

SSM3K15CT

High-Speed Switching Applications

Analog Switch Applications

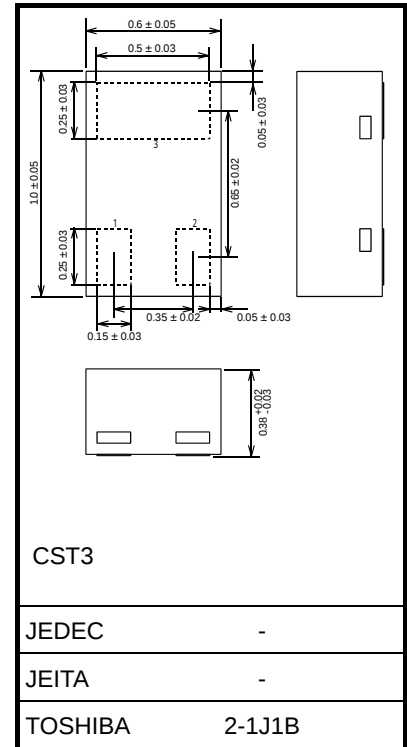
- Optimum for high-density mounting in small packages
- Low ON-resistance
: $R_{on} = 4.0 \Omega$ (max) (@ $V_{GS} = 4 V$)
: $R_{on} = 7.0 \Omega$ (max) (@ $V_{GS} = 2.5 V$)
- Lead (Pb)-free

Maximum Ratings ($T_a = 25^\circ C$)

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

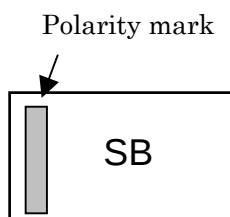
Note: Mounted on an FR4 board
(10 mm $\times$ 10 mm $\times$ 1.0 t, Cu Pad: 100 mm²)

Unit: mm

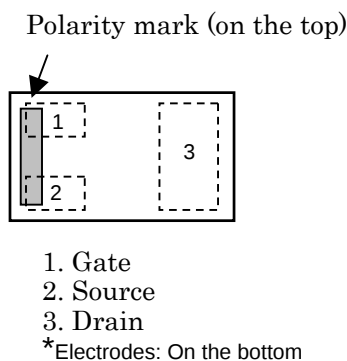


Weight: 0.75 mg (typ.)

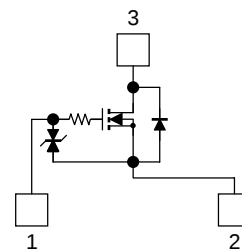
Marking (Top View)



Pin Condition (Top View)



Equivalent Circuit



Handling Precaution

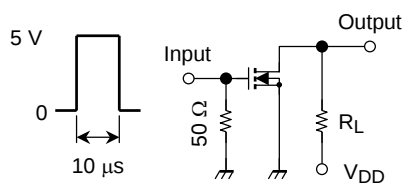
When handling individual devices that are not yet mounted on a circuit board, ensure that the environment is protected against electrostatic discharge. Operators should wear anti-static clothing, and containers and other objects that come into direct contact with devices should be made of anti-static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

Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	I_{GSS}	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$	—	—	± 1	μA
Drain-source breakdown voltage	$V_{(BR) DSS}$	$I_D = 0.1 \text{ mA}, V_{GS} = 0$	30	—	—	V
Drain cut-off current	I_{DSS}	$V_{DS} = 30 \text{ V}, V_{GS} = 0$	—	—	1	μA
Gate threshold voltage	V_{th}	$V_{DS} = 3 \text{ V}, I_D = 0.1 \text{ mA}$	0.8	—	1.5	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 3 \text{ V}, I_D = 10 \text{ mA}$	25	—	—	mS
Drain-Source ON-resistance	$R_{DS(ON)}$	$I_D = 10 \text{ mA}, V_{GS} = 4 \text{ V}$	—	2.2	4.0	Ω
		$I_D = 10 \text{ mA}, V_{GS} = 2.5 \text{ V}$	—	4.0	7.0	
Input capacitance	C_{iss}	$V_{DS} = 3 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$	—	7.8	—	pF
Reverse transfer capacitance	C_{rss}	$V_{DS} = 3 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$	—	3.6	—	pF
Output capacitance	C_{oss}	$V_{DS} = 3 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$	—	8.8	—	pF
Switching time	Turn-on time	$V_{DD} = 5 \text{ V}, I_D = 10 \text{ mA}, V_{GS} = 0 \sim 5 \text{ V}$	—	50	—	ns
	Turn-off time		—	180	—	

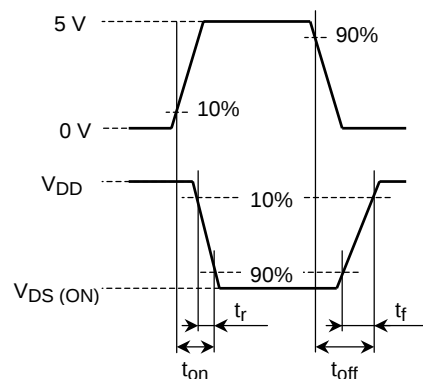
Switching Time Test Circuit

(a) Test circuit



$V_{DD} = 5 \text{ V}$
 $D.U. \leq 1\%$
 Input: $t_r, t_f < 5 \text{ ns}$
 $(Z_{out} = 50 \Omega)$
 Common Source
 $T_a = 25^\circ\text{C}$

(b) V_{IN}

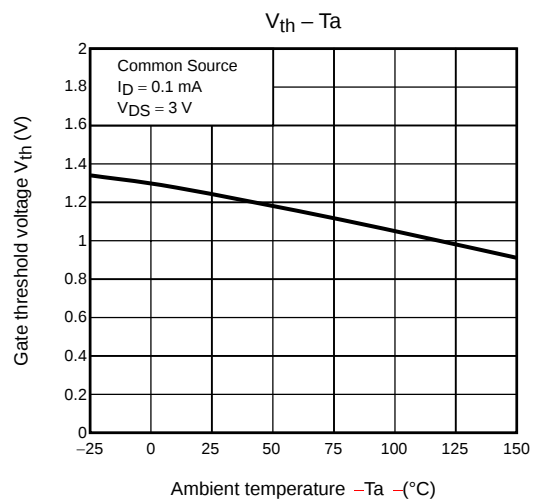
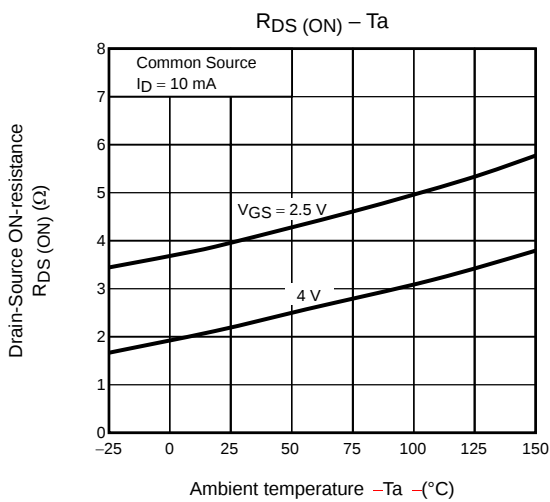
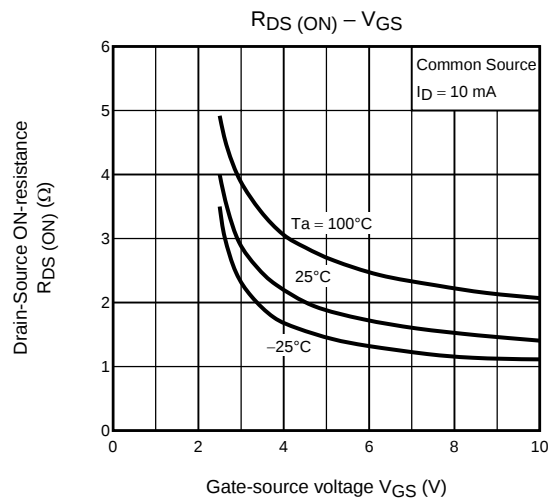
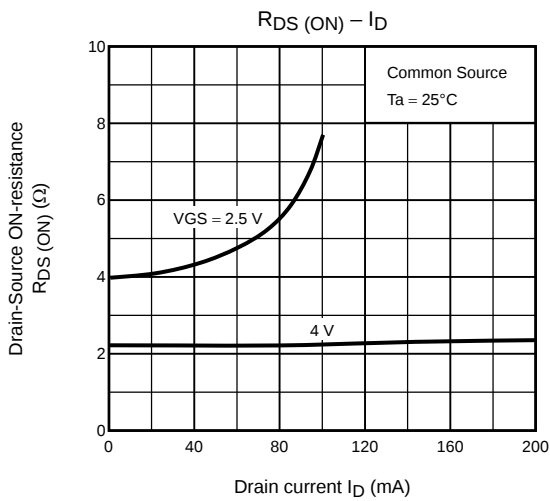
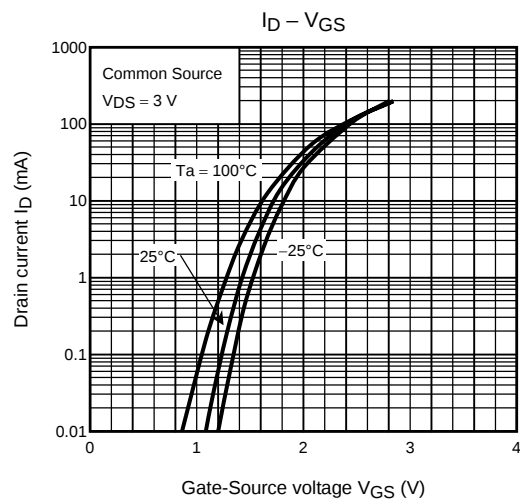
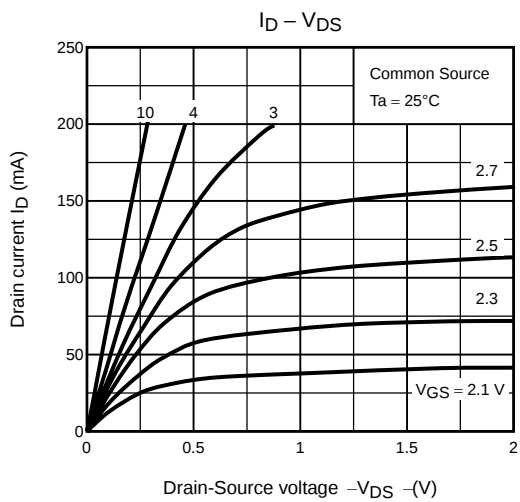


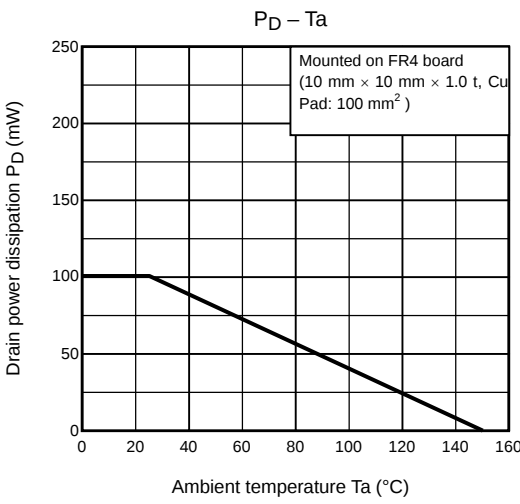
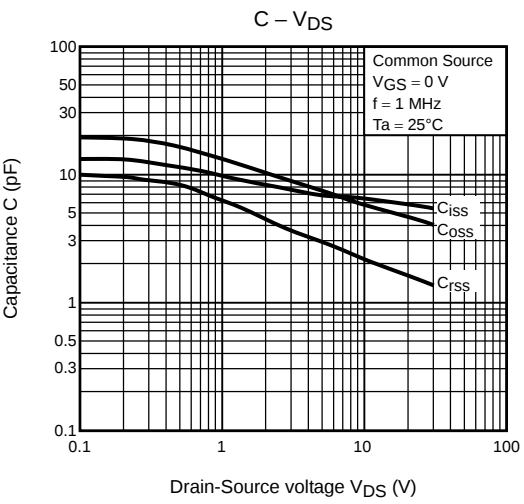
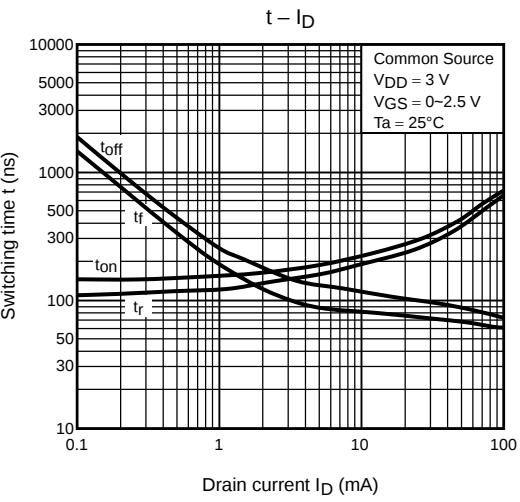
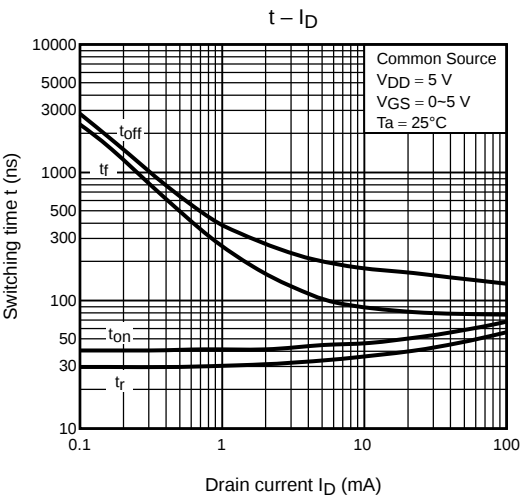
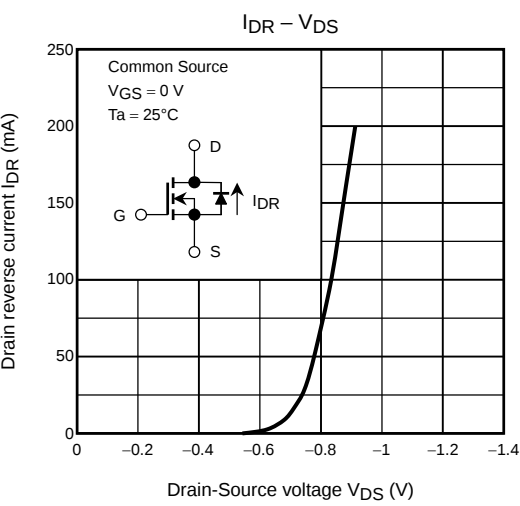
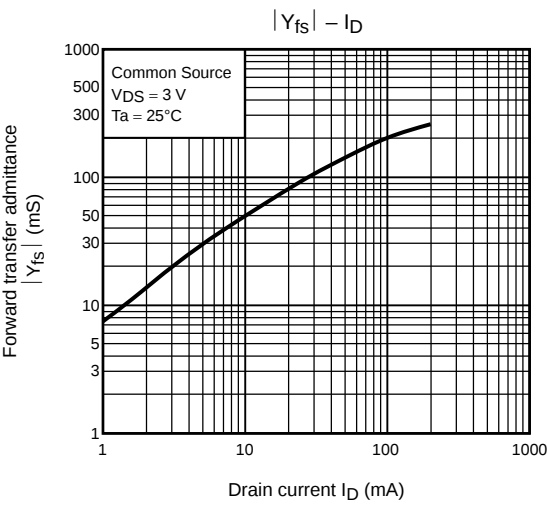
(c) V_{OUT}

Precaution

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

Take this into consideration when using the device. The V_{GS} recommended voltage for turning on this product is 2.5 V or higher.





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