

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

# SSM6P26TU

## High Speed Switching Applications

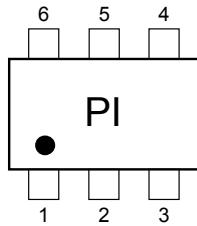
- Optimum for high-density mounting in small packages
- Low on-resistance:  $R_{on} = 230\text{m}\Omega$  (max) (@ $V_{GS} = -4\text{ V}$ )
- $R_{on} = 330\text{m}\Omega$  (max) (@ $V_{GS} = -2.5\text{ V}$ )
- $R_{on} = 980\text{m}\Omega$  (max) (@ $V_{GS} = -1.8\text{ V}$ )

## Maximum Ratings (Ta = 25°C) (Q1, Q2 Common)

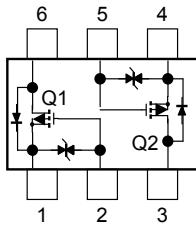
Characteristics	Symbol	Rating	Unit
Drain-Source voltage	V <sub>DS</sub>	-20	V
Gate-Source voltage	V <sub>GSS</sub>	± 8	V
Drain current	DC	I <sub>D</sub>	A
	Pulse	I <sub>DP</sub>	
Drain power dissipation	P <sub>D</sub> (Note1)	500	mW
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature range	T <sub>stg</sub>	-55~150	°C

Note1: Mounted on FR4 board. (total dissipation)  
(25.4 mm × 25.4 mm × 1.6 t, Cu Pad: 645 mm<sup>2</sup> )

## Marking

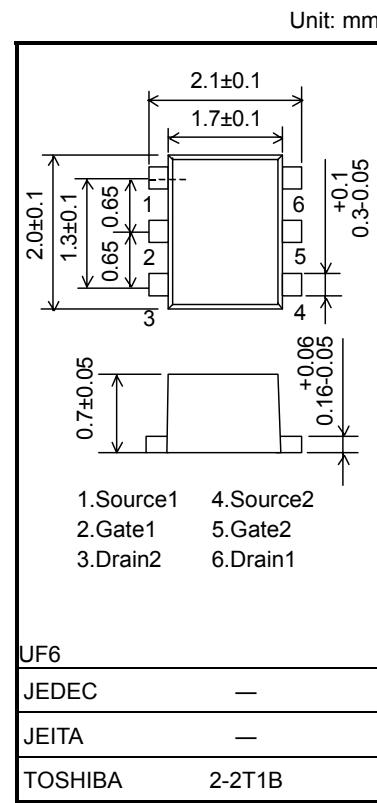


## Equivalent Circuit (top view)



## 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.



Weight: 7.0 mg (typ.)

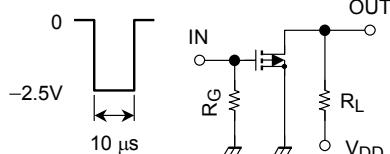
## Electrical Characteristics (Ta = 25°C) (Q1, Q2 Common)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±8 V, V <sub>DS</sub> = 0	—	—	±1	μA
Drain-Source breakdown voltage	V <sub>(BR) DSS</sub>	I <sub>D</sub> = -1 mA, V <sub>GS</sub> = 0	-20	—	—	V
	V <sub>(BR) DSX</sub>	I <sub>D</sub> = -1 mA, V <sub>GS</sub> = +8 V	-12	—	—	
Drain cut-off current	I <sub>DSS</sub>	V <sub>DS</sub> = -20 V, V <sub>GS</sub> = 0	—	—	-1	μA
Gate threshold voltage	V <sub>th</sub>	V <sub>DS</sub> = -3 V, I <sub>D</sub> = -0.1 mA	-0.5	—	-1.1	V
Forward transfer admittance	Y <sub>fs</sub>	V <sub>DS</sub> = -3 V, I <sub>D</sub> = -0.25 A (Note2)	0.8	1.7	—	S
Drain-Source on-resistance	R <sub>DS</sub> (ON)	I <sub>D</sub> = -0.25 A, V <sub>GS</sub> = -4 V (Note2)	—	200	230	mΩ
		I <sub>D</sub> = -0.25 A, V <sub>GS</sub> = -2.5 V (Note2)	—	260	330	
		I <sub>D</sub> = -0.25 A, V <sub>GS</sub> = -1.8 V (Note2)	—	400	980	
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -10 V, V <sub>GS</sub> = 0, f = 1 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	—
	Turn-off time	t <sub>off</sub>	V <sub>GS</sub> = 0~2.5 V, R <sub>G</sub> = 4.7 Ω	—	15	—

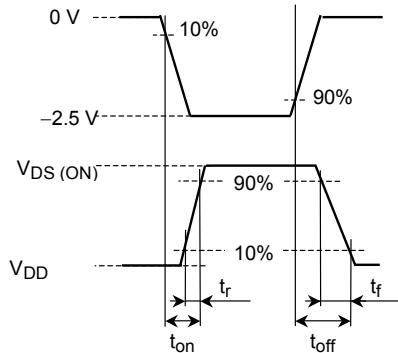
Note2: Pulse test

## Switching Time Test Circuit

## (a) Test circuit



$V_{DD} = -10 V$   
 $R_G = 4.7 \Omega$   
 $D.U. \leq 1\%$   
 $V_{IN}: t_r, t_f < 5 ns$   
 Common Source  
 $T_a = 25^\circ C$

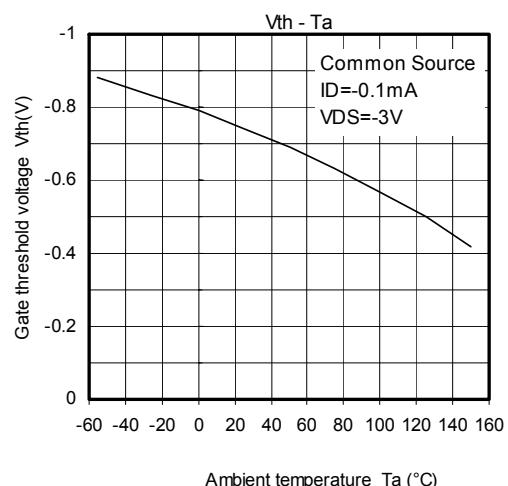
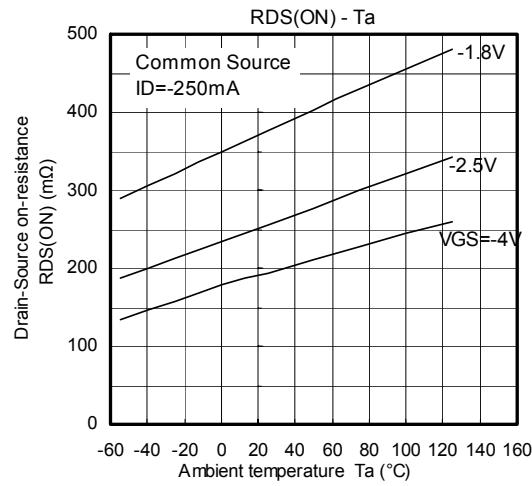
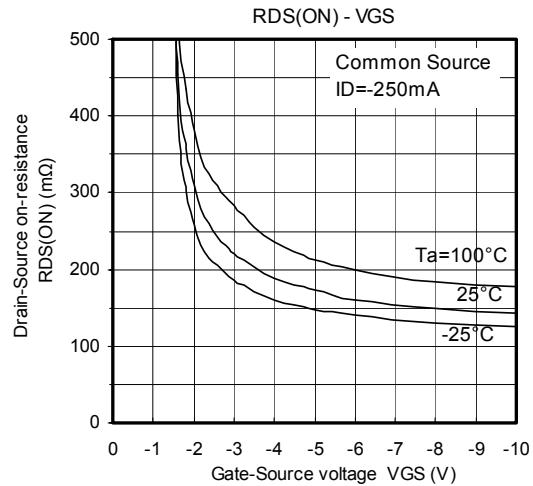
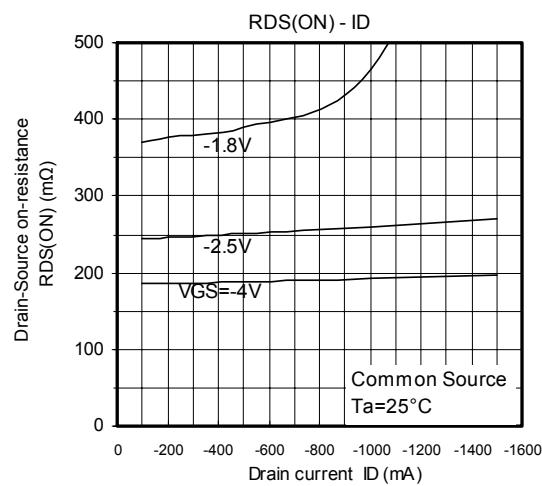
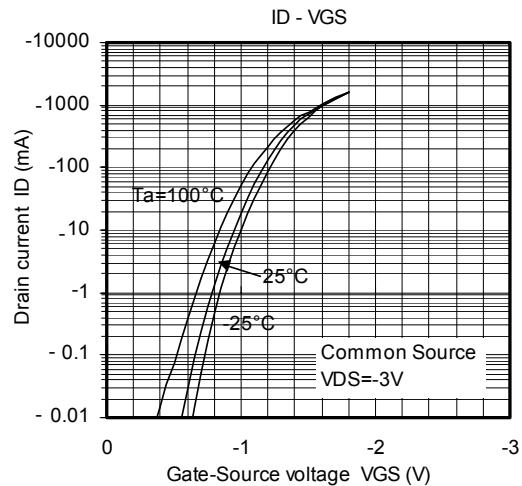
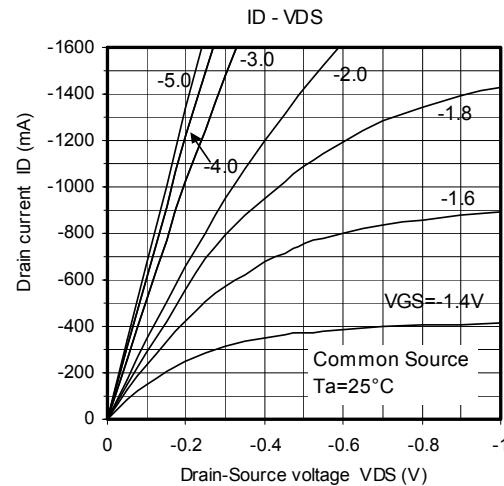
(b) V<sub>IN</sub>(c) V<sub>OUT</sub>

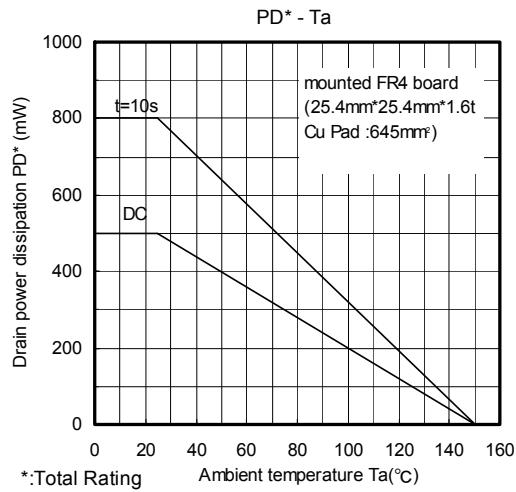
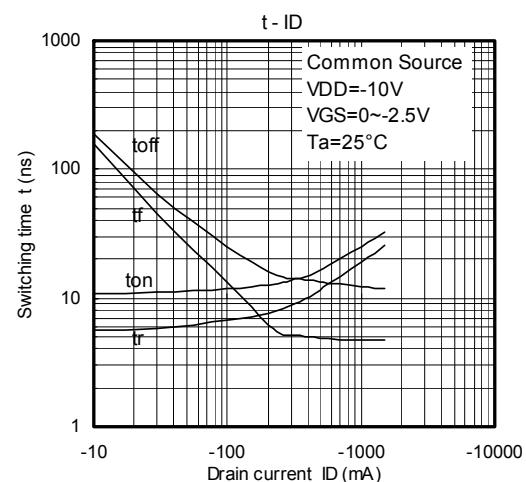
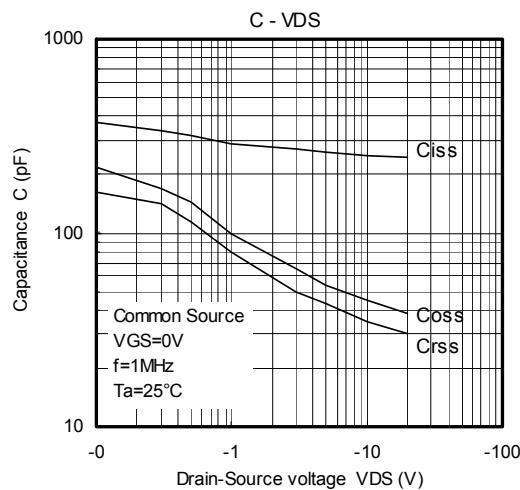
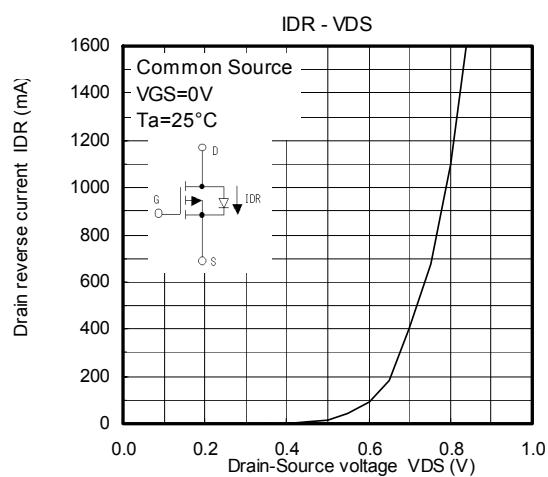
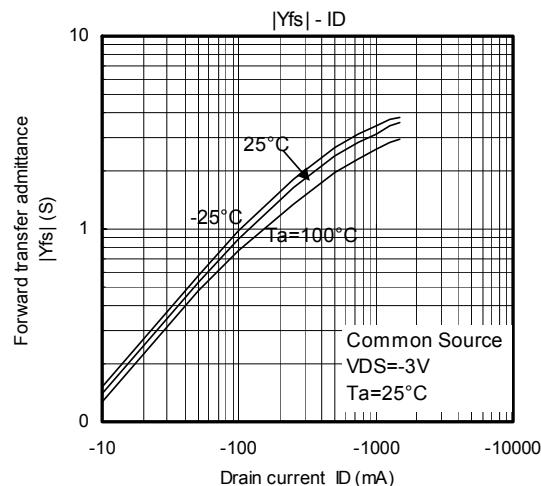
## Precaution

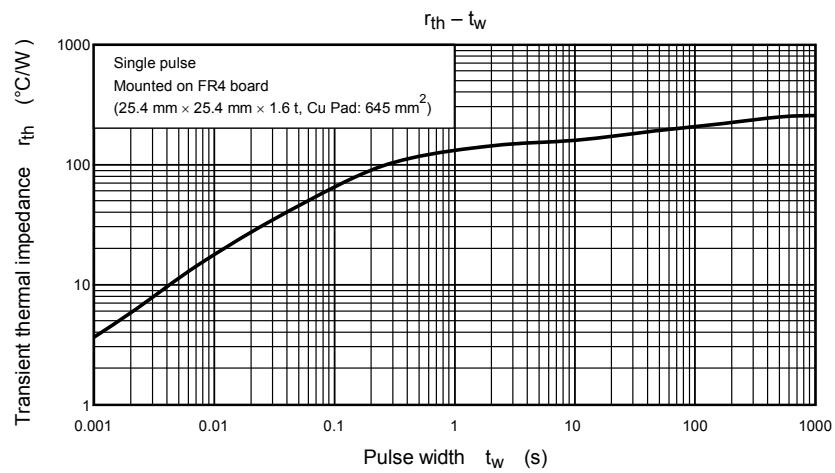
$V_{th}$  can be expressed as the voltage between gate and source when the low operating current value is  $I_D = -100 \mu A$  for this product. For normal switching operation,  $V_{GS}$  (on) requires a higher voltage than  $V_{th}$  and  $V_{GS}$  (off) requires a lower voltage than  $V_{th}$ .

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

Please take this into consideration when using the device. The  $V_{GS}$  recommended voltage for turning on this product is -1.8 V or higher.







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