SamHop Microelectronics Corp.

# STM6915

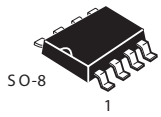
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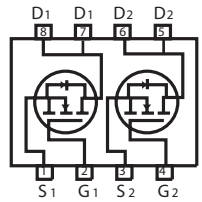
## Dual N-Channel Enhancement Mode Field Effect Transistor

| PRODUCT SUMMARY | | |
|---|---|---|
| $V_{DSS}$ | $I_D$ | $R_{DS(ON)}$ ( m ) Max |
| 30V | 8.5A | 19 @ $V_{GS}$ = 10V<br>28 @ $V_{GS}$ = 4.5V |

### FEATURES

- Super high dense cell design for low $R_{DS(ON)}$.
- Rugged and reliable.
- Surface Mount Package.




## ABSOLUTE MAXIMUM RATINGS ($T_A$=25 C unless otherwise noted)

| Parameter | | Symbol | N-Channel | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 30 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Drain Current-Continuous [a] @ Ta | 25°C | ID | 8.5 | A |
| | 70°C | | 6.5 | A |
| -Pulsed [b] | | IDM | 40 | A |
| Drain-Source Diode Forward Current [a] | | IS | 1.7 | A |
| Maximum Power Dissipation [a] | Ta= 25°C | PD | 2 | W |
| | Ta=70°C | | 1.44 | |
| Operating Junction and Storage Temperature Range | | $T_J$, $T_{STG}$ | -55 to -150 | °C |

## THERMAL CHARACTERISTICS

| | | | |
|---|---|---|---|
| Thermal Resistance, Junction-to-Ambient [a] | $R_{\theta JA}$ | 62.5 | C/W |

# STM6915

## ELECTRICAL CHARACTERISTICS ($T_A$=25°C unless otherwise noted)

| Parameter | Symbol | Condition | Min | Typ [c] | Max | Unit |
|---|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V, $I_D$=250uA | 30 | | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=24V, $V_{GS}$=0V | | | 1 | uA |
| Gate-Body Leakage | $I_{GSS}$ | $V_{GS}$ = ±20V, $V_{DS}$=0V | | | ±100 | nA |
| **ON CHARACTERISTICS [b]** | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$ = 250uA | 1 | 1.8 | 3 | V |
| Drain-Source On-State Resistance | $R_{DS(ON)}$ | $V_{GS}$=10V, $I_D$=8A | | 16 | 19 | m ohm |
| | | $V_{GS}$ = 4.5V, $I_D$= 5A | | 22 | 28 | m ohm |
| On-State Drain Current | $I_{D(ON)}$ | $V_{DS}$ = 5V, $V_{GS}$ = 10V | 15 | | | A |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$ = 5V, $I_D$ =6A | | 13 | | S |
| **DYNAMIC CHARACTERISTICS [c]** | | | | | | |
| Input Capacitance | $C_{ISS}$ | $V_{DS}$ =15V, $V_{GS}$ = 0V<br>f =1.0MHz | | 770 | | pF |
| Output Capacitance | $C_{OSS}$ | | | 160 | | pF |
| Reverse Transfer Capacitance | $C_{RSS}$ | | | 95 | | pF |
| **SWITCHING CHARACTERISTICS [c]** | | | | | | |
| Turn-On Delay Time | $t_{D(ON)}$ | $V_{DD}$ = 15V,<br>$I_D$ = 1A,<br>$V_{GS}$ = 10V,<br>$R_{GEN}$ = 6 ohm<br>$R_L$ = 15 ohm | | 14 | | ns |
| Rise Time | $t_r$ | | | 16 | | ns |
| Turn-Off Delay Time | $t_{D(OFF)}$ | | | 16.5 | | ns |
| Fall Time | $t_f$ | | | 29 | | ns |
| Total Gate Charge | $Q_g$ | $V_{DS}$ =15V, $I_D$ =8A, $V_{GS}$ =10V | | 14.6 | | nC |
| | | $V_{DS}$ =15V, $I_D$ =8A, $V_{GS}$ =4.5V | | 7.9 | | nC |
| Gate-Source Charge | $Q_{gs}$ | $V_{DS}$ =15V, $I_D$ = 8A,<br>$V_{GS}$ =4.5V | | 2.2 | | nC |
| Gate-Drain Charge | $Q_{gd}$ | | | 3.5 | | nC |

## ELECTRICAL CHARACTERISTICS ($T_A$=25°C unless otherwise noted)

| Parameter | Symbol | Condition | Min | Typ[c] | Max | Unit |
|---|---|---|---|---|---|---|
| DRAIN-SOURCE DIODE CHARACTERISTICS [b] | | | | | | |
| Diode Forward Voltage | $V_{SD}$ | $V_{GS}$ = 0V, Is =1.7A | | 0.82 | 1.2 | V |

Notes

a.Surface Mounted on FR4 Board, t≤10sec.
b.Pulse Test:Pulse Width≤ 300us, Duty Cycle≤ 2%.
c.Guaranteed by design, not subject to production testing.

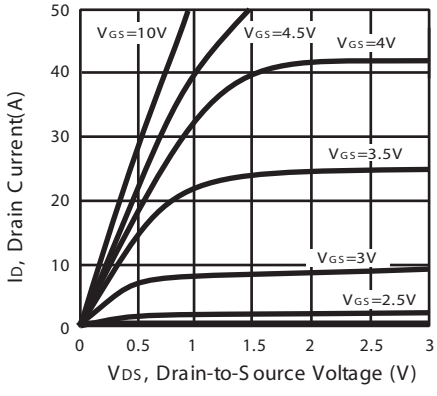



Figure 1. Output Characteristics

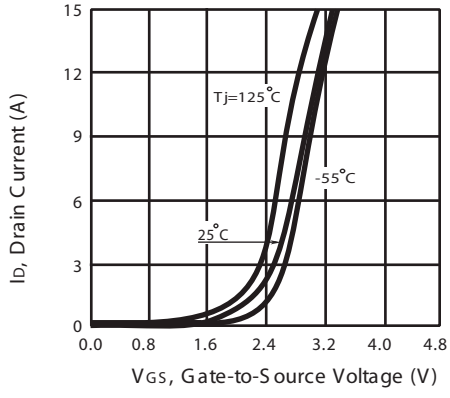



Figure 2. Transfer Characteristics

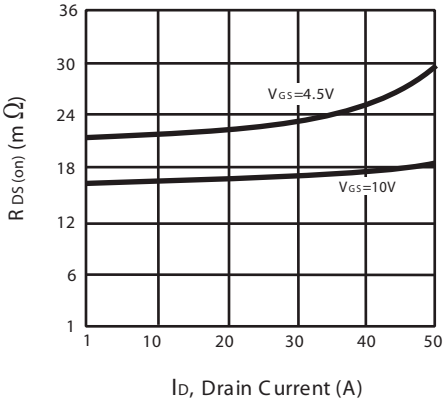



Figure 3. On-Resistance vs. Drain Current and Gate Voltage

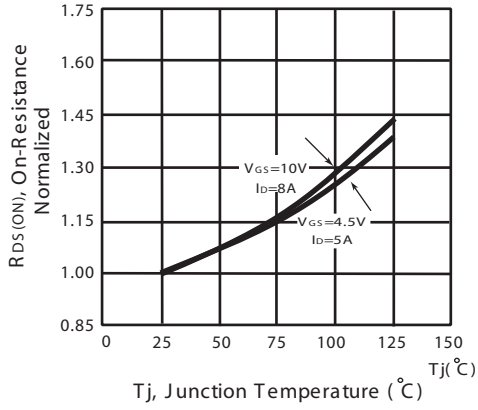



Figure 4. On-Resistance Variation with Drain Current and Temperature

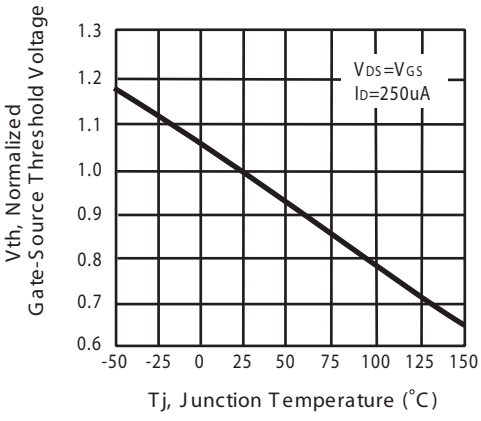



Figure 5. Gate Threshold Variation with Temperature

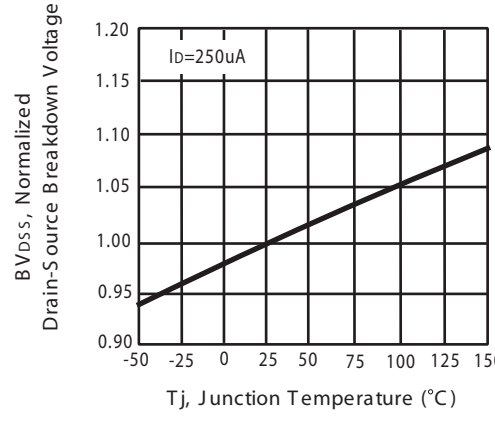



Figure 6. Breakdown Voltage Variation with Temperature

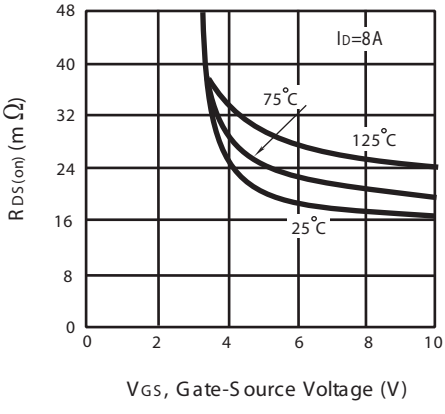



Figure 7. On-Resistance vs. Gate-Source Voltage

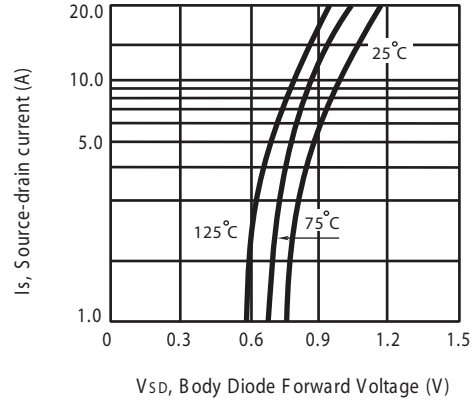



Figure 8. Body Diode Forward Voltage Variation with Source Current

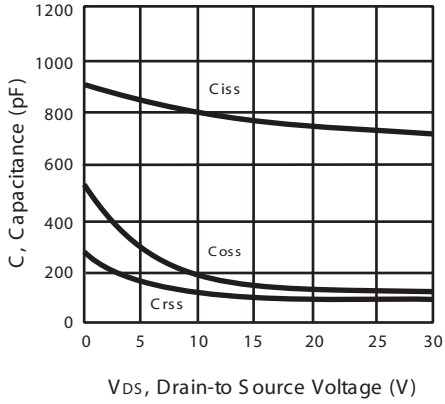



Figure 9. Capacitance

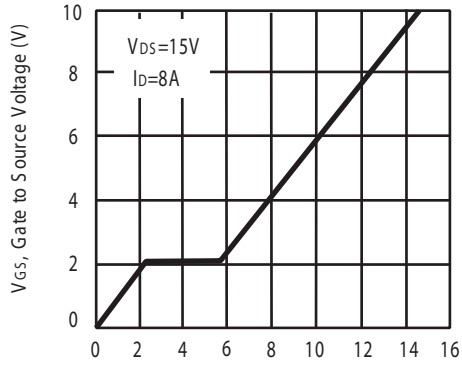



Figure 10. Gate Charge

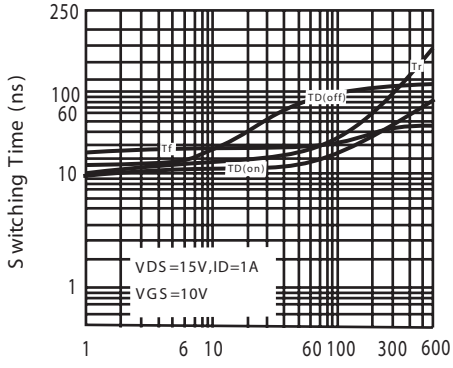



Figure 11.switching characteristics

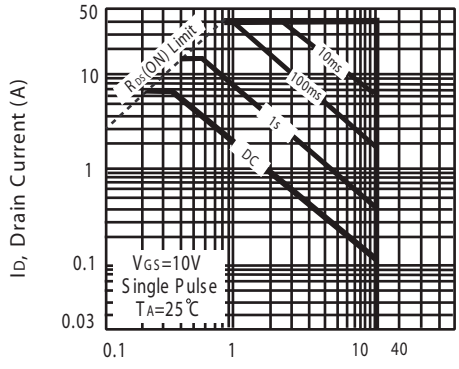
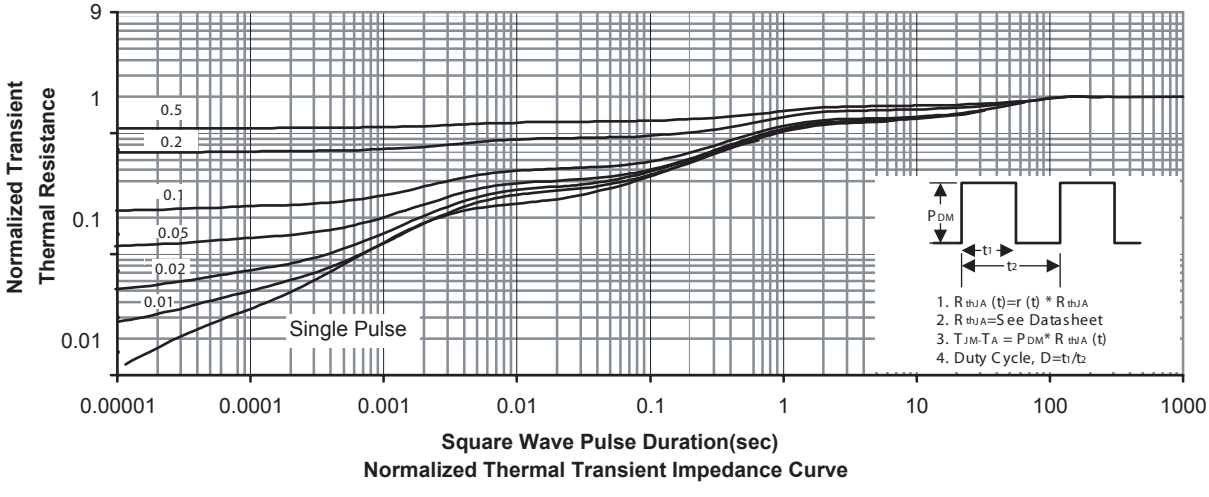
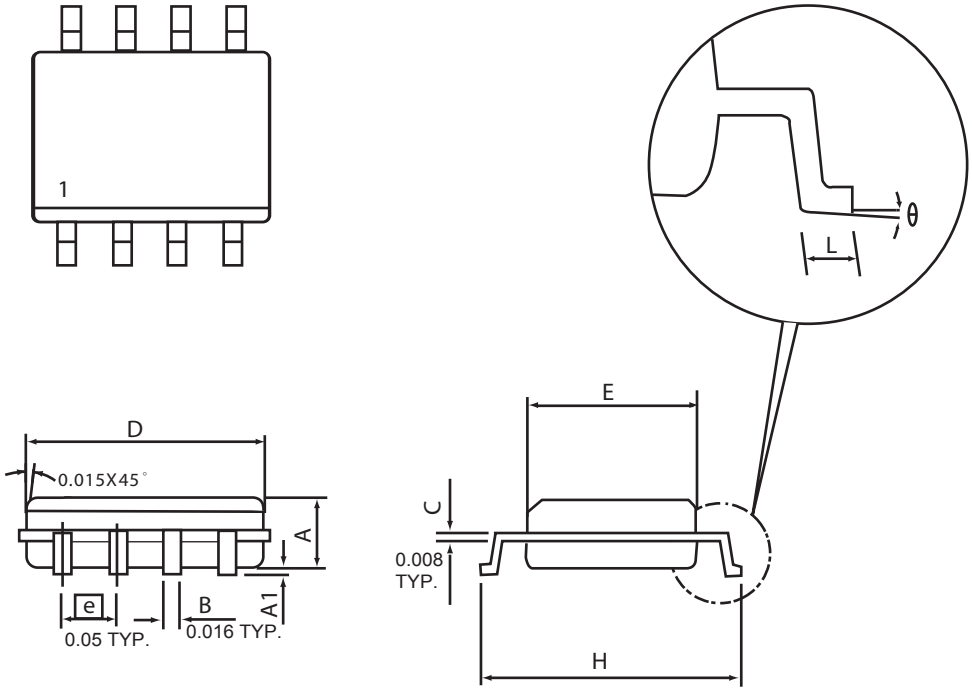



Figure 12. Maximum Safe Operating Area



## PACKAGE OUTLINE DIMENSIONS

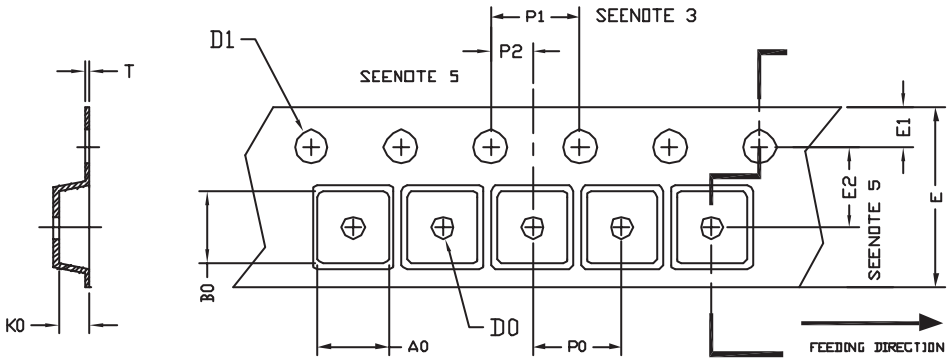
### SO-8




| SYMBOLS | MILLIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 1.35 | 1.75 | 0.053 | 0.069 |
| A1 | 0.10 | 0.25 | 0.004 | 0.010 |
| D | 4.80 | 4.98 | 0.189 | 0.196 |
| E | 3.81 | 3.99 | 0.150 | 0.157 |
| H | 5.79 | 6.20 | 0.228 | 0.244 |
| L | 0.41 | 1.27 | 0.016 | 0.050 |
| θ | 0° | 8° | 0° | 8° |

## SO-8 Tape and Reel Data

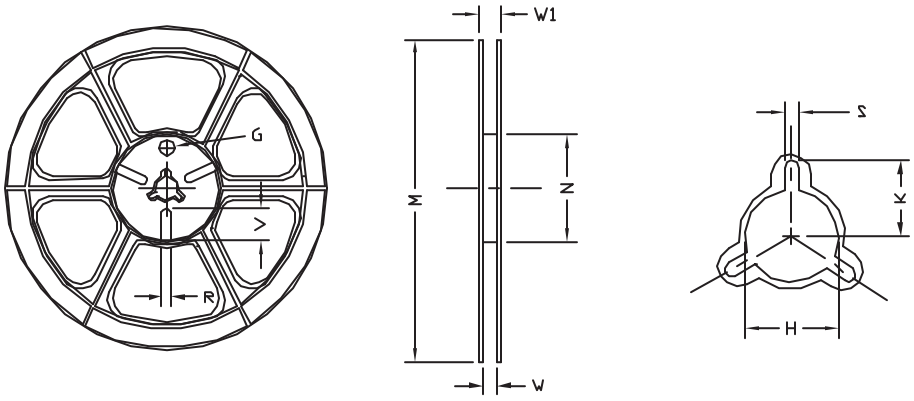
### SO-8 Carrier Tape




unit:mm

| PACKAGE | A0 | B0 | K0 | D0 | D1 | E | E1 | E2 | P0 | P1 | P2 | T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SOP 8N 150mil | 6.40 | 5.20 | 2.10 | $\phi$1.5 (MIN) | $\phi$1.5 + 0.1 - 0.0 | 12.0 ±0.3 | 1.75 | 5.5 ±0.05 | 8.0 | 4.0 | 2.0 ±0.05 | 0.3 ±0.05 |

### SO-8 Reel




UNIT:mm

| TAPE SIZE | REEL SIZE | M | N | W | W1 | H | K | S | G | R | V |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 mm | $\phi$330 | 330 ± 1 | 62 ±1.5 | 12.4 + 0.2 | 16.8 - 0.4 | $\phi$12.75 + 0.15 | --- | 2.0 ±0.15 | --- | --- | --- |