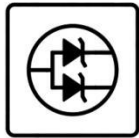


MSKSEMI

SEMICONDUCTOR



ESD



TVS



TSS



MOV

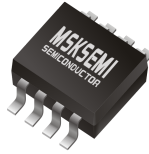


GDT

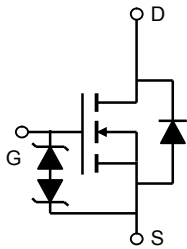


PLED

Product data sheet



SOP-8



Features

- $V_{DS} (V) = 40V$
- $I_D = 14 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 13.0m \Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 16.5m \Omega (V_{GS} = 4.5V)$

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

| Parameter | Symbol | Rating | Unit | |
|---|------------|------------------|------------|--------------|
| Drain-Source Voltage | V_{DS} | 40 | V | |
| Gate-Source Voltage | V_{GS} | ± 20 | | |
| Continuous Drain Current | I_D | $T_A=25^\circ C$ | 14 | A |
| | | $T_A=70^\circ C$ | 10 | |
| Pulsed Drain Current | I_{DM} | 70 | | |
| Avalanche Current | I_{AR} | 30 | | |
| Repetitive Avalanche Energy | $L=0.3mH$ | E_{AR} | 135 | mJ |
| Power Dissipation | P_D | $T_A=25^\circ C$ | 3.1 | W |
| | | $T_A=70^\circ C$ | 2 | |
| Thermal Resistance.Junction- to-Ambient | R_{thJA} | $t \leq 10s$ | 40 | $^\circ C/W$ |
| | | Steady-State | 75 | |
| Thermal Resistance.Junction- to-Lead | R_{thJL} | 24 | | |
| Junction Temperature | T_J | 150 | $^\circ C$ | |
| 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 | 40 | | | V | |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =32V, V _{GS} =0V | | | 1 | μA | |
| | | V _{DS} =32V, V _{GS} =0V, T _J =55°C | | | 5 | | |
| Gate-Body Leakage Current | I _{GSS} | V _{DS} =0V, V _{GS} =±20V | | | ±100 | μA | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250μA | 1 | | 3 | V | |
| Static Drain-Source On-Resistance | R _{Ds(on)} | V _{GS} =10V, I _D =14A | | | 11.5 | mΩ | |
| | | V _{GS} =10V, I _D =14A T _J =125°C | | 13 | | | |
| | | V _{GS} =4.5V, I _D =5A | | | 16.5 | | |
| On State Drain Current | I _{D(ON)} | V _{GS} =10V, V _{DS} =5V | 70 | | | A | |
| Forward Transconductance | g _{FS} | V _{DS} =5V, I _D =5A | 50 | | | S | |
| Input Capacitance | C _{iss} | V _{GS} =0V, V _{DS} =20V, f=1MHz | | 1600 | 1920 | pF | |
| Output Capacitance | C _{oss} | | | 320 | | | |
| Reverse Transfer Capacitance | C _{rss} | | | 100 | | | |
| Gate Resistance | R _g | V _{GS} =0V, V _{DS} =0V, f=1MHz | | 3.4 | | Ω | |
| Total Gate Charge (10V) | Q _g | V _{GS} =10V, V _{DS} =20V, I _D =14A | | 22 | | nC | |
| Total Gate Charge (4.5V) | | | | 10.5 | | | |
| Gate Source Charge | | | Q _{gs} | | 4.2 | | |
| Gate Drain Charge | | | Q _{gd} | | 4.8 | | |
| Turn-On DelayTime | t _{d(on)} | V _{GS} =10V, V _{DS} =20V, R _L =1.5Ω, R _{GEN} =3Ω | | 3.5 | | ns | |
| Turn-On Rise Time | t _r | | | 6 | | | |
| Turn-Off DelayTime | t _{d(off)} | | | 13.2 | | | |
| Turn-Off Fall Time | t _f | | | 3.5 | | | |
| Body Diode Reverse Recovery Time | t _{rr} | I _F = 14A, di/dt= 100A/us | | 31 | | nC | |
| Body Diode Reverse Recovery Charge | Q _{rr} | | | 33 | | | |
| Maximum Body-Diode Continuous Current | I _S | | | | 4 | 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 us pulses, duty cycle 0.5% max.

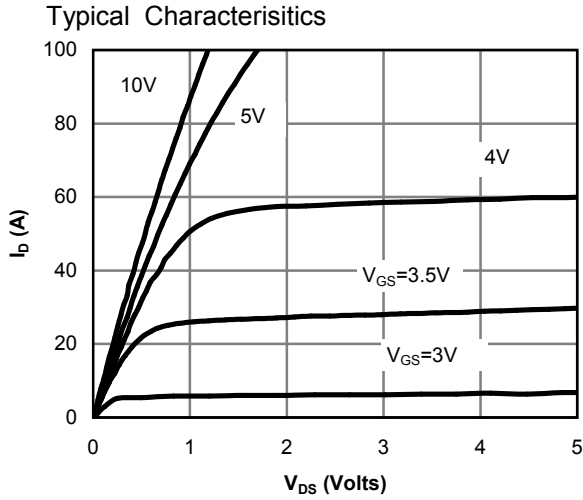


Figure 1: On-Region Characteristics

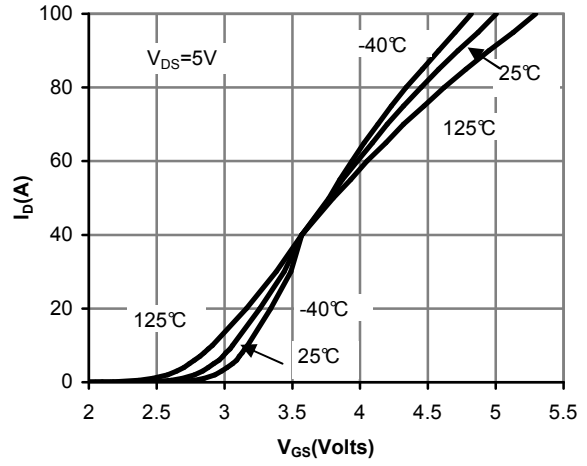


Figure 2: Transfer Characteristics

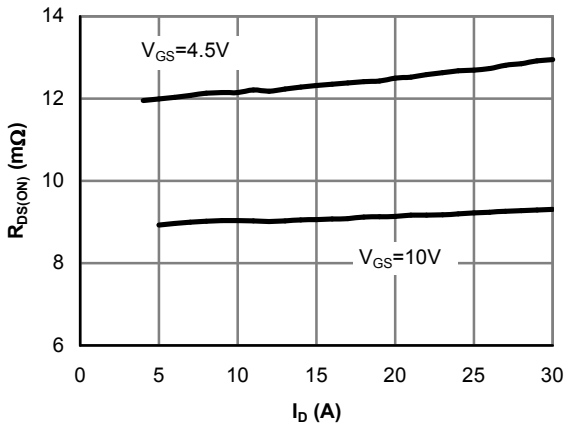


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

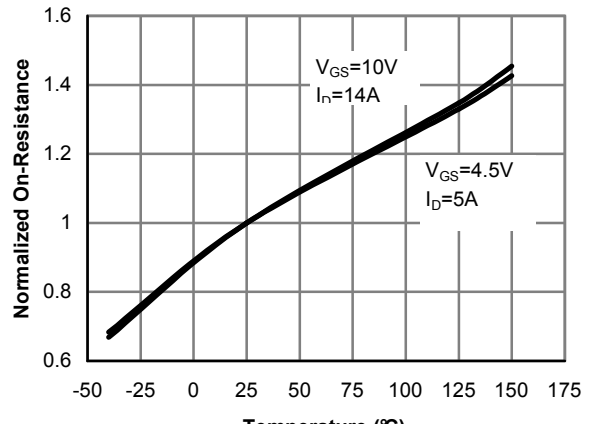


Figure 4: On-Resistance vs. Junction Temperature

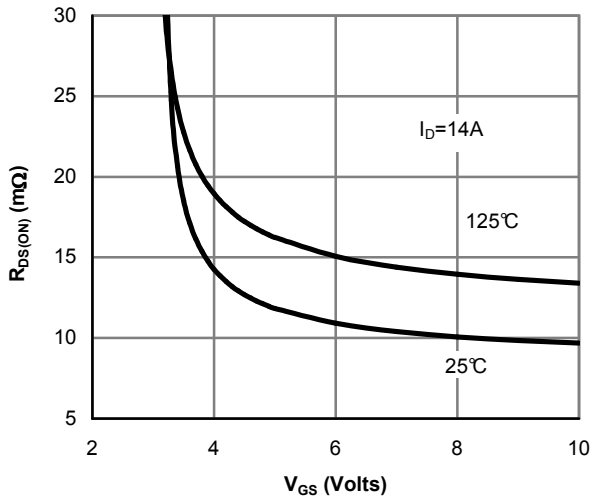


Figure 5: On-Resistance vs. Gate-Source Voltage

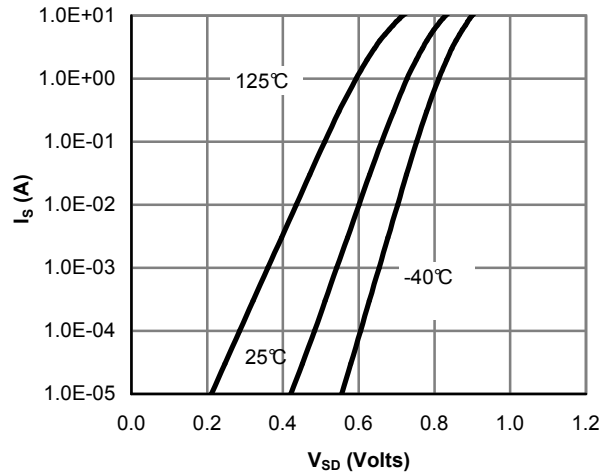


Figure 6: Body-Diode Characteristics

Typical Characteristics

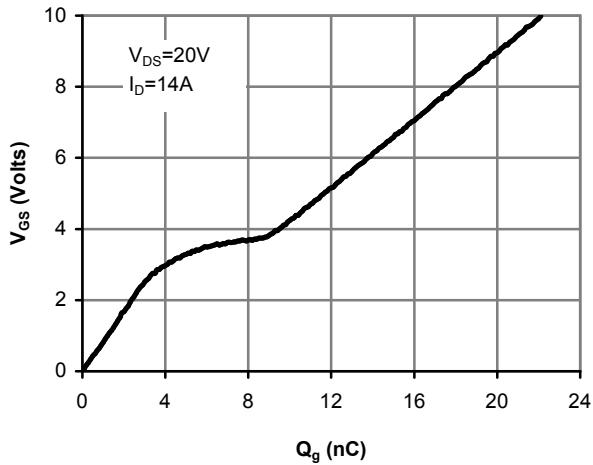


Figure 7: Gate-Charge Characteristics

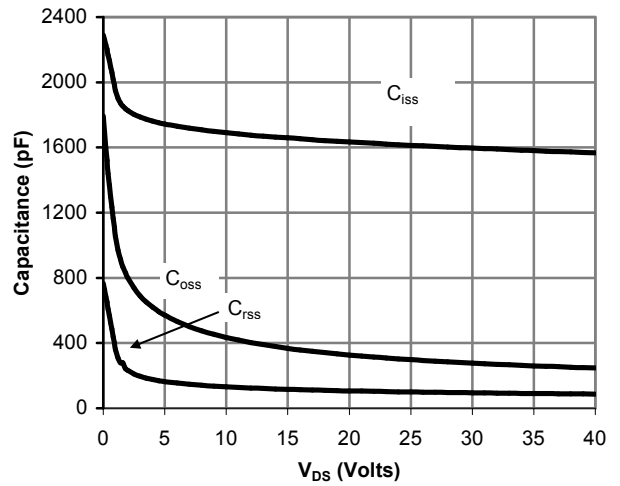


Figure 8: Capacitance Characteristics

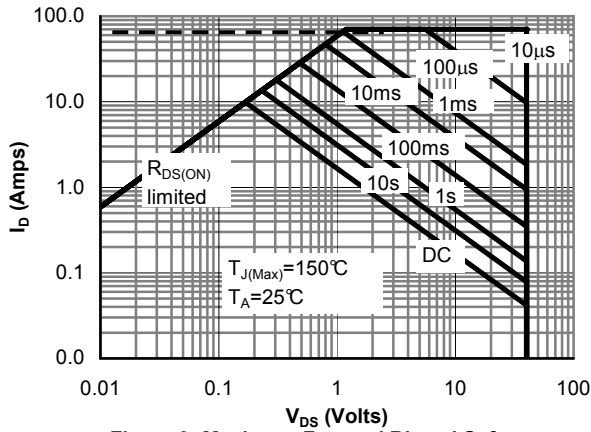


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

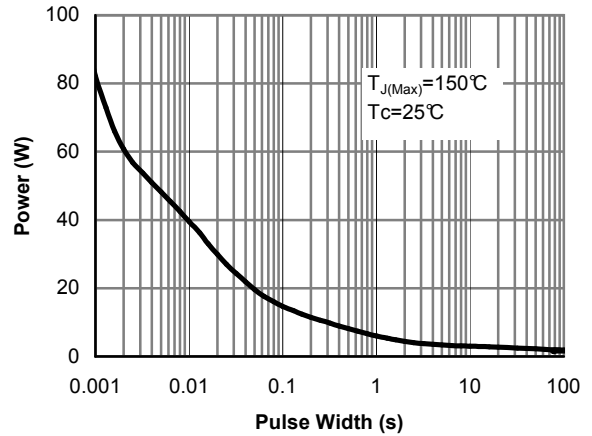


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

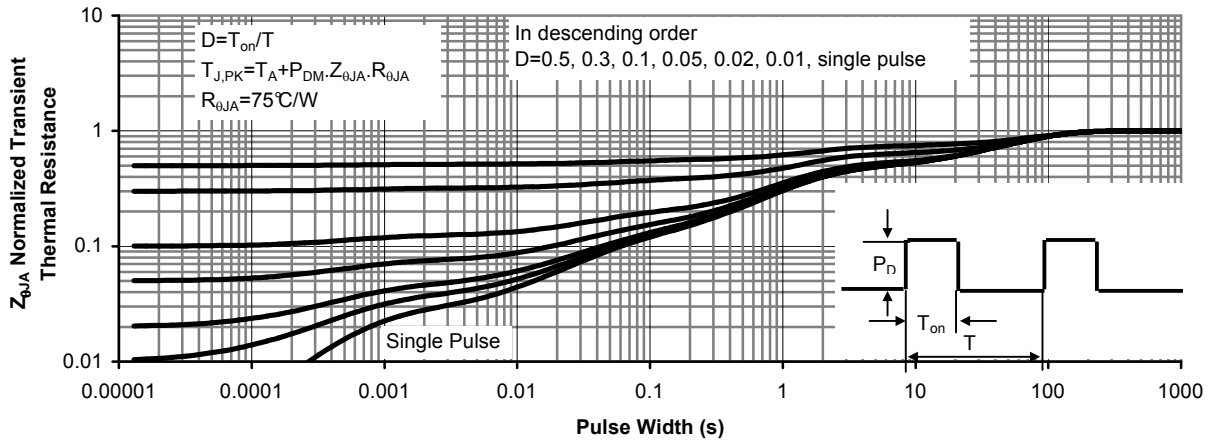
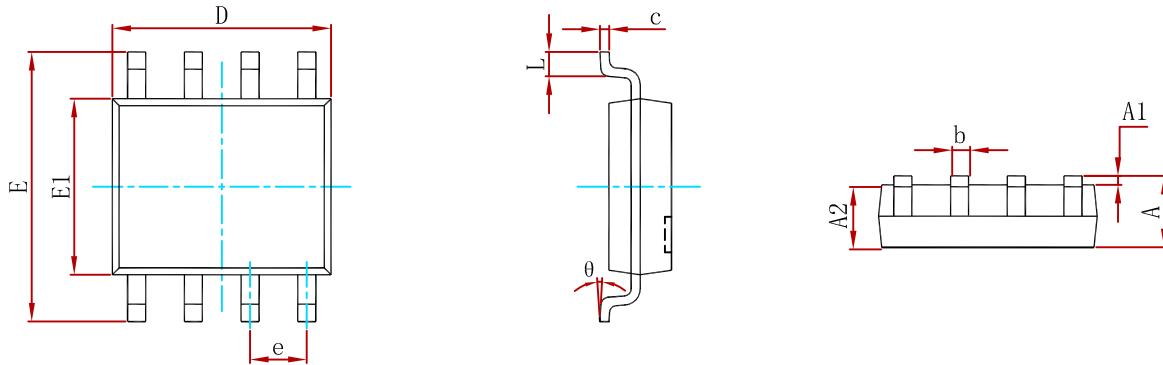


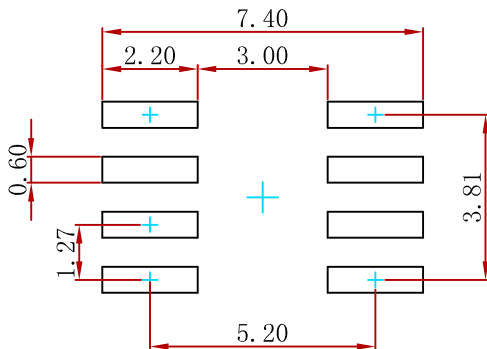
Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

PACKAGE MECHANICAL DATA



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.350 | 1.750 | 0.053 | 0.069 |
| A1 | 0.100 | 0.250 | 0.004 | 0.010 |
| A2 | 1.350 | 1.550 | 0.053 | 0.061 |
| b | 0.330 | 0.510 | 0.013 | 0.020 |
| c | 0.170 | 0.250 | 0.007 | 0.010 |
| D | 4.800 | 5.000 | 0.189 | 0.197 |
| e | 1.270 (BSC) | | 0.050 (BSC) | |
| E | 5.800 | 6.200 | 0.228 | 0.244 |
| E1 | 3.800 | 4.000 | 0.150 | 0.157 |
| L | 0.400 | 1.270 | 0.016 | 0.050 |
| θ | 0° | 8° | 0° | 8° |

Suggested Pad Layout



Note:
 1. Controlling dimension: in millimeters.
 2. General tolerance: ± 0.05mm.
 3. The pad layout is for reference purposes only.

REEL SPECIFICATION

| P/N | PKG | QTY |
|-----------|-------|------|
| AO4480-MS | SOP-8 | 3000 |

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