

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type

HN1K04FU

High Speed Switching Applications
 Analog Switch Applications

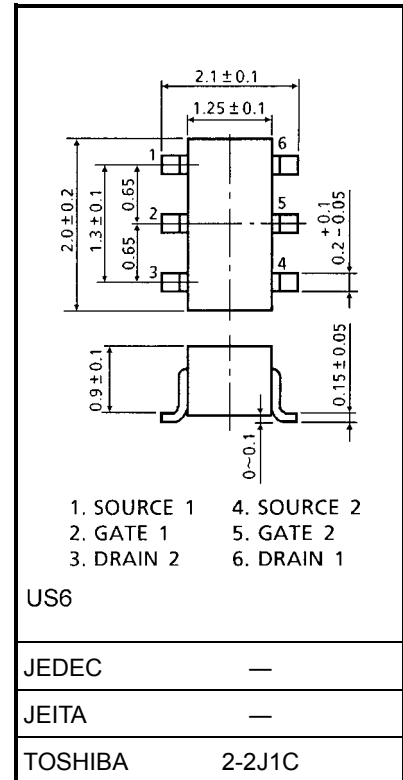
Unit: mm

- High input impedance and extremely low drive current.
- V_{th} is low and it is possible to drive directly at low-voltage CMOS.
 : $V_{th} = 0.8$ to 2.5 V
- Switching speed is fast.
- Suitable for high-density mounting because of a compact package.

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

Characteristics	Symbol	Rating	Unit
Drain-source voltage	V_{DS}	50	V
Gate-source voltage	V_{GSS}	10	V
DC drain current	I_D	50	mA
Drain power dissipation	P_D (Note)	200	mW
Channel temperature	T_{ch}	150	°C
Storage temperature range	T_{stg}	-55 to 150	°C

Note: TOTAL rating

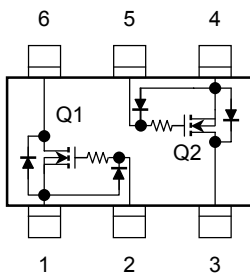


Weight: 6.8 mg

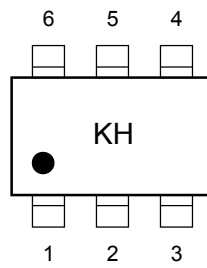
Electrical Characteristics (Ta = 25°C) (Q1, Q2 common)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	I_{GSS}	$V_{GS} = 10$ V, $V_{DS} = 0$ V	—	—	1	μ A
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D = 100$ μ A, $V_{GS} = 0$ V	50	—	—	V
Drain cut-off current	I_{DSS}	$V_{DS} = 50$ V, $V_{GS} = 0$ V	—	—	1	μ A
Gate threshold voltage	V_{th}	$V_{DS} = 5$ V, $I_D = 0.1$ mA	0.8	—	2.5	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 5$ V, $I_D = 10$ mA	20	—	—	mS
Drain-source ON resistance	$R_{DS(ON)}$	$I_D = 10$ mA, $V_{GS} = 4.0$ V	—	20	50	Ω
Input capacitance	C_{iss}	$V_{DS} = 5$ V, $V_{GS} = 0$ V, $f = 1$ MHz	—	6.3	—	pF
Reverse transfer capacitance	C_{rSS}	$V_{DS} = 5$ V, $V_{GS} = 0$ V, $f = 1$ MHz	—	1.3	—	pF
Output capacitance	C_{oss}	$V_{DS} = 5$ V, $V_{GS} = 0$ V, $f = 1$ MHz	—	5.7	—	pF
Switching time	t_{on}	$V_{DD} = 5$ V, $I_D = 10$ mA, $V_{GS} = 0$ to 4.0 V	—	0.11	—	μ s
	t_{off}	$V_{DD} = 5$ V, $I_D = 10$ mA, $V_{GS} = 0$ to 4.0 V	—	0.15	—	

Equivalent Circuit (top view)



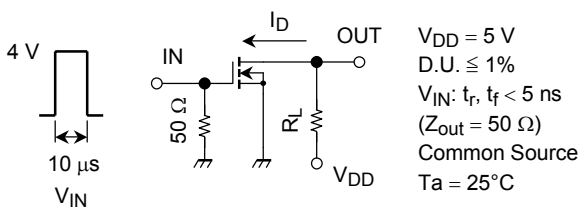
Marking



(Q1, Q2 common)

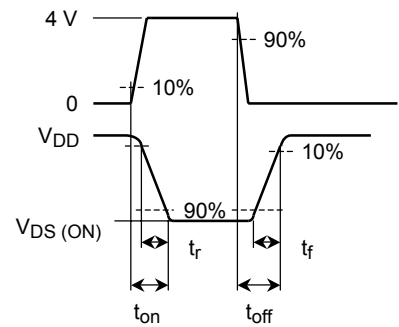
Switching Time Test Circuit

(a) Test circuit



(b) VIN

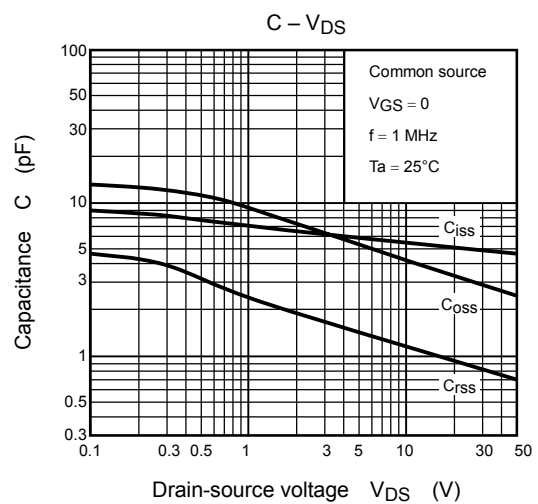
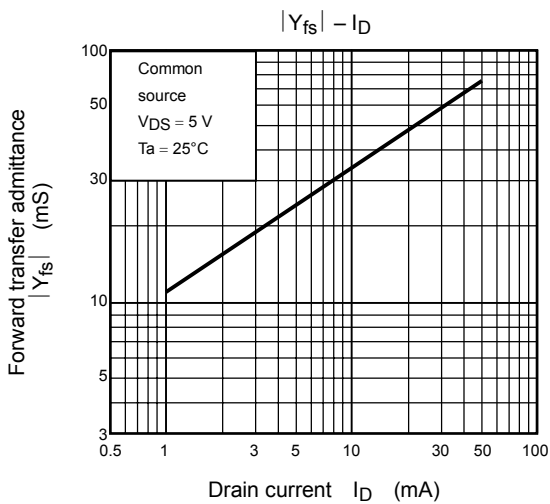
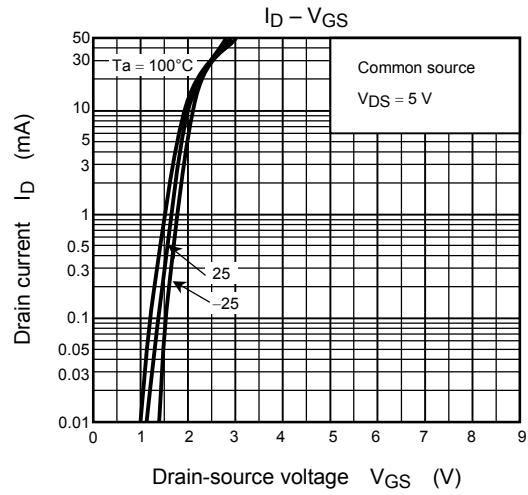
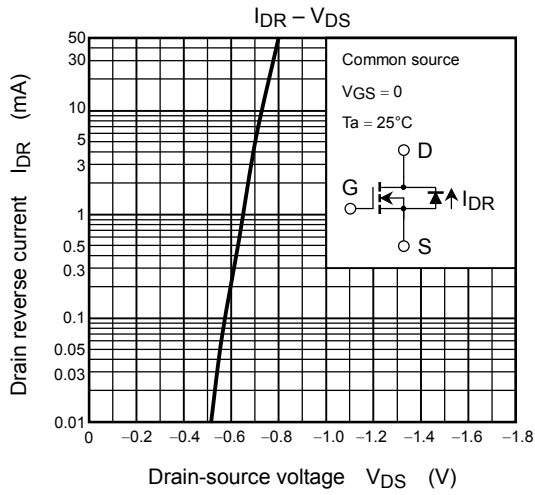
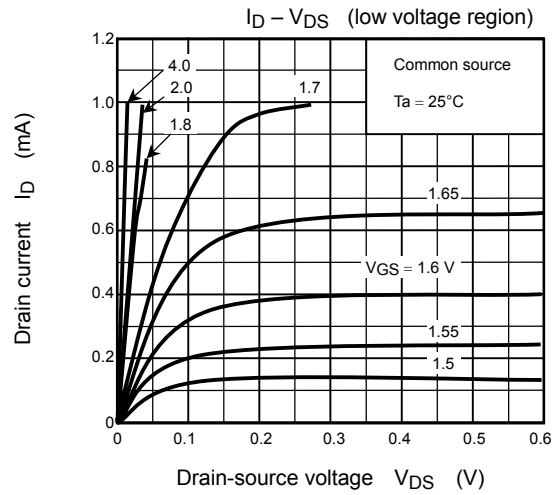
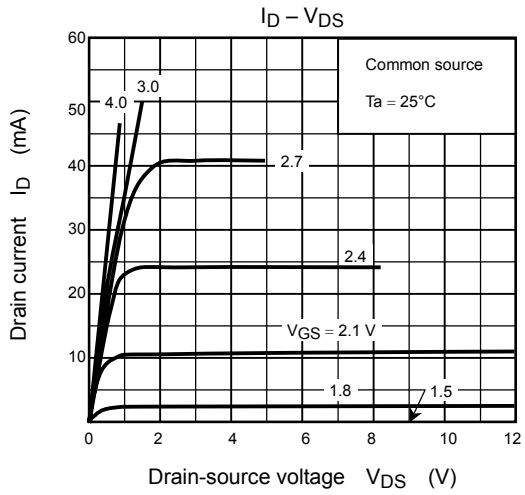
VGS



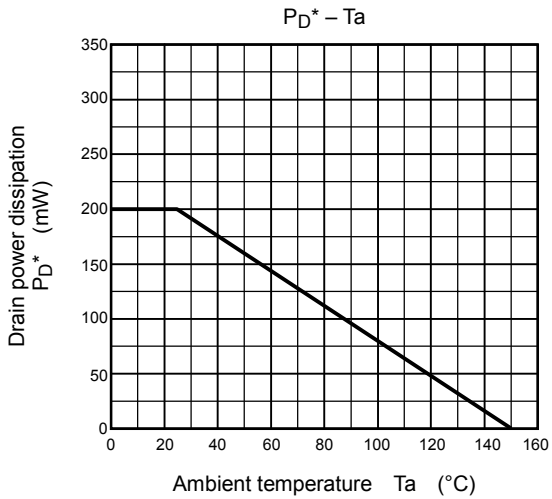
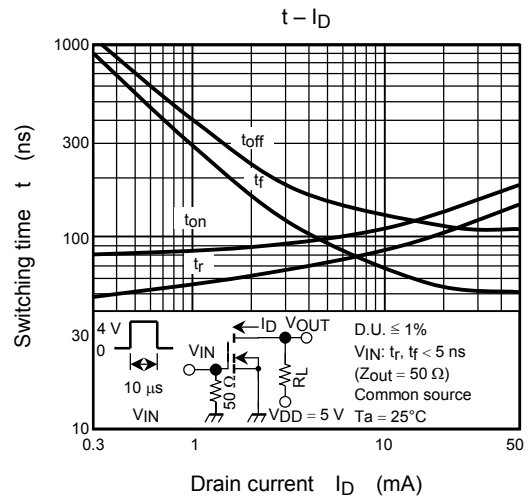
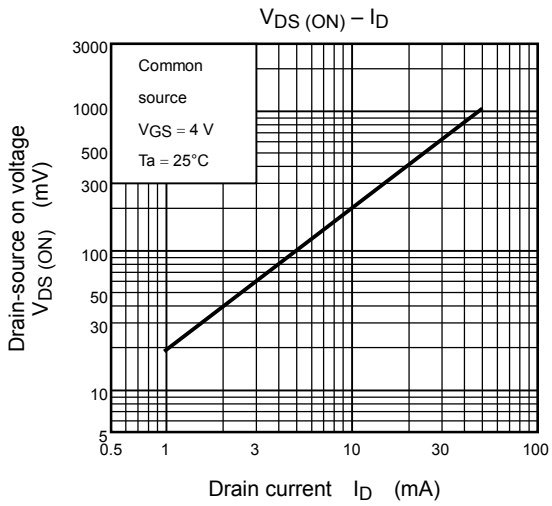
(c) VOUT

VDS

(Q1, Q2 common)



(Q1, Q2 common)



*: TOTAL rating

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