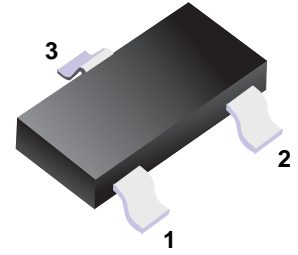


AO3415

■ P-Channel MOSFET

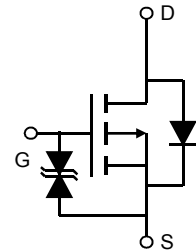


- 1. Gate
- 2. Source
- 3. Drain

■ Features

- $V_{DS} (V) = -20V$
- $I_D = -5 A (V_{GS} = -4.5V)$
- $R_{DS(ON)} < 43m\Omega (V_{GS} = -4.5V)$
- $R_{DS(ON)} < 55m\Omega (V_{GS} = -2.5V)$
- $R_{DS(ON)} < 75m\Omega (V_{GS} = -1.8V)$
- $R_{DS(ON)} < 100m\Omega (V_{GS} = -1.5V)$

■ Simplified outline(SOT23-3L)



■ Absolute Maximum Ratings $T_a = 25^\circ C$

| Parameter | Symbol | Rating | Unit |
|---|------------------|------------|--------------|
| Drain-Source Voltage | V_{DS} | -20 | V |
| Gate-Source Voltage | V_{GS} | ± 8 | |
| Continuous Drain Current | $T_A=25^\circ C$ | -5 | A |
| | $T_A=70^\circ C$ | -4 | |
| Pulsed Drain Current | I_{DM} | -30 | |
| Power Dissipation | $T_A=25^\circ C$ | 1.5 | W |
| | $T_A=70^\circ C$ | 1 | |
| Thermal Resistance.Junction- to-Ambient | $t \leq 10s$ | 80 | $^\circ C/W$ |
| | Steady-State | 100 | |
| Thermal Resistance.Junction- to-Lead | R_{thJL} | 52 | |
| Junction Temperature | T_J | 150 | $^\circ C$ |
| Junction Storage Temperature Range | T_{stg} | -55 to 150 | |

■ Electrical Characteristics Ta = 25°C

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---------------------------------------|---------------------|---|------|-----|------|------|
| Drain-Source Breakdown Voltage | V _{DSS} | I _D =-250 μ A, V _{GS} =0V | -20 | | | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =-20V, V _{GS} =0V | | | -1 | μA |
| | | V _{DS} =-20V, V _{GS} =0V, T _J =55°C | | | -5 | |
| Gate-Body leakage current | I _{GSS} | V _{DS} =0V, V _{GS} =±8V | | | ±10 | μA |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} I _D =-250 μ A | -0.3 | | -0.9 | V |
| Static Drain-Source On-Resistance | R _{DS(on)} | V _{GS} =-4.5V, I _D =-4A | | | 43 | mΩ |
| | | V _{GS} =-4.5V, I _D =-4A T _J =125°C | | | 59 | |
| | | V _{GS} =-2.5V, I _D =-4A | | | 55 | |
| | | V _{GS} =-1.8V, I _D =-2A | | | 75 | |
| | | V _{GS} =-1.5V, I _D =-1A | | | 100 | |
| On state drain current | I _{D(ON)} | V _{GS} =-4.5V, V _{DS} =-5V | -30 | | | A |
| Forward Transconductance | g _{FS} | V _{DS} =-5V, I _D =-4 A | | 20 | | S |
| Input Capacitance | C _{iss} | V _{GS} =0V, V _{DS} =-10V, f=1MHz | 600 | | 905 | pF |
| Output Capacitance | C _{oss} | | 80 | | 150 | |
| Reverse Transfer Capacitance | C _{rss} | | 48 | | 115 | |
| Gate resistance | R _g | V _{GS} =0V, V _{DS} =0V, f=1MHz | 6 | | 20 | Ω |
| Total Gate Charge | Q _g | V _{GS} =-4.5V, V _{DS} =-10V, I _D =-4A | 7.4 | | 11 | nC |
| Gate Source Charge | Q _{gs} | | 0.8 | | 1.2 | |
| Gate Drain Charge | Q _{gd} | | 1.3 | | 3.1 | |
| Turn-On DelayTime | t _{d(on)} | V _{GS} =-4.5V, V _{DS} =-10V, R _L =2.5Ω, R _{GEN} =3Ω | | 13 | | ns |
| Turn-On Rise Time | t _r | | | 9 | | |
| Turn-Off DelayTime | t _{d(off)} | | | 19 | | |
| Turn-Off Fall Time | t _f | | | 29 | | |
| Body Diode Reverse Recovery Time | t _{rr} | I _F =-4A, di/dt=100A/μ s | 20 | | 32 | nC |
| Body Diode Reverse Recovery Charge | Q _{rr} | | 40 | | 62 | |
| Maximum Body-Diode Continuous Current | I _S | | | | -2 | A |
| Diode Forward Voltage | V _{SD} | I _S =-1A, V _{GS} =0V | | | -1 | V |

* The static characteristics in Figures 1 to 6 are obtained using <300us pulses, duty cycle 0.5% max.

■ Typical Characteristics

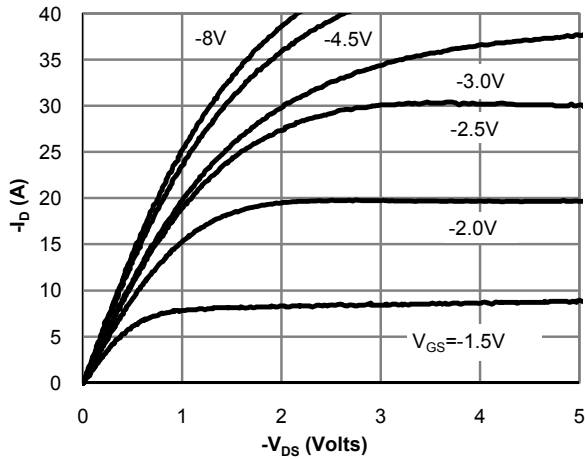


Figure 1: On-Region Characteristics (Note E)

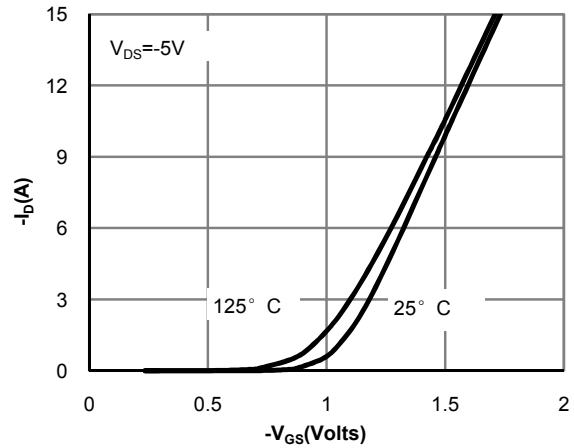


Figure 2: Transfer Characteristics (Note E)

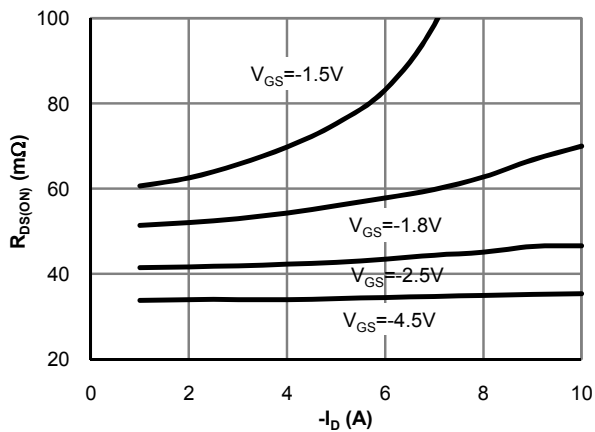


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

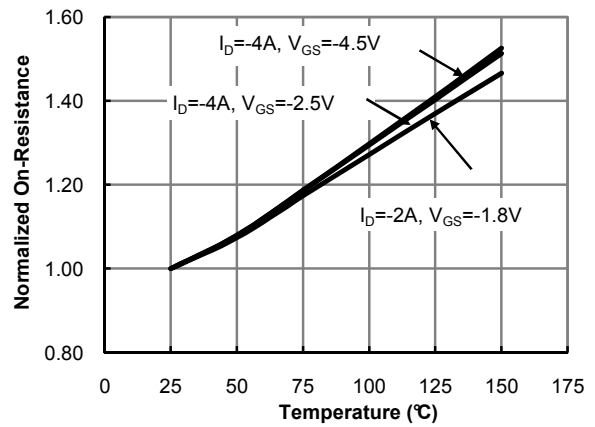


Figure 4: On-Resistance vs. Junction Temperature (Note E)

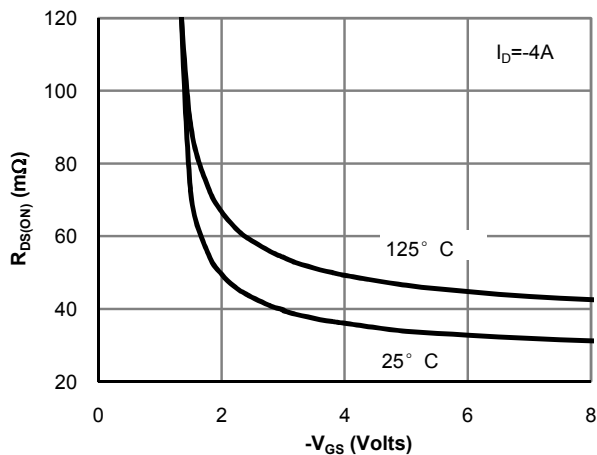


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

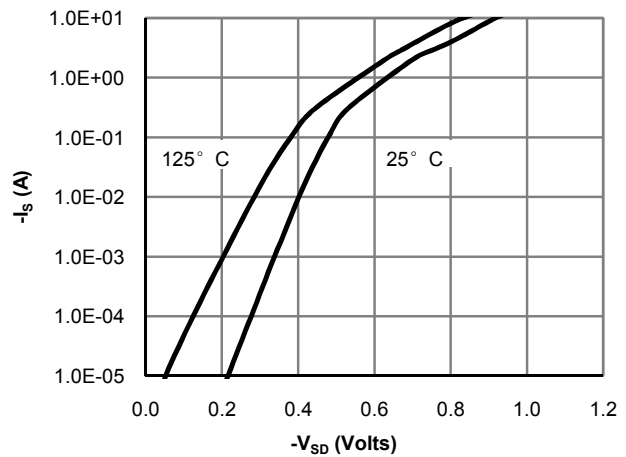


Figure 6: Body-Diode Characteristics (Note E)

■ Typical Characteristics

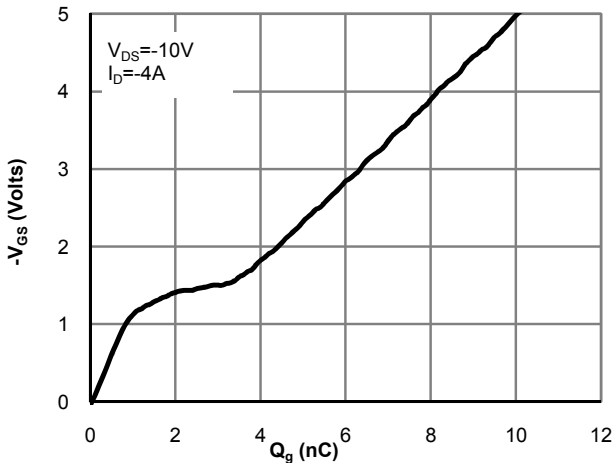


Figure 7: Gate-Charge Characteristics

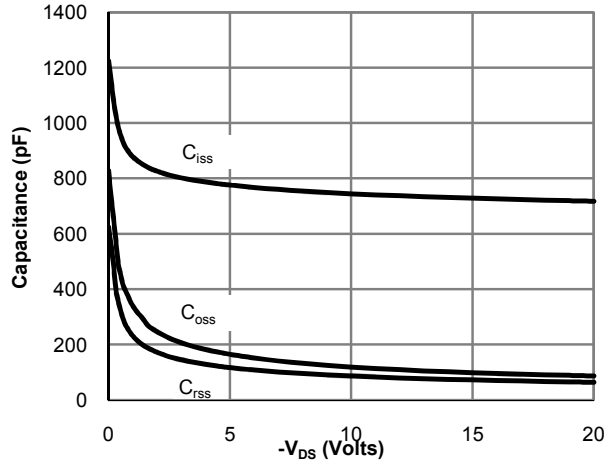


Figure 8: Capacitance Characteristics

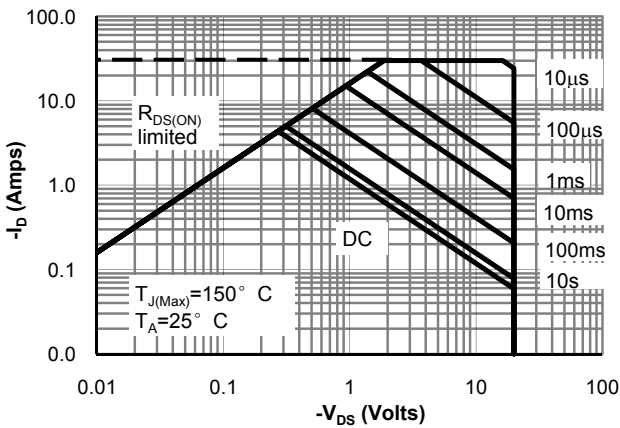


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

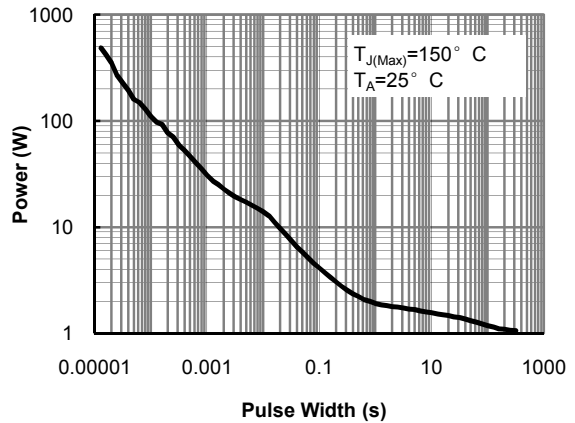


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

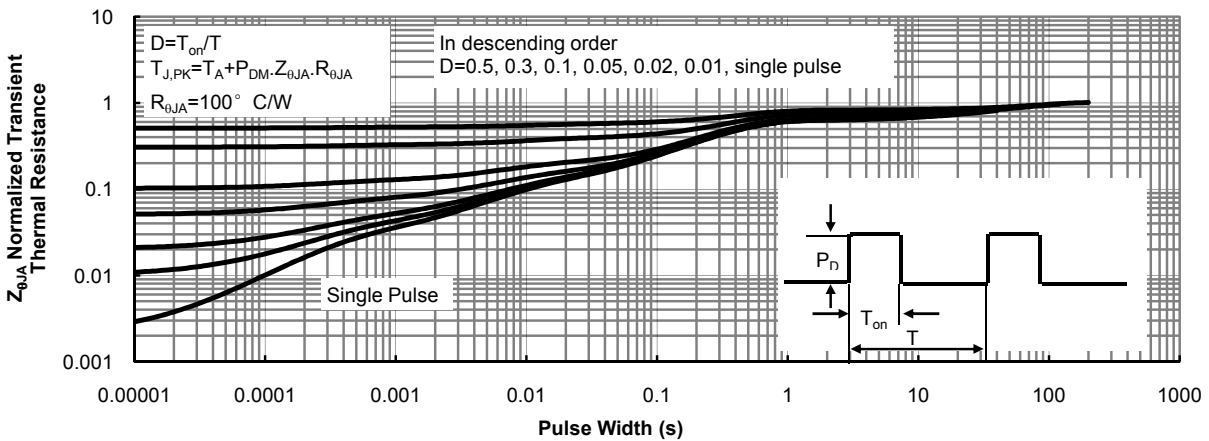
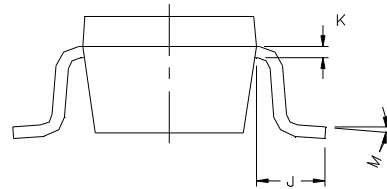
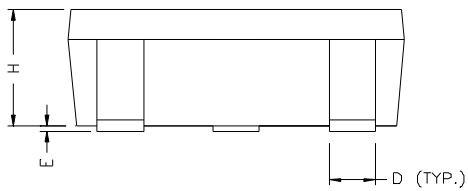
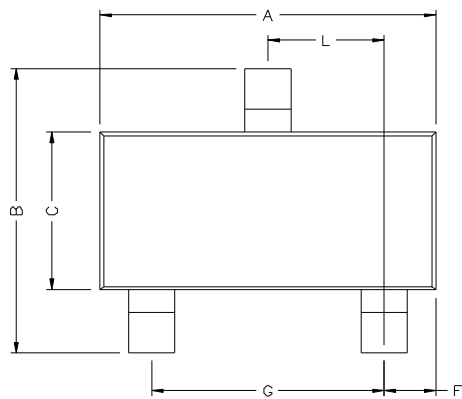


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

■ SOT23-3L



DIMENSIONS (mm are the original dimensions)

| UNIT | A | B | C | D | E | F | G | H | K | J | L | M |
|------|------|------|------|------|------|------|-----|------|------|------|------|-----|
| mm | 2.70 | 2.65 | 1.50 | 0.35 | 0 | 0.45 | 1.9 | 1.00 | 0.10 | 0.40 | 0.85 | 0° |
| | 3.10 | 2.95 | 1.70 | 0.50 | 0.10 | 0.55 | | 1.30 | 0.20 | - | 1.15 | 10° |