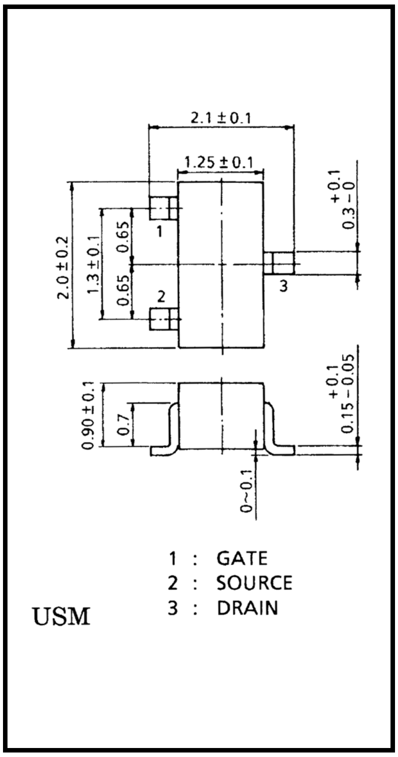
SSM3J15FU

- Small package
- Low ON resistance : R_{on} = 12 Ω (max) (@V_{GS} = −4 V)
  : R_{on} = 32 Ω (max) (@V_{GS} = −2.5 V)

Unit: mm



Weight: 0.006g(typ.)

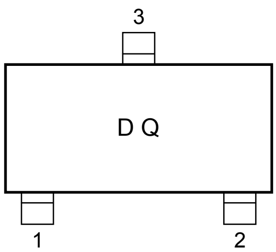
Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Drain-Source voltage		V_{DS}	−30	V
Gate-Source voltage		V_{GSS}	±20	V
Drain current	DC	I_D	−100	mA
	Pulse	I_{DP}	−200	
Drain power dissipation (Ta = 25°C)		P_D (Note 1)	150	mW
Channel temperature		T_{ch}	150	°C
Storage temperature range		T_{stg}	−55~150	°C

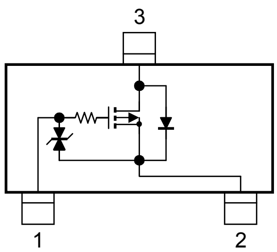
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

Note 1: Total rating, mounted on FR4 board
(25.4 mm × 25.4 mm × 1.6 t, Cu Pad: 0.6 mm^2 × 3)

Marking



Equivalent Circuit (top view)



Handling Precaution

When handling individual devices (which are not yet mounting 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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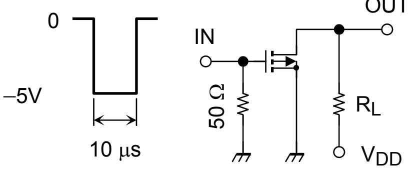
Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	MIN.	TYP.	MAX.	UNIT
Gate leakage current		I_{GSS}	V_{GS} = ±16 V, V_{DS} = 0	—	—	±1	μA
Drain-Source breakdown voltage		$V_{(BR)\ DSS}$	I_D = −0.1 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	−1.1	—	−1.7	V
Forward transfer admittance		$\|Y_{fs}\|$	V_{DS} = −3 V, I_D = −10 mA	20	—	—	mS
Drain-Source ON resistance		$R_{DS\ (ON)}$	I_D = −10 mA, V_{GS} = −4 V	—	8	12	Ω
			I_D = −1 mA, V_{GS} = −2.5 V	—	14	32	
Input capacitance		C_{iss}	V_{DS} = −3 V, V_{GS} = 0, f = 1 MHz	—	9.1	—	pF
Reverse transfer capacitance		C_{rss}		—	3.5	—	pF
Output capacitance		C_{oss}		—	8.6	—	pF
Switching time	Turn-on time	t_{on}	V_{DD} = −5 V, I_D = −10 mA, V_{GS} = 0~−5 V	—	65	—	ns
	Turn-off time	t_{off}		—	175	—	

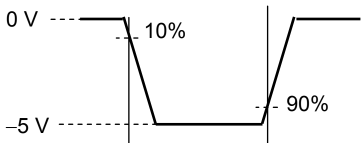
Switching Time Test Circuit

(a) Test circuit

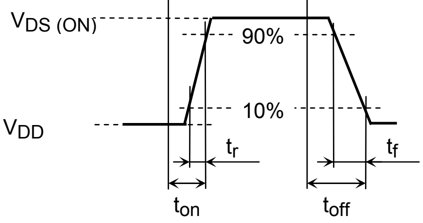


V_{DD} = −5 V
Duty ≦ 1%
V_{IN}: t_r, t_f < 5 ns
(Z_{out} = 50 Ω)
Common Source
Ta = 25°C

(b) V_{IN}



(c) V_{OUT}



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.