TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE

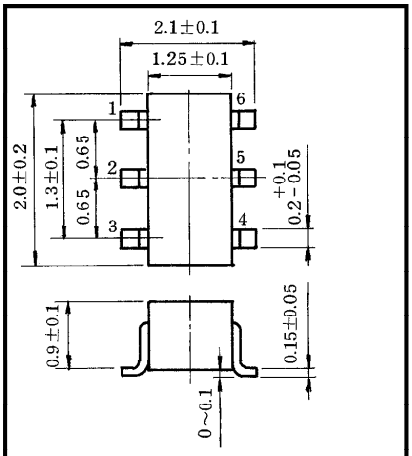
HN1K02FU

HIGH SPEED SWITCHING APPLICATIONS

ANALOG SWITCH APPLICATIONS

- 2.5 Volts Gate Drive.
- Low Threshold Voltage : $V_{th} = 0.5 \sim 1.5V$
- High Speed
- Enhancement-Mode
- Small Package

Unit in mm



1. SOURCE 1
2. GATE 1
3. DRAIN 2
4. SOURCE 2
5. GATE 2
6. DRAIN 1

US6	
JEDEC	—
EIAJ	—
TOSHIBA	2-2J1C

Weight : 6.8mg

MAXIMUM RATINGS (Ta = 25°C) (Q1, Q2 COMMON)

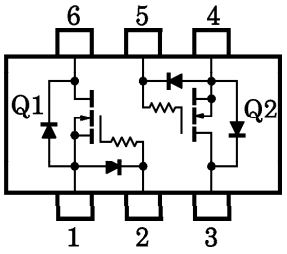
CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GSS}	10	V
DC Drain Current	I_D	50	mA
Drain Power Dissipation	P_D*	200	mW
Channel Temperature	T_{ch}	150	°C
Storage Temperature Range	T_{stg}	−55~150	°C

* Total Rating

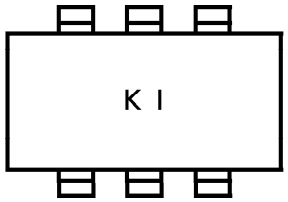
ELECTRICAL CHARACTERISTICS (Ta = 25°C) (Q1, Q2 COMMON)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	V_{GS}=10V, V_{DS}=0	—	—	1	μA
Drain-Source Breakdown Voltage		$V_{(BR)\,DSS}$	I_D=100μA, V_{GS}=0	20	—	—	V
Drain Cut-off Current		I_{DSS}	V_{DS}=20V, V_{GS}=0	—	—	1	μA
Gate Threshold Voltage		V_{th}	V_{DS}=3V, I_D=0.1mA	0.5	—	1.5	V
Forward Transfer Admittance		$\|Y_{fs}\|$	V_{DS}=3V, I_D=10mA	20	—	—	mS
Drain-Source ON Resistance		$R_{DS\,(ON)}$	I_D=10mA, V_{GS}=2.5V	—	20	40	Ω
Input Capacitance		C_{iss}	V_{DS}=3V, V_{GS}=0, f=1MHz	—	5.5	—	pF
Reverse Transfer Capacitance		C_{rss}	V_{DS}=3V, V_{GS}=0, f=1MHz	—	1.6	—	pF
Output Capacitance		C_{oss}	V_{DS}=3V, V_{GS}=0, f=1MHz	—	6.5	—	pF
Switching Time	Turn-on Time	t_{on}	V_{DD}=3V, I_D=10mA, V_{GS}=0~2.5V	—	0.14	—	μs
	Turn-off Time	t_{off}	V_{DD}=3V, I_D=10mA, V_{GS}=0~2.5V	—	0.14	—	μs

EQUIVALENT CIRCUIT (TOP VIEW)

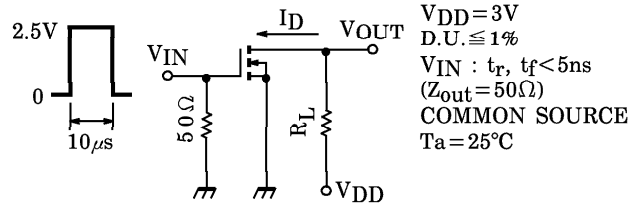


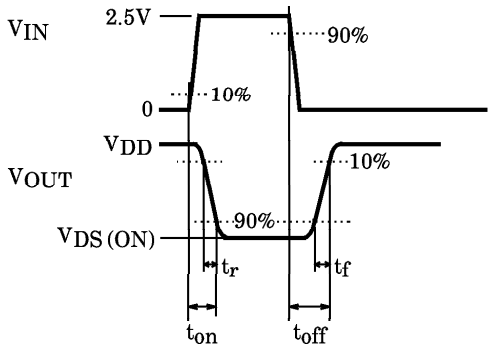
MARKING



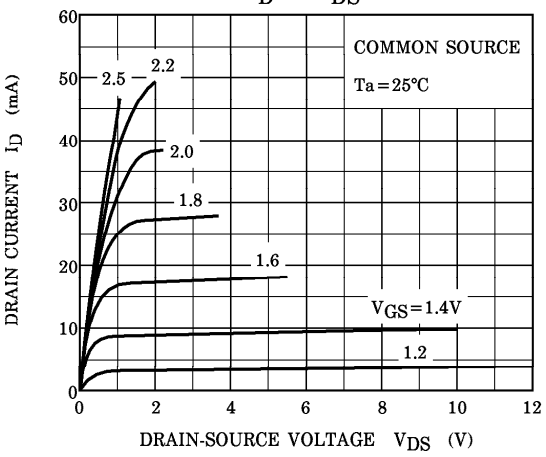
(Q1, Q2 COMMON)

SWITCHING TIME TEST CIRCUIT

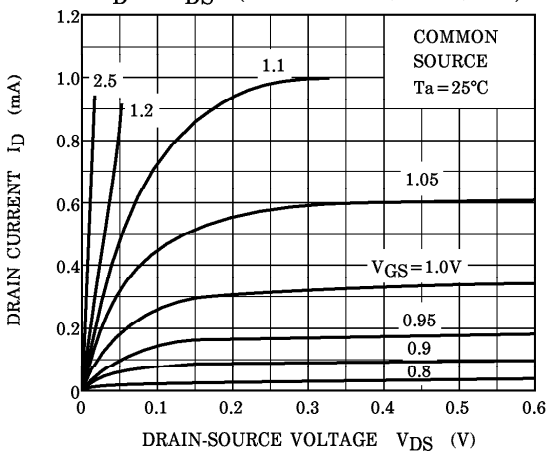




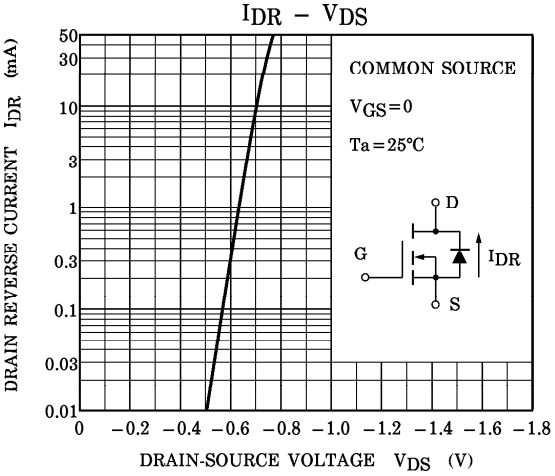
I_D – V_{DS}



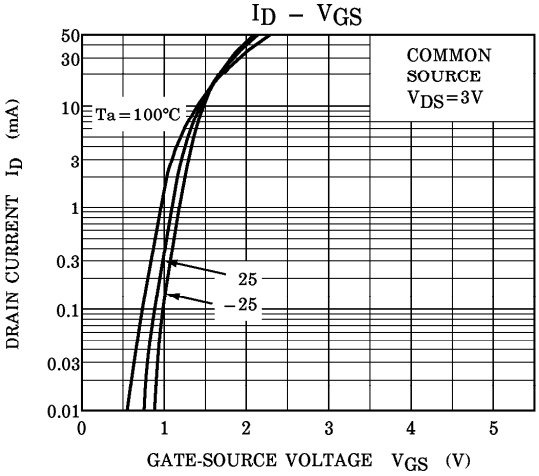
I_D – V_{DS} (LOW VOLTAGE REGION)



I_{DR} – V_{DS}

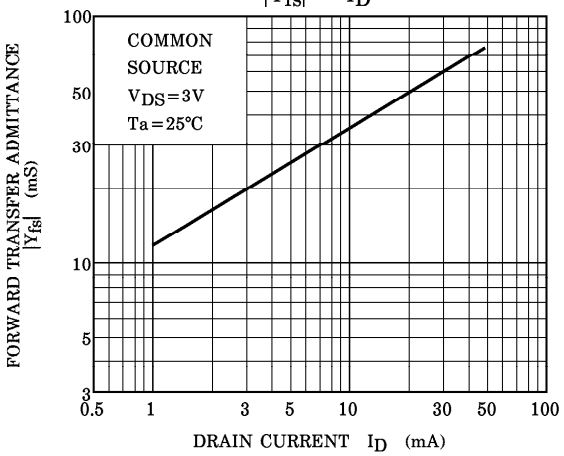


I_D – V_{GS}

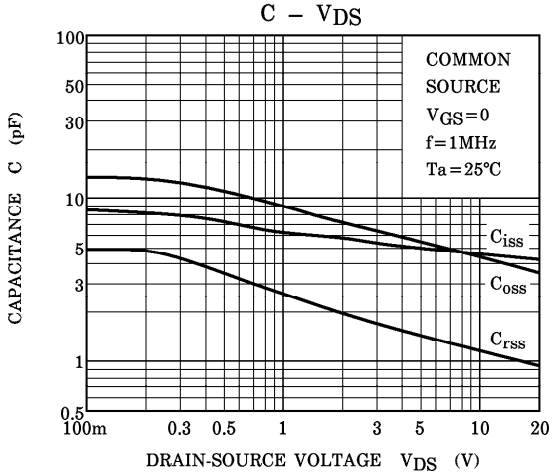


(Q1, Q2 COMMON)

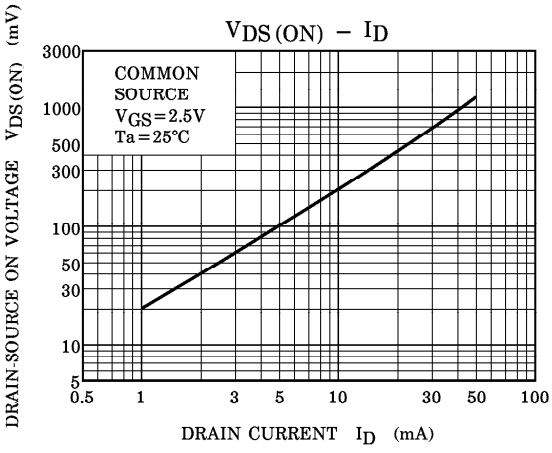
$|Y_{fs}|$ – I_D



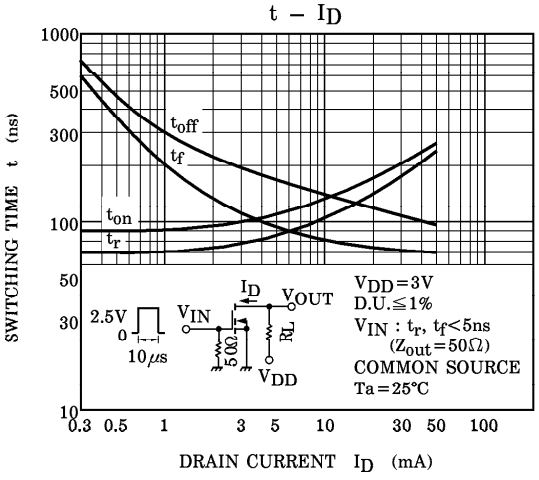
C – V_{DS}



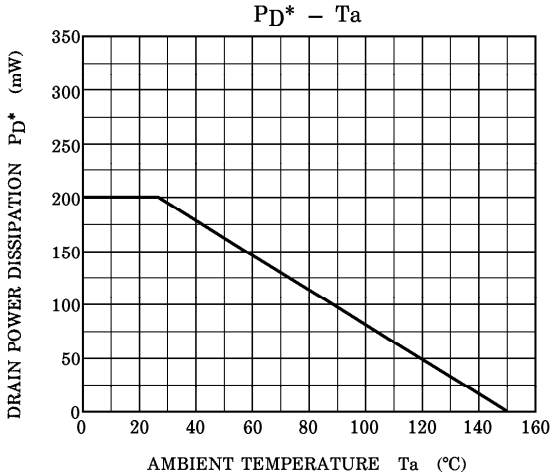
$V_{DS\,(ON)}$ – I_D



t – I_D



P_D* – Ta



* : Total Rating