Unit in mm

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type

# HN1K03FU

# High Speed Switching Applications Analog Switch Applications

Hign input impedance

Low gate threshold voltage :  $V_{th} = 0.5V \sim 1.5V$ Excellent switching times  $: t_{on} = 0.16 \mu s$  (typ.)  $t_{off} = 0.15 \mu s$  (typ.)

Small package

Enhancement-mode

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

Characteristic	Symbol	Rating	Unit
Drain-Source voltage	$V_{DS}$	20	V
Gate-Source voltage	$V_{GSS}$	10	V
DC Drain current	I <sub>D</sub>	100	mA
Drain power dissipation	P <sub>D</sub> *	200	mW
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature range	T <sub>stg</sub>	-55~150	°C

<sup>\*:</sup> Total rating

2.1 ± 0.1 1.25 ± 0.1 0.65  $1.3 \pm 0.1$ <u>0~0</u> 1. SOURCE 1 4. SOURCE 2 2. GATE 1 5. GATE 2 3. DRAIN 2 6. DRAIN 1 US<sub>6</sub>

2-2J1C

Weight: 6.8mg

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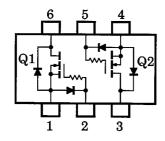
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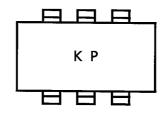
## Electrical Characteristics (Ta = 25°C) (Q1, Q2 Common)

Chara	cteristic	Symbol	Test Condition	Min.	Тур.	Max.	Unit
Gate leakage cu	rrent	I <sub>GSS</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 0	_	_	1	μΑ
Drain-Source bre	eakdown voltage	V <sub>(BR) DSS</sub>	I <sub>D</sub> = 100μA, V <sub>GS</sub> = 0	20	_	_	V
Drain cut-off curr	rent	I <sub>DSS</sub>	V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0	_	_	1	μA
Gate threshold v	oltage	V <sub>th</sub>	V <sub>DS</sub> = 3V, I <sub>D</sub> = 0.1mA	0.5	_	1.5	V
Forward transfer	admittance	Y <sub>fs</sub>	V <sub>DS</sub> = 3V, I <sub>D</sub> = 10mA	25	50	_	mS
Drain-Source Of	N resistance	R <sub>DS (ON)</sub>	I <sub>D</sub> = 10mA, V <sub>GS</sub> = 2.5V	_	8	12	Ω
Input capacitanc	е	C <sub>iss</sub>	V <sub>DS</sub> = 3V, V <sub>GS</sub> = 0, f = 1MHz	1	8.5	1	pF
Reverse transfer	capacitance	C <sub>rss</sub>	V <sub>DS</sub> = 3V, V <sub>GS</sub> = 0, f = 1MHz	1	3.3	1	pF
Output capacitance		Coss	V <sub>DS</sub> = 3V, V <sub>GS</sub> = 0, f = 1MHz	1	9.3	1	pF
Switching time	Turn-on time	t <sub>on</sub>	$V_{DD} = 3V, I_{D} = 10mA,$ $V_{GS} = 0 \sim 2.5V$		0.16		μs
	Turn-off time	t <sub>off</sub>	$V_{DD} = 3V$ , $I_{D} = 10mA$ , $V_{GS} = 0~2.5V$		0.15		μs

# **Equivalent Circuit (Top View)**

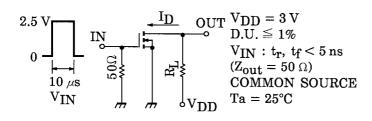


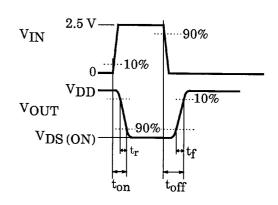
## Marking

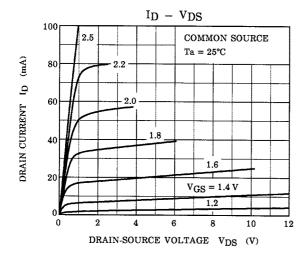


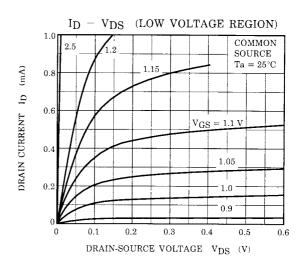
#### (Q1,Q2 Common)

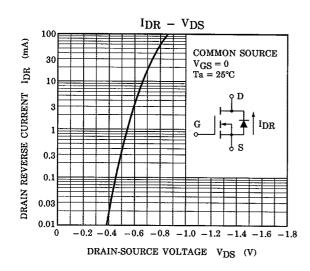
### **Switching Time Test Circuit**

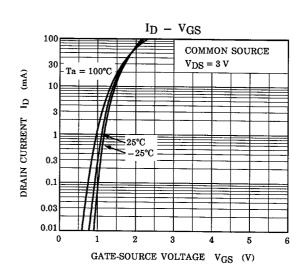




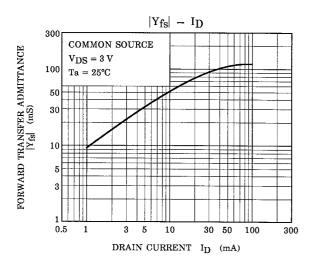


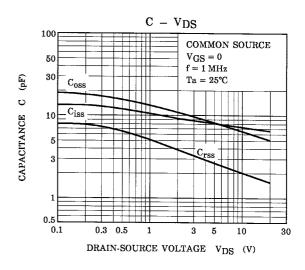


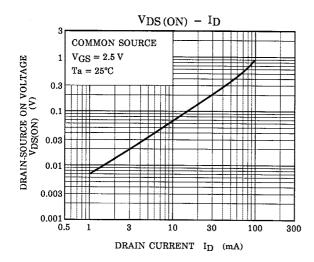


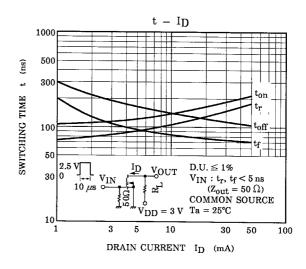


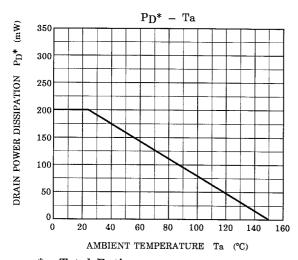
### (Q1,Q2 Common)











\*: Total Rating