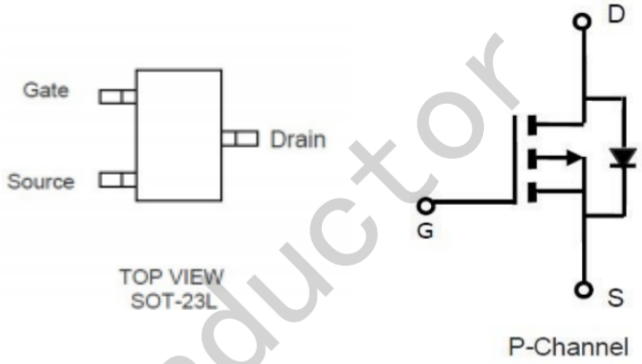
## FEATURE

- -30V/-5.6A, $R_{DS(ON)}$=37mΩ(typ.)@$V_{GS}$=-10V
- -30V/-4.3A, $R_{DS(ON)}$=52mΩ(typ.)@$V_{GS}$=-4.5V
- Super high design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and Maximum DC current capability
- Full RoHS compliance
- SOT23-3L package design




## DESCRIPTION

The JSM2321A is the P-Channel logic enhancement mode power field effect transistor is produced using high cell density advanced trench technology to provide excellent $R_{DS(ON)}$.

This device is suitable for use as a load switch or in PWM and gate charge for most of the synchronous buck converter applications.

## APPLICATIONS

- High Frequency Point-of-load Synchronous
- Buck Converter for MB/NB/UMPC/VGA
- DC/DC Converter
- Load Switch

## ABSOLUTE MAXIMUM RATINGS ($T_A$= 25℃ Unless otherwise noted )

| Symbol | Parameter | | Typical | Unit |
|---|---|---|---|---|
| $V_{DSS}$ | Drain-Source Voltage | | -30 | V |
| $V_{GSS}$ | Gate-Source Voltage | | ±20 | V |
| $I_D$ | Continuous Drain Current ($T_C$=25℃) | $V_{GS}$=-10V | -5.6 | A |
| | Continuous Drain Current ($T_C$=70℃) | | -5.0 | |
| $I_{DM}$ | Pulsed Drain Current | | -20 | A |
| $I_S$ | Continuous Source Current (Diode Conduction) | | -1.4 | A |
| $P_D$ | Power Dissipation | $T_A$=25℃ | 1.4 | W |
| | | $T_A$=70℃ | 0.9 | |
| $T_J$ | Operation Junction Temperature | | 150 | ℃ |
| $T_{STG}$ | Storage Temperature Range | | -55~+150 | ℃ |
| $R_{\theta JA}$ | Thermal Resistance Junction to Ambient | | 120 | ℃/W |

**Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress rating only and functional device operation is not implied**

## ELECTRICAL CHARACTERISTICS ($T_A$=25℃ Unless otherwise noted)

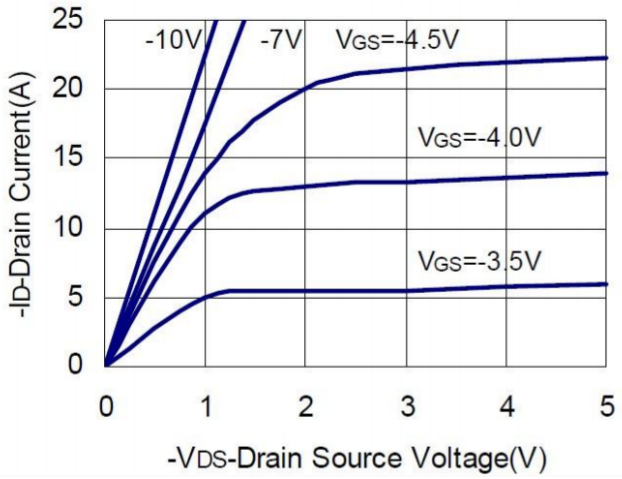
| Symbol | Parameter | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Static Parameters** | | | | | | |
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V, $I_D$=-250Ua | -30 | | | V |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$=$V_{GS}$, $I_D$=-250uA | -1.0 | | -2.0 | V |
| $I_{GSS}$ | Gate Leakage Current | $V_{DS}$=0V, $V_{GS}$=±20V | | | ±100 | nA |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$=-24V, $V_{GS}$=0 | | | -1 | uA |
| | | $V_{DS}$=-24V, $V_{GS}$=0<br>$T_J$=55℃ | | | -5 | |
| $R_{DS(ON)}$ | Drain-Source On-Resistance | $V_{GS}$=-10V, $I_D$=-5.6A | | 37 | 50 | mΩ |
| | | $V_{GS}$=-4.5V, $I_D$=-4.3A | | 52 | 75 | |
| **Source-Drain Diode** | | | | | | |
| $V_{SD}$ | Diode Forward Voltage | $I_S$=-1.0A, $V_{GS}$=0V | | -0.7 | -1.0 | V |
| **Dynamic Parameters** | | | | | | |
| $Q_g$ | Total Gate Charge | $V_{DS}$=-20V | | 6 | | nC |
| $Q_{gs}$ | Gate-Source Charge | $V_{GS}$=-4.5V | | 2.7 | | |
| $Q_{gd}$ | Gate-Drain Charge | $I_D$=-4.0A | | 3.1 | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=-25V | | 645 | | pF |
| $C_{oss}$ | Output Capacitance | $V_{GS}$=0V | | 272 | | |
| $C_{rss}$ | Reverse Transfer Capacitance | f=1MHz | | 105 | | |
| $T_{d(on)}$ | Turn-On Time | $V_{DS}$=-12V | | 9 | | nS |
| $T_r$ | | $I_D$=-4A | | 16.5 | | |
| $T_{d(off)}$ | Turn-Off Time | $V_{GEN}$=-10V | | 22 | | |
| $T_f$ | | $R_G$=3.3Ω | | 21 | | |

**Note: 1. Pulse test: pulse width<=300uS, duty cycle<=2%**

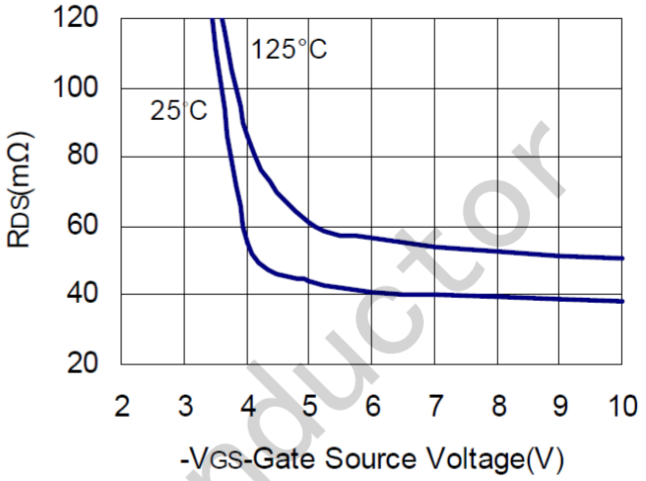
**2.Static parameters are based on package level with recommended wire bonding**

## TYPICAL CHARACTERISTICS (25℃ Unless Note)

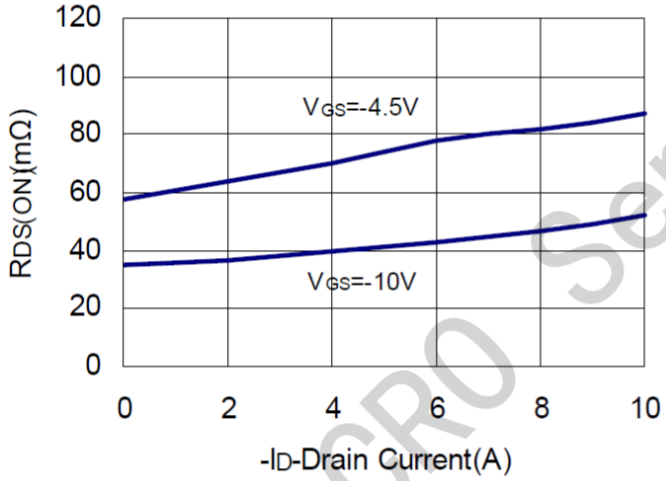
**Output Characteristics**



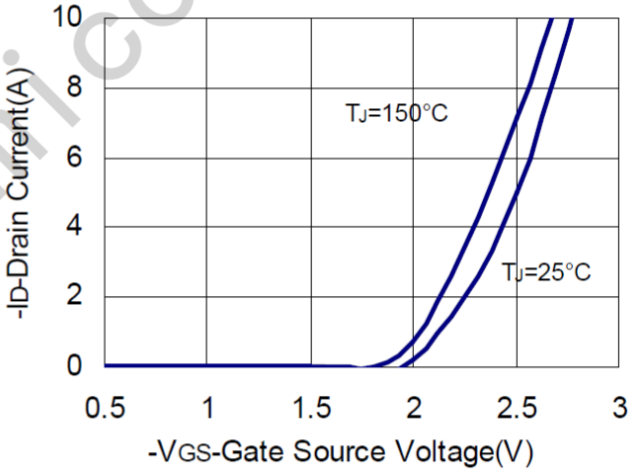

**Drain-Source On Resistance**



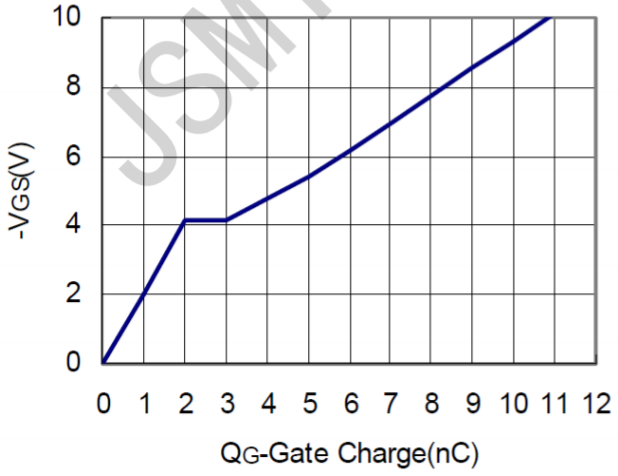

**Drain Source On Resistance**



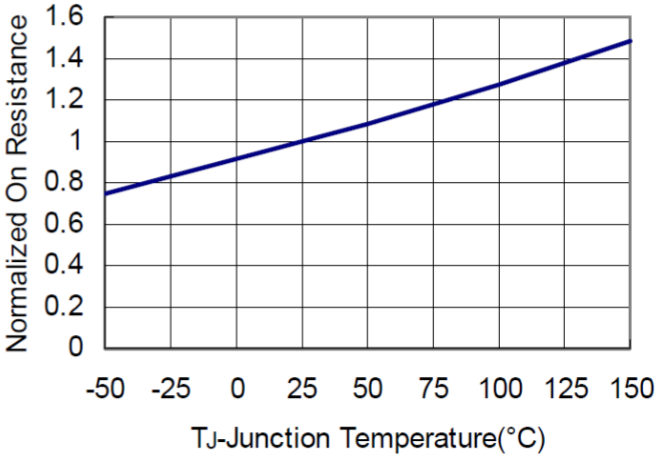

**Transfer Characteristics**




**Gate Charge**

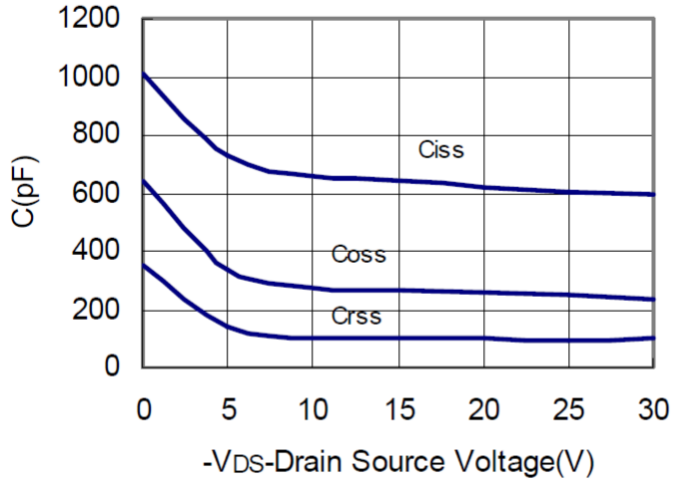



**Drain Source On Resistance**

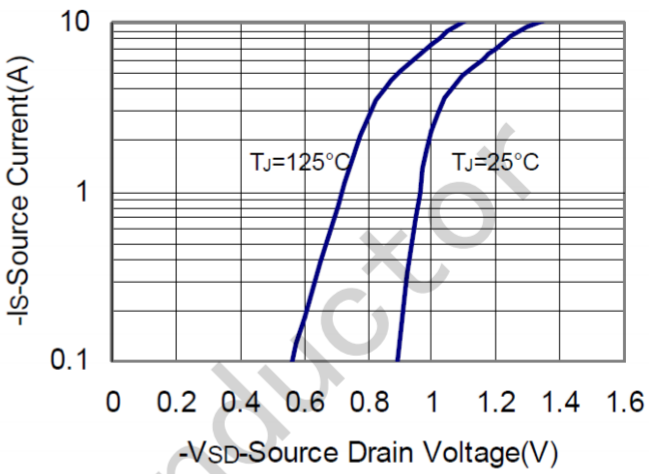


## TYPICAL CHARACTERISTICS (continuous)

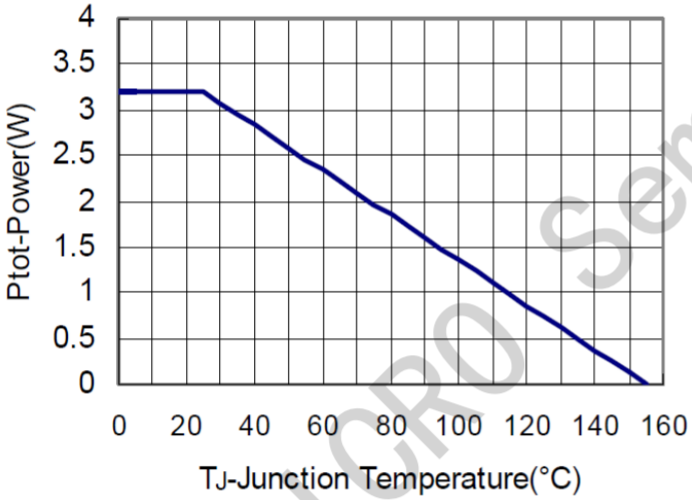
**Capacitance**



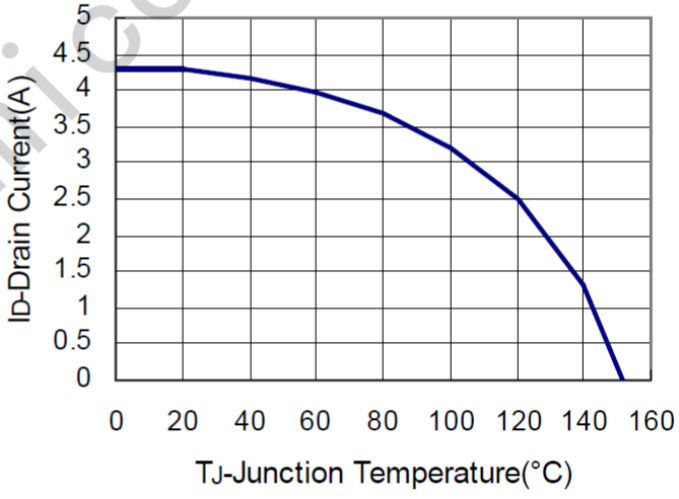

**Source Drain Diode Forward**



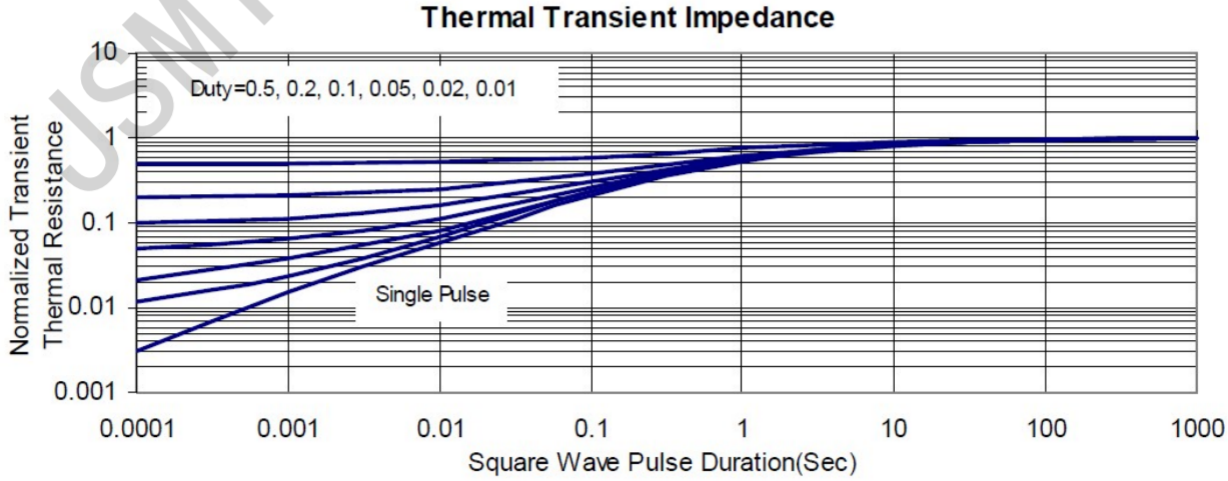

**Power Dissipation**



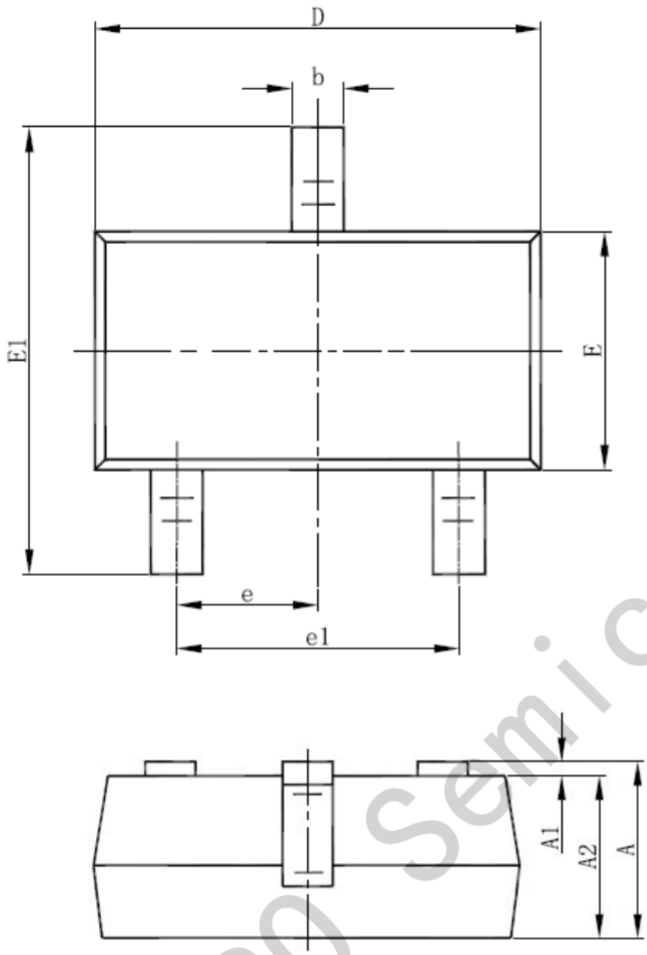

**Drain Current**




**Thermal Transient Impedance**



## SOT23-3L PACKAGE OUTLINE DIMENSIONS






| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E | 1.500 | 1.700 | 0.059 | 0.067 |
| E1 | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |