SSM3K01F

Unit: mm

- Small package
- Low on resistance：Ron = 120 mΩ (max) (V_{GS} = 4 V)

  ：Ron = 150 mΩ (max) (V_{GS} = 2.5 V)

- Low gate threshold voltage: V_{th} = 0.6~1.1 V (V_{DS} = 3 V, I_D = 0.1 mA)

Absolute Maximum Ratings (Ta = 25°C)

| Characteristics		Symbol	Rating	Unit
Drain-source voltage		V_{DS}	30	V
Gate-source voltage		V_{GSS}	±10	V
Drain current	DC	I_D	1.3	A
	Pulse	I_{DP}	2.6	
Drain power dissipation		P_D	200	mW
Channel temperature		T_{ch}	150	°C
Storage temperature range		T_{stg}	−55~150	°C

Note:　Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the TY Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

1. GATE
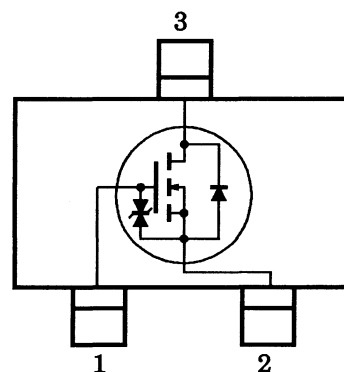2. SOURCE
3. DRAIN

S-MINI
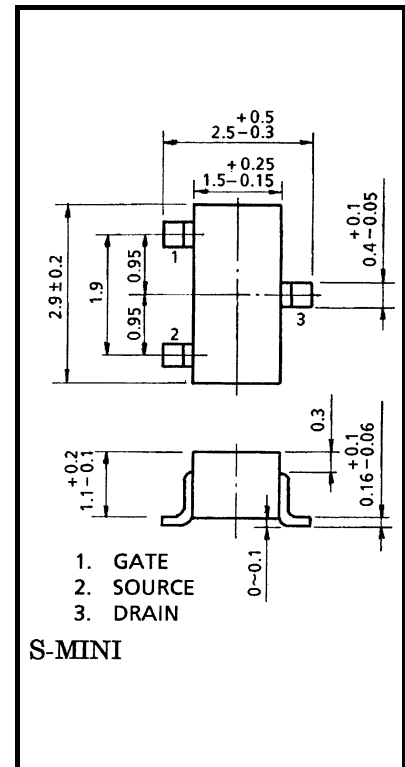
Weight: 0.012 g (typ.)

Marking
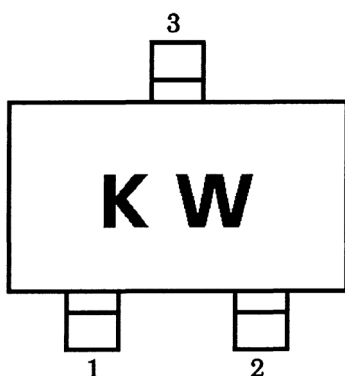
Equivalent Circuit

Handling Precaution

When handling individual devices (which are not yet mounted on a circuit board), be sure that the environment is protected against electrostatic electricity. Operators should wear anti-static clothing, and containers and other objects that come into direct contact with devices should be made of anti-static materials.

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Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition		Min	Typ.	Max	Unit
Gate leakage current		I_{GSS}	$V_{GS} = \pm 10$ V, $V_{DS} = 0$		—	—	±5	µA
Drain-source breakdown voltage		$V_{(BR)DSS}$	$I_D = 1$ mA, $V_{GS} = 0$		30	—	—	V
Drain cut-off current		I_{DSS}	$V_{DS} = 30$ V, $V_{GS} = 0$		—	—	1	µA
Gate threshold voltage		V_{th}	$V_{DS} = 3$ V, $I_D = 0.1$ mA		0.6	—	1.1	V
Forward transfer admittance		$|Y_{fs}|$	$V_{DS} = 3$ V, $I_D = 0.65$ A	(Note)	2.0	—	—	S
Drain-source ON resistance		$R_{DS(ON)}$	$I_D = 0.65$ A, $V_{GS} = 4$ V	(Note)	—	85	120	mΩ
			$I_D = 0.65$ A, $V_{GS} = 2.5$ V	(Note)	—	115	150	
Input capacitance		C_{iss}	$V_{DS} = 10$ V, $V_{GS} = 0$, f = 1 MHz		—	152	—	pF
Reverse transfer capacitance		C_{rss}	$V_{DS} = 10$ V, $V_{GS} = 0$, f = 1 MHz		—	41	—	pF
Output capacitance		C_{oss}	$V_{DS} = 10$ V, $V_{GS} = 0$, f = 1 MHz		—	102	—	pF
Switching time	Turn-on time	t_{on}	$V_{DD} = 15$ V, $I_D = 0.5$ A, $V_{GS} = 0$~2.5 V, $R_G = 4.7$ Ω		—	45	—	ns
	Turn-off time	t_{off}			—	69	—	

Note: Pulse test

Switching Time Test Circuit
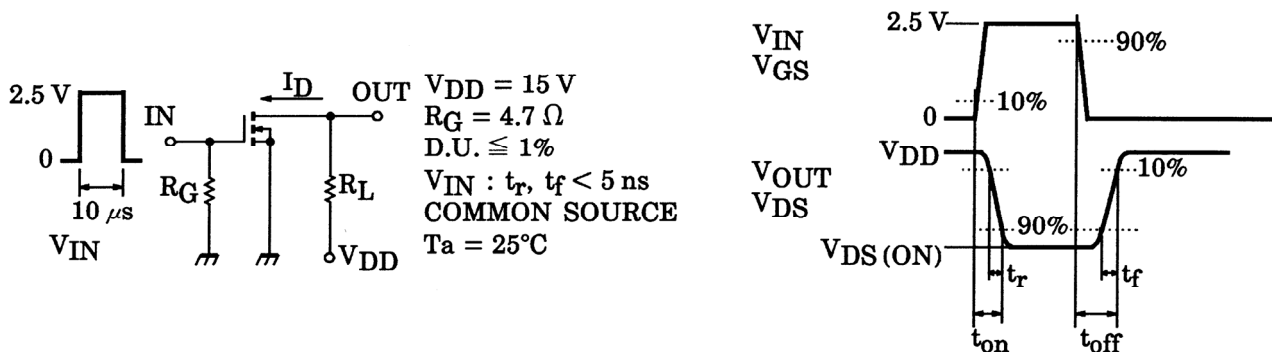
Precaution

V_{th} can be expressed as voltage between gate and source when low operating current value is $I_D = 100$ µA for this product. For normal switching operation, $V_{GS(ON)}$ requires higher voltage than V_{th} and $V_{GS(off)}$ requires lower voltage than V_{th}.

(Relationship can be established as follows: $V_{GS(off)} < V_{th} < V_{GS(ON)}$)

Please take this into consideration for using the device.