TOSHIBA Field Effect Transistor Silicon N Channel MOS Type

SSM3K01F

High Speed Switching Applications

Unit: mm

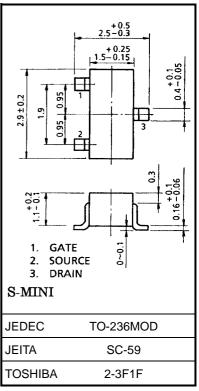
- Small package
- Low on resistance: Ron = 120 m Ω (max) (VGS = 4 V)

: Ron = 150 m Ω (max) (VGS = 2.5 V)

• Low gate threshold voltage: $V_{th} = 0.6 \sim 1.1 \text{ V (V}_{DS} = 3 \text{ V, I}_{D} = 0.1 \text{ mA)}$

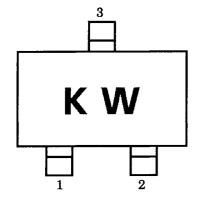
Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit	
Drain-source voltage		V _{DS}	30	V	
Gate-source voltage		V _{GSS}	±10	V	
Drain current	DC	I _D	1.3	Α	
	Pulse	I _{DP}	2.6		
Drain power dissipation		PD	200	mW	
Channel temperature		T _{ch}	150	°C	
Storage temperature range		T _{stg}	-55~150	°C	

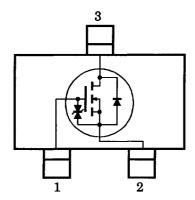


Weight: 0.012 g (typ.)

Marking



Equivalent Circuit



Handling Precaution

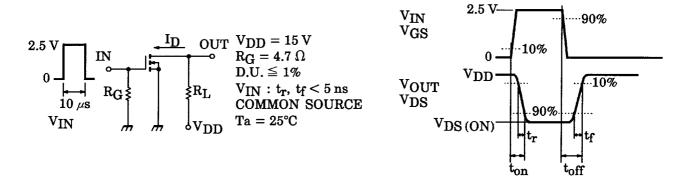
When handling individual devices (which are not yet mounted on a circuit board), be sure that the environment is protected against electrostatic electricity. Operators should wear anti-static clothing, and containers and other objects that come into direct contact with devices should be made of anti-static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

Electrical Characteristics (Ta = 25°C)

Chara	Characteristics Symbol Test Condition		Min	Тур.	Max	Unit	
Gate leakage current		I _{GSS}	$V_{GS} = \pm 10 \text{ V}, V_{DS} = 0$		_	±5	μΑ
Drain-source breakdown voltage		V (BR) DSS	$I_D = 1 \text{ mA}, V_{GS} = 0$		_	_	V
Drain cut-off curre	ent	I _{DSS}	$V_{DS} = 30 \text{ V}, V_{GS} = 0$	_	_	1	μА
Gate threshold vo	oltage	V _{th}	$V_{DS} = 3 \text{ V}, I_D = 0.1 \text{ mA}$	0.6	_	1.1	V
Forward transfer	admittance	Y _{fs}	$V_{DS} = 3 \text{ V}, I_D = 0.65 \text{ A}$ (Not	e) 2.0	_	_	S
Drain-source ON resistance		R _{DS (ON)}	I _D = 0.65 A, V _{GS} = 4 V (Not	e) —	85	120	mΩ
			I _D = 0.65 A, V _{GS} = 2.5 V (Not	e) —	115	150	
Input capacitance		C _{iss}	$V_{DS} = 10 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$		152	_	pF
Reverse transfer capacitance		C _{rss}	V _{DS} = 10 V, V _{GS} = 0, f = 1 MHz		41	_	pF
Output capacitance		Coss	$V_{DS} = 10 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$		102	_	pF
Switching time	Turn-on time	t _{on}	V_{DD} = 15 V, I_{D} = 0.5 A, V_{GS} = 0~2.5 V, R_{G} = 4.7 Ω	_{',}	45	_	ns
	Turn-off time	t _{off}		_	69	_	

Note: Pulse test

Switching Time Test Circuit



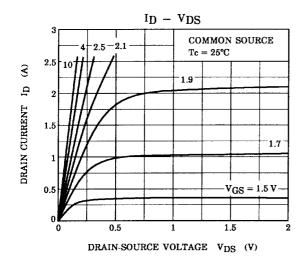
Precaution

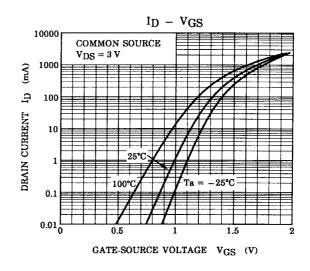
 V_{th} can be expressed as voltage between gate and source when low operating current value is I_D = 100 μA for this product. For normal switching operation, V_{GS} (ON) requires higher voltage than V_{th} and V_{GS} (off) requires lower voltage than V_{th} .

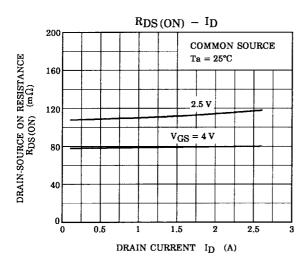
(Relationship can be established as follows: $VGS (off) < V_{th} < V_{GS} (on)$)

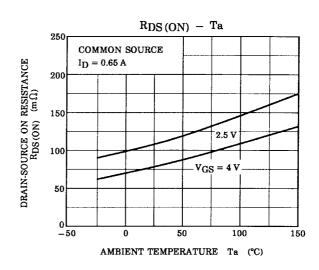
Please take this into consideration for using the device.

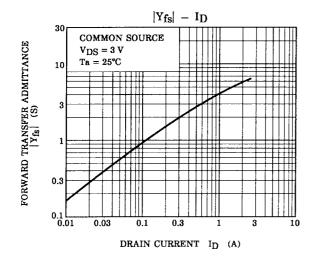
VGS recommended voltage of 2.5 V or higher to turn on this product.

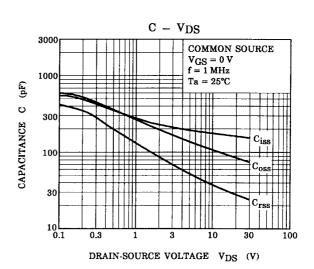


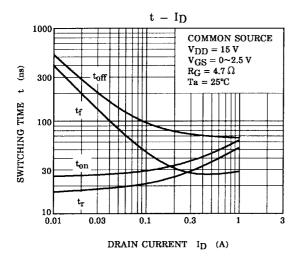


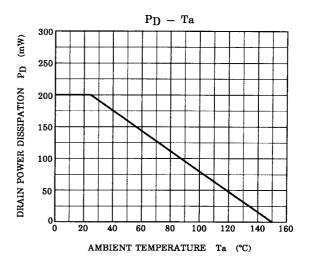












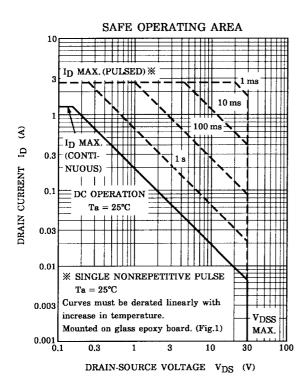




Figure 1 25.4 mm \times 25.4 mm \times 1.6 t (a Cu pad of 0.8 mm² area)

RESTRICTIONS ON PRODUCT USE

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