

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE

# SSM3K01F

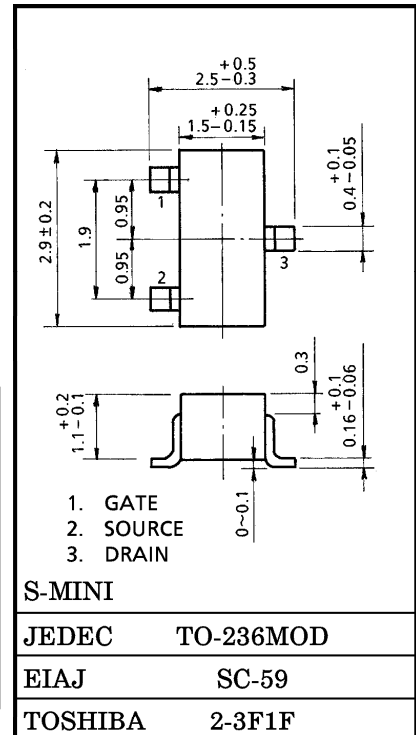
HIGH SPEED SWITCHING APPLICATIONS

Unit in mm

- Small Package
- Low on Resistance : Ron = 120 mΩ (Max) (VGS = 4 V)  
: Ron = 150 mΩ (Max) (VGS = 2.5 V)
- Low Gate Threshold Voltage : Vth = 0.6~1.1 V  
(VDS = 3 V, ID = 0.1 mA)

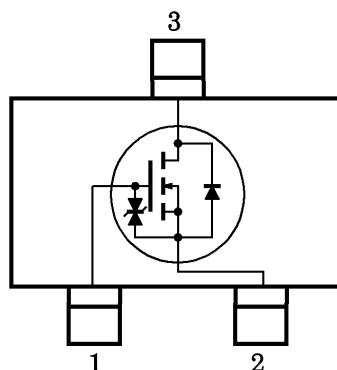
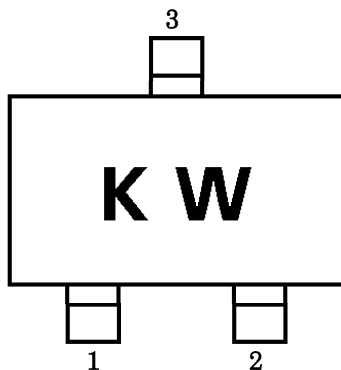
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V <sub>DS</sub>	30	V
Gate-Source Voltage		V <sub>GSS</sub>	±10	V
Drain Current	DC	I <sub>D</sub>	1.3	A
	Pulse	I <sub>DP</sub>	2.6	
Drain Power Dissipation		P <sub>D</sub>	200	mW
Channel Temperature		T <sub>ch</sub>	150	°C
Storage Temperature Range		T <sub>stg</sub>	-55~150	°C



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.

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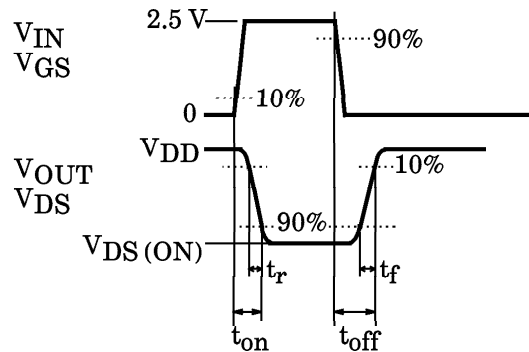
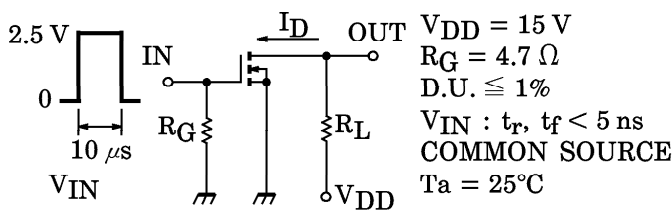
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \pm 10\text{ V}, V_{DS} = 0$	—	—	$\pm 5$	$\mu\text{A}$
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1\text{ mA}, V_{GS} = 0$	30	—	—	V
Drain Cut-off Current	$I_{DSS}$	$V_{DS} = 30\text{ V}, V_{GS} = 0$	—	—	1	$\mu\text{A}$
Gate Threshold Voltage	$V_{th}$	$V_{DS} = 3\text{ V}, I_D = 0.1\text{ mA}$	0.6	—	1.1	V
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = 3\text{ V}, I_D = 0.65\text{ A}$ (Note 1)	2.0	—	—	S
Drain-Source ON Resistance	$R_{DS(ON)}$	$I_D = 0.65\text{ A}, V_{GS} = 4\text{ V}$ (Note 1)	—	85	120	m $\Omega$
		$I_D = 0.65\text{ A}, V_{GS} = 2.5\text{ V}$ (Note 1)	—	115	150	
Input Capacitance	$C_{iss}$	$V_{DS} = 10\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	152	—	pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS} = 10\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	41	—	pF
Output Capacitance	$C_{oss}$	$V_{DS} = 10\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	102	—	pF
Switching Time	Turn-on Time	$t_{on}$	—	45	—	ns
	Turn-off Time	$t_{off}$		69		

(Note 1) : Pulse test

SWITCHING TIME TEST CIRCUIT



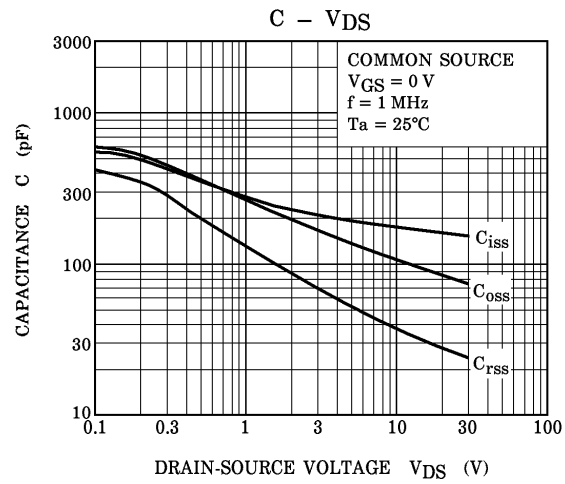
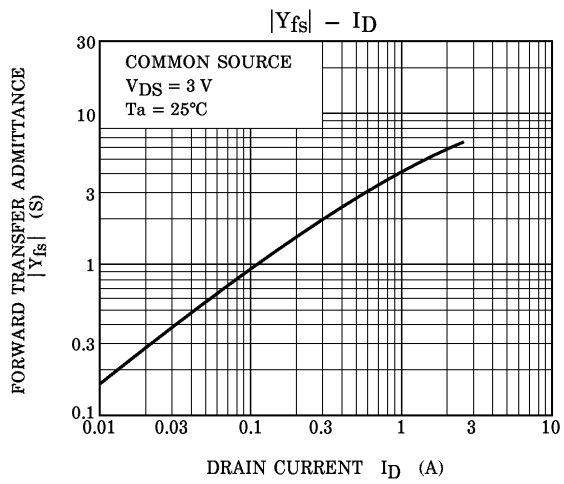
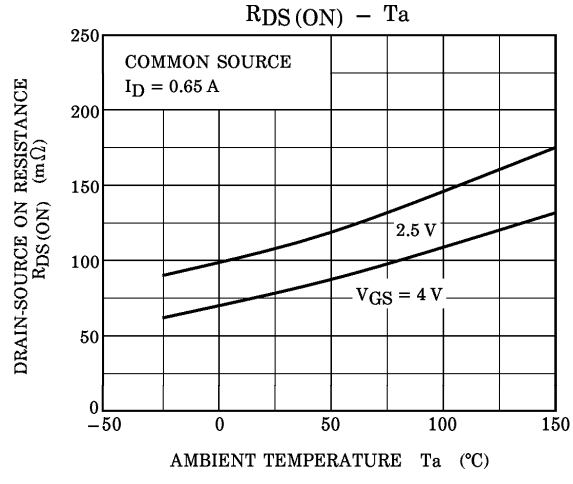
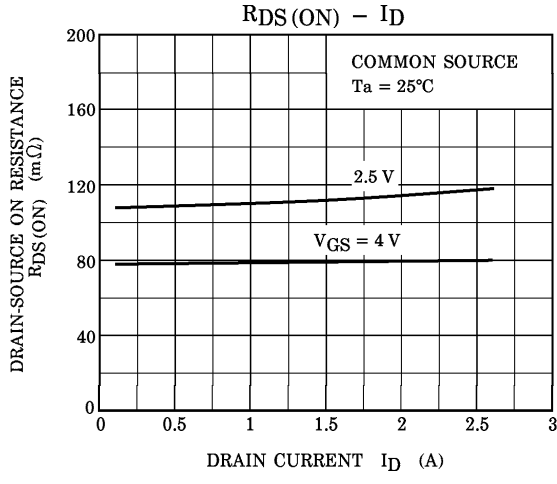
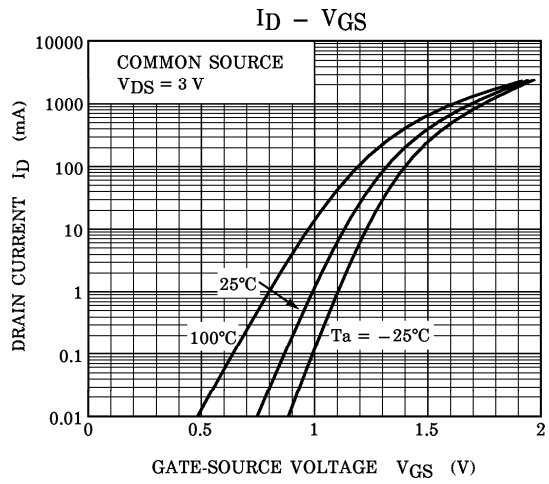
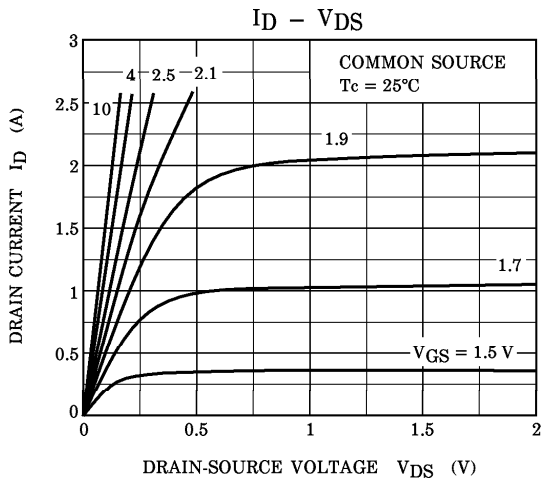
PRECAUTION

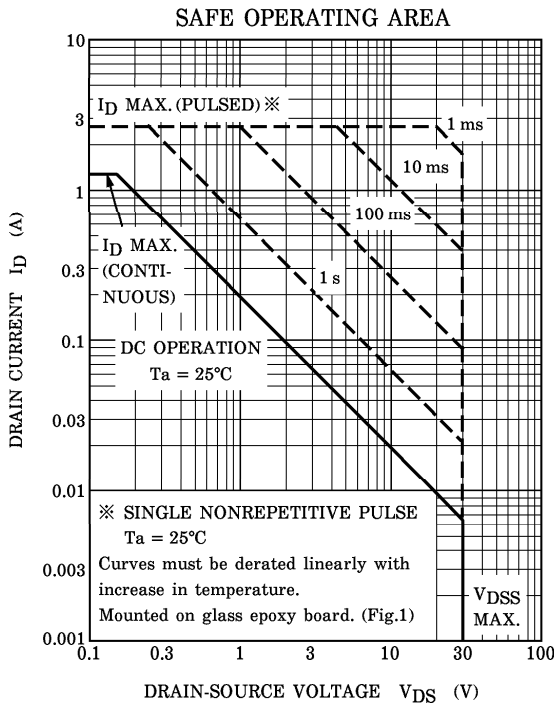
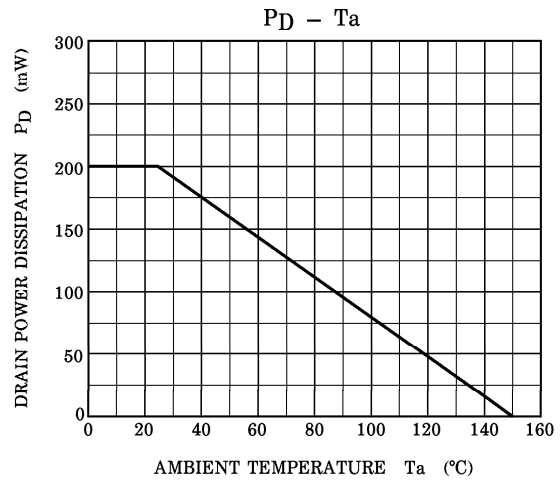
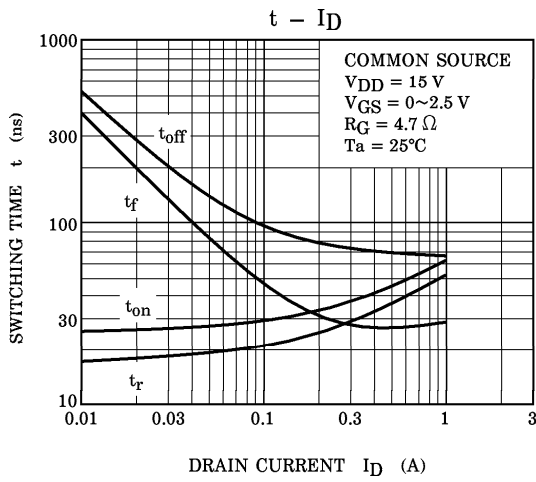
$V_{th}$  can be expressed as voltage between gate and source when low operating current value is  $I_D = 100\ \mu\text{A}$  for this product. For normal switching operation,  $V_{GS(ON)}$  requires higher voltage than  $V_{th}$  and  $V_{GS(off)}$  requires lower voltage than  $V_{th}$ .

(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 2.5 V or higher to turn on this product.





(Fig.1) : 25.4 mm × 25.4 mm × 1.6 t (a Cu pad of 0.8 mm<sup>2</sup> area)

