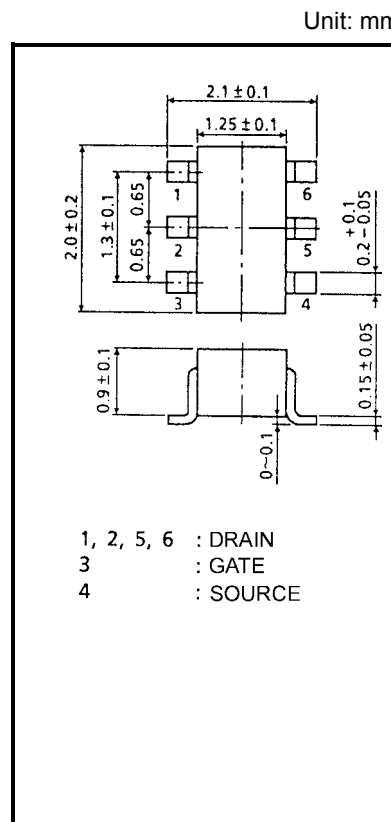**TY Semicondutor**® TY

SSM6J07FU

Power Management Switch

High Speed Switching Applications

Unit: mm

- Small package
- Low on resistance
    - : R_{on} = 450 mΩ (max) (V_{GS} = −10 V)
    - : R_{on} = 800 mΩ (max) (V_{GS} = −4 V)

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	−0.8	A
	Pulse	I_{DP}	−1.6	
Drain power dissipation		P_D (Note1)	300	mW
Channel temperature		T_{ch}	150	°C
Storage temperature range		T_{stg}	−55~150	°C

Note 1: Mounted on FR4 board
(25.4 mm × 25.4 mm × 1.6 t, Cu Pad: 0.32 mm^2 × 6)

1, 2, 5, 6 : DRAIN
3 : GATE
4 : SOURCE

Weight: 6.8 mg (typ.)

25.4 mm × 25.4 mm × 1.6 t, Cu Pad: 0.32 mm^2 × 6

0.4 mm

0.8 mm

Marking

6 5 4

K D F

1 2 3
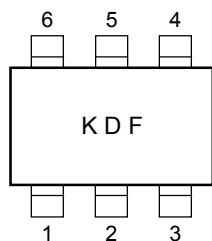
Equivalent Circuit
Figure 1:
(top view)

6 5 4

1 2 3
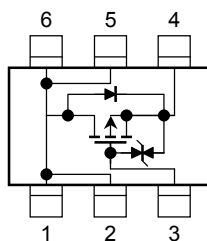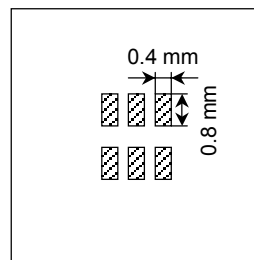
SSM6J07FU

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.

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition		Min	Typ.	Max	Unit
Gate leakage current		I_{GSS}	$V_{GS} = \pm16$ V, $V_{DS} = 0$		—	—	±1	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}	$V_{DS} = -5$ V, $I_D = -0.1$ mA		−1.1	—	−1.8	V
Forward transfer admittance		$|Y_{fs}|$	$V_{DS} = -5$ V, $I_D = -0.4$ A	(Note2)	0.7	—	—	S
Drain-source ON resistance		$R_{DS(ON)}$	$I_D = -0.4$ A, $V_{GS} = -10$ V	(Note2)	—	350	450	mΩ
			$I_D = -0.4$ A, $V_{GS} = -4$ V	(Note2)	—	570	800	
			$I_D = -0.4$ A, $V_{GS} = -3.3$ V	(Note2)	—	0.7	1.6	Ω
Input capacitance		C_{iss}	$V_{DS} = -15$ V, $V_{GS} = 0$, f = 1 MHz		—	130	—	pF
Reverse transfer capacitance		C_{rss}	$V_{DS} = -15$ V, $V_{GS} = 0$, f = 1 MHz		—	16	—	pF
Output capacitance		C_{oss}	$V_{DS} = -15$ V, $V_{GS} = 0$, f = 1 MHz		—	52	—	pF
Switching time	Turn-on time	t_{on}	$V_{DD} = -15$ V, $I_D = -0.4$ A,		—	28	—	ns
	Turn-off time	t_{off}	$V_{GS} = 0\sim-4$ V, $R_G = 10$ Ω		—	38	—	ns

Note 2: Pulse test

Switching Time Test Circuit

(a) Test circuit
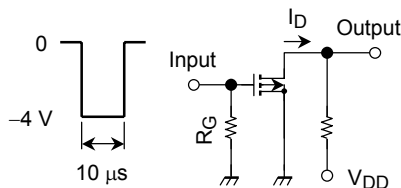
(b) V_{IN}

(c) V_{OUT}

$V_{DD} = -15$ V
$R_G = 10$ Ω
D.U. ≦ 1%
Input: t_r, t_f < 5 ns
Common source
Ta = 25°C
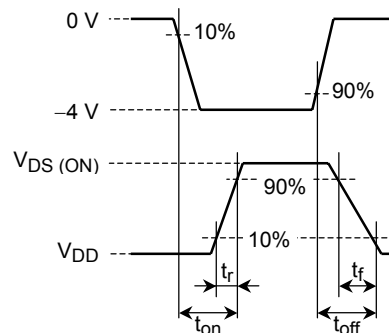
Precaution

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.
V_{GS} recommended voltage of −4.0 V or higher to turn on this product.