

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE SILICON P CHANNEL MOS TYPE

HN1L02FU

HIGH SPEED SWITCHING APPLICATIONS
ANAROG SWITCH APPLICATIONS

Unit in mm

Q1, Q2 COMMON

- 2.5V Gate Drive
- Low Threshold Voltage
Q1 : $V_{th}=0.5\sim1.5V$ Q2 : $V_{th}=-0.5\sim-1.5V$
- High Speed
- Small Package

Q1 MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GSS}	10	V
Drain Current	I_D	50	mA

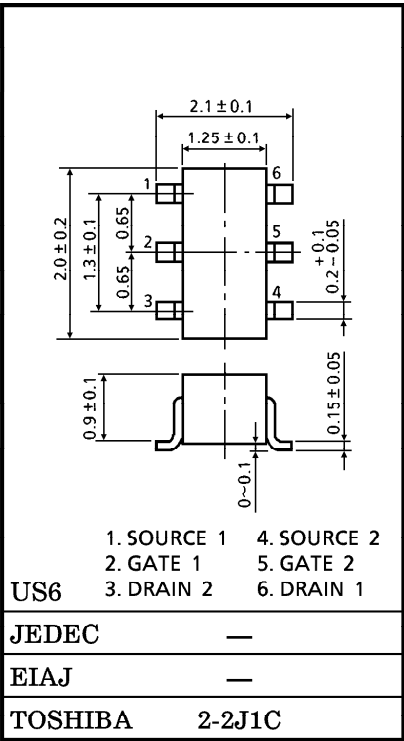
Q2 MAXIMUM RATINGS (Ta = 25°C)

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)

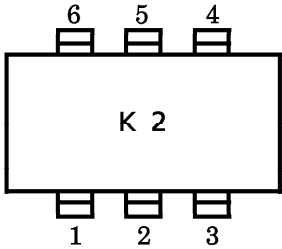
CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain Power Dissipation	P_D ※	200	mW
Channel Temperature	T_{ch}	150	°C
Storage Temperature Range	T_{stg}	-55 ~ 150	°C

※ Total Rating

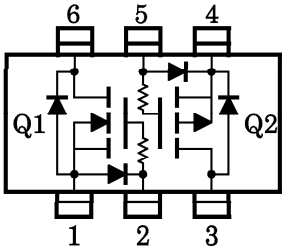


Weight : 6.8mg

MARKING



EQUIVALENT CIRCUIT (TOP VIEW)



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Q1 ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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		$V_{(BR) DSS}$	$I_D = 100\mu A, V_{GS} = 0$	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}	$V_{DD} = 3V, I_D = 10mA,$ $V_{GS} = 0 \sim 2.5V$	—	0.14	—	μs
	Turn-off Time	t_{off}	$V_{DD} = 3V, I_D = 10mA,$ $V_{GS} = 0 \sim 2.5V$	—	0.14	—	μs

Q2 ELECTRICAL CHARACTERISTICS (Ta = 25°C)

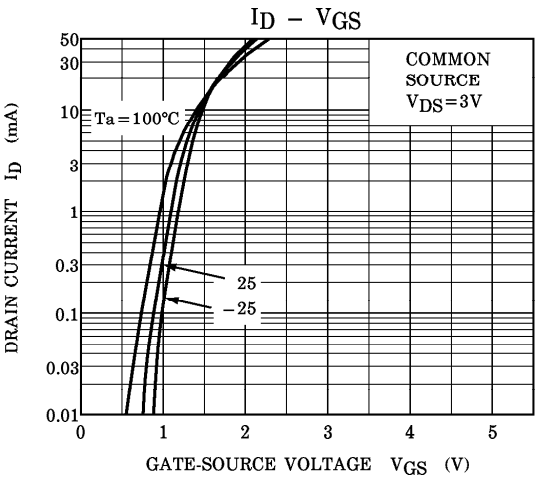
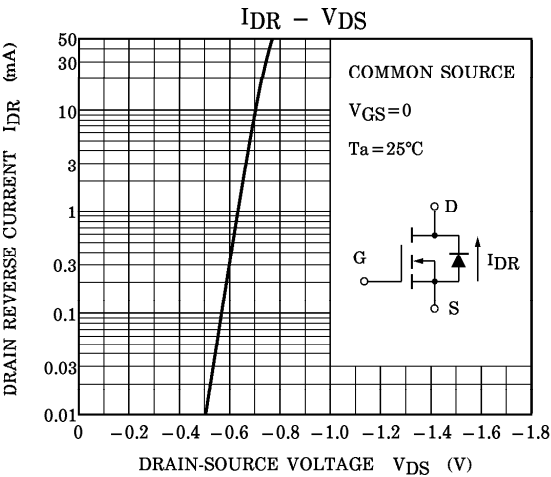
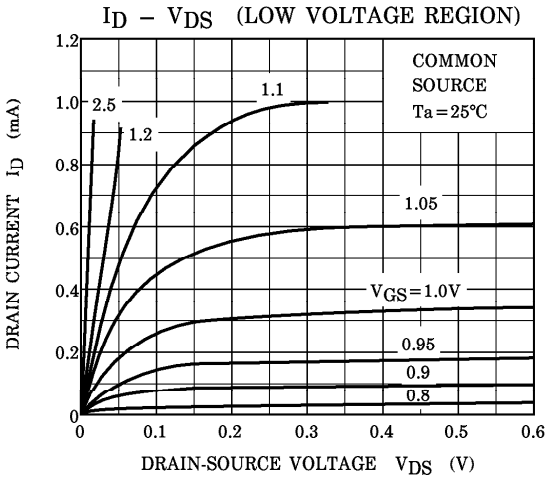
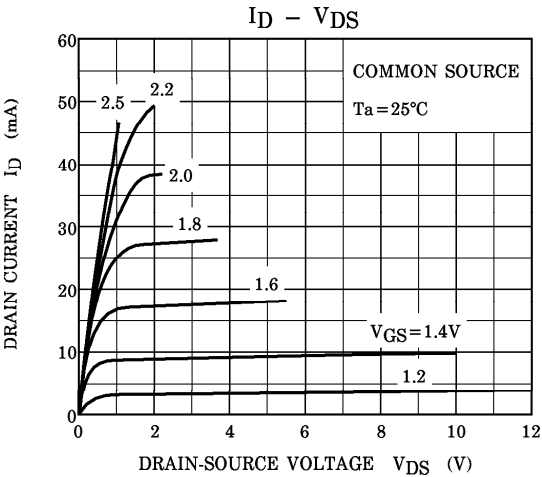
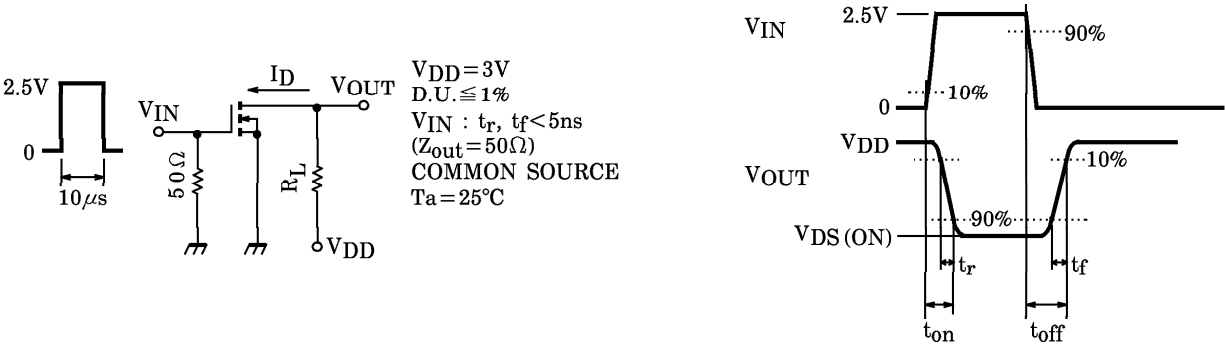
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = -7V, V_{DS} = 0$	—	—	-1	μA
Drain-Source Breakdown Voltage		$V_{(BR) DSS}$	$I_D = -100\mu A, V_{GS} = 0$	-20	—	—	V
Drain Cut-off Current		I_{DSS}	$V_{DS} = -20V, V_{GS} = 0$	—	—	-1	μA
Gate Threshold Voltage		V_{th}	$V_{DS} = -3V, I_D = -0.1mA$	-0.5	—	-1.5	V
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = -3V, I_D = -10mA$	15	—	—	mS
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = -10mA, V_{GS} = -2.5V$	—	20	40	Ω
Input Capacitance		C_{iss}	$V_{DS} = -3V, V_{GS} = 0,$ $f = 1MHz$	—	10.4	—	pF
Reverse Transfer Capacitance		C_{rss}	$V_{DS} = -3V, V_{GS} = 0,$ $f = 1MHz$	—	2.8	—	pF
Output Capacitance		C_{oss}	$V_{DS} = -3V, V_{GS} = 0,$ $f = 1MHz$	—	8.4	—	pF
Switching Time	Turn-on Time	t_{on}	$V_{DD} = -3V, I_D = -10mA,$ $V_{GS} = 0 \sim -2.5V$	—	0.15	—	μs
	Turn-off Time	t_{off}	$V_{DD} = -3V, I_D = -10mA,$ $V_{GS} = 0 \sim -2.5V$	—	0.13	—	μs

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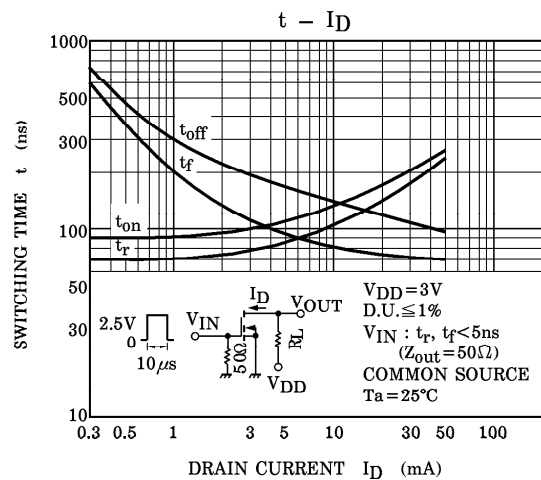
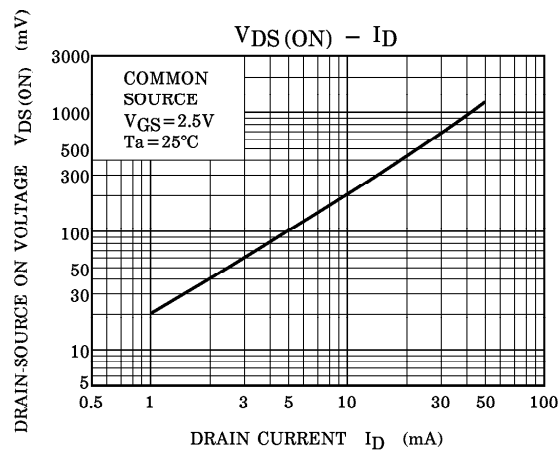
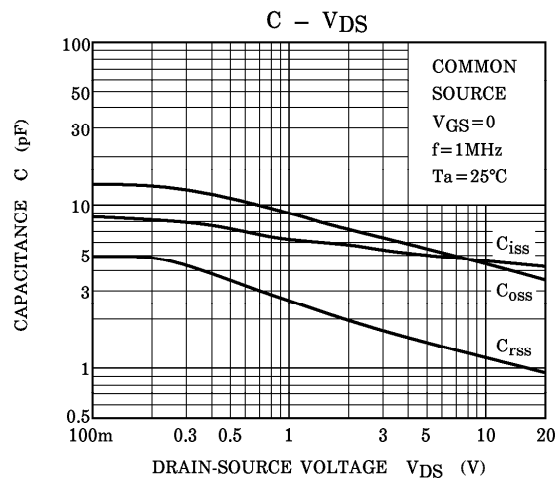
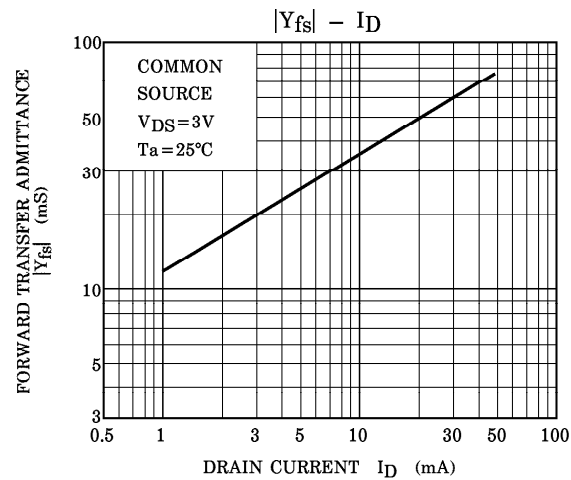
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Q1 (Nch MOS FET)

SWITCHING TIME TEST CIRCUIT

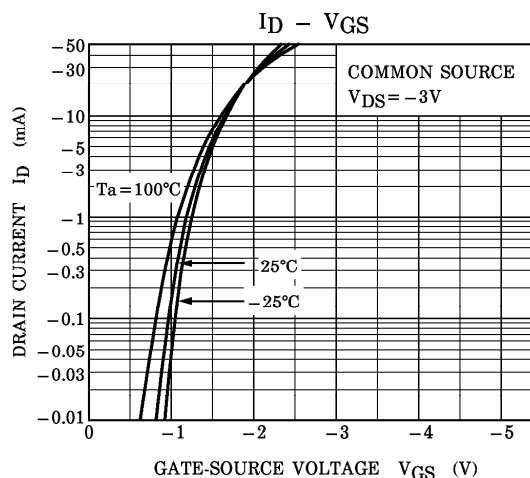
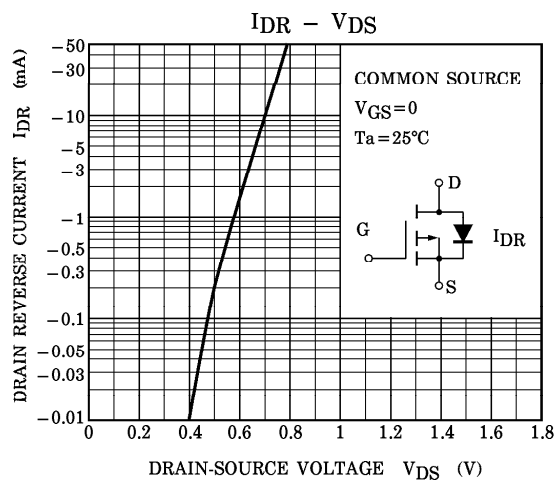
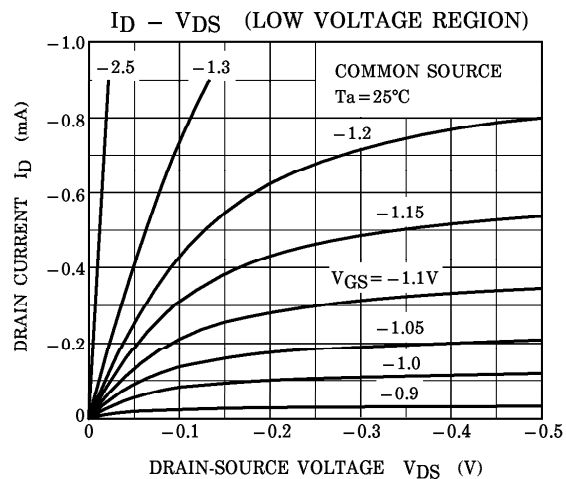
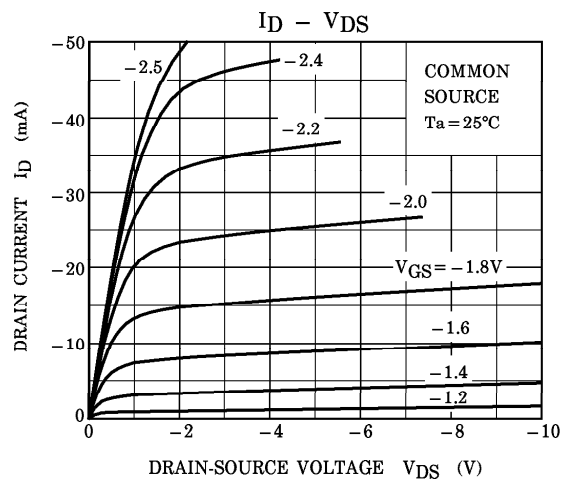
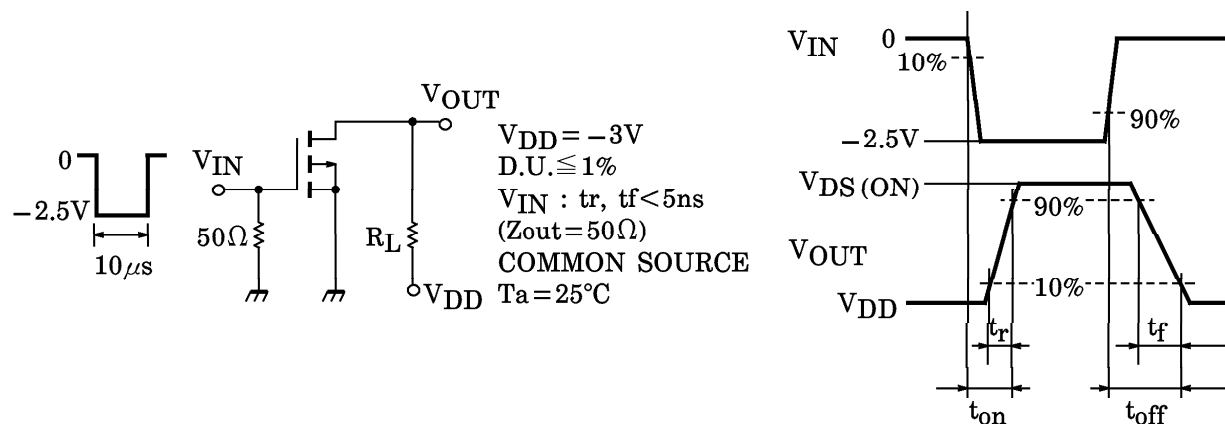


Q1 (Nch MOS FET)

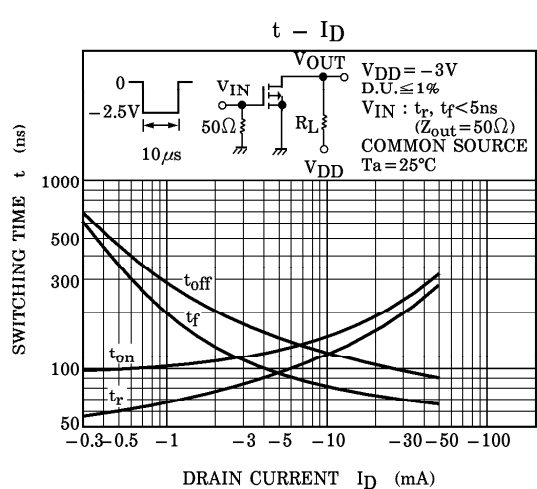
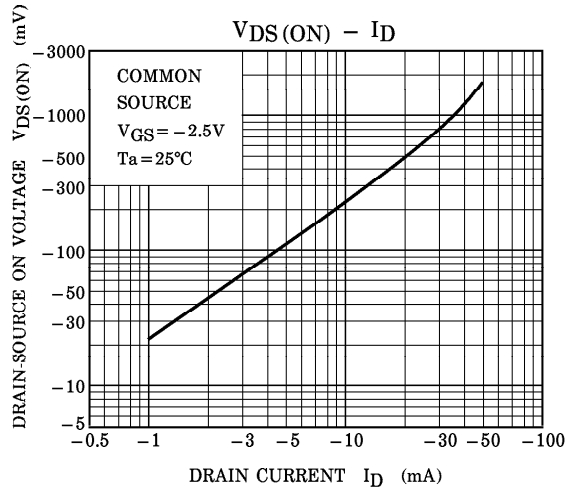
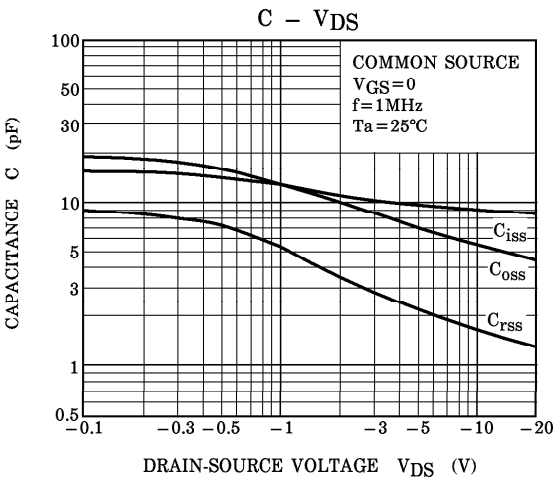
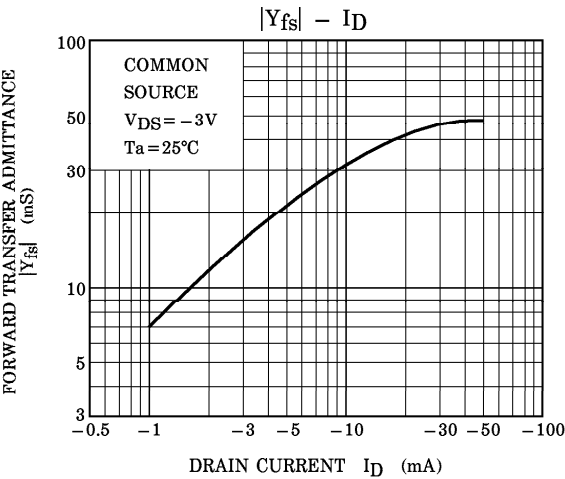


Q2 (Pch MOS FET)

SWITCHING TIME TEST CIRCUIT



Q2 (Pch MOS FET)



(Q1, Q2 COMMON)

