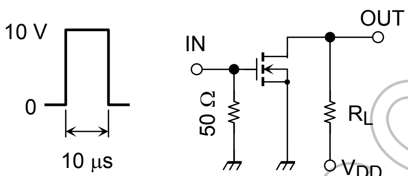
Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ	Max	Unit
Gate leakage current		I_{GSS}	$V_{GS} = \pm 20$ V, $V_{DS} = 0$ V	—	—	± 10	μA
Drain-source breakdown voltage		$V_{(BR)\,DSS}$	$I_D = 10$ mA, $V_{GS} = 0$ V	60	—	—	V
		$V_{(BR)\,DSX}$	$I_D = 10$ mA, $V_{GS} = -10$ V	45	—	—	
Drain cutoff current		I_{DSS}	$V_{DS} = 60$ V, $V_{GS} = 0$ V	—	—	1	μA
Gate threshold voltage		V_{th}	$V_{DS} = 10$ V, $I_D = 0.25$ mA	1.5	—	3.1	V
Forward transfer admittance		$\lvert Y_{fs} \rvert$	$V_{DS} = 10$ V, $I_D = 200$ mA (Note 2)	225	—	—	mS
Drain-source ON-resistance		$R_{DS\,(ON)}$	$I_D = 500$ mA, $V_{GS} = 10$ V (Note 2)	—	1.62	2.1	Ω
			$I_D = 100$ mA, $V_{GS} = 5$ V (Note 2)	—	1.90	2.6	
			$I_D = 100$ mA, $V_{GS} = 4.5$ V (Note 2)	—	2.10	3.3	
Input capacitance		C_{iss}	$V_{DS} = 25$ V, $V_{GS} = 0$ V, f = 1 MHz	—	17.0	—	pF
Reverse transfer capacitance		C_{rss}		—	1.9	—	
Output capacitance		C_{oss}		—	3.6	—	
Switching time	Turn-on delay time	$t_{d(on)}$	$V_{DD} = 30$ V, $I_D = 200$ mA, $V_{GS} = 0$ to 10 V	—	3.3	6.6	ns
	Turn-off delay time	$t_{d(off)}$		—	14.5	40	
Drain-Source forward voltage		V_{DSF}	$I_D = -200$ mA, $V_{GS} = 0$ V (Note 2)	—	-0.84	-1.2	V

Note2: Pulse test

Switching Time Test Circuit

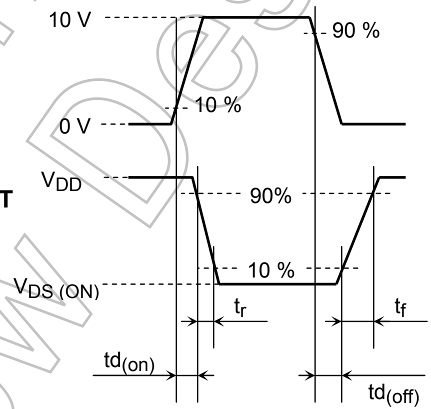
(a) Test circuit



$V_{DD} = 30$ V
Duty ≤ 1%
V_{IN}: t_r, t_f < 2 ns
($Z_{out} = 50\ \Omega$)
Common Source
Ta = 25 °C

(b) V_{IN}

(c) V_{OUT}



Precaution

Let V_{th} be the voltage applied between gate and source that causes the drain current (I_D) to be low (0.25 mA for the SSM3K7002BFS). Then, for normal switching operation, $V_{GS(on)}$ must be higher than V_{th}, and $V_{GS(off)}$ must be lower than V_{th}. This relationship can be expressed as: $V_{GS(off)} < V_{th} < V_{GS(on)}$.
Take this into consideration when using the device.

Handling Precaution

When handling individual devices that are not yet mounted on a circuit board, make sure that the environment is protected against electrostatic discharge. Operators should wear antistatic clothing, and containers and other objects that come into direct contact with devices should be made of antistatic materials.

Thermal resistance $R_{th\,(ch\text{-}a)}$ and Power dissipation P_D vary depending on board material, board area, board thickness and pad area. When using this device, please take heat dissipation into consideration.

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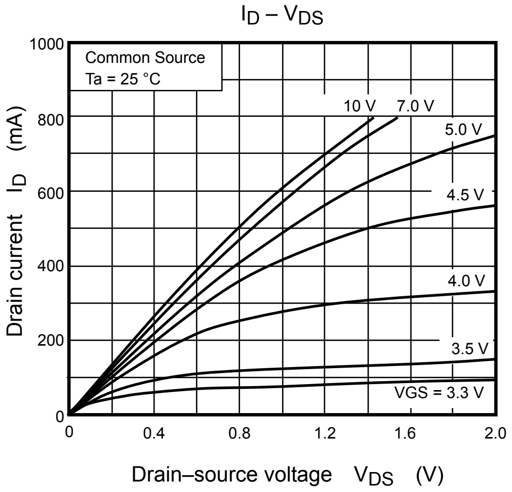

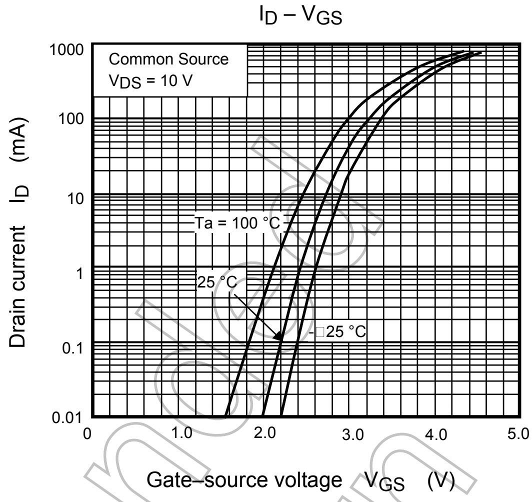

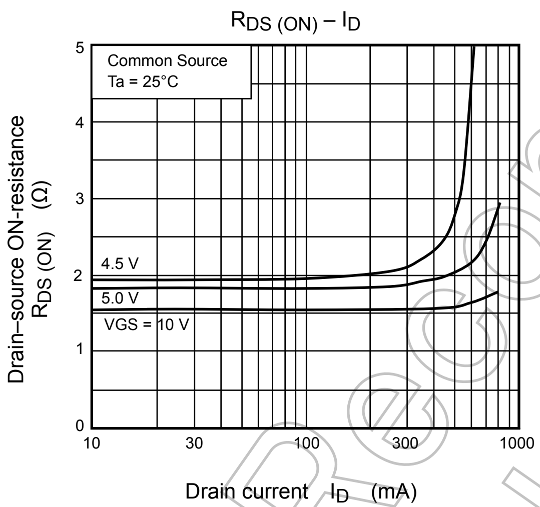

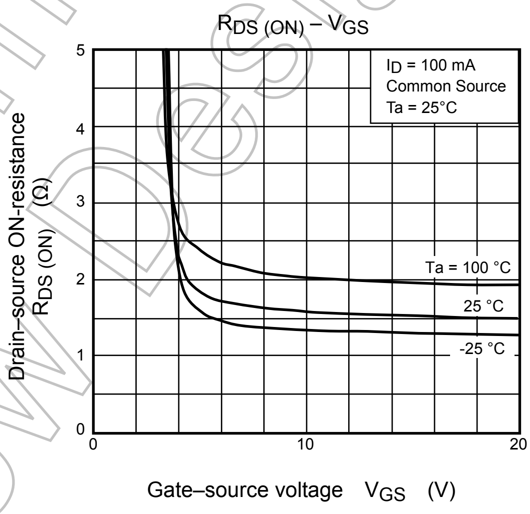

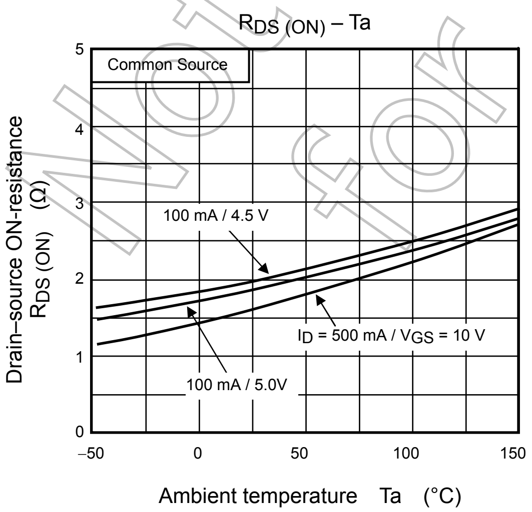

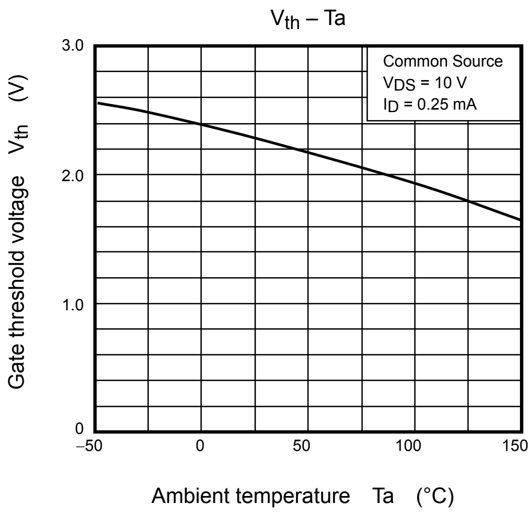

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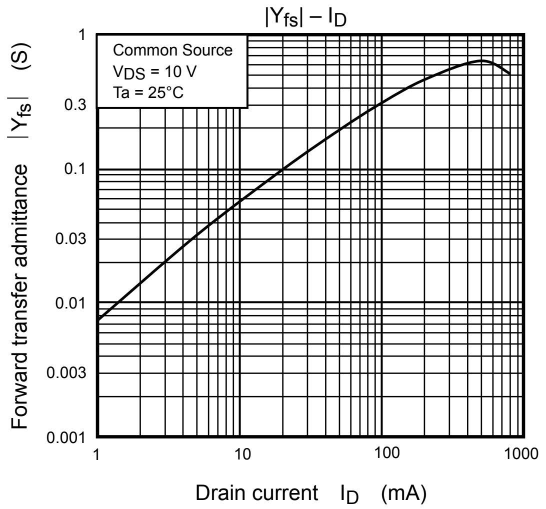

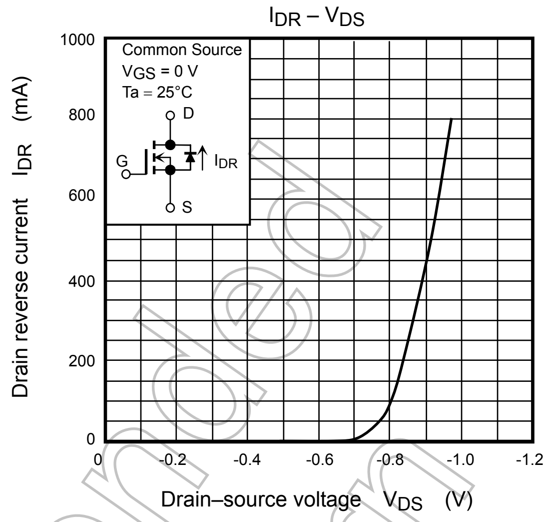

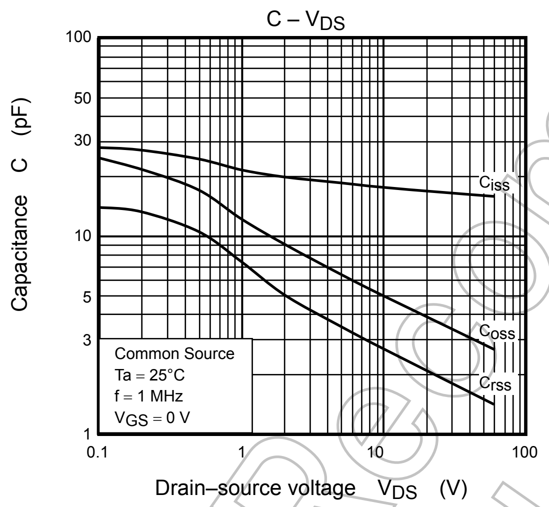

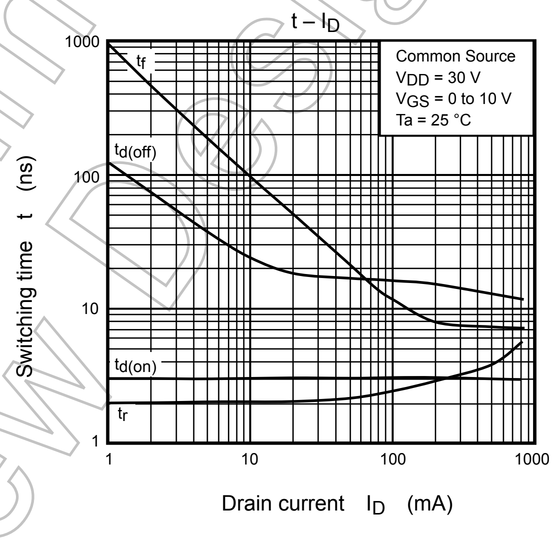

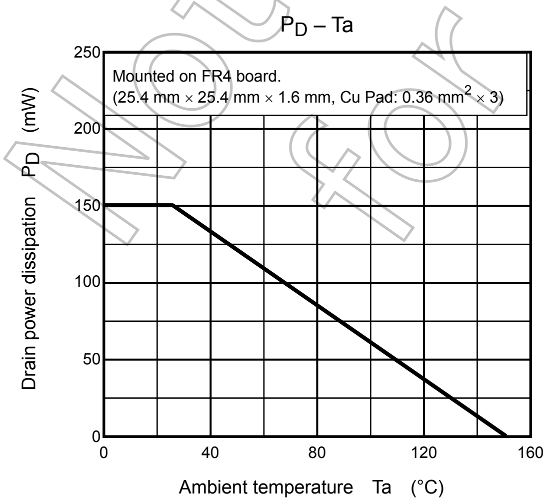

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