| | |
|---|---|
| $V_{DSS}$ | 20 V |
| $I_D$ | 6 A |
| $R_{DS(ON)}$ | 16mΩ |

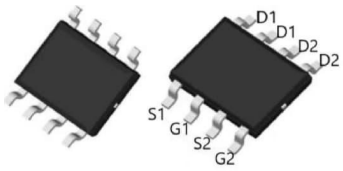
## Features

Low Gate Charge
100% UIS Tested, 100% DVDS Tested
High Power and current handing capability
Lead free product is acquired

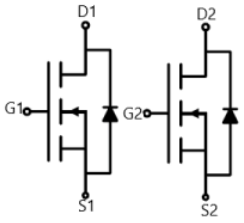
## Applications

Load switch
PMW

9926A
GA7M7K




SOP-8 top&bottom view




Schematic Diagram

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

**Absolute Maximum Ratings ($T_C$=25℃ unless otherwise noted)**

| Symbol | Parameter | Limit | Unit |
|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage ($V_{GS}$=0V) | 20 | V |
| $V_{GS}$ | Gate-Source Voltage ($V_{DS}$=0V) | ±12 | V |
| $I_D$ | Drain Current-Continuous($T_A$=25℃) | 6 | A |
| | Drain Current-Continuous($T_A$=100℃) | 3.8 | A |
| $I_{DM\ (pluse)}$ | Drain Current-Continuous@ Current-Pulsed (Note 1) | 24 | A |
| $P_D$ | Maximum Power Dissipation($T_A$=25℃) | 0.9 | W |
| | Maximum Power Dissipation($T_A$=100℃) | 0.3 | W |
| $E_{AS}$ | Avalanche energy (Note 2) | 256 | mJ |
| $T_J$, $T_{STG}$ | Operating Junction and Storage Temperature Range | -55 To 150 | ℃ |

## Electrical Characteristics ($T_J$=25℃ unless otherwise specified)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **On/Off States** | | | | | | |
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V $I_D$=250μA | 20 | | | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$=20V, $V_{GS}$=0V $T_J$=25℃ | | | 1 | μA |
| | | $V_{DS}$=20V, $V_{GS}$=0V $T_J$=125℃ | | | 100 | μA |
| $I_{GSS}$ | Gate-Body Leakage Current | $V_{GS}$=±12V, $V_{DS}$=0V | | | ±100 | nA |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$=$V_{GS}$, $I_D$=250μA | 0.5 | | 1 | V |
| $g_{FS}$ | Forward Transconductance | $V_{DS}$=5V, $I_D$=1.5A | | 6.5 | | S |
| $R_{DS(ON)}$ | Drain-Source On-State Resistance | $V_{GS}$=4.5V, $I_D$=3A T $_J$=25℃ | | 20 | 25 | mΩ |
| | | $V_{GS}$=2.5V, $I_D$=3A $T_J$=25℃ | | 27 | 32 | mΩ |
| **Dynamic Characteristics** | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=10V,$V_{GS}$=0V, f=1.0MHz | | 568 | | pF |
| $C_{oss}$ | Output Capacitance | | | 68 | | pF |
| $C_{rss}$ | Reverse Transfer Capacitance | | | 60 | | pF |
| Rg | Gate resistance | $V_{GS}$=0V, $V_{DS}$=0V, f=1.0MHz | | 9 | | Ω |
| **Switching Parameters** | | | | | | |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{GS}$=4.5V, $V_{DS}$=10V, $R_L$=6.7Ω, $R_{GEN}$=3Ω | | 14 | | nS |
| $t_r$ | Turn-on Rise Time | | | 8 | | nS |
| $t_{d(off)}$ | Turn-Off Delay Time | | | 44 | | nS |
| $t_f$ | Turn-Off Fall Time | | | 15 | | nS |
| $Q_g$ | Total Gate Charge | $V_{GS}$=4.5V, $V_{DS}$=10V, $I_D$=1.5A | | 55 | | nC |
| $Q_{gs}$ | Gate-Source Charge | | | 8.7 | | nC |
| $Q_{gd}$ | Gate-Drain Charge | | | 13.5 | | nC |
| **Source-Drain Diode Characteristics** | | | | | | |
| $I_{SD}$ | Source-Drain Current (Body Diode) | | | | 6 | A |
| $V_{SD}$ | Forward on Voltage (Note 3) | $V_{GS}$=0V, $I_S$=1.5A | | | 1.2 | V |
| $t_{rr}$ | Reverse Recovery Time | $I_F$=1.5A, dI/dt=500A/μs | | 44 | | ns |
| $Q_{rr}$ | Reverse Recovery Charge | $I_F$=1.5A, dI/dt=500A/μs | | 49 | | nC |

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
Notes 2.$E_{AS}$ condition: $T_J$=25℃,$V_{DD}$=20V,$V_G$=10V, Rg=25Ω, L=0.5mH.
Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

## Thermal Characteristic

| Symbol | Parameter | Typ | Max | Unit |
|---|---|---|---|---|
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient | | 144 | ℃/W |

## RATING AND CHARACTERISTIC CURVES

**Figure 1. Output Characteristics**

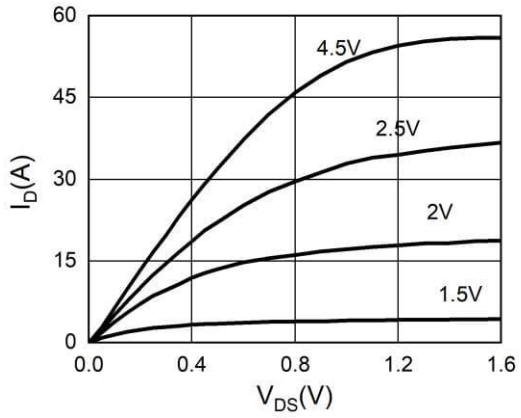



**Figure 2. Transfer Characteristics**

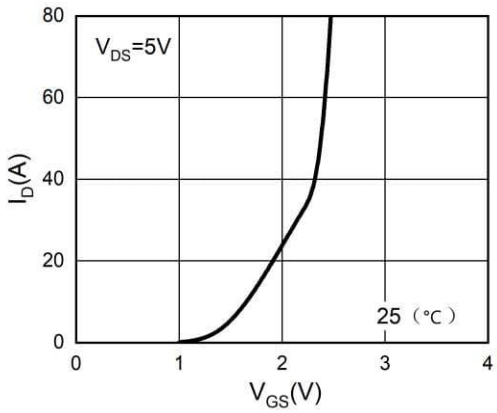



**Figure 3. Power Dissipation**

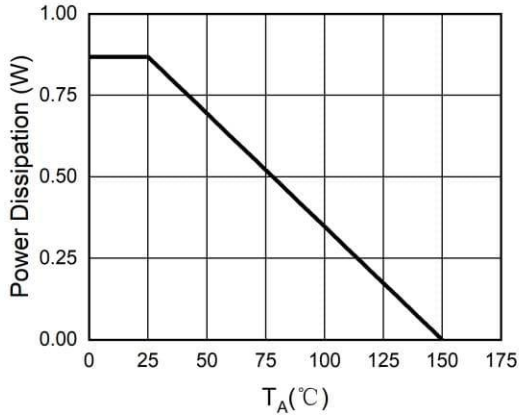



**Figure 4. Drain Current**

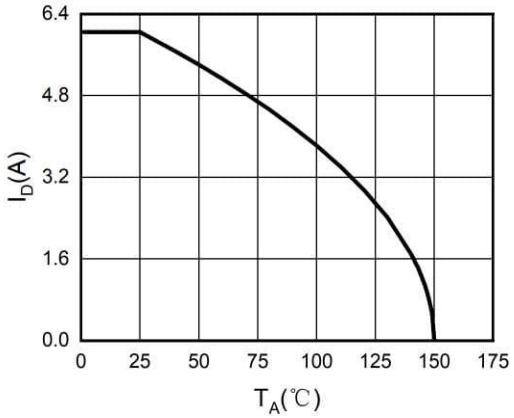



**Figure 5. $BV_{DSS}$ vs Junction Temperature**

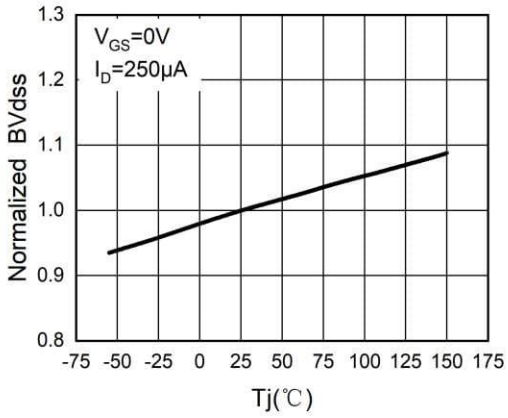
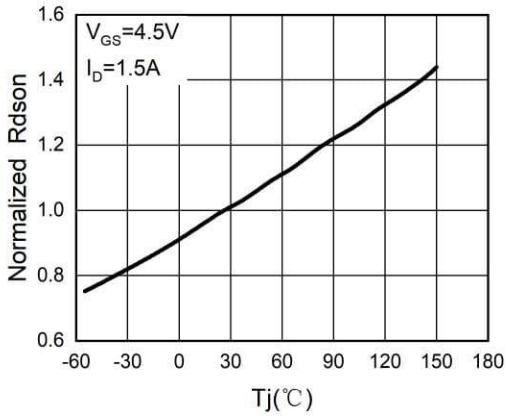



**Figure 6. $R_{DS(ON)}$ vs Junction Temperature**



## RATING AND CHARACTERISTIC CURVES

**Figure 7. Gate Charge Waveforms**

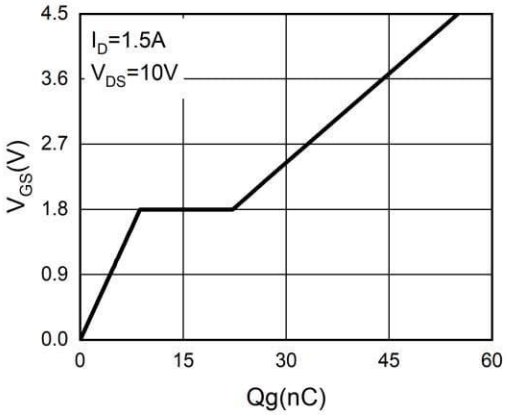



**Figure 8. Capacitance**

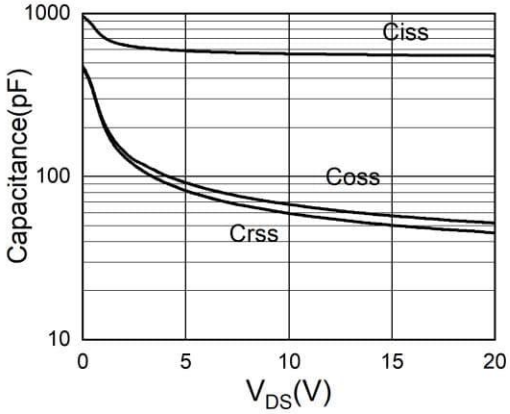



**Figure 9. Body-Diode Characteristics**

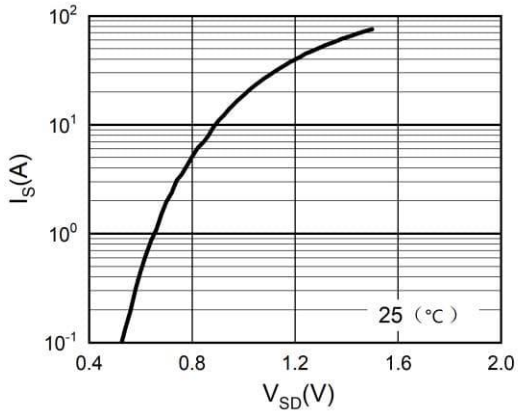
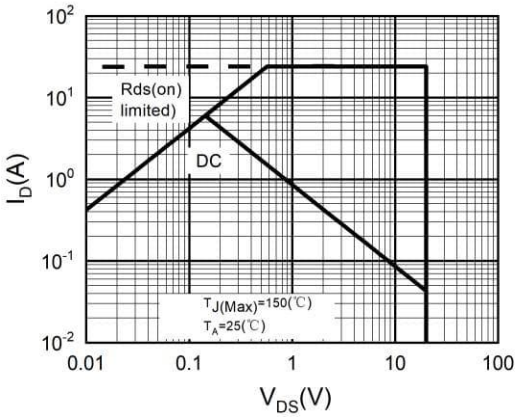


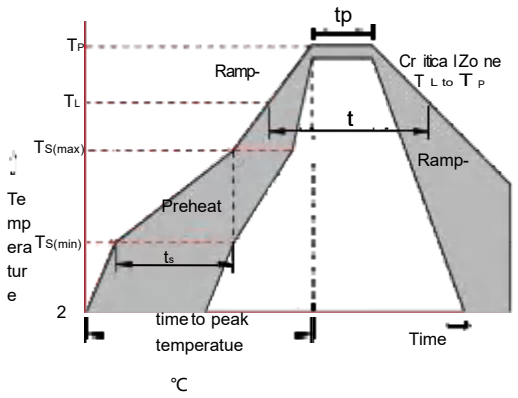

**Figure 10. Maximum Safe Operating Area**



## Soldering parameters

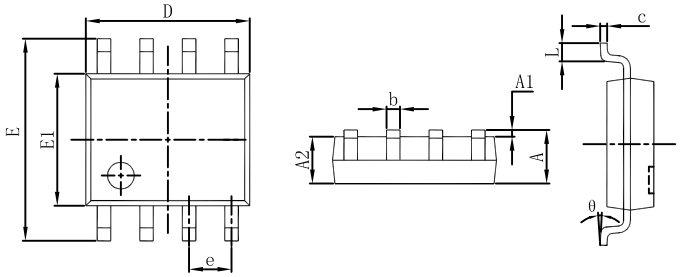
| Reflow Condition | | Pb-Free assembly (see as bellow) |
|---|---|---|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150℃ |
| | -Temperature Max($T_{s(max)}$) | +200℃ |
| | -Time (Min to Max) (ts) | 60-180 secs. |
| Average ramp up rate (Liquid us Temp ($T_L$) to peak) | | 3℃/sec. Max |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate | | 3℃/sec. Max |
| Reflow | -Temperature($T_L$)(Liquid us) | +217℃ |
| | -Temperature($t_L$) | 60-150 secs. |
| Peak Temp ($T_p$) | | +260(+0/-5)℃ |
| Time within 5℃ of actual Peak Temp ($t_p$) | | 30 secs. Max |
| Ramp-down Rate | | 6℃/sec. Max |
| Time 25℃ to Peak Temp ($T_P$) | | 8 min. Max |
| Do not exceed | | +260℃ |

**FIG5:** Reflow condition

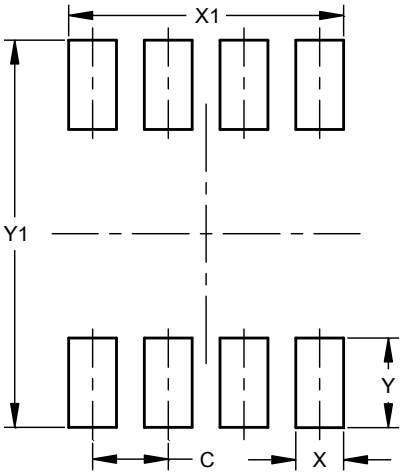



## Package Dimensions & Suggested Pad Layout

**SOP-8**



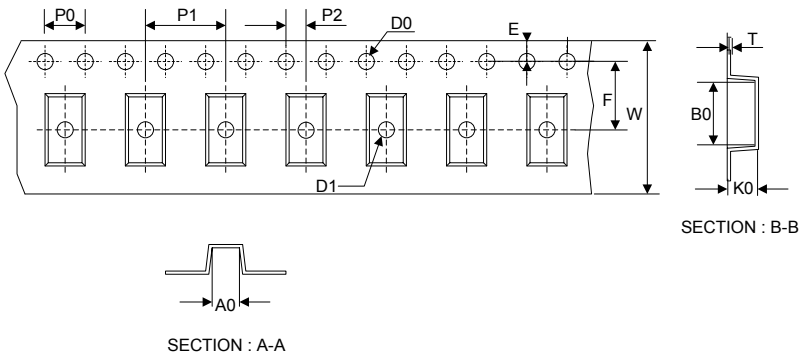

| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | **Min** | **Max** | **Min** | **Max** |
| A | 1.350 | 1.750 | 0.053 | 0.069 |
| A1 | 0.100 | 0.250 | 0.004 | 0.010 |
| A2 | 1.350 | 1.550 | 0.053 | 0.061 |
| b | 0.330 | 0.510 | 0.013 | 0.020 |
| c | 0.170 | 0.250 | 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° |




| Dimensions | Value (in mm) |
|---|---|
| **C** | 1.27 |
| **X** | 0.70 |
| **X1** | 4.51 |
| **Y** | 2.00 |
| **Y1** | 7.00 |

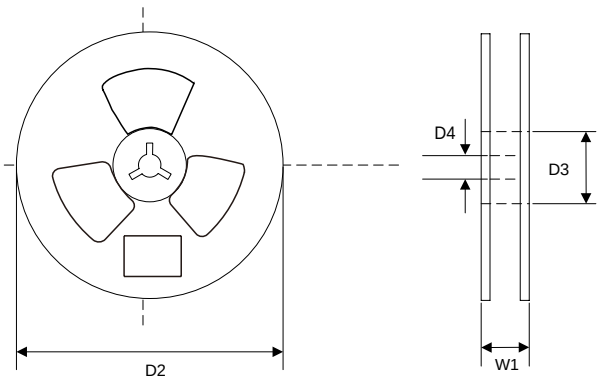
## Tape & rell specification

Tape



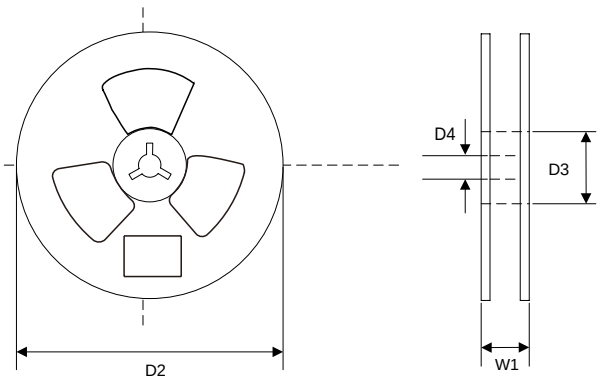

| Symbol | Dimension (mm) |
|---|---|
| P0 | 4.00±0.20 |
| P1 | 8.00±0.20 |
| P2 | 2.00±0.20 |
| D0 | 1.55±0.20 |
| D1 | 1.55±0.20 |
| E | 1.75±0.15 |
| F | 5.50±0.20 |
| W | 12.00±0.20 |
| A0 | 7.00±0.20 |
| B0 | 5.70±0.20 |
| K0 | 1.35±0.20 |
| T | 0.23±0.20 |

13” Reel




| | |
|---|---|
| D2 | 330.0±5.0 |
| D3 | 73Min. |
| D4 | 13.5±2.5 |
| W1 | 16.0±3.0 |
| Quantity: 3000PCS | |

13” Reel




| | |
|---|---|
| D2 | 330.0±5.0 |
| D3 | 73Min. |
| D4 | 13.5±2.5 |
| W1 | 16.0±3.0 |
| Quantity: 4000PCS | |

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