

SSM6K06FU

High Speed Switching Applications

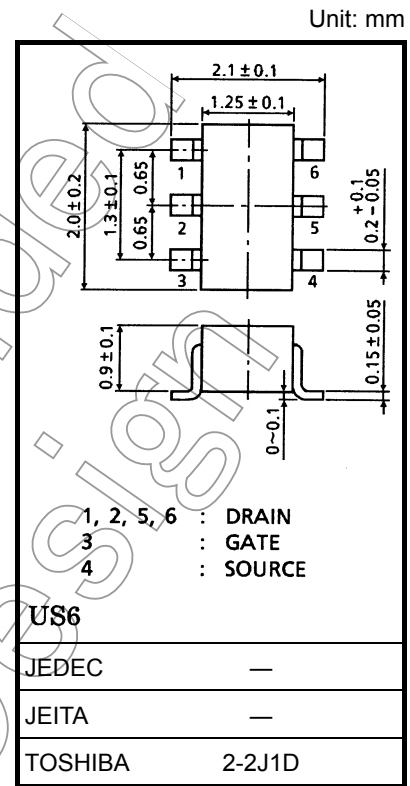
- Small package
- Low ON- resistance: $R_{DS(ON)} = 160 \text{ m}\Omega \text{ max (@} V_{GS} = 4 \text{ V)}$
: $R_{DS(ON)} = 210 \text{ m}\Omega \text{ max (@} V_{GS} = 2.5 \text{ V)}$
- Low gate threshold voltage

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristics		Symbol	Rating	Unit
Drain-source voltage		V_{DS}	20	V
Gate-source voltage		V_{GSS}	± 12	V
Drain current	DC	I_D	1.1	A
	Pulse	I_{DP}	2.2	
Drain power dissipation ($T_a = 25^\circ\text{C}$)		P_D (Note 1)	300	mW
Channel temperature		T_{ch}	150	$^\circ\text{C}$
Storage temperature range		T_{stg}	-55 to 150	$^\circ\text{C}$

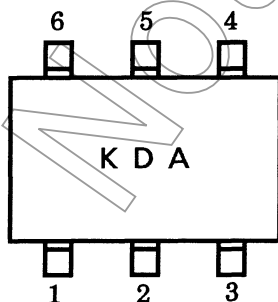
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc.).

Note 1: Mounted on FR4 board.
(25.4 mm \times 25.4 mm \times 1.6 mm, Cu pad: 0.32 mm² \times 6) Figure 1.

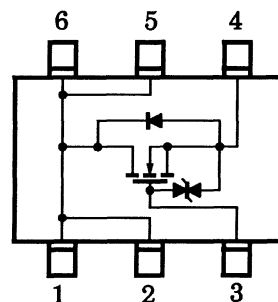


Weight: 6.8 mg (typ.)

Marking



Equivalent Circuit (top view)



Handling Precaution

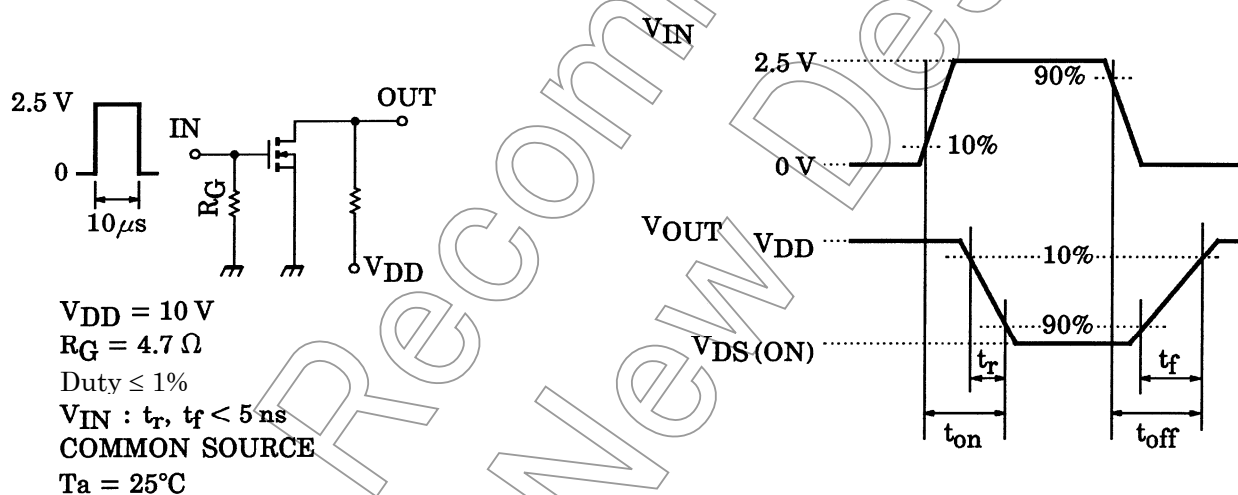
When handling individual devices (which are not yet mounting on a circuit board), be sure that the environment is protected against electrostatic electricity. Operators should wear anti-static clothing, and containers and other objects that come into direct contact with devices should be made of anti-static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

Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	I_{GSS}	$V_{GS} = \pm 12\text{ V}, V_{DS} = 0$	—	—	± 1	μA
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D = 1\text{ mA}, V_{GS} = 0$	20	—	—	V
Drain cut-off current	I_{DSS}	$V_{DS} = 20\text{ V}, V_{GS} = 0$	—	—	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 2)	1.2	—	—	S
Drain-source ON resistance	$R_{DS(ON)}$	$I_D = 0.5\text{ A}, V_{GS} = 4\text{ V}$ (Note 2)	—	120	160	$\text{m}\Omega$
		$I_D = 0.5\text{ A}, V_{GS} = 2.5\text{ V}$ (Note 2)	—	160	210	
Input capacitance	C_{iss}	$V_{DS} = 10\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	125	—	pF
Reverse transfer capacitance	C_{rss}	$V_{DS} = 10\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	30	—	pF
Output capacitance	C_{oss}	$V_{DS} = 10\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	75	—	pF
Switching time	Turn-on time	t_{on}	$V_{DD} = 10\text{ V}, I_D = 0.5\text{ A},$	—	42	ns
	Turn-off time	t_{off}	$V_{GS} = 0\text{ to }2.5\text{ V}, R_G = 4.7\text{ }\Omega$	—	100	

Note 2: Pulse test

Switching Time Test Circuit

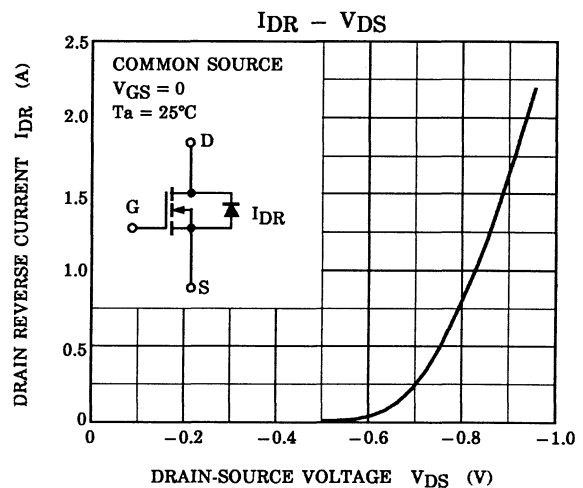
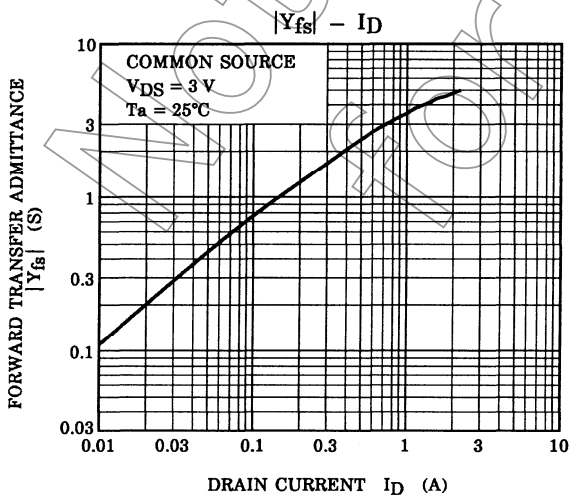
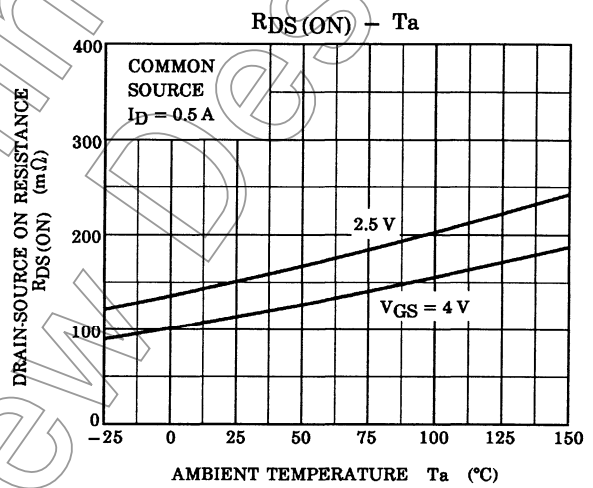
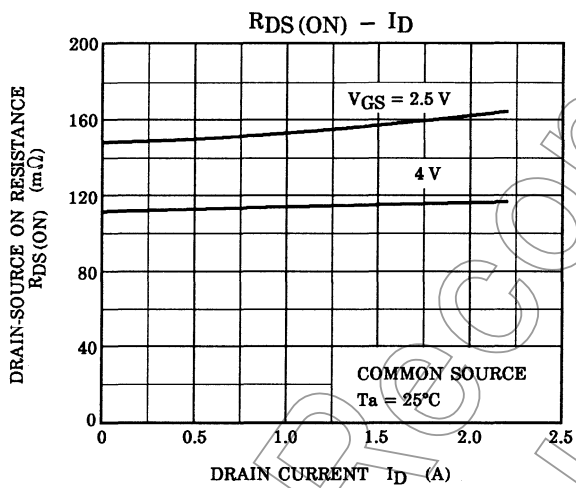
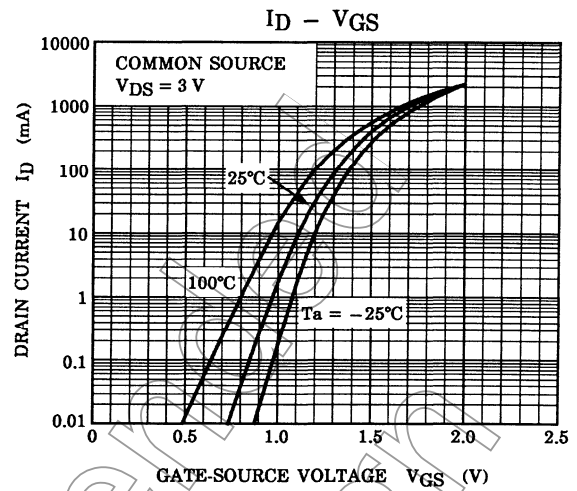
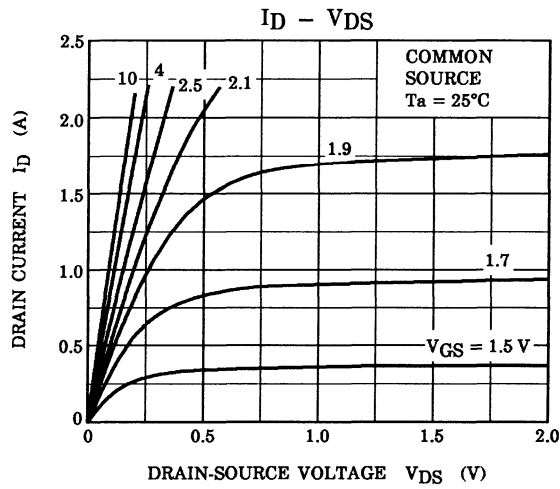


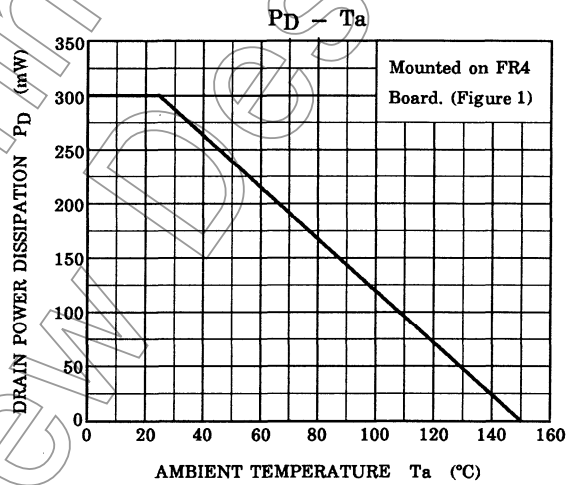
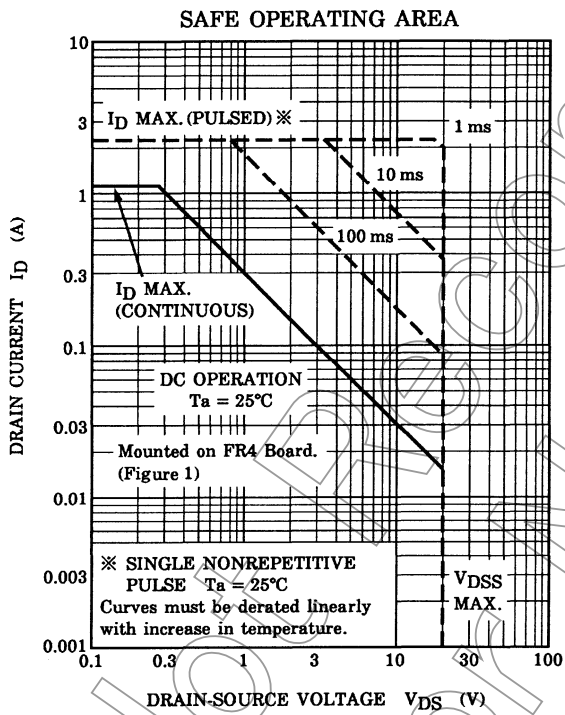
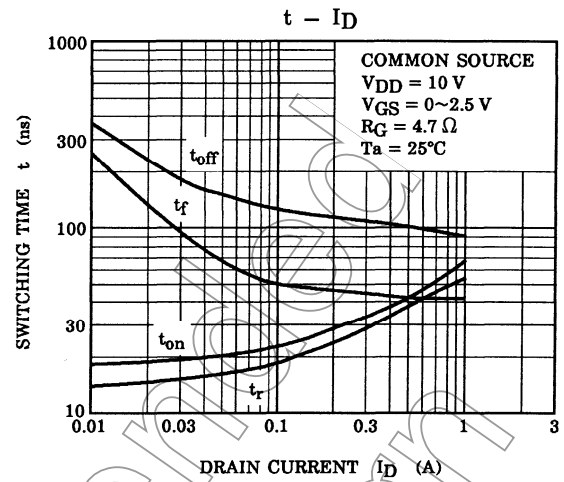
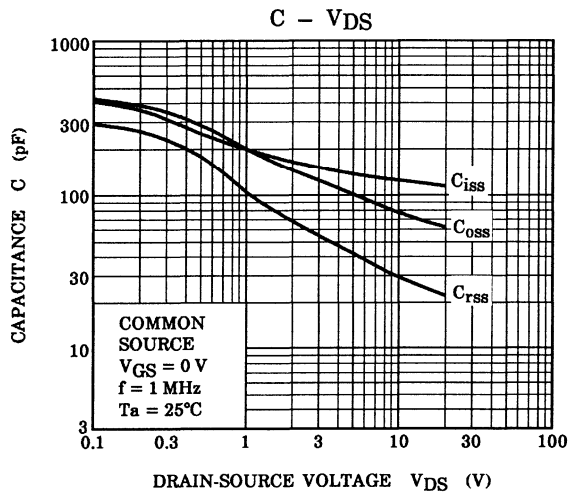
Precaution

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.





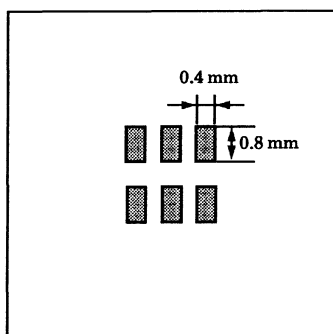


Figure 1 25.4 mm × 25.4 mm × 1.6 mm, Cu Pad: 0.32 mm² × 6

Not Recommended
for New Design

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