

TOSHIBA FIELD EFFECT TRANSISTOR SILICON P CHANNEL MOS TYPE

SSM3J01F

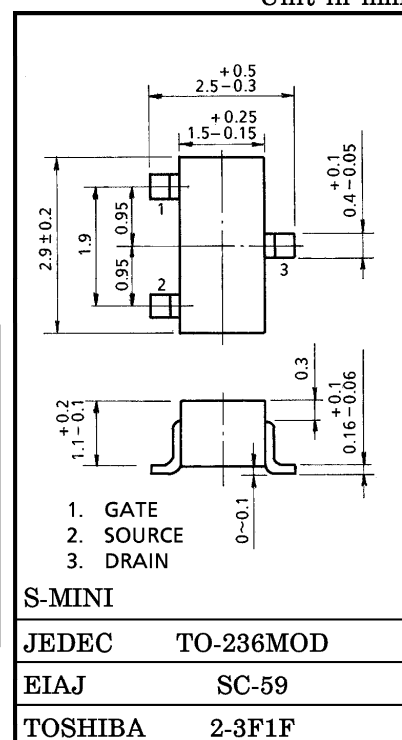
HIGH SPEED SWITCHING APPLICATIONS

Unit in mm

- Small Package
- Low on Resistance : $R_{on} = 0.4 \Omega$ (Max.) ($V_{GS} = -4 V$)
: $R_{on} = 0.6 \Omega$ (Max.) ($V_{GS} = -2.5 V$)
- Low Gate Threshold Voltage

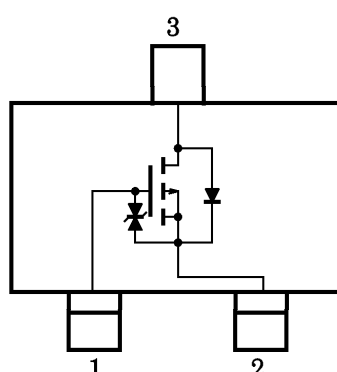
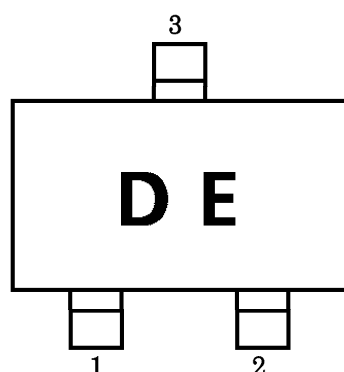
MAXIMUM RATINGS ($T_a = 25^\circ C$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GSS}	± 10	V
Drain Current	DC	I_D	mA
	Pulse	I_{DP}	
Drain Power Dissipation ($T_a = 25^\circ C$)	P_D	200	mW
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55~150	$^\circ C$



MARKING

EQUIVALENT CIRCUIT



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.

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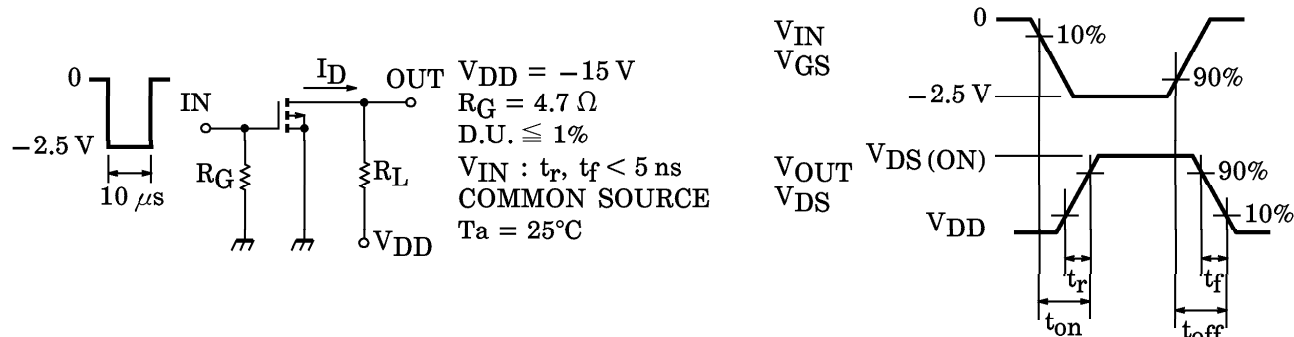
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 10\text{ V}, V_{DS} = 0$	—	—	± 1	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} $ (Note)	$V_{DS} = -3\text{ V}, I_D = -0.35\text{ A}$	1.0	—	—	S
Drain-Source ON Resistance		$R_{DS(ON)}$ (Note)	$I_D = -0.35\text{ A}, V_{GS} = -4\text{ V}$	—	0.3	0.4	Ω
			$I_D = -0.35\text{ A}, V_{GS} = -2.5\text{ V}$	—	0.4	0.6	
Input Capacitance		C_{iss}	$V_{DS} = -10\text{ V}, V_{GS} = 0,$ $f = 1\text{ MHz}$	—	240	—	pF
Reverse Transfer Capacitance		C_{rss}	$V_{DS} = -10\text{ V}, V_{GS} = 0,$ $f = 1\text{ MHz}$	—	24	—	pF
Output Capacitance		C_{oss}	$V_{DS} = -10\text{ V}, V_{GS} = 0,$ $f = 1\text{ MHz}$	—	94	—	pF
Switching Time	Turn-on Time	t_{on}	$V_{DD} = -15\text{ V}, I_D = -0.3\text{ A},$ $V_{GS} = 0 \sim -2.5\text{ V}, R_G = 4.7\text{ }\Omega$	—	36	—	ns
	Turn-off Time	t_{off}		—	37	—	

(Note) : Pulse test

SWITCHING TIME TEST CIRCUIT



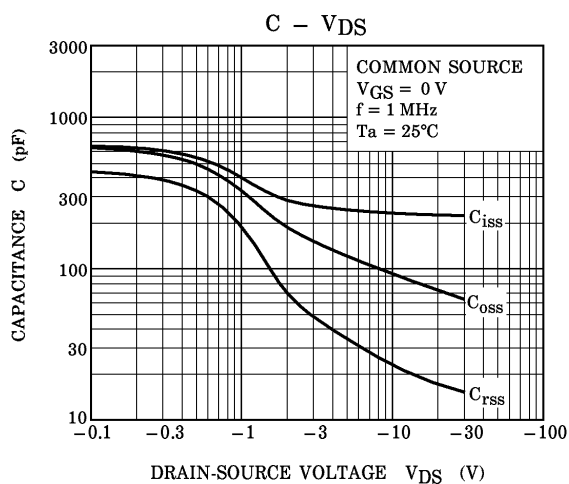
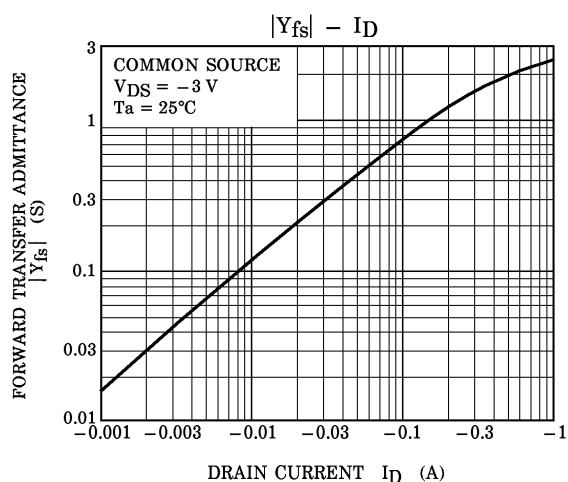
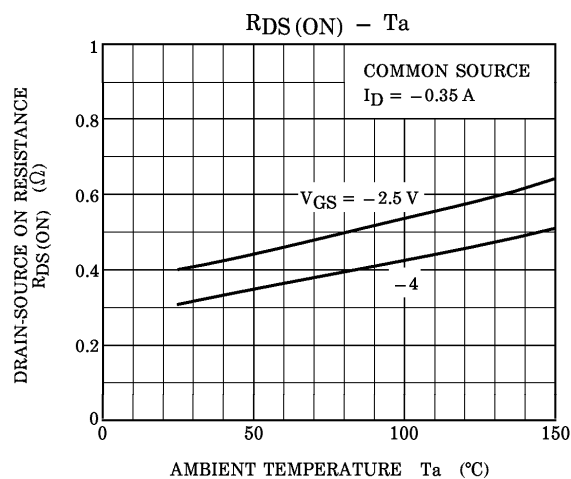
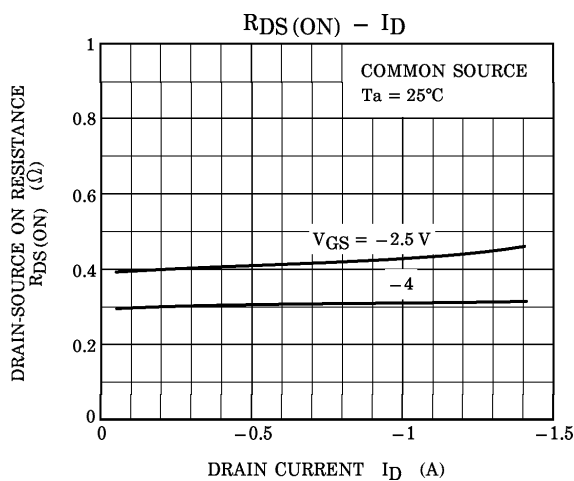
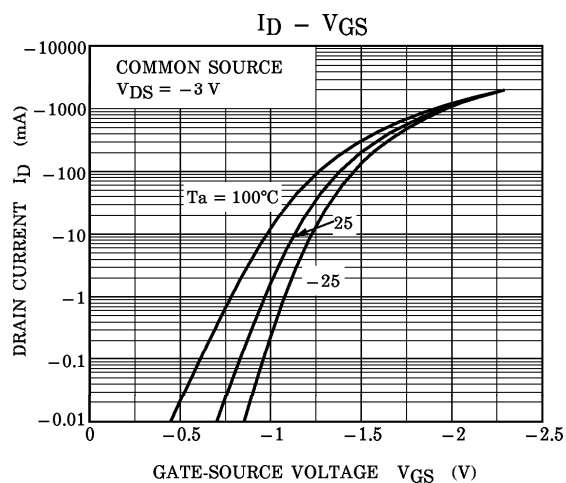
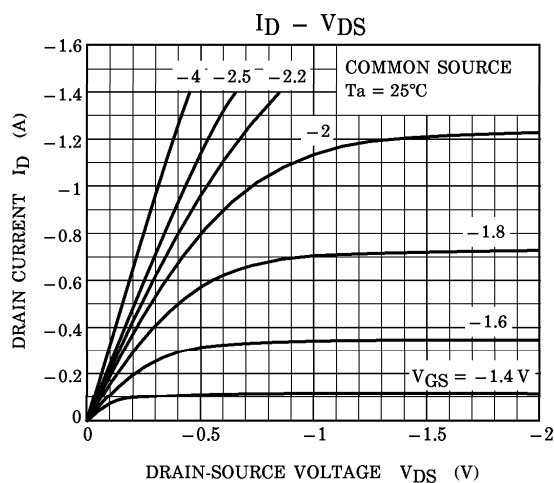
PRECAUTION

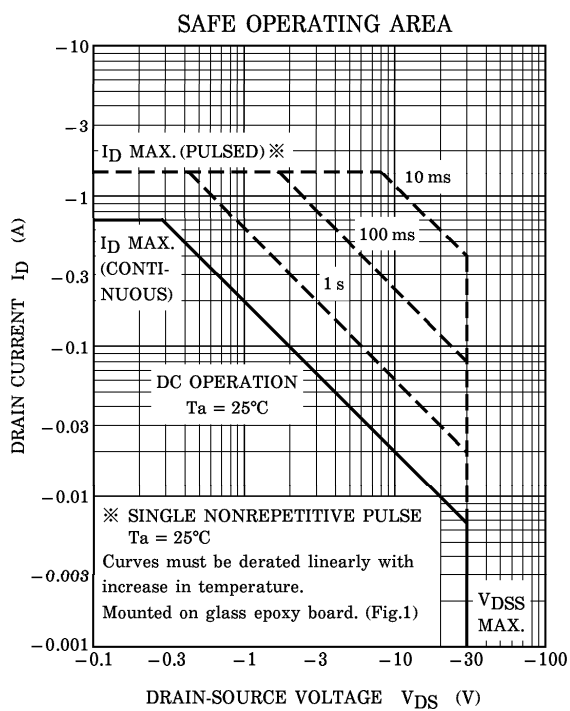
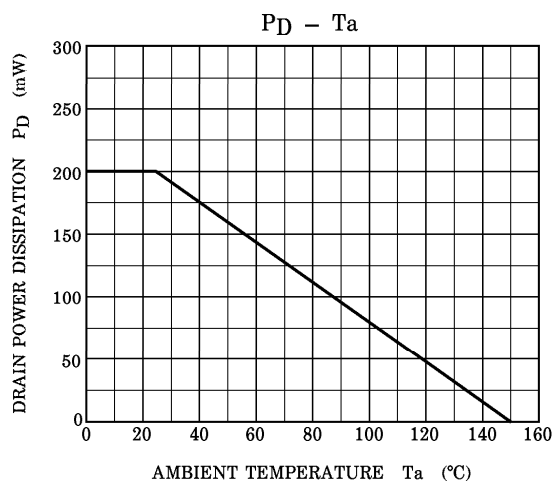
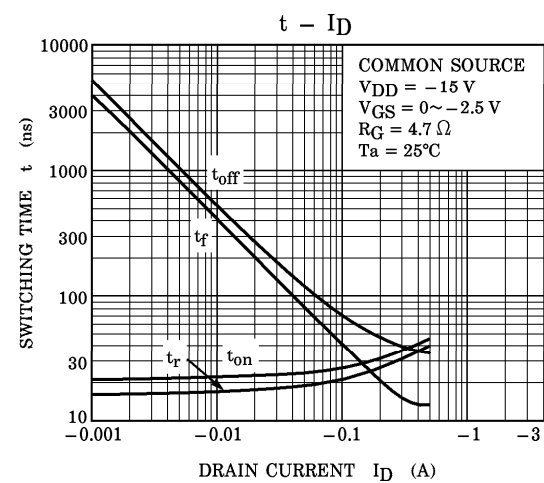
V_{th} can be expressed as voltage between gate and source when low operating current value is $I_D = -100\text{ }\mu\text{A}$ for this product. For normal switching operation, $V_{GS(ON)}$ requires higher voltage than V_{th} and $V_{GS(off)}$ requires lower voltage than V_{th} .

(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)

