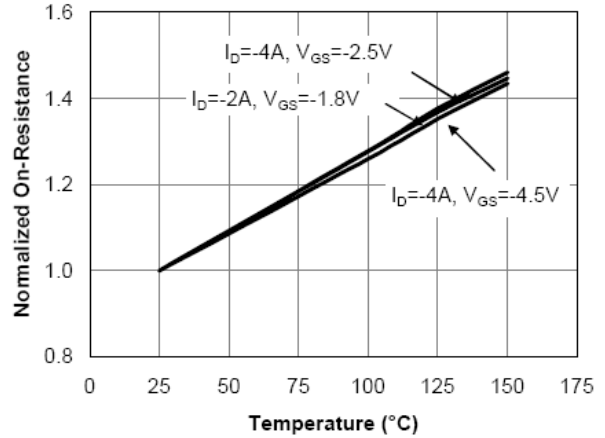


Figure 4: On-Resistance vs. Junction Temperature

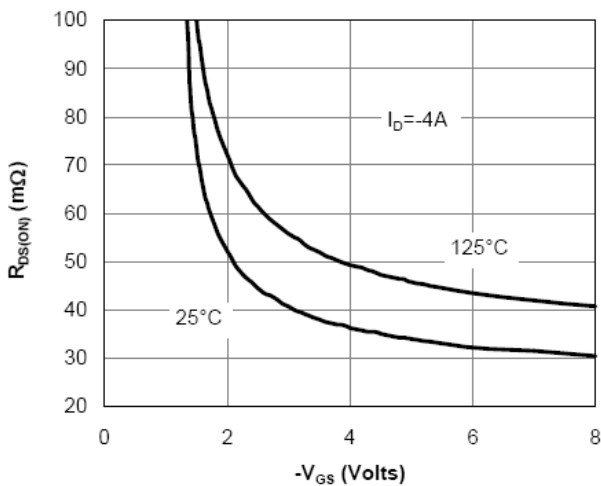


Figure 5: On-Resistance vs. Gate-Source Voltage

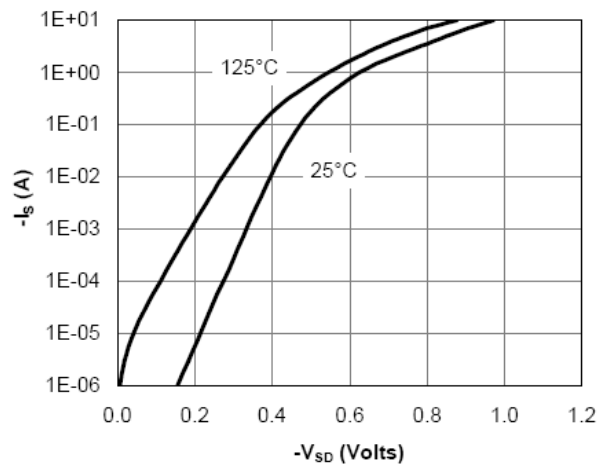


Figure 6: Body-Diode Characteristics

Dual P-Channel Enhancement Mode Field Effect Transistor BL3415

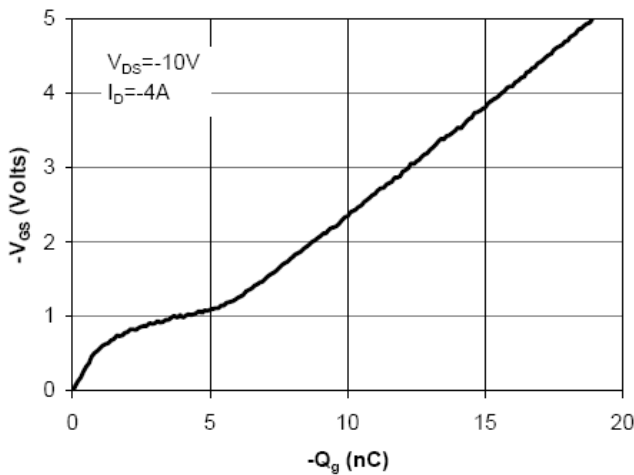


Figure 7: Gate-Charge Characteristics

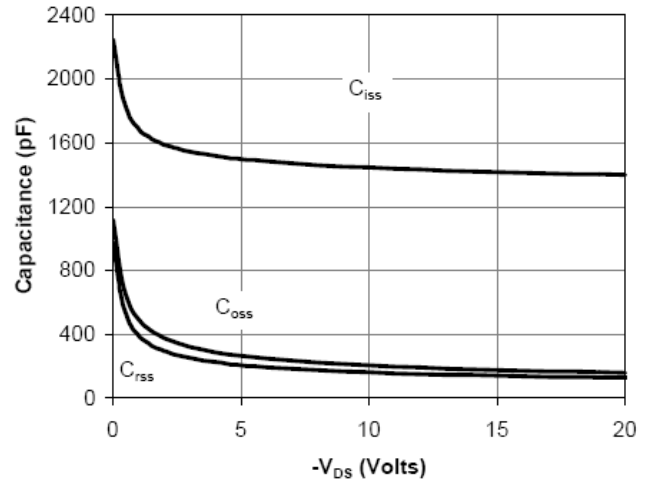


Figure 8: Capacitance Characteristics

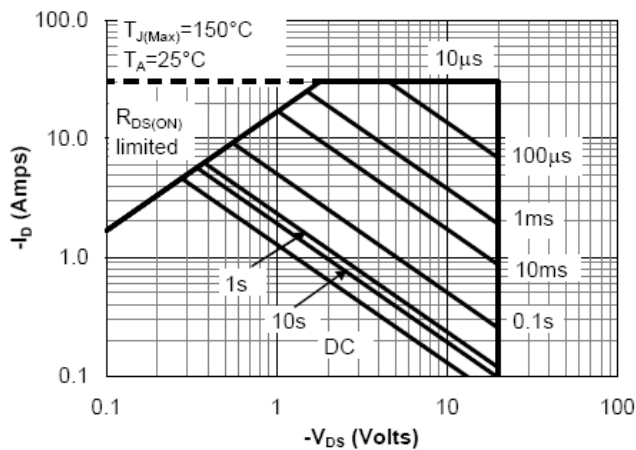


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

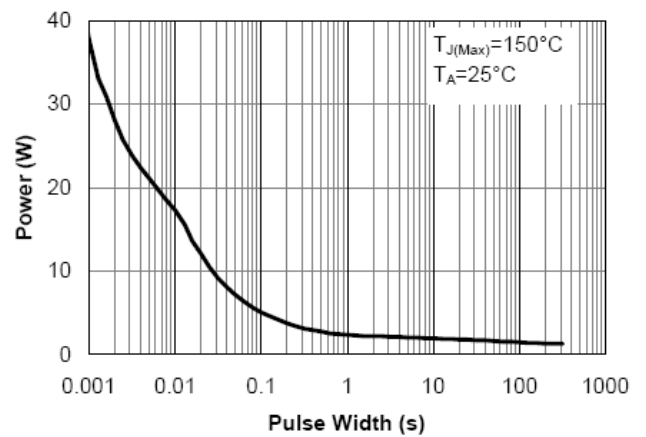


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

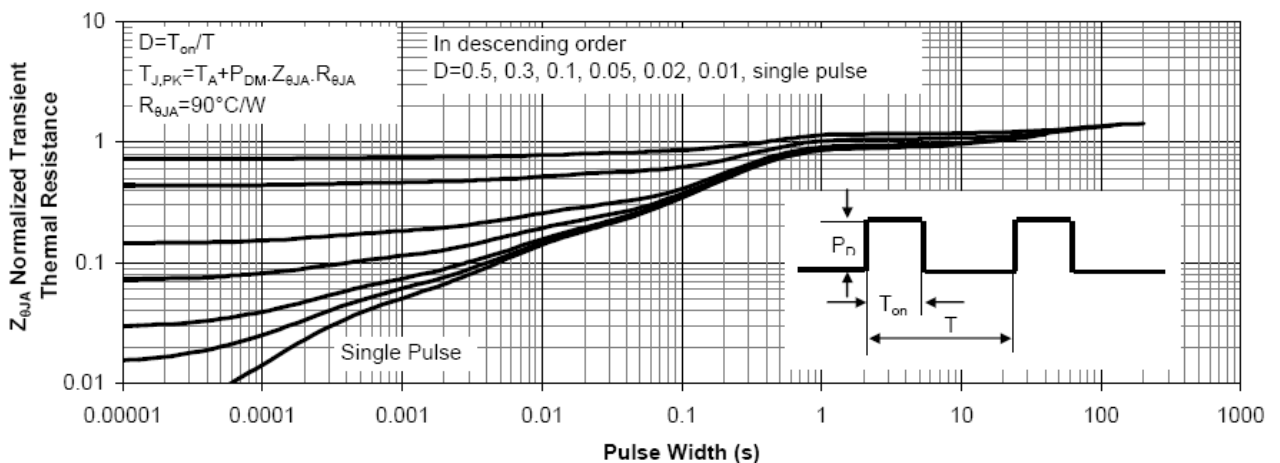


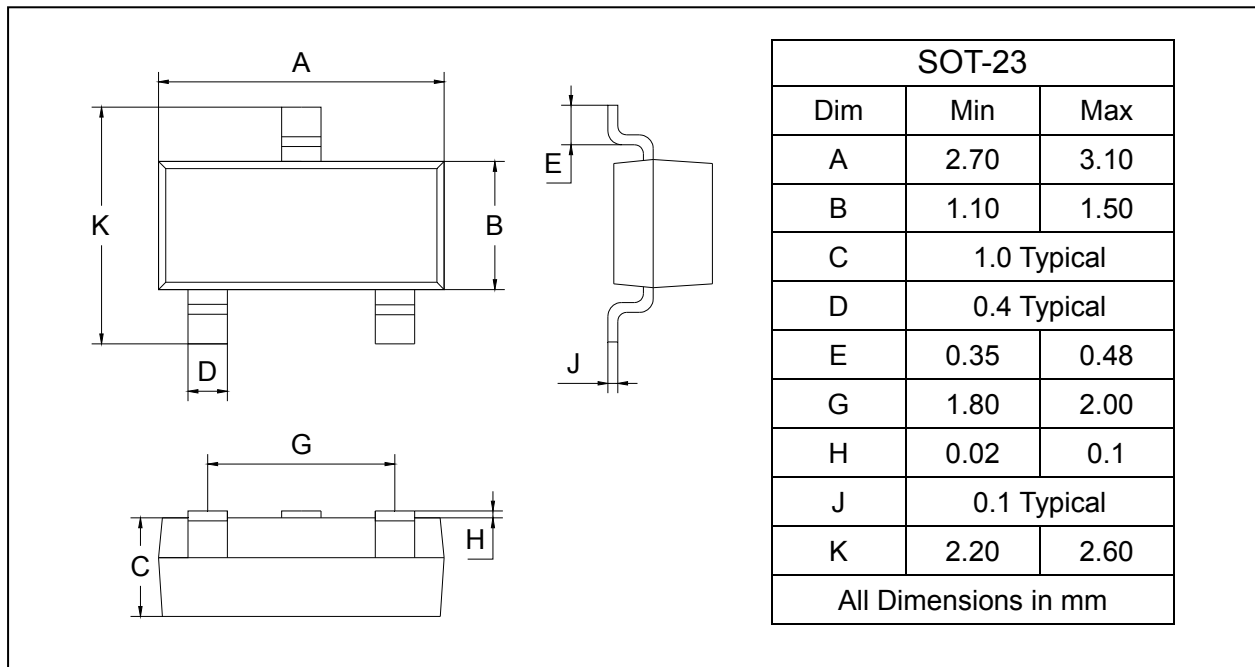
Figure 11: Normalized Maximum Transient Thermal Impedance

Dual P-Channel Enhancement Mode Field Effect Transistor BL3415

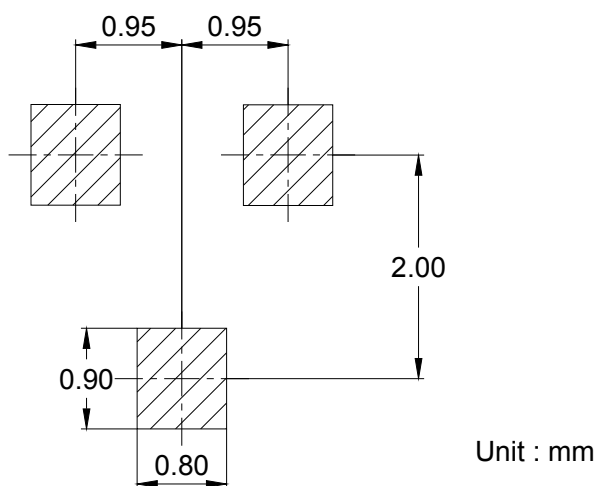
PACKAGE OUTLINE

Plastic surface mounted package

SOT-23



SOLDERING FOOTPRINT



PACKAGE INFORMATION

| Device | Package | Shipping |
|--------|---------|----------------|
| BL3415 | SOT-23 | 3000/Tape&Reel |