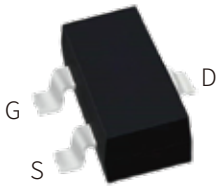
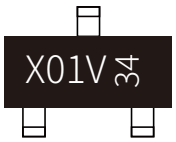
# FEATURES

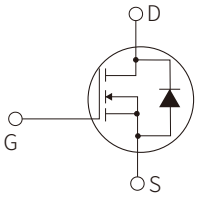
- $V_{DS}$ = 30V, $I_D$ = 5.6A
- $R_{DS(ON)}$ <25 mΩ @$V_{GS}$=10V
- $R_{DS(ON)}$ <34mΩ @$V_{GS}$=4.5V
- $R_{DS(ON)}$ <50mΩ @$V_{GS}$=2.5V
- Trench Power LV MOSFET technology
- High density cell design for low $R_{DS(ON)}$
- High Speed switching



SOT-23-3L



Marking



Schematic Symbol

# APPLICATION

- Battery protection
- Load switch
- Power management

# APPROVALS

| | |
|---|---|
| **RoHS** | Compliance with 2011/65/EU |
| **HF** | Compliance with IEC61249-2-21:2003 |

# ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 30 | V |
| Gate Threshold Voltage | $V_{GSS}$ | ±12 | V |
| Drain Current - Continuous ($T_A$=25°C) | $I_D$ | 5.6 | A |
| Drain Current - Continuous($T_A$=70°C) | | 4.5 | |
| Pulsed Drain Current [A] | $I_{DM}$ | 23 | A |
| Power Dissipation ($T_A$=25°C) | $P_D$ | 1.2 | W |
| Power Dissipation ($T_A$=70°C) | | 0.8 | |
| Thermal Resistance Junction- to- Ambient [B] | $R_{\theta JA}$ | 104 | °C/W |
| Operating Junction and Storage Temperature Range | $T_J$, $T_{STG}$ | -55 ~ +150 | °C |

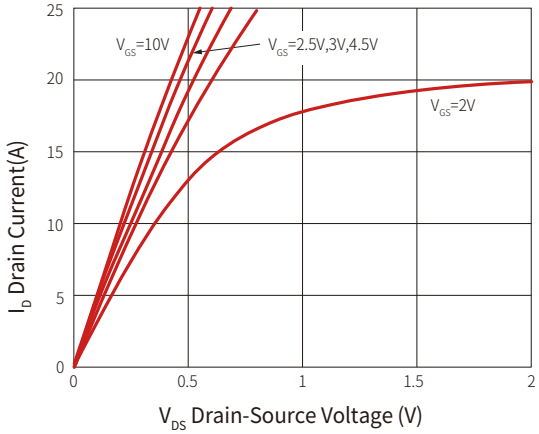
# ELECTRICAL CHARACTERISTICS (Ta=25°C )

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Static Parameter** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V,$I_D$=250μA | 30 | | | V |
| Gate-source leakage current | $I_{GSS}$ | $V_{GS}$=±12V,$V_{DS}$=0V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=30V,$V_{GS}$=0V | | | 1 | μA |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$,$I_D$=250μA | 0.5 | 0.9 | 1.4 | V |
| Drain-source on-resistance | $R_{DS(on)}$ | $V_{GS}$=10V,$I_D$=4.2A | | 18 | 25 | mΩ |
| | | $V_{GS}$=4.5V,$I_D$=4A | | 26 | 34 | mΩ |
| | | $V_{GS}$=2.5V,$I_D$=1A | | 35 | 50 | mΩ |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=5.6A,$V_{GS}$=0V | | | 1.2 | V |
| **Dynamic Parameters** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=15V,$V_{GS}$=0V,f=1MHz | | 630 | | pF |
| Output Capacitance | $C_{oss}$ | | | 55 | | pF |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 71 | | pF |
| Turn–on Delay Time | $t_{d(on)}$ | $V_{DS}$=15V<br>$V_{GS}$=10V,$R_{GEN}$=3Ω<br>$I_D$=5.6A | | 4.4 | | ns |
| Turn–on Rise Time | $t_r$ | | | 28.2 | | ns |
| Turn–Off Delay Time | $t_{d(off)}$ | | | 16.2 | | ns |
| Turn–off Fall Time | $t_f$ | | | 26 | | ns |
| Total Gate Charge | $Q_g$ | $V_{DS}$=15V,$I_D$=5.6A<br>$V_{GS}$=10V | | 17.25 | | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 2.1 | | nC |
| Gate-Drain Charge | $Q_{gd}$ | | | 2 | | nC |
| Reverse Recovery Chrage | $Q_{rr}$ | $I_F$=5.6A,di/dt=100A/us | | 1.1 | | nC |
| Reverse Recovery Time | $t_{rr}$ | | | 13.1 | | ns |

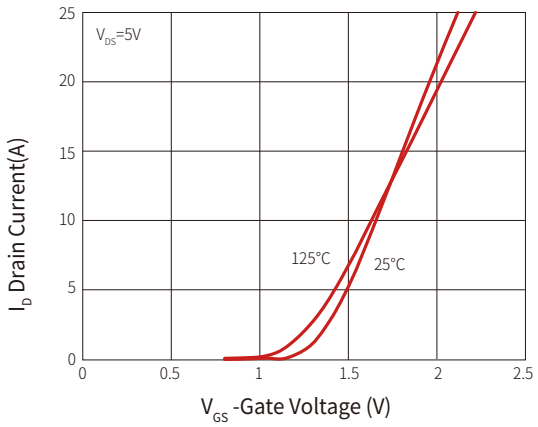
A. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.
B. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

# PARAMETER CHARACTERISTIC CURVE

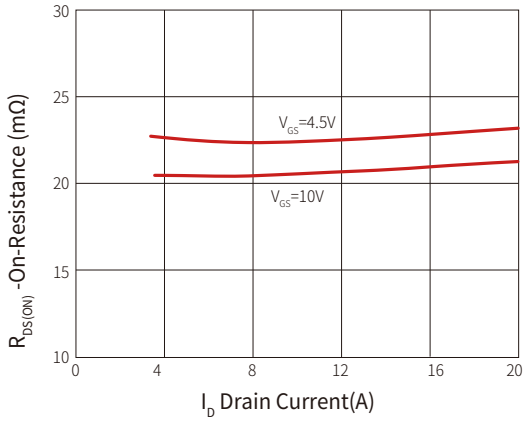
### Fig 1: Output Characteristics



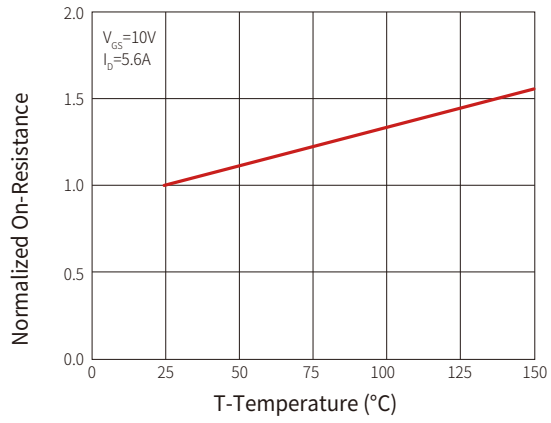

### Figure 2: Transfer Characteristics



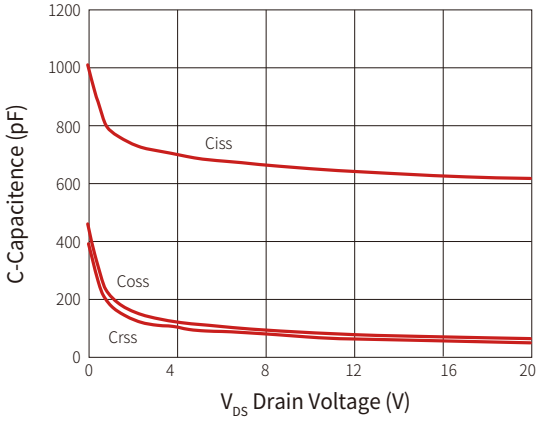

### Figure 3: On-Resistance vs. Drain Current and Gate Voltage



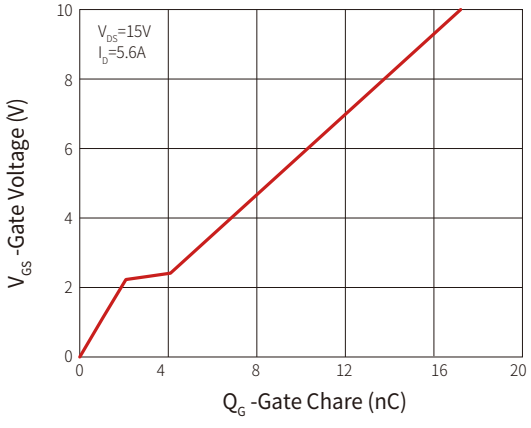

### Figure 4: On-Resistance vs. Junction Temperature



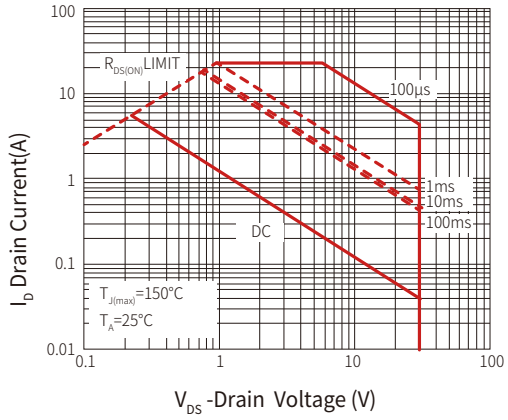

### Figure 5: Capacitance Characteristics



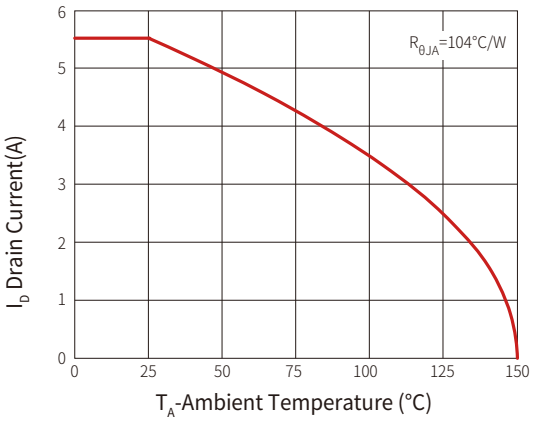

### Figure 6: Gate Charge



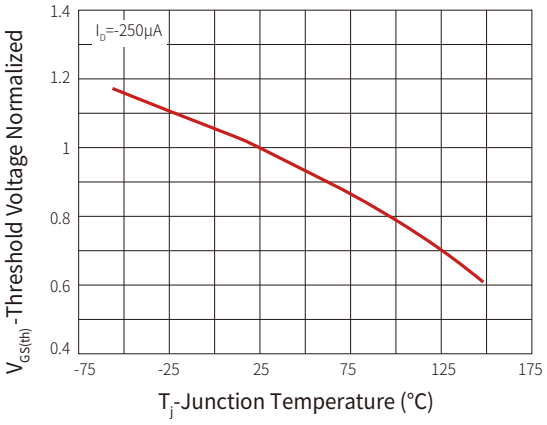
## Figure 7: Safe Operation Area



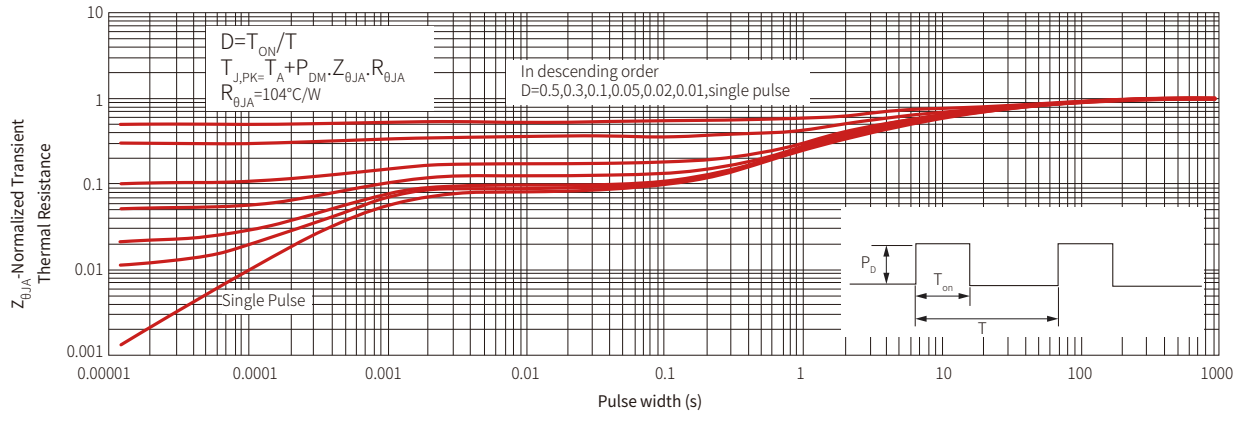

## Figure 8: Maximum Continuous Drain Current vs Ambient Temperature



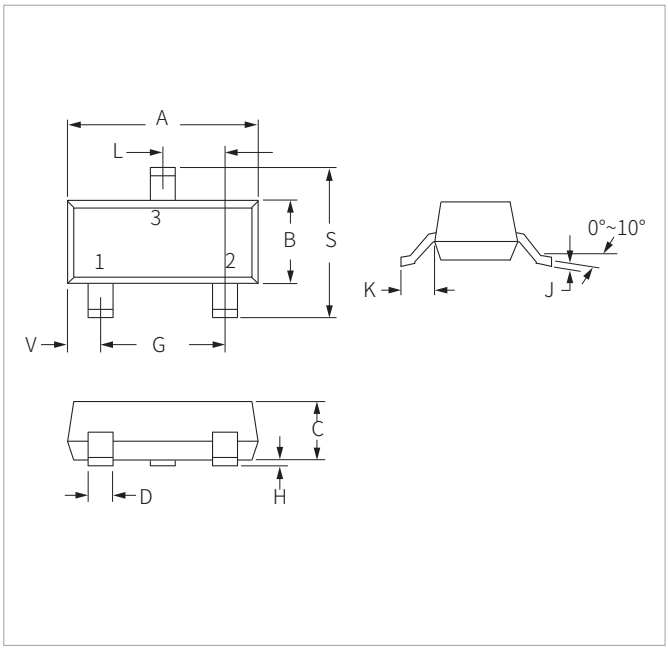

## Figure 9: Normalized Threshold voltage




## Figure 10: Normalized Maximum Transient Thermal Impedance

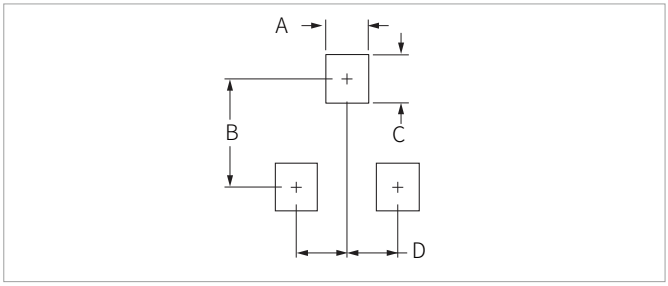


# SOT-23-3L PACKAGE INFORMATION




| Ref. | Millimeters | | Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 2.80 | 3.15 | 0.110 | 0.124 |
| B | 1.50 | 1.70 | 0.060 | 0.070 |
| C | 1.00 | 1.30 | 0.039 | 0.051 |
| D | 0.37 | 0.50 | 0.015 | 0.020 |
| G | 1.78 | 2.10 | 0.070 | 0.083 |
| H | 0.01 | 0.15 | 0.001 | 0.006 |
| J | 0.08 | 0.18 | 0.003 | 0.007 |
| K | 0.35 | 0.69 | 0.014 | 0.029 |
| L | 0.89 | 1.02 | 0.035 | 0.040 |
| S | 2.60 | 3.00 | 0.102 | 0.118 |
| V | 0.45 | 0.60 | 0.018 | 0.024 |

# RECOMMENDED PAD LAYOUT DIMENSIONS




| Ref. | Millimeters | | Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 0.70 | 1.00 | 0.028 | 0.039 |
| B | 2.30 | 2.50 | 0.090 | 0.098 |
| C | 0.70 | 1.00 | 0.028 | 0.039 |
| D | 0.80 | 1.10 | 0.032 | 0.043 |

# ORDERING INFORMATION

| Part Number | Component Package | QTY/Reel | Reel Size |
|---|---|---|---|
| SNM3400AL | SOT-23-3L | 3000PCS | 7” |

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