

SSM5N15FU

High Speed Switching Applications

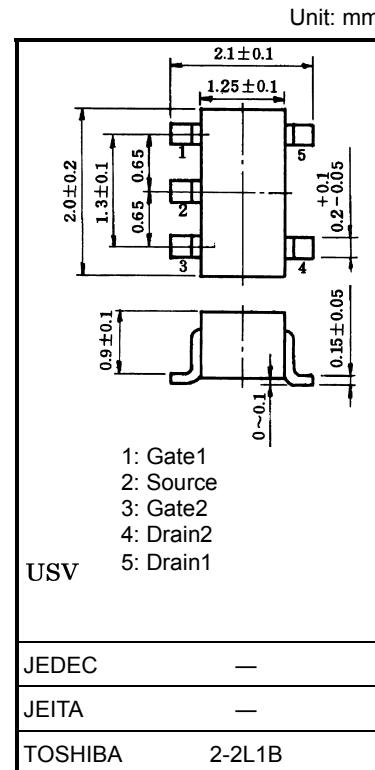
Analog Switch Applications

- Small package
- Low ON resistance : $R_{on} = 4.0 \Omega$ (max) (@ $V_{GS} = 4$ V)
- : $R_{on} = 7.0 \Omega$ (max) (@ $V_{GS} = 2.5$ V)

Maximum Ratings (Ta = 25°C) (Q1, Q2 Common)

Characteristics	Symbol	Rating	Unit
Drain-Source voltage	V_{DS}	30	V
Gate-Source voltage	V_{GSS}	± 20	V
Drain current	DC	I_D	100
	Pulse	I_{DP}	200
Drain power dissipation ($T_A = 25^\circ C$)	P_D (Note)	150	mW
Channel temperature	T_{ch}	150	$^\circ C$
Storage temperature range	T_{stg}	-55~150	$^\circ C$

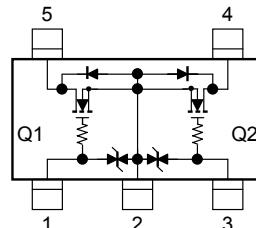
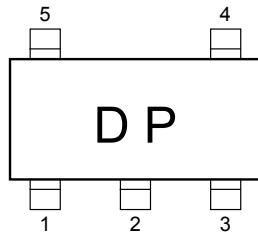
Note: Total rating,



Weight: 0.006 g (typ.)

Marking

Equivalent Circuit (top view)



Handling Precaution

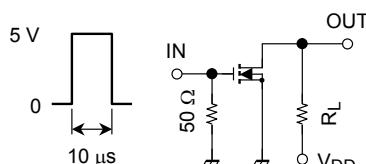
When handling individual devices (which are not yet mounting on a circuit board), be sure that the environment is protected against electrostatic electricity. Operators should wear anti-static clothing, and containers and other objects that come into direct contact with devices should be made of anti-static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

Electrical Characteristics (Ta = 25°C) (Q1, Q2 common)

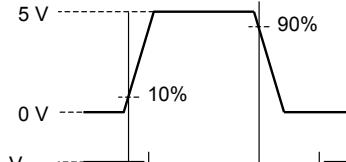
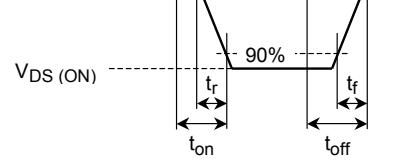
Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Gate leakage current	I _{GSS}	V _{GS} = ±16 V, V _{DS} = 0	—	—	±1	μA
Drain-Source breakdown voltage	V _{(BR) DSS}	I _D = 0.1 mA, V _{GS} = 0	30	—	—	V
Drain cut-off current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0	—	—	1	μA
Gate threshold voltage	V _{th}	V _{DS} = 3 V, I _D = 0.1 mA	0.8	—	1.5	V
Forward transfer admittance	Y _{fs}	V _{DS} = 3 V, I _D = 10 mA	25	—	—	mS
Drain-Source ON resistance	R _{DSS} (ON)	I _D = 10 mA, V _{GS} = 4 V	—	2.2	4.0	Ω
		I _D = 10 mA, V _{GS} = 2.5 V	—	4.0	7.0	
Input capacitance	C _{iss}	V _{DS} = 3 V, V _{GS} = 0, f = 1 MHz	—	7.8	—	pF
Reverse transfer capacitance	C _{rss}		—	3.6	—	pF
Output capacitance	C _{oss}		—	8.8	—	pF
Switching time	Turn-on time	t _{on}	V _{DD} = 5 V, I _D = 10 mA, V _{GS} = 0~5 V	—	50	ns
	Turn-off time	t _{off}		—	180	

Switching Time Test Circuit

(a) Test circuit



V_{DD} = 5 V
 Duty ≤ 1%
 V_{IN}: t_r, t_f < 5 ns
 (Z_{out} = 50 Ω)
 Common Source
 Ta = 25°C

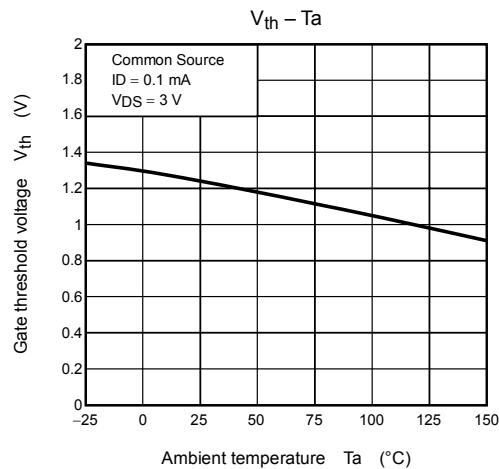
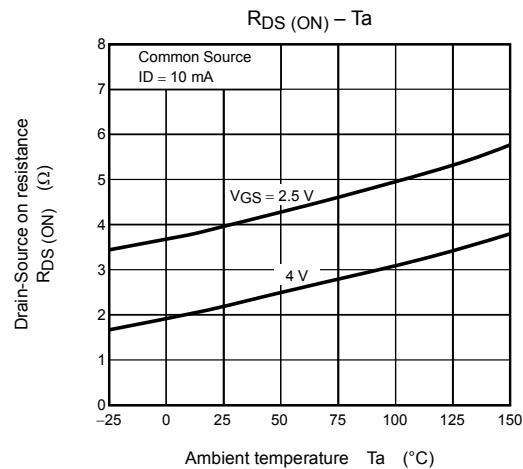
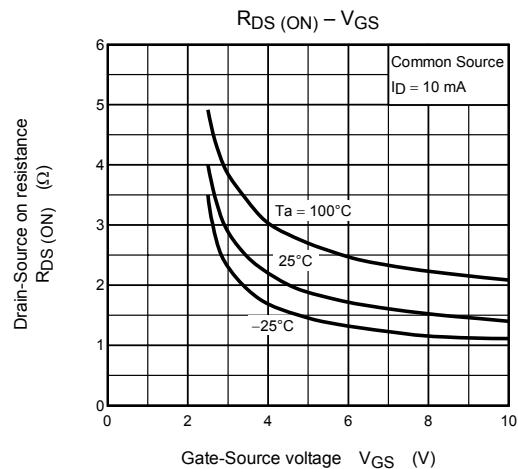
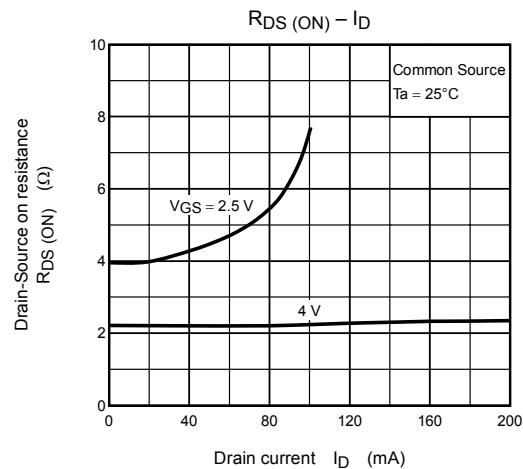
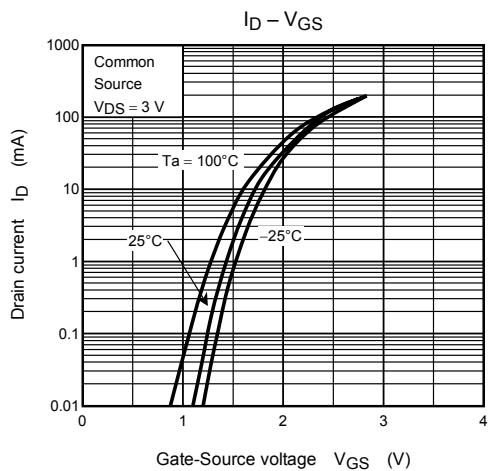
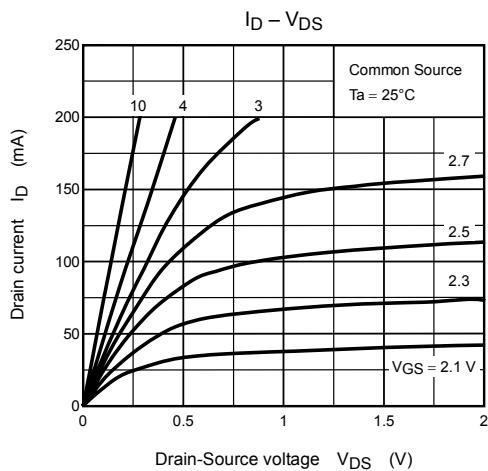
(b) V_{IN}(c) V_{OUT}

Precaution

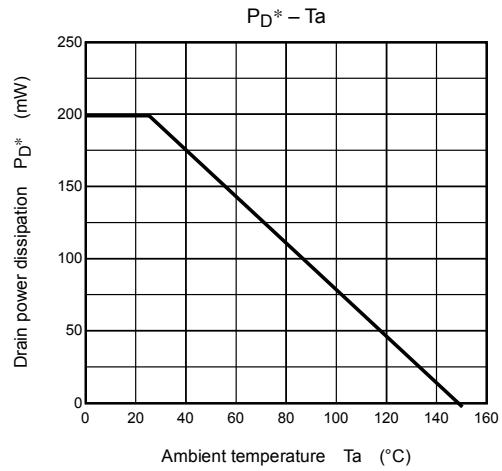
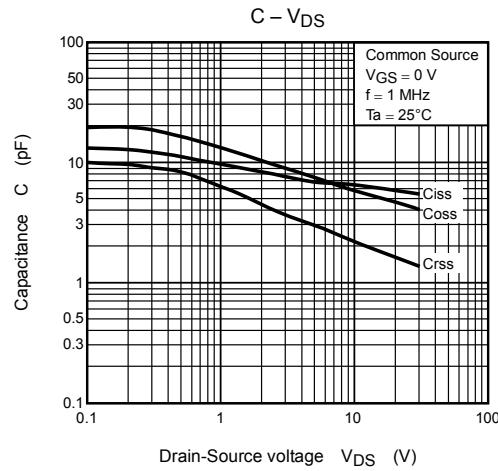
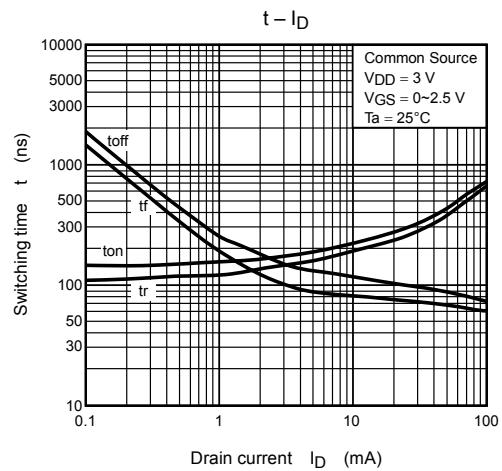
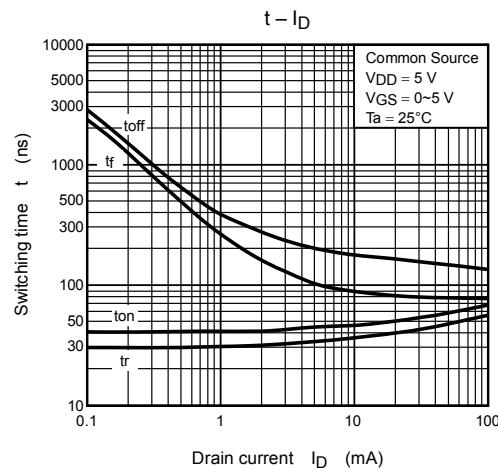
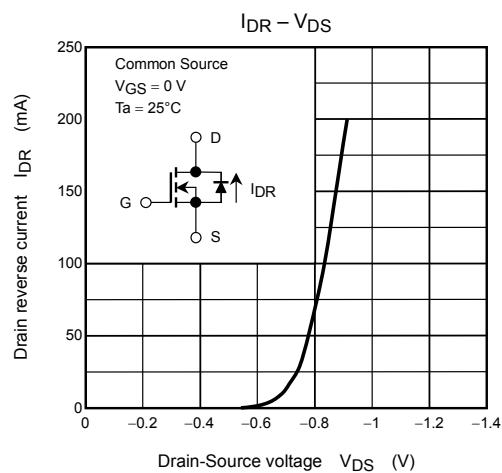
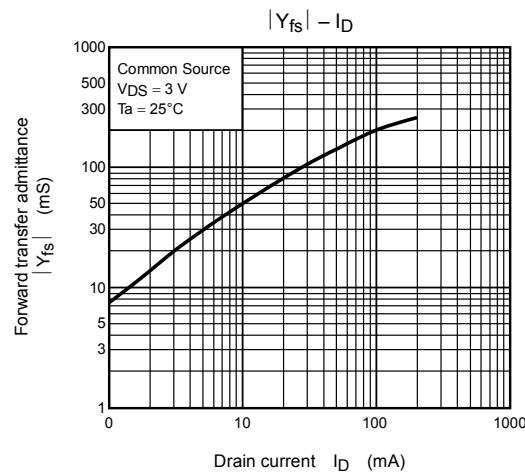
V_{th} can be expressed as voltage between gate and source when low operating current value is I_D = 100 μA for this product. For normal switching operation, V_{GS} (on) requires higher voltage than V_{th} and V_{GS} (off) requires lower voltage than V_{th}. (Relationship can be established as follows: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

(Q1, Q2 common)



(Q1, Q2 common)



*: Total rating

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