TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE

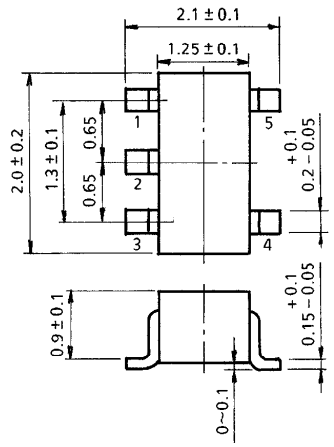
HN4K03JU

HIGH SPEED SWITCHING APPLICATIONS

ANALOG SWITCH APPLICATIONS

- High Input Impedance
- Low Gate Threshold Voltage : V_{th} = 0.5~1.5 V
- Excellent Switching Times
- Small Package

Unit in mm



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

JEDEC	—
EIAJ	—
TOSHIBA	2-2L1B

Weight : 6.2 mg

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	100	mA
Drain Power Dissipation	P_D*	200	mW
Channel Temperature	T_{ch}	150	°C
Storage Temperature Range	T_{stg}	−55 ~ 150	°C

* : Total Rating

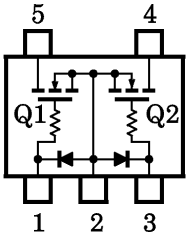
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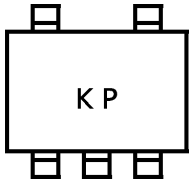
ELECTRICAL CHARACTERISTICS (Ta = 25°C) (Q1, Q2 COMMON)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	V_{GS} = 10 V, V_{DS} = 0	—	—	1	μA
Drain-Source Breakdown Voltage		$V_{(BR)\,DSS}$	I_D = 100 μA, V_{GS} = 0	20	—	—	V
Drain Cut-off Current		I_{DSS}	V_{DS} = 20 V, V_{GS} = 0	—	—	1	μA
Gate Threshold Voltage		V_{th}	V_{DS} = 3 V, I_D = 0.1 mA	0.5	—	1.5	V
Forward Transfer Admittance		$\|Y_{fs}\|$	V_{DS} = 3 V, I_D = 10 mA	25	50	—	mS
Drain-Source ON Resistance		$R_{DS\,(ON)}$	I_D = 10 mA, V_{GS} = 2.5 V	—	8	12	Ω
Input Capacitance		C_{iss}	V_{DS} = 3 V, V_{GS} = 0, f = 1 MHz	—	8.5	—	pF
Reverse Transfer Capacitance		C_{rss}	V_{DS} = 3 V, V_{GS} = 0, f = 1 MHz	—	3.3	—	pF
Output Capacitance		C_{oss}	V_{DS} = 3 V, V_{GS} = 0, f = 1 MHz	—	9.3	—	pF
Switching Time	Turn-on Time	t_{on}	V_{DD} = 3 V, I_D = 10 mA V_{GS} = 0~2.5 V	—	0.16	—	μs
	Turn-off Time	t_{off}	V_{DD} = 3 V, I_D = 10 mA V_{GS} = 0~2.5 V	—	0.15	—	

EQUIVALENT CIRCUIT (TOP VIEW)

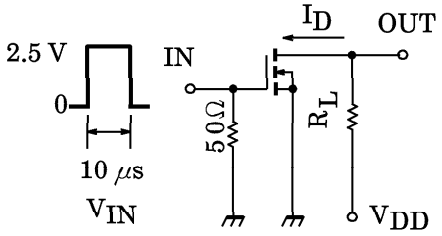


MARKING

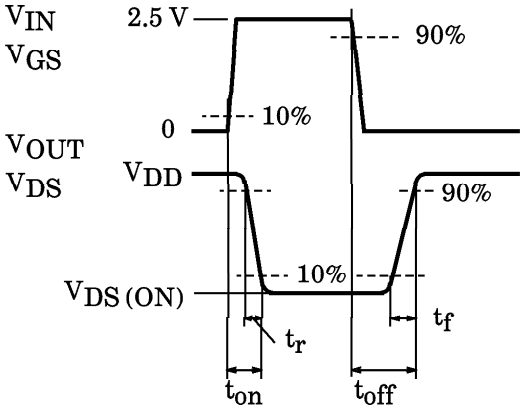


(Q1, Q2 COMMON)

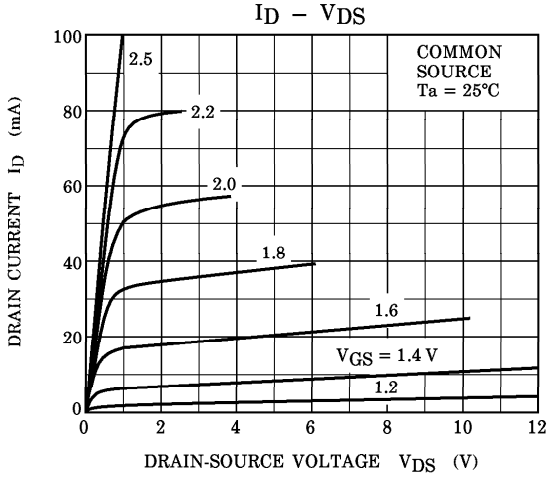
SWITCHING TIME TEST CIRCUIT



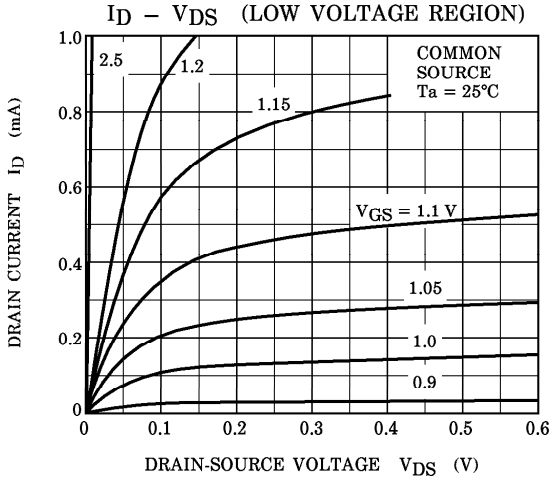
V_{DD} = 3 V
D.U. ≦ 1%
V_{IN} : t_r, t_f < 5 ns
(Z_{out} = 50 Ω)
COMMON SOURCE
Ta = 25°C



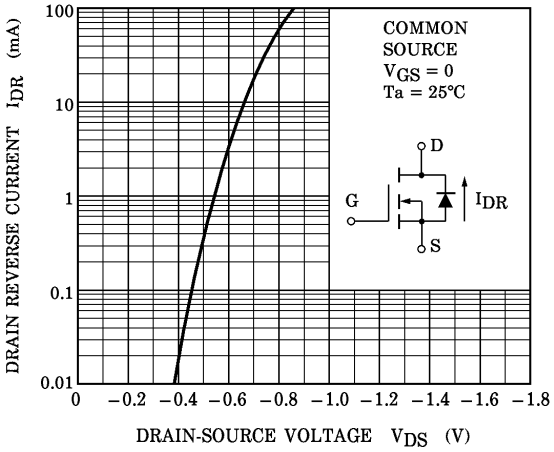
I_D – V_{DS}



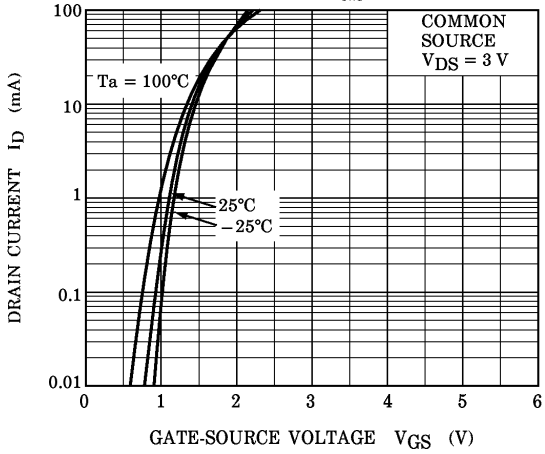
I_D – V_{DS} (LOW VOLTAGE REGION)



I_{DR} – V_{DS}

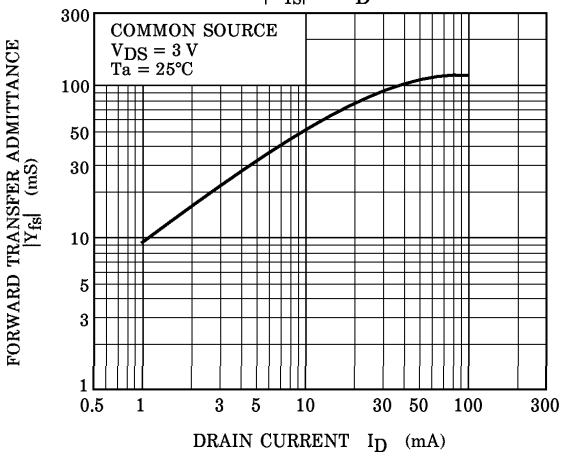


I_D – V_{GS}

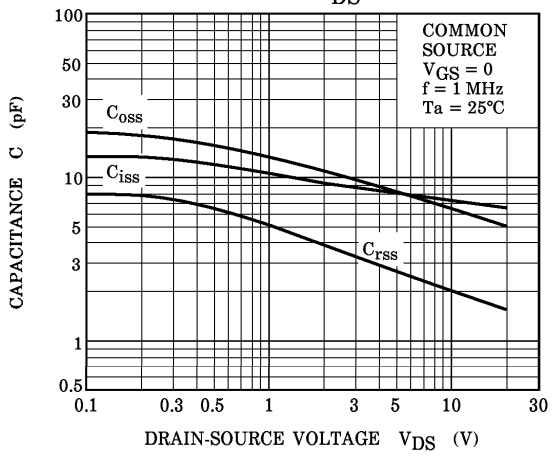


(Q1, Q2 COMMON)

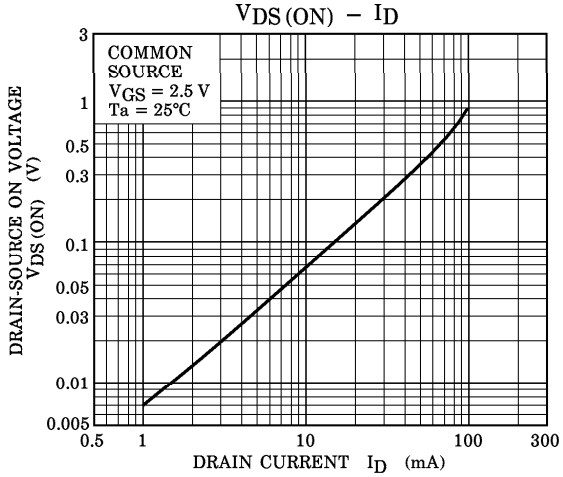
$|Y_{fs}|$ – I_D



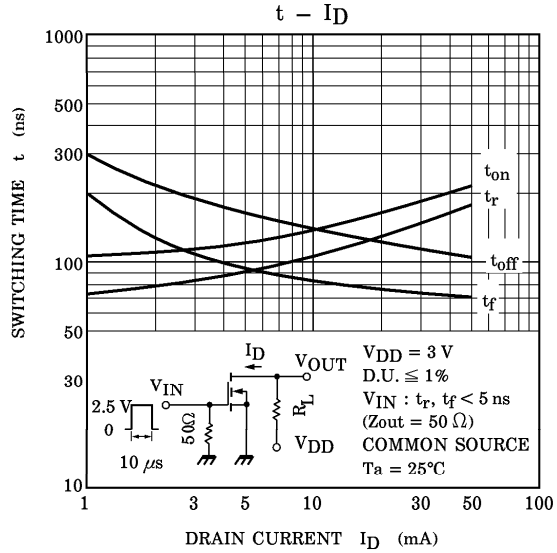
C – V_{DS}



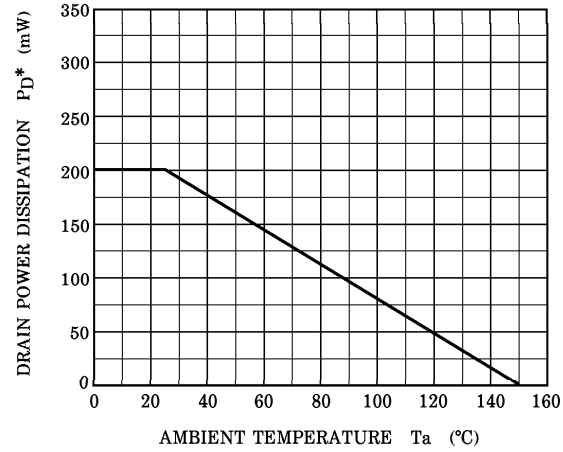
$V_{DS\,(ON)}$ – I_D



t – I_D



P_D* – Ta



* : Total Rating