

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE

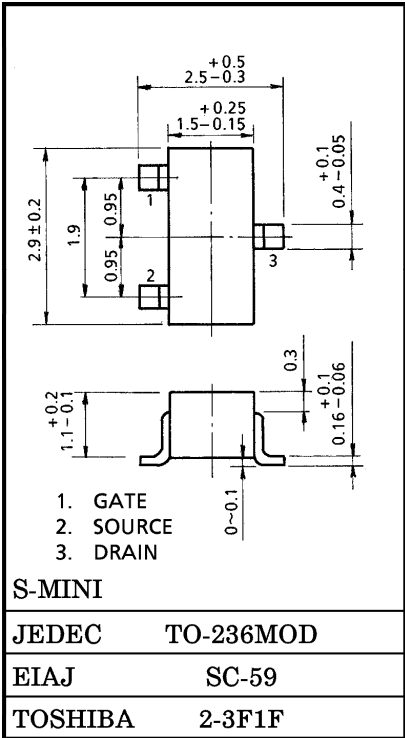
SSM3K02F

HIGH SPEED SWITCHING APPLICATIONS

- Small Package
- Low on Resistance : $R_{on} = 200\text{ m}\Omega$ (Max) ($V_{GS} = 4\text{ V}$)
: $R_{on} = 250\text{ m}\Omega$ (Max) ($V_{GS} = 2.5\text{ V}$)
- Low Gate Threshold Voltage : $V_{th} = 0.6\sim 1.1\text{ V}$
($V_{DS} = 3\text{ V}$, $I_D = 0.1\text{ mA}$)

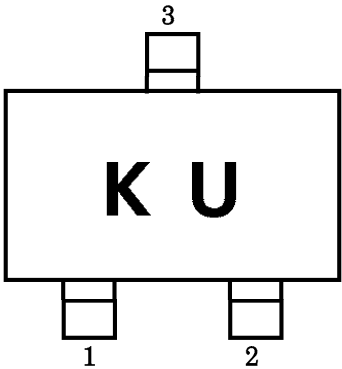
MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GSS}	± 10	V
Drain Current	DC	I_D	1.0	A
	Pulse	I_{DP}	2.0	
Drain Power Dissipation		P_D	200	mW
Channel Temperature		T_{ch}	150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	$-55\sim 150$	$^\circ\text{C}$

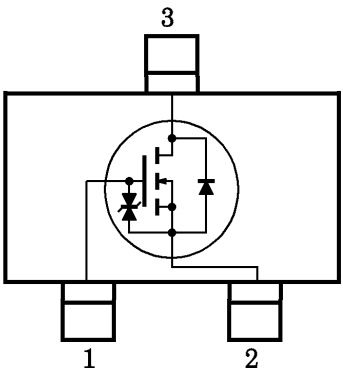


Weight : 0.012 g

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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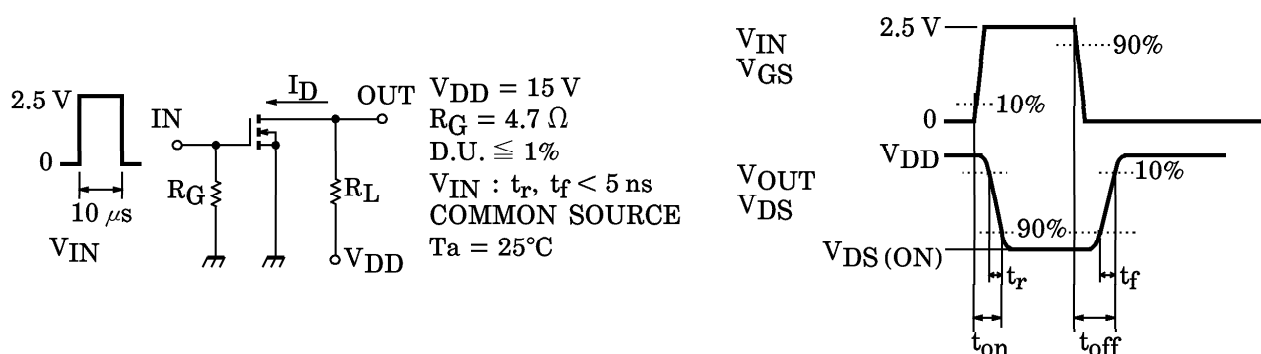
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 10 \text{ V}, V_{DS} = 0$	—	—	± 5	μA
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	μA
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} $	$V_{DS} = 3 \text{ V}, I_D = 0.5 \text{ A}$ (Note 1)	1.5	—	—	S
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 0.5 \text{ A}, V_{GS} = 4 \text{ V}$ (Note 1)	—	140	200	$\text{m}\Omega$
			$I_D = 0.5 \text{ A}, V_{GS} = 2.5 \text{ V}$ (Note 1)	—	180	250	
Input Capacitance		C_{iss}	$V_{DS} = 10 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$	—	115	—	pF
Reverse Transfer Capacitance		C_{rss}	$V_{DS} = 10 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$	—	24	—	pF
Output Capacitance		C_{oss}	$V_{DS} = 10 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$	—	60	—	pF
Switching Time	Turn-on Time	t_{on}	$V_{DD} = 15 \text{ V}, I_D = 0.5 \text{ A},$ $V_{GS} = 0 \sim 2.5 \text{ V}, R_G = 4.7 \Omega$	—	52	—	ns
	Turn-off Time	t_{off}		—	80	—	

(Note 1) : Pulse test

SWITCHING TIME TEST CIRCUIT

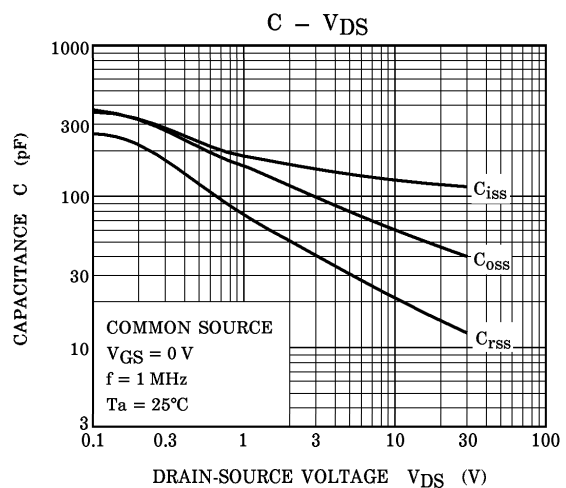
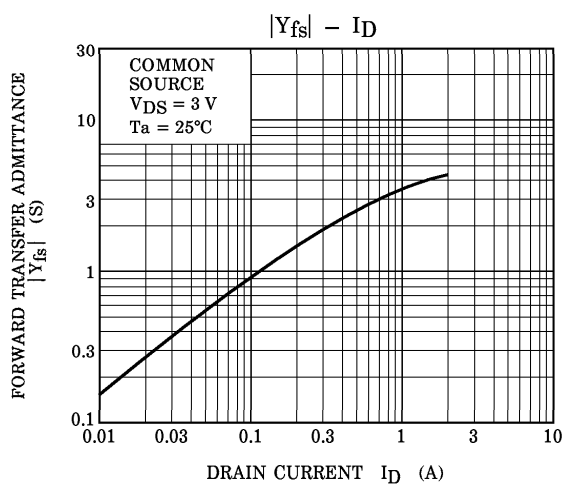
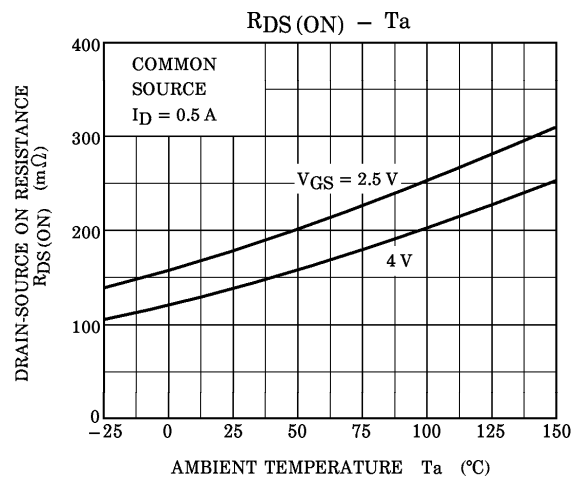
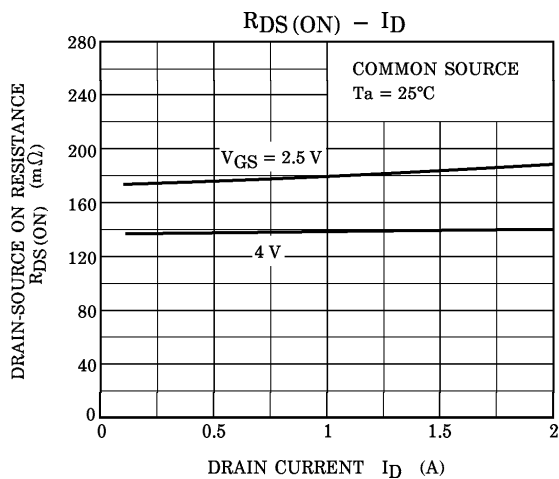
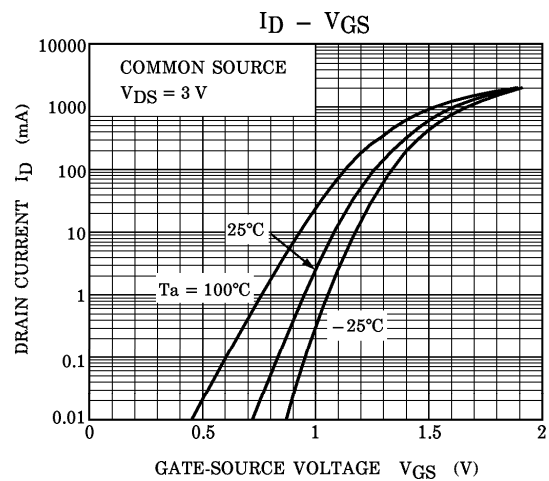
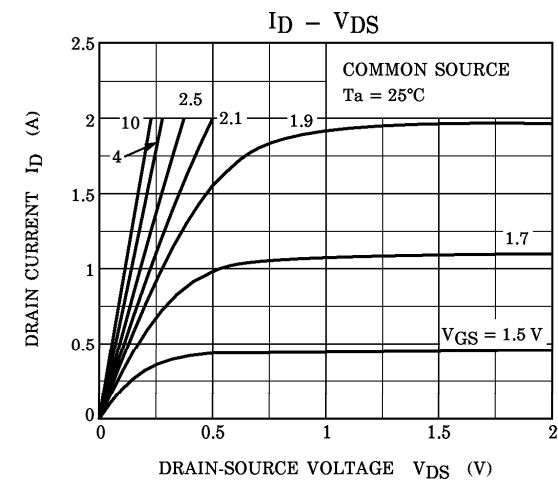


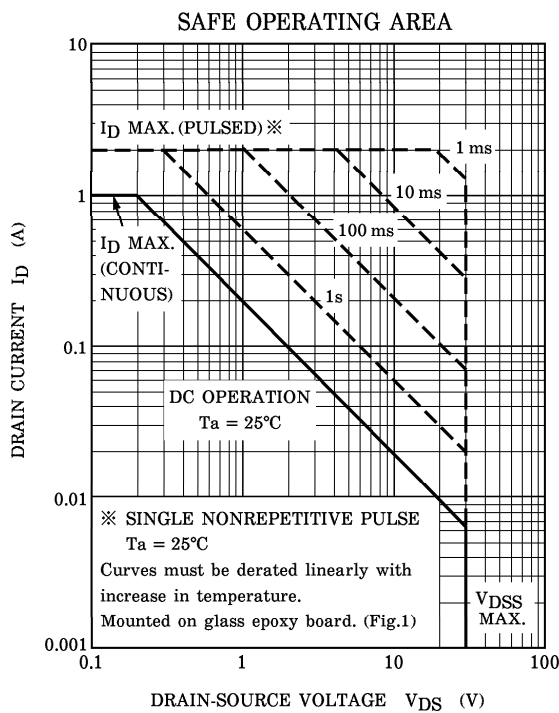
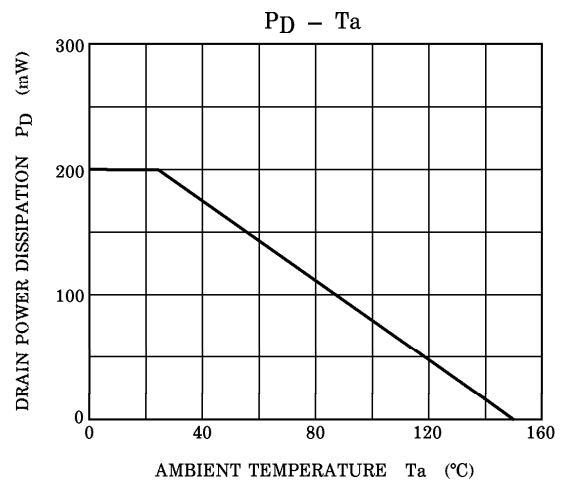
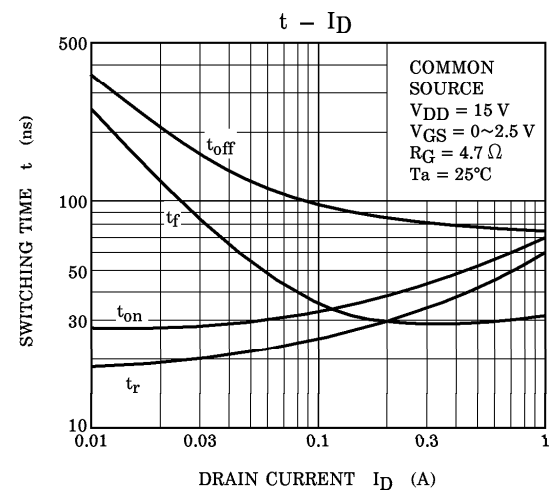
PRECAUTION

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 mm² area)

