Unit: mm

TOSHIBA Field Effect Transistor Silicon P Channel MOS Type (U-MOSIII)

# SSM6J26FE

## **High Speed Switching Applications**

• Optimum for high-density mounting in small packages

• Low on-resistance:  $R_{on} = 230m\Omega \text{ (max) } (@V_{GS} = -4 \text{ V})$ 

 $R_{on} = 330 m\Omega \text{ (max) (@V_{GS} = -2.5 V)}$ 

 $R_{on} = 980 m\Omega \text{ (max) } (@V_{GS} = -1.8 \text{ V})$ 

## Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit	
Drain-Source voltage		$V_{DS}$	-20	V	
Gate-Source voltage		V <sub>GSS</sub>	± 8	V	
Drain current	DC	I <sub>D</sub>	-0.5	А	
	Pulse	I <sub>DP</sub>	-1.5		
Drain power dissipation		P <sub>D</sub> (Note 1)	500	mW	
Channel temperature		T <sub>ch</sub>	150	°C	
Storage temperature range		T <sub>stg</sub>	-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.

1.6±0.05 1.2±0.05 1.2±0.05 1.2±0.05 1.2±0.05 4 90.0450 1,2,5,6 :Drain 3 :Gate 4 :Source ES6 JEDEC —

JEITA —

TOSHIBA 2-2N1A

Weight: 3.0 mg (typ.)

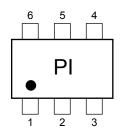
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

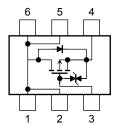
Note 1: Mounted on FR4 board.

 $(25.4 \text{ mm} \times 25.4 \text{ mm} \times 1.6 \text{ t}, \text{ Cu Pad: } 645 \text{ mm}^2)$ 

#### Marking

#### **Equivalent Circuit (top view)**





#### **Handling Precaution**

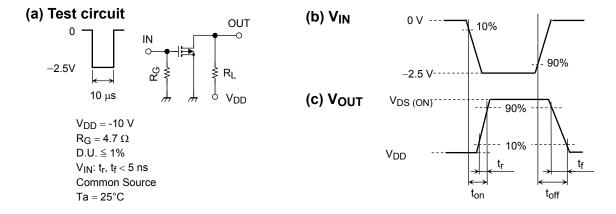
When handling individual devices (which are not yet mounted on a circuit board), be sure that the environment is protected against electrostatic electricity. Operators should wear anti-static clothing, and containers and other objects that come into direct contact with devices should be made of anti-static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

## **Electrical Characteristics (Ta = 25°C)**

Chara	acteristics	Symbol	Test Condition	Min	Тур.	Max	Unit	
Gate leakage curi	rent	I <sub>GSS</sub>	$V_{GS} = \pm 8 \text{ V}, V_{DS} = 0$	_	_	±1	μА	
Drain-Source breakdown voltage	V (BR) DSS	$I_D = -1 \text{ mA}, V_{GS} = 0$	-20	_	_	- V		
	V (BR) DSX	I <sub>D</sub> = -1 mA, V <sub>GS</sub> = +8 V	-12	_	_			
Drain cut-off curre	ent	I <sub>DSS</sub>	V <sub>DS</sub> = -20 V, V <sub>GS</sub> = 0	_	_	-1	μА	
Gate threshold vo	oltage	V <sub>th</sub>	$V_{DS} = -3 \text{ V}, I_{D} = -0.1 \text{ mA}$	-0.5	_	-1.1	V	
Forward transfer	admittance	Y <sub>fs</sub>	$V_{DS} = -3 \text{ V}, I_{D} = -0.25 \text{ A}$ (No	te2) 0.8	1.7	_	S	
Drain-Source on-resistance		R <sub>DS</sub> (ON)	$I_D = -0.25 \text{ A}, V_{GS} = -4 \text{ V}$ (No	te2) —	200	230	mΩ	
			$I_D = -0.25 \text{ A}, V_{GS} = -2.5 \text{ V}$ (No	te2) —	260	330		
			$I_D = -0.25 \text{ A}, V_{GS} = -1.8 \text{ V}$ (No	te2) —	400	980		
Input capacitance	citance $C_{iss}$ $V_{DS} = -10 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$			250	_	pF		
Reverse transfer capacitance		C <sub>rss</sub>	V <sub>DS</sub> = -10 V, V <sub>GS</sub> = 0, f = 1 MHz		35	_	pF	
Output capacitance		C <sub>oss</sub>	V <sub>DS</sub> = -10 V, V <sub>GS</sub> = 0, f = 1 MHz		45	_	pF	
Switching time	Turn-on time	t <sub>on</sub>	V <sub>DD</sub> = -10 V, I <sub>D</sub> = -0.25 A,	_	14	_	ns	
	Turn-off time	t <sub>off</sub>	$V_{GS} = 0$ ~-2.5 V, $R_G = 4.7 \Omega$	_	15	_		

Note2: Pulse test

# **Switching Time Test Circuit**

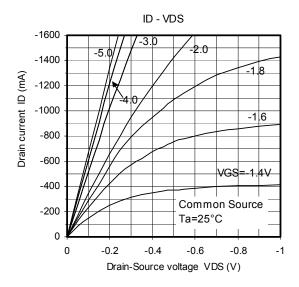


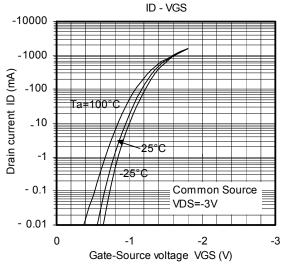
#### **Precaution**

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

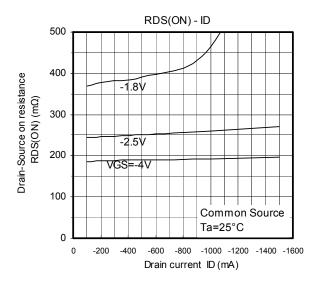
(The relationship can be established as follows:  $V_{GS\ (off)} < V_{th} < V_{GS\ (on)}$ )

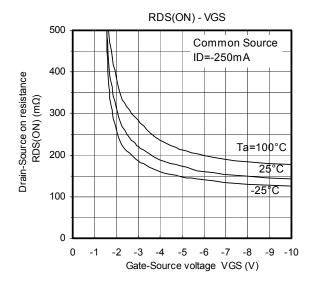
Please take this into consideration when using the device.

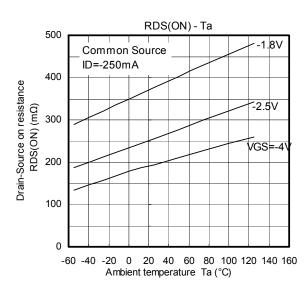


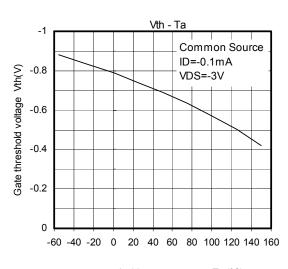


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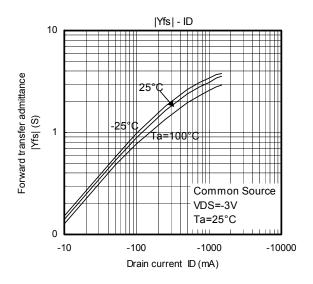


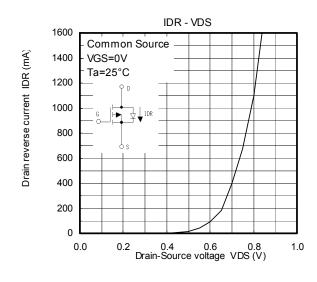


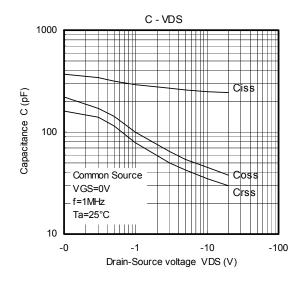


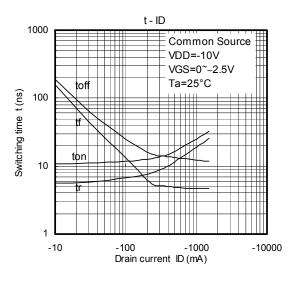


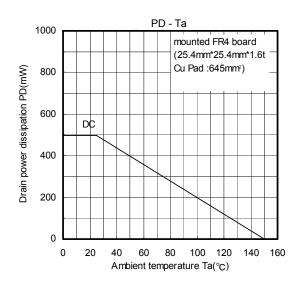
Ambient temperature Ta (°C)











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20070701-EN GENERAL

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