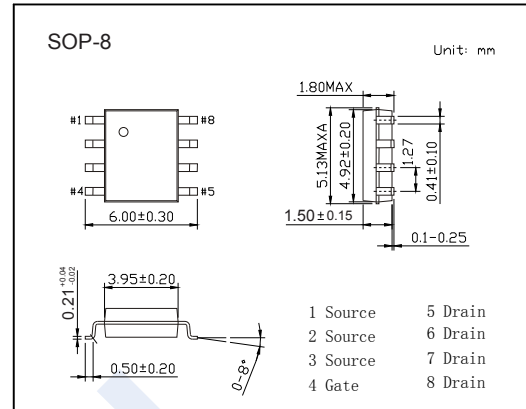
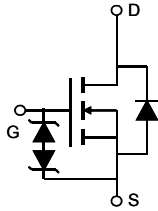


N-Channel MOSFET

AO4302-HF (KO4302-HF)

■ Features

- $V_{DS} (V) = 30V$
- $I_D = 23 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 4m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 5m\Omega (V_{GS} = 4.5V)$
- ESD Rating: 2000V HBM
- Pb-Free Package May be Available. The G-Suffix Denotes a Pb-Free Lead Finish



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

| Parameter | Symbol | Rating | Unit |
|---|-------------------------------|------------------|--------------|
| Drain-Source Voltage | V_{DS} | 30 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | |
| Continuous Drain Current | I_D | $T_A=25^\circ C$ | A |
| | | $T_A=70^\circ C$ | |
| Pulsed Drain Current | I_{DM} | 316 | |
| Avalanche Current | I_{AS}, I_{AR} | 49 | |
| Avalanche energy | $L=0.1mH$ E_{AS}, E_{AR} | 120 | mJ |
| Power Dissipation | P_D | $T_A=25^\circ C$ | W |
| | | $T_A=70^\circ C$ | |
| Thermal Resistance.Junction- to-Ambient | R_{thJA} | $t \leq 10s$ | $^\circ C/W$ |
| | | Steady-State | |
| Thermal Resistance.Junction- to-Lead | R_{thJL} | 15 | |
| Junction Temperature | T_J | 150 | $^\circ C$ |
| Storage Temperature Range | T_{stg} | -55 to 150 | |

N-Channel MOSFET

AO4302-HF (KO4302-HF)

■ Electrical Characteristics Ta = 25°C

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---------------------------------------|---------------------|--|------|------|------|------|
| Drain-Source Breakdown Voltage | V _{DSS} | I _D =250 uA, V _{GS} =0V | 30 | | | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =30V, V _{GS} =0V | | | 1 | uA |
| | | V _{DS} =30V, V _{GS} =0V, T _J =55°C | | | 5 | |
| Gate-Body Leakage Current | I _{GSS} | V _{DS} =0V, V _{GS} =±20V | | | ±10 | uA |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250uA | 1.3 | | 2.3 | V |
| Static Drain-Source On-Resistance | R _{DS(on)} | V _{GS} =10V, I _D =20A | | | 4 | mΩ |
| | | V _{GS} =10V, I _D =20A T _J =125°C | | | 6 | |
| | | V _{GS} =4.5V, I _D =18A | | | 5 | |
| On State Drain Current | I _{D(ON)} | V _{GS} =10V, V _{DS} =5V | 316 | | | A |
| Forward Transconductance | g _{FS} | V _{DS} =5V, I _D =20A | | 120 | | S |
| Input Capacitance | C _{iss} | V _{GS} =0V, V _{DS} =15V, f=1MHz | 2310 | | 3470 | pF |
| Output Capacitance | C _{oss} | | 330 | | 620 | |
| Reverse Transfer Capacitance | C _{rss} | | 150 | | 360 | |
| Gate Resistance | R _g | V _{GS} =0V, V _{DS} =0V, f=1MHz | 0.7 | | 2.4 | Ω |
| Total Gate Charge (10V) | Q _g | V _{GS} =10V, V _{DS} =15V, I _D =20A | 41 | | 63 | nC |
| Total Gate Charge (4.5V) | | | 19 | | 30 | |
| Gate Source Charge | Q _{gs} | | | 7.5 | | |
| Gate Drain Charge | Q _{gd} | | | 10.9 | | |
| Turn-On DelayTime | t _{d(on)} | | | 7 | | |
| Turn-On Rise Time | t _r | V _{GS} =10V, V _{DS} =15V, R _L =0.75Ω, R _{GEN} =3Ω | | 4.8 | | ns |
| Turn-Off DelayTime | t _{d(off)} | | | 41.5 | | |
| Turn-Off Fall Time | t _f | | | 8.8 | | |
| Body Diode Reverse Recovery Time | t _{rr} | | | 11 | 17 | |
| Body Diode Reverse Recovery Charge | Q _{rr} | I _F = 20A, di/dt= 500A/us | 24 | | 37 | nC |
| Maximum Body-Diode Continuous Current | I _S | | | | 5 | A |
| Diode Forward Voltage | V _{SD} | I _S =1A, V _{GS} =0V | | | 1 | V |

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

■ Marking

| | |
|---------|------------------|
| Marking | 4302 KC**** F |
|---------|------------------|

N-Channel MOSFET AO4302-HF (KO4302-HF)

■ Typical Characteristics

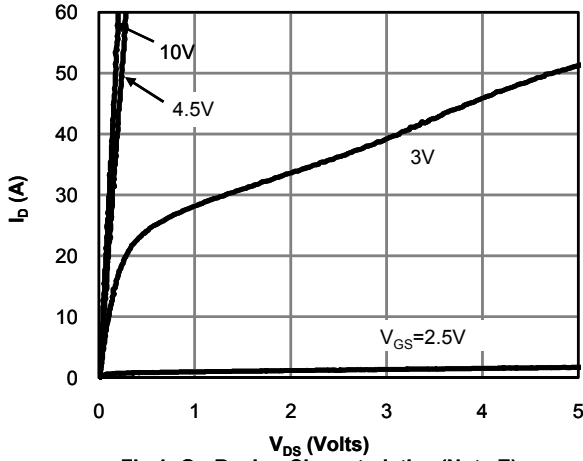


Fig 1: On-Region Characteristics (Note E)

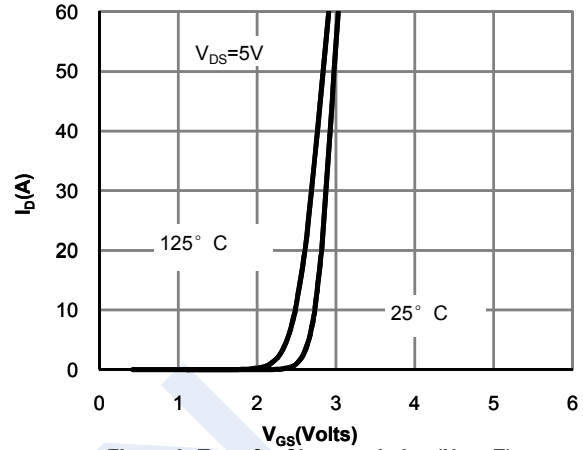


Figure 2: Transfer Characteristics (Note E)

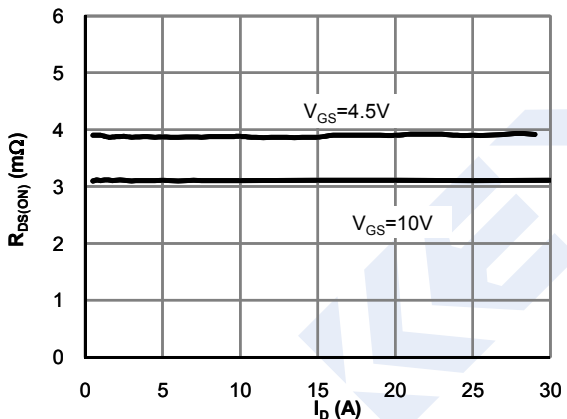


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

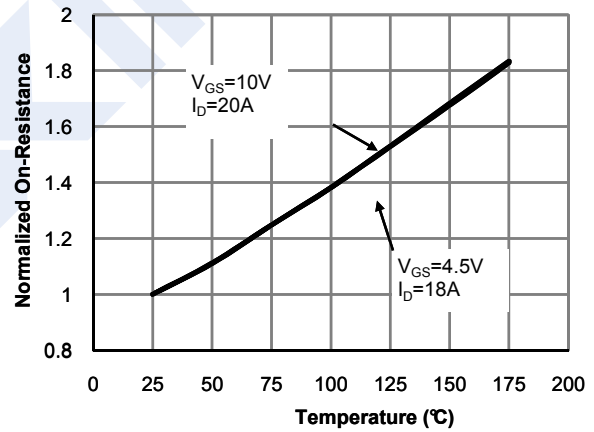


Figure 4: On-Resistance vs. Junction Temperature (Note E)

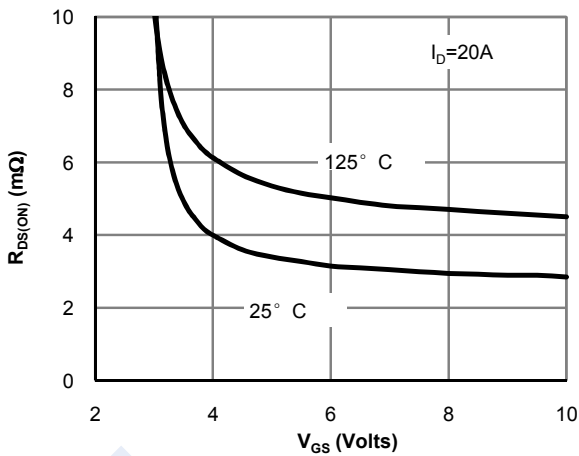


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

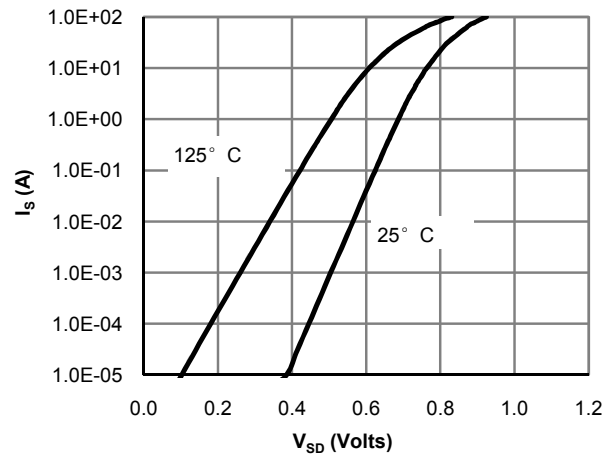


Figure 6: Body-Diode Characteristics (Note E)

N-Channel MOSFET AO4302-HF (KO4302-HF)

■ Typical Characteristics

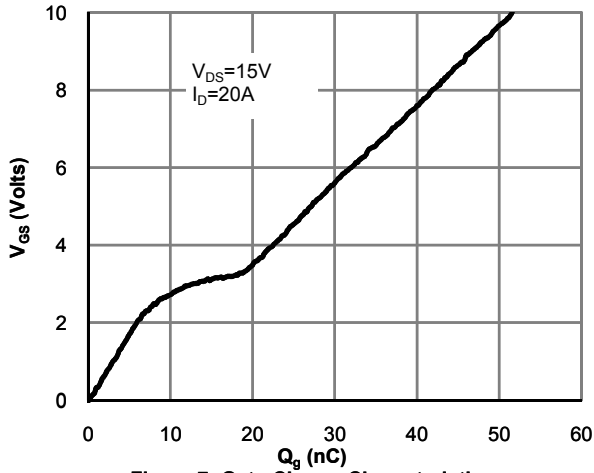


Figure 7: Gate-Charge Characteristics

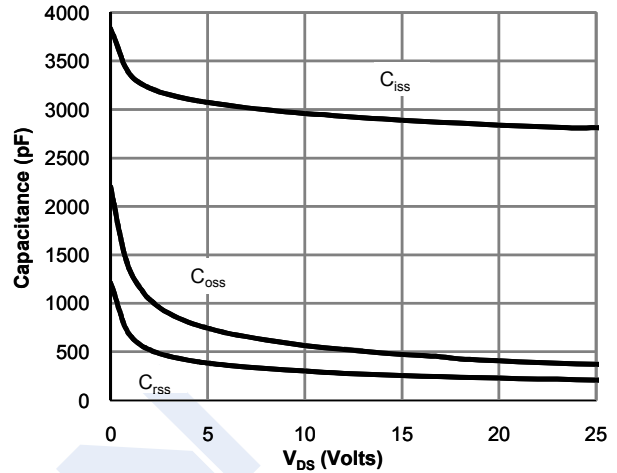


Figure 8: Capacitance Characteristics

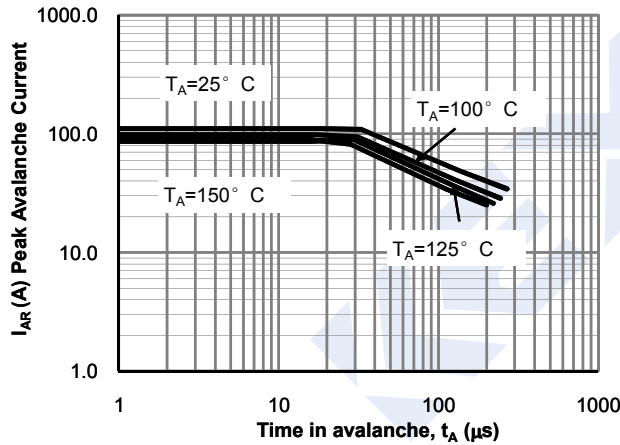


Figure 9: Single Pulse Avalanche capability (Note C)

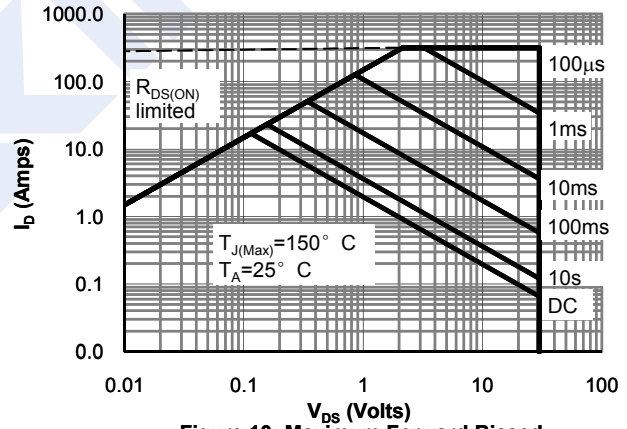


Figure 10: Maximum Forward Biased Safe Operating Area (Note F)

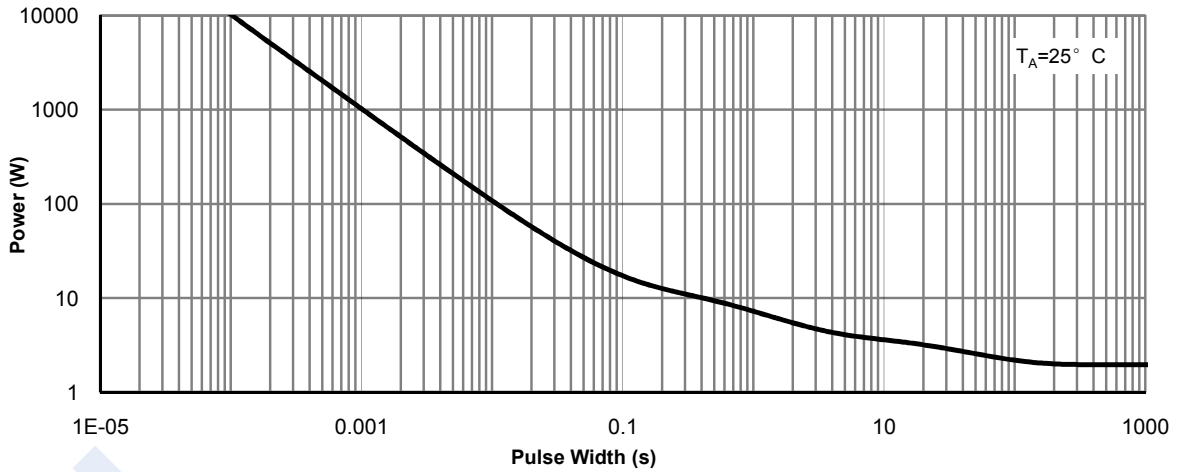


Figure 11: Single Pulse Power Rating Junction-to-Ambient (Note F)

N-Channel MOSFET AO4302-HF (KO4302-HF)

■ Typical Characteristics

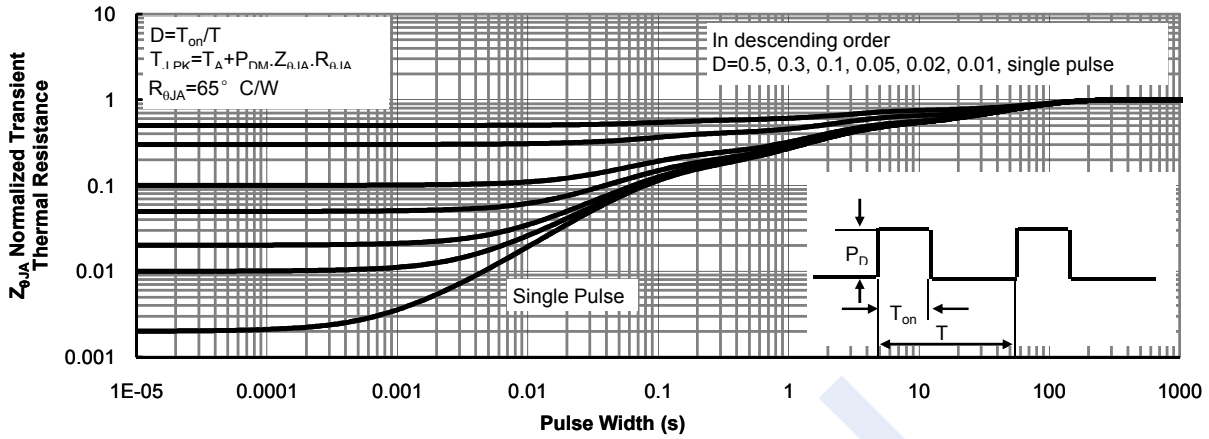


Figure 12: Normalized Maximum Transient Thermal Impedance (Note F)