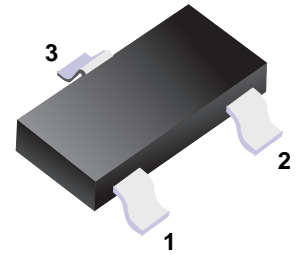


AO3423

■ P-Channel Enhancement MOSFET

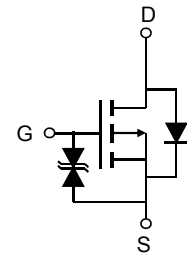


- 1. Gate
- 2. Source
- 3. Drain

■ Features

- $V_{DS} (V) = -20V$
- $I_D = -2.0 A (V_{GS} = -10V)$
- $R_{DS(ON)} < 92m\Omega (V_{GS} = -10V)$
- $R_{DS(ON)} < 118m\Omega (V_{GS} = -4.5V)$
- $R_{DS(ON)} < 166m\Omega (V_{GS} = -2.5V)$

■ 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} | ± 12 | | |
| Continuous Drain Current | I_D | $T_a = 25^\circ C$ | -2 | A |
| | | $T_a = 70^\circ C$ | -2 | |
| Pulsed Drain Current (Note.1) | I_{DM} | -17 | | |
| Power Dissipation (Note.2) | P_D | $T_a = 25^\circ C$ | 1.4 | W |
| | | $T_a = 70^\circ C$ | 0.9 | |
| Thermal Resistance.Junction- to-Ambient | R_{thJA} | $t \leq 10 s$ | 90 | $^\circ C/W$ |
| | | Steady State | 125 | |
| Thermal Resistance.Junction- to-Lead | R_{thJL} | 60 | | |
| Junction Temperature | T_J | 150 | $^\circ C$ | |
| Junction and Storage Temperature Range | T_{stg} | -55 to 150 | | |

Note.1: Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)} = 150^\circ C$. Ratings are based on low frequency and duty cycles to keep initial $T_J = 25^\circ C$.

Note.2: The power dissipation P_D is based on $T_{J(MAX)} = 150^\circ C$, using $\leq 10s$ junction-to-ambient thermal resistance.

■ Electrical Characteristics Ta = 25°C

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---------------------------------------|---------------------|---|------|-------|------|------|
| Drain-Source Breakdown Voltage | V _{DSS} | I _D =-250 μA, V _{GS} =0V | -20 | | | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _D =-20V, V _{GS} =0V | | | -1 | μA |
| | | V _D =-20V, V _{GS} =0V, T _J =55°C | | | -5 | |
| Gate-Body leakage current | I _{GSS} | V _D =0V, V _{GS} =±12V | | | ±10 | uA |
| Gate Threshold Voltage | V _{GS(th)} | V _D =V _{GS} I _D =-250 μA | -0.5 | -0.85 | -1.2 | V |
| Static Drain-Source On-Resistance | R _{DS(on)} | V _{GS} =-10V, I _D =-2A | | 76 | 92 | mΩ |
| | | V _{GS} =-10V, I _D =-2A T _J =125°C | | 99 | 119 | |
| | | V _{GS} =-4.5V, I _D =-2A | | 94 | 118 | |
| | | V _{GS} =-2.5V, I _D =-1A | | 128 | 166 | |
| On state drain current | I _{D(on)} | V _{GS} =-4.5V, V _D =-5V | -17 | | | A |
| Forward Transconductance | g _{FS} | V _D =-5V, I _D =-2A | | 6.8 | | S |
| Input Capacitance | C _{iss} | V _{GS} =0V, V _D =-10V, f=1MHz | 250 | 325 | 400 | pF |
| Output Capacitance | C _{oss} | | 40 | 63 | 85 | |
| Reverse Transfer Capacitance | C _{rss} | | 22 | 37 | 52 | |
| Gate resistance | R _g | V _{GS} =0V, V _D =0V, f=1MHz | | 11.2 | 17 | Ω |
| Total Gate Charge | Q _g | V _{GS} =-4.5V, V _D =-10V, I _D =-2A | | 3.2 | 4.5 | nC |
| Gate Source Charge | Q _{gs} | | 0.6 | | | |
| Gate Drain Charge | Q _{gd} | | 0.9 | | | |
| Turn-On DelayTime | t _{d(on)} | V _{GS} =-10V, V _D =-10V, R _L =5 Ω, R _{GEN} =3 Ω | | 11 | | ns |
| Turn-On Rise Time | t _r | | | 5.5 | | |
| Turn-Off DelayTime | t _{d(off)} | | | 22 | | |
| Turn-Off Fall Time | t _f | | | 8 | | |
| Body Diode Reverse Recovery Time | t _{rr} | I _F =-2A, di/dt=100A/μs | | 6.1 | | nC |
| Body Diode Reverse Recovery Charge | Q _{rr} | | | 1.4 | | |
| Maximum Body-Diode Continuous Current | I _S | | | | -1.5 | A |
| Diode Forward Voltage | V _{SD} | I _S =-1.0A, V _{GS} =0V | | -0.76 | -1 | V |

■ Typical Characteristics

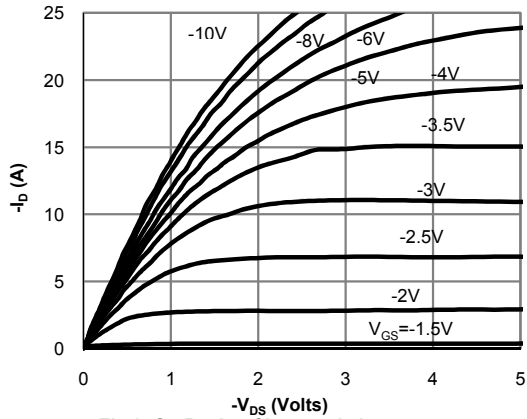


Fig 1: On-Region Characteristics

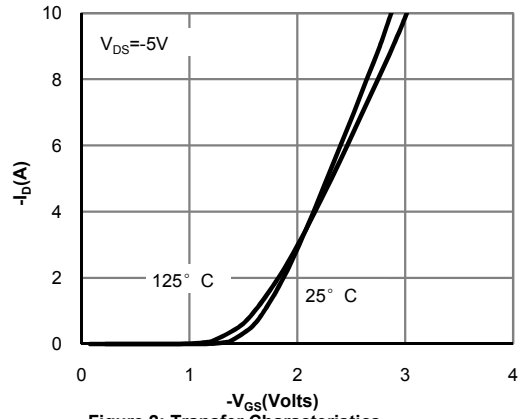


Figure 2: Transfer Characteristics

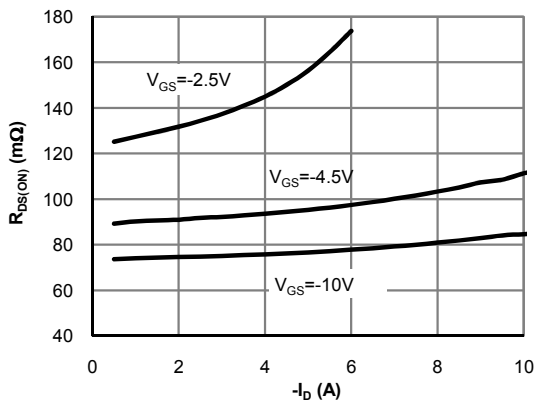


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

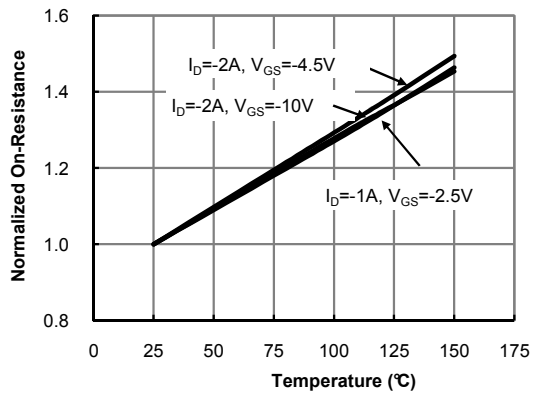


Figure 4: On-Resistance vs. Junction Temperature

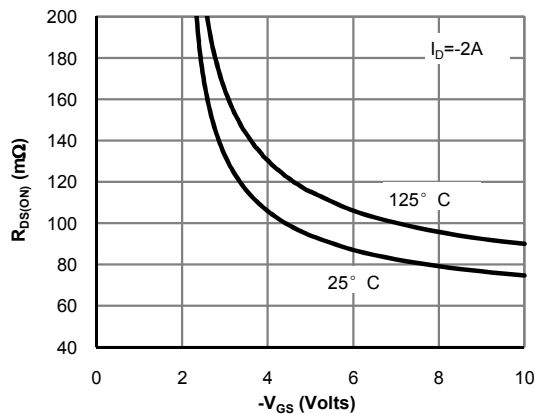


Figure 5: On-Resistance vs. Gate-Source Voltage

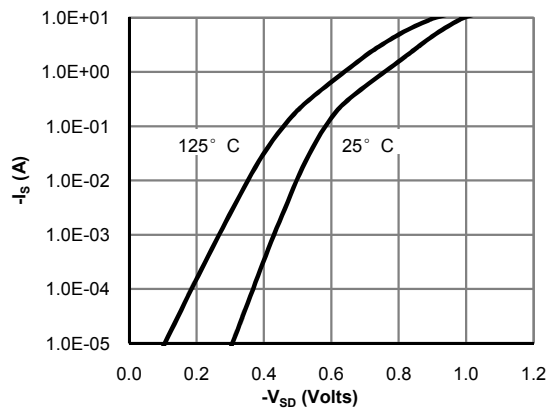


Figure 6: Body-Diode Characteristics

■ Typical Characteristics

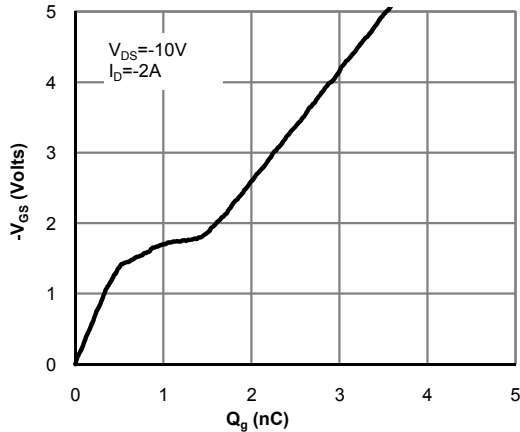


Figure 7: Gate-Charge Characteristics

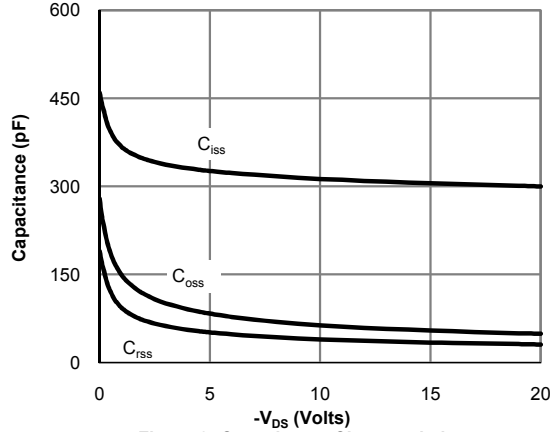


Figure 8: Capacitance Characteristics

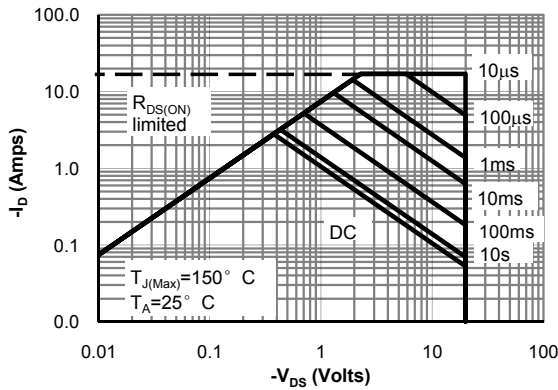


Figure 9: Maximum Forward Biased Safe Operating Area

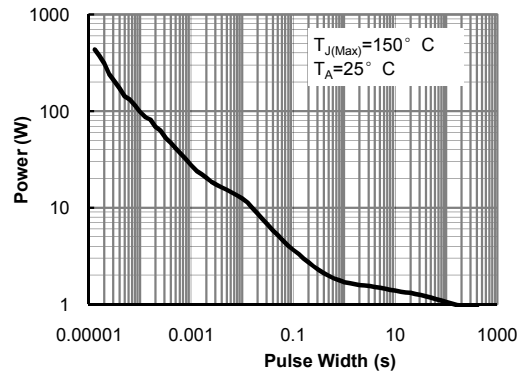


Figure 10: Single Pulse Power Rating Junction-to-Ambient

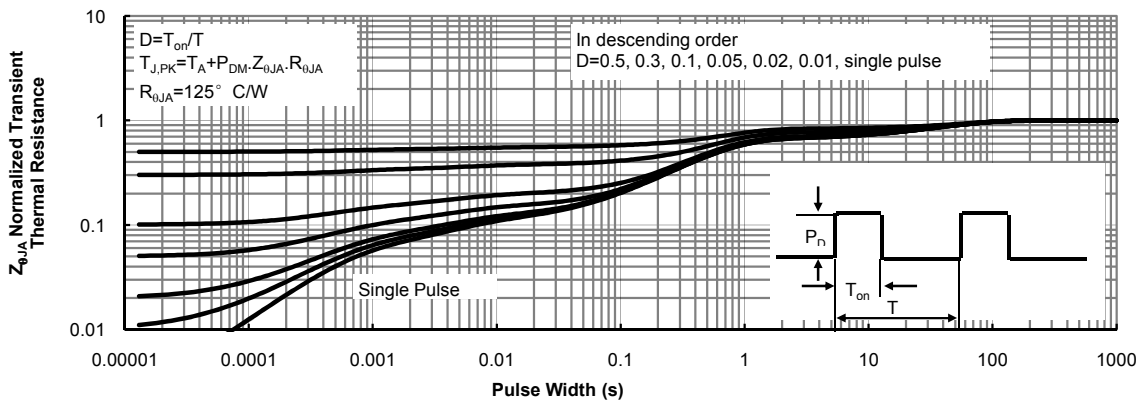
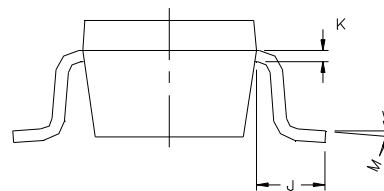
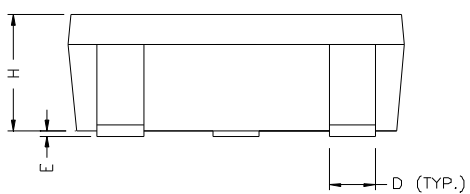
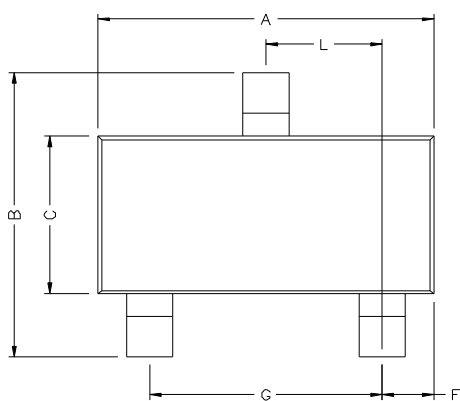


Figure 11: Normalized Maximum Transient Thermal Impedance

■ SOT23-3L



DIMENSIONS (mm are the original dimensions)

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