1.6 ± 0.2

0.8 + 0.1

2-2H1B

Unit: mm

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type

SSM3K16FS

High Speed Switching Applications Analog Switch Applications

• Suitable for high-density mounting due to compact package

• Low on resistance: $R_{on} = 3.0 \Omega \text{ (max) } (@V_{GS} = 4 \text{ V})$

: $R_{on} = 4.0 \Omega \text{ (max) } (@V_{GS} = 2.5 \text{ V})$

: $R_{on} = 15 \Omega (max) (@V_{GS} = 1.5 V)$

Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit	
Drain-Source voltage		V_{DS}	20	V	
Gate-Source voltage		V _{GSS}	±10	V	
Drain current	DC	I _D	100	mA	
	Pulse	I _{DP}	200		
Drain power dissipation (Ta = 25°C)		P _D	100	mW	
Channel temperature		T _{ch}	150	°C	
Storage temperature range		T _{stg}	-55 to 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.

Weight: 2.4 mg (typ.)

SSM

JEDEC JEITA TOSHIBA

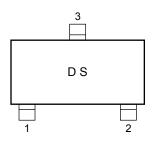
1: Gate 2. Source 3: Drain

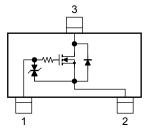
operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook

("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Marking

Internal connections





Handling Precaution

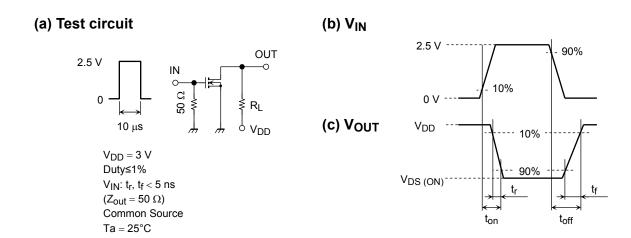
When handling individual devices (which are not yet mounting on a circuit board), be sure that the environment is protected against electrostatic electricity. Operators should wear anti-static clothing, and containers and other objects that come into direct contact with devices should be made of anti-static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

Start of commercial production 2001-03

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Тур.	Max	Unit
Gate leakage current		I _{GSS}	$V_{GS} = \pm 10 \text{ V}, V_{DS} = 0$	_	_	±1	μА
Drain-Source breakdown voltage		V (BR) DSS	$I_D = 0.1 \text{ mA}, V_{GS} = 0$	20	_	_	V
Drain cut-off curre	ent	I _{DSS}	V _{DS} = 20 V, V _{GS} = 0	_	_	1	μΑ
Gate threshold vo	Itage	V _{th}	$V_{DS} = 3 \text{ V}, I_{D} = 0.1 \text{ mA}$	0.6	_	1.1	V
Forward transfer a	admittance	Y _{fs}	V _{DS} = 3 V, I _D = 10 mA	40	_	_	mS
Drain-Source ON resistance		R _{DS} (ON)	$I_D = 10$ mA, $V_{GS} = 4$ V	_	1.5	3.0	Ω
			$I_D = 10 \text{ mA}, V_{GS} = 2.5 \text{ V}$	_	2.2	4.0	
			I _D = 1 mA, V _{GS} = 1.5 V	_	5.2	15	
Input capacitance		C _{iss}	$V_{DS} = 3 V$, $V_{GS} = 0$, $f = 1 MHz$	_	9.3	_	pF
Reverse transfer	capacitance	C _{rss}	$V_{DS} = 3 V$, $V_{GS} = 0$, $f = 1 MHz$	_	4.5	_	pF
Output capacitance		Coss	$V_{DS} = 3 V$, $V_{GS} = 0$, $f = 1 MHz$	_	9.8	_	pF
Switching time	Turn-on time	t _{on}	$V_{DD} = 3 \text{ V}, I_D = 10 \text{ mA},$ $V_{GS} = 0 \text{ to } 2.5 \text{ V}$	_	70	_	ns
	Turn-off time	t _{off}		_	125	_	

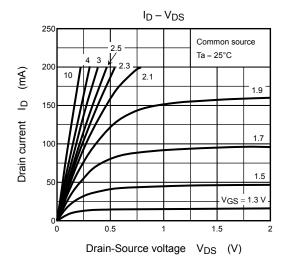
Switching Time Test Circuit

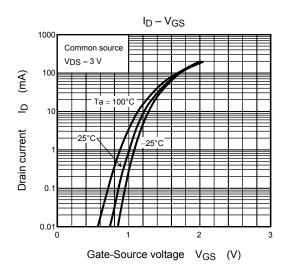


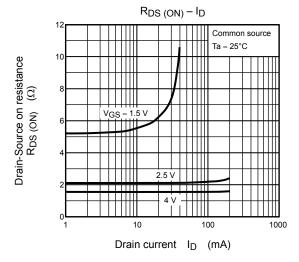
Precaution

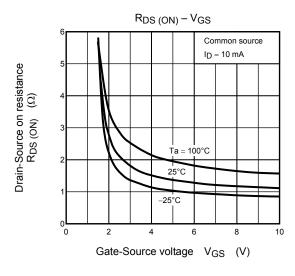
 V_{th} can be expressed as voltage between gate and source when low operating current value is I_D = 100 μA for this product. For normal switching operation, V_{GS} (on) requires higher voltage than V_{th} and V_{GS} (off) requires lower voltage than V_{th} . (Relationship can be established as follows: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

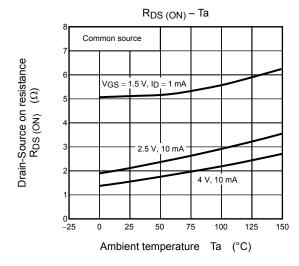
Please take this into consideration for using the device.

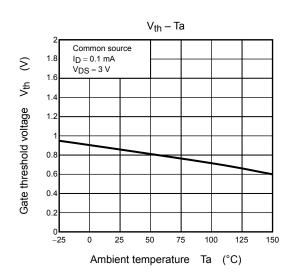




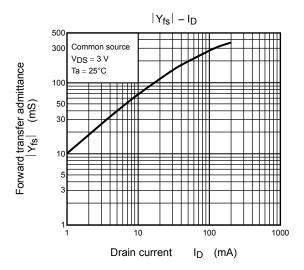


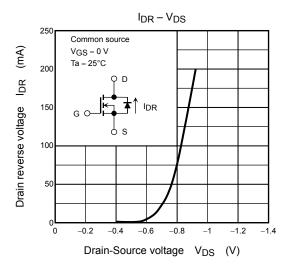


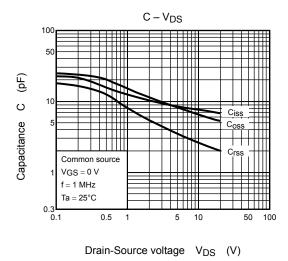


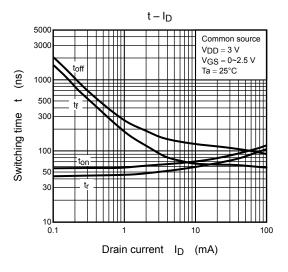


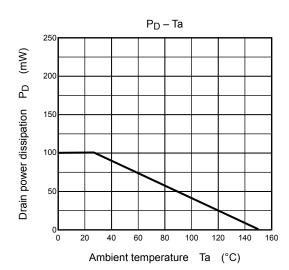
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