

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N-P CHANNEL MOS TYPE

HN1L03FU

HIGH SPEED SWITCHING APPLICATIONS

ANAROG SWITCH APPLICATIONS

Unit in mm

Q1, Q2 COMMON

- Low Threshold Voltage
Q1 : $V_{th} = 0.8 \sim 2.5 \text{ V}$ Q2 : $V_{th} = -0.5 \sim -1.5 \text{ V}$
- High Speed
- Small Package

Q1 MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DS}	50	V
Gate-Source Voltage	V_{GSS}	10	V
Drain Current	I_D	50	mA

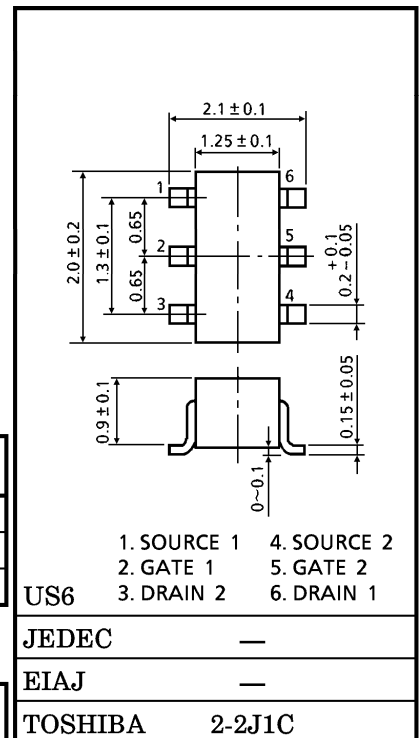
Q2 MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GSS}	-7	V
Drain Current	I_D	-50	mA

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

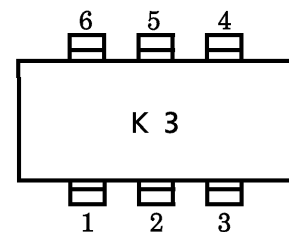
CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain Power Dissipation	P_D^*	200	mW
Channel Temperature	T_{ch}	150	°C
Storage Temperature Range	T_{stg}	-55 ~ 150	°C

* : Total Rating

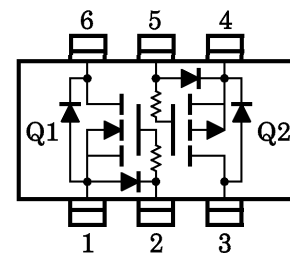


Weight : 6.8 mg

MARKING



EQUIVALENT CIRCUIT (TOP VIEW)



961001EAA1

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Q1 ELECTRICAL CHARACTERISTICS (Ta = 25°C)

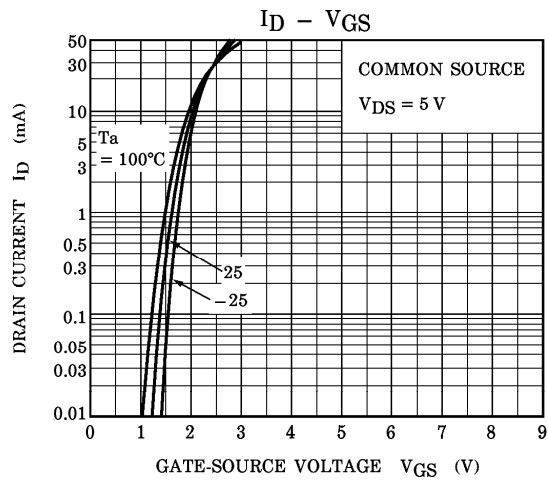
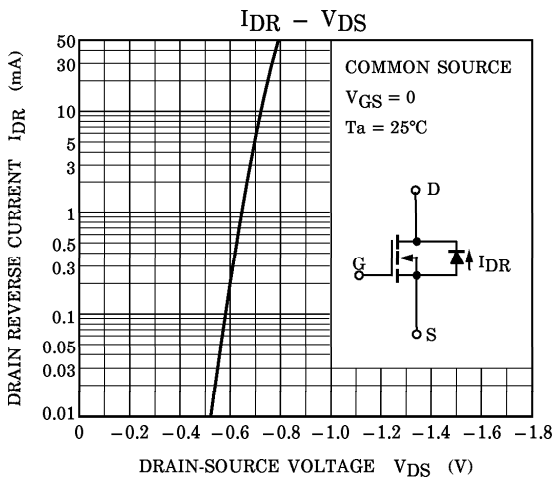
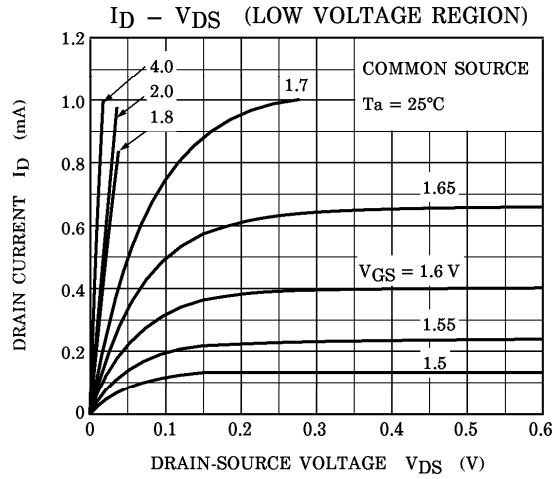
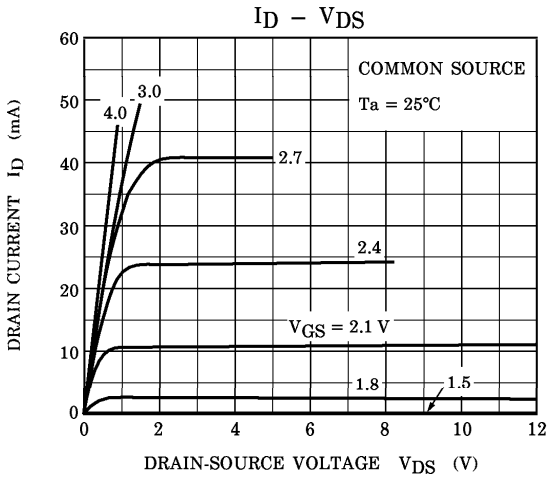
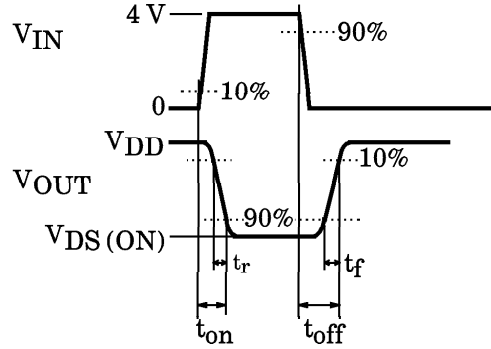
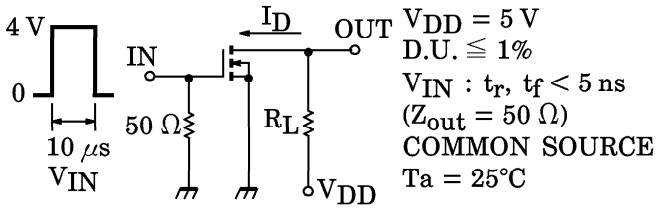
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		IGSS	VGS = 10 V, VDS = 0	—	—	1	μA
Drain-Source Breakdown Voltage		V(BR)DSS	ID = 100 μA, VGS = 0	50	—	—	V
Drain Cut-off Current		IDSS	VDS = 50 V, VGS = 0	—	—	1	μA
Gate Threshold Voltage		Vth	VDS = 5 V, ID = 0.1 mA	0.8	—	2.5	V
Forward Transfer Admittance		Yfs	VDS = 5 V, ID = 10 mA	20	—	—	mS
Drain-Source ON Resistance		RDS(ON)	ID = 10 mA, VGS = 4.0 V	—	20	50	Ω
Input Capacitance		Ciss	VDS = 5 V, VGS = 0, f = 1 MHz	—	6.3	—	pF
Reverse Transfer Capacitance		Crss	VDS = 5 V, VGS = 0, f = 1 MHz	—	1.3	—	pF
Output Capacitance		Coss	VDS = 5 V, VGS = 0, f = 1 MHz	—	5.7	—	pF
Switching Time	Turn-on Time	ton	VDD = 5 V, ID = 10 mA, VGS = 0~4.0 V	—	0.11	—	μs
	Turn-off Time	toff	VDD = 5 V, ID = 10 mA, VGS = 0~4.0 V	—	0.15	—	μs

Q2 ELECTRICAL CHARACTERISTICS (Ta = 25°C)

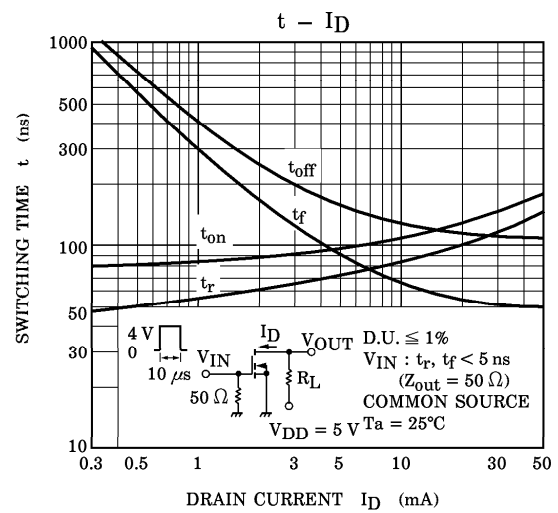
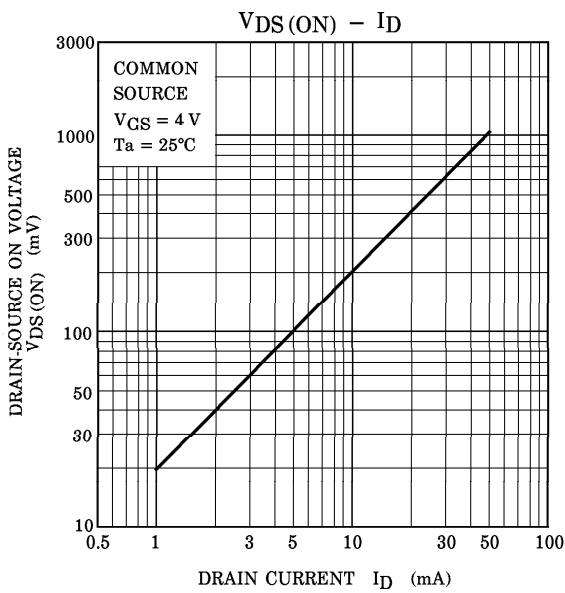
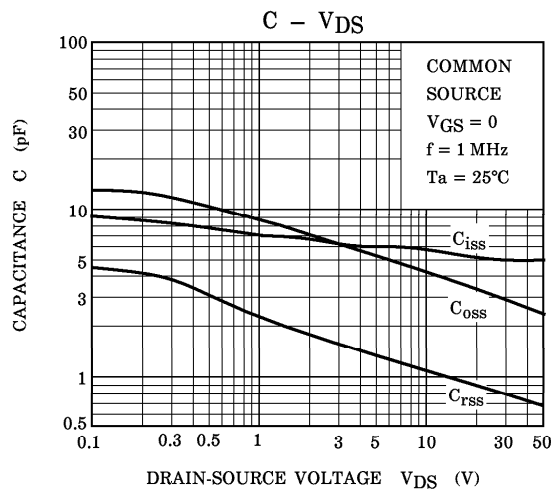
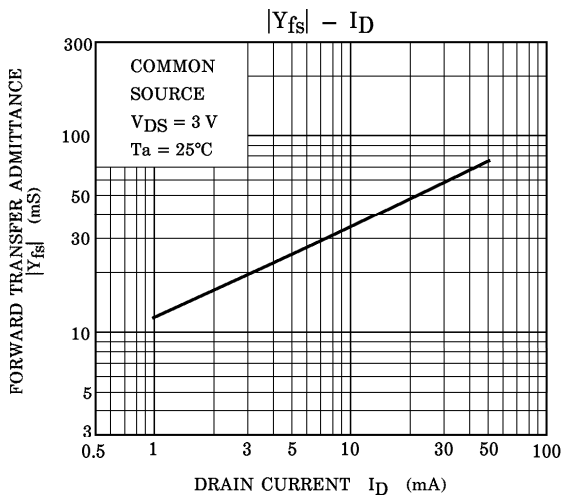
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		IGSS	VGS = -7 V, VDS = 0	—	—	-1	μA
Drain-Source Breakdown Voltage		V(BR)DSS	ID = -100 μA, VGS = 0	-20	—	—	V
Drain Cut-off Current		IDSS	VDS = -20 V, VGS = 0	—	—	-1	μA
Gate Threshold Voltage		Vth	VDS = -3 V, ID = -0.1 mA	-0.5	—	-1.5	V
Forward Transfer Admittance		Yfs	VDS = -3 V, ID = -10 mA	15	—	—	mS
Drain-Source ON Resistance		RDS(ON)	ID = -10 mA, VGS = -2.5 V	—	20	40	Ω
Input Capacitance		Ciss	VDS = -3 V, VGS = 0, f = 1 MHz	—	10.4	—	pF
Reverse Transfer Capacitance		Crss	VDS = -3 V, VGS = 0, f = 1 MHz	—	2.8	—	pF
Output Capacitance		Coss	VDS = -3 V, VGS = 0, f = 1 MHz	—	8.4	—	pF
Switching Time	Turn-on Time	ton	VDD = -3 V, ID = -10 mA, VGS = 0~-2.5 V	—	0.15	—	μs
	Turn-off Time	toff	VDD = -3 V, ID = -10 mA, VGS = 0~-2.5 V	—	0.13	—	μs

Q1 (Nch MOS FET)

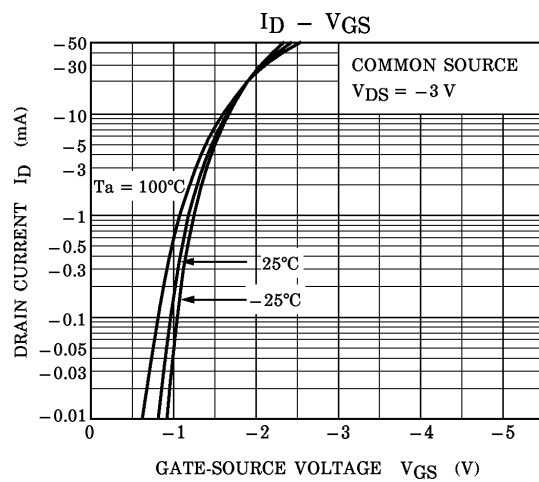
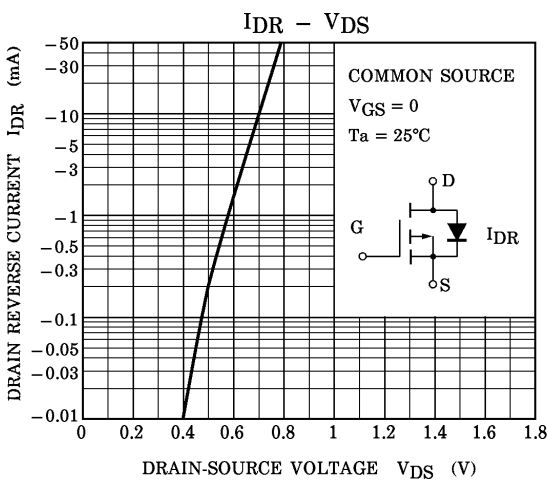
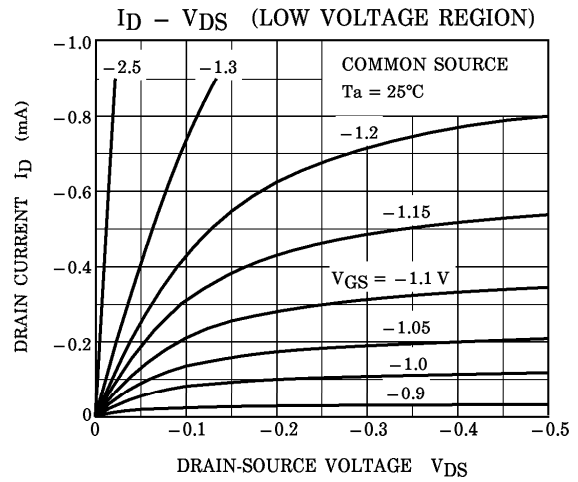
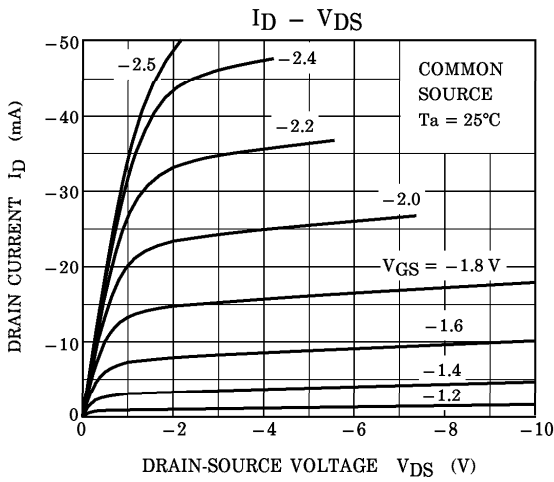
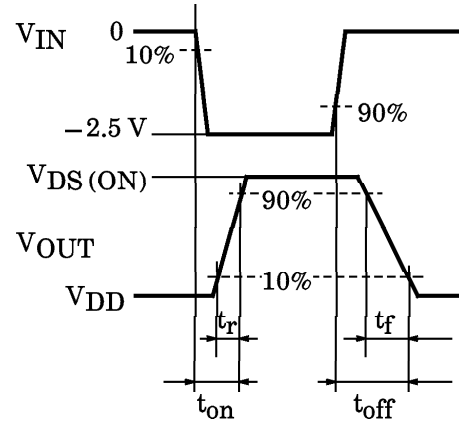
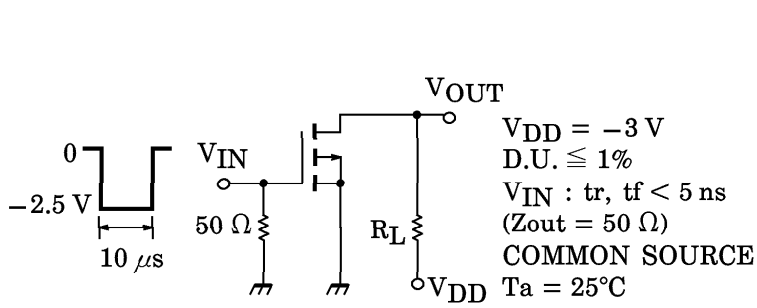
SWITCHING TIME TEST CIRCUIT



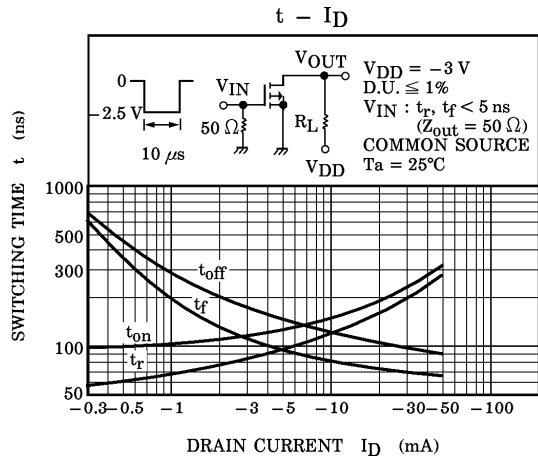
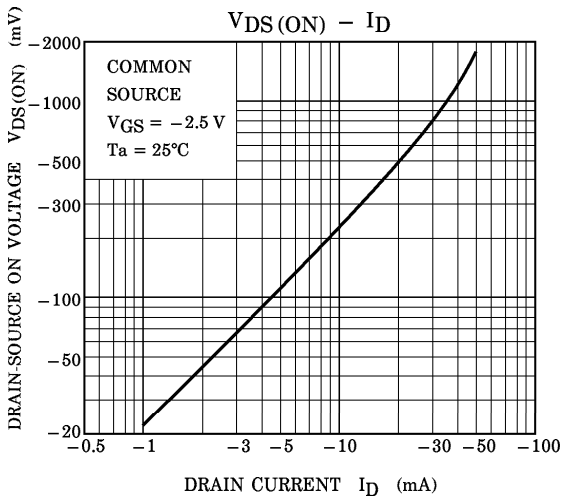
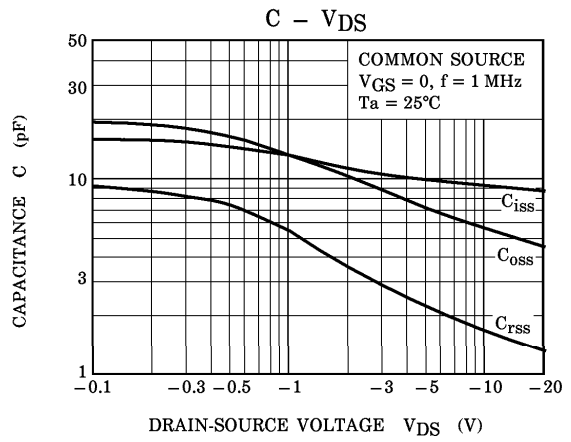
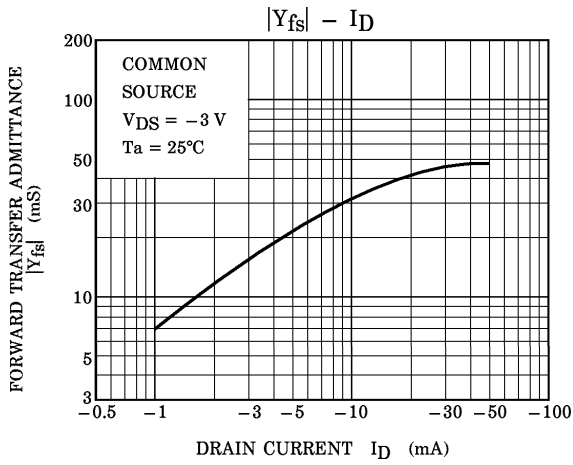
Q1 (Nch MOS FET)



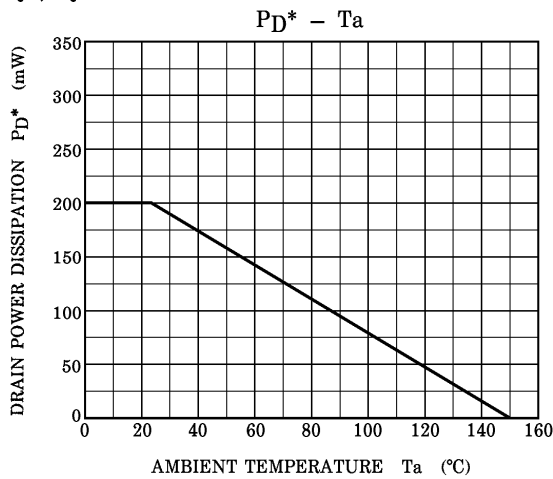
Q2 (Pch MOS FET)
SWITCHING TIME TEST CIRCUIT



Q2 (Pch MOS FET)



(Q1, Q2 COMMON)



* : Total Rating