

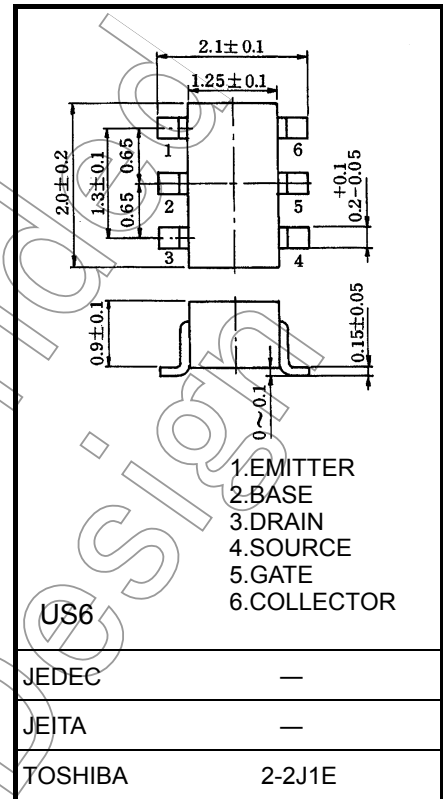
TOSHIBA Multichip Discrete Device

HN7G03FU

Unit: mm

Power Management Switch Applications
 Driver Circuit Applications
 Interface Circuit Applications

Q1 (transistor) : 2SA1955 equivalent
 Q2 (S-MOS) : SSM3K04FU equivalent



Q1 Absolute Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-base voltage	V _{CB0}	-15	V
Collector-emitter voltage	V _{CEO}	-12	V
Emitter-base voltage	V _{EB0}	-5	V
Collector current	I _C	-400	mA
Base current	I _B	-50	mA

Weight: 6.8 mg (typ.)

Q2 Absolute 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	100	mA

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

Characteristic	Symbol	Rating	Unit
Power dissipation	P*	200	mW
Junction temperature	T _j	125	°C
Storage temperature range	T _{stg}	-55~125	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

* Total rating.

Q1 Electrical Characteristics (Ta = 25°C)

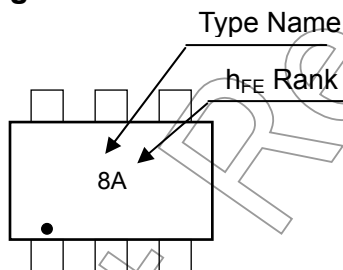
Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cutoff current	I_{CBO}	—	$V_{CB} = -15\text{ V}, I_E = 0$	—	—	-0.1	μA
Emitter cutoff current	I_{EBO}	—	$V_{EB} = -5\text{ V}, I_C = 0$	—	—	-0.1	μA
DC current gain	h_{FE} (Note 1)	—	$V_{CE} = -2\text{ V}, I_C = -10\text{ mA}$	300	—	1000	
Collector-emitter saturation voltage	$V_{CE(sat)} (1)$	—	$I_C = -10\text{ mA}, I_B = -0.5\text{ mA}$	—	-15	-30	mV
	$V_{CE(sat)} (2)$	—	$I_C = -200\text{ mA}, I_B = -10\text{ mA}$	—	-110	-250	
Base-emitter saturation voltage	$V_{BE(sat)}$	—	$I_C = -200\text{ mA}, I_B = -10\text{ mA}$	—	-0.87	-1.2	V

Note 1: h_{FE} classification A: 300~600, B: 500~1000

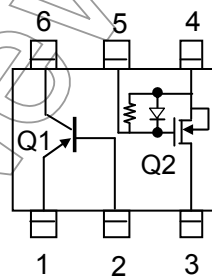
Q2 Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	I_{GSS}	—	$V_{GS} = 10\text{ V}, V_{DS} = 0$	—	—	15	μA
Drain-source breakdown voltage	$V_{(BR)DSS}$	—	$I_D = 100\text{ }\mu\text{A}, V_{GS} = 0$	20	—	—	V
Drain current	I_{DSS}	—	$V_{DS} = 20\text{ V}, V_{GS} = 0$	—	—	1	μA
Gate threshold voltage	V_{th}	—	$V_{DS} = 3\text{ V}, I_D = 0.1\text{ mA}$	0.7	—	1.3	V
Forward transfer admittance	$ Y_{fs} $	—	$V_{DS} = 3\text{ V}, I_D = 10\text{ mA}$	25	50	—	mS
Drain-source ON-resistance	$R_{DS(ON)}$	—	$I_D = 10\text{ mA}, V_{GS} = 2.5\text{ V}$	—	4	12	Ω
Gate-source ON-resistance	R_{GS}	—	$V_{GS} = 0 \sim 10\text{ V}$	0.7	1.0	1.3	M Ω

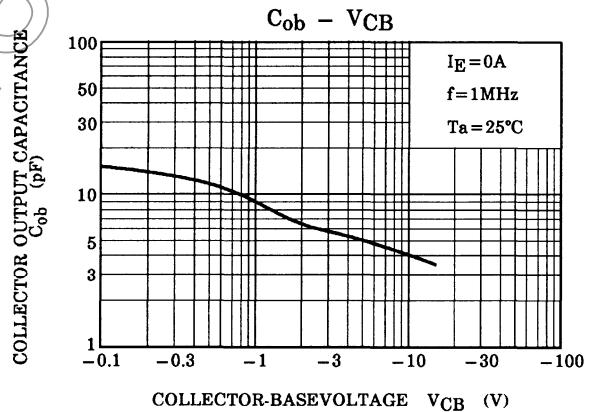
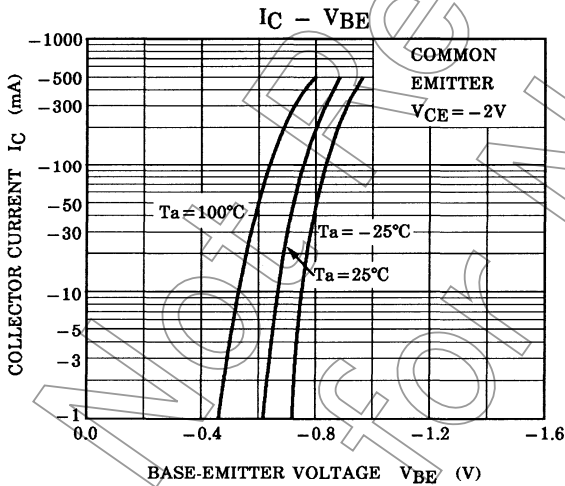
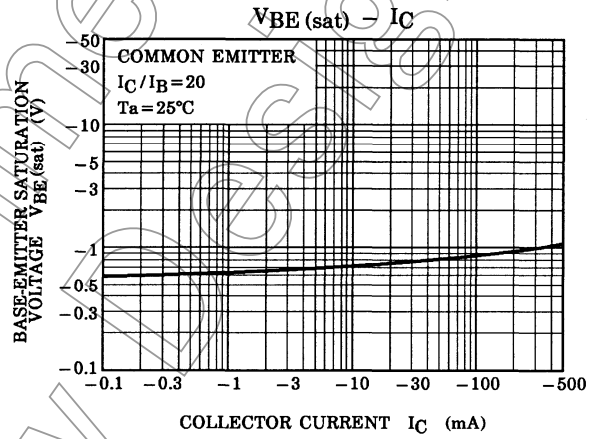
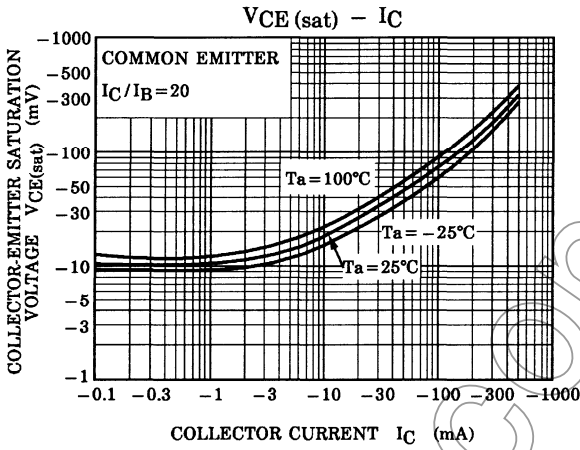
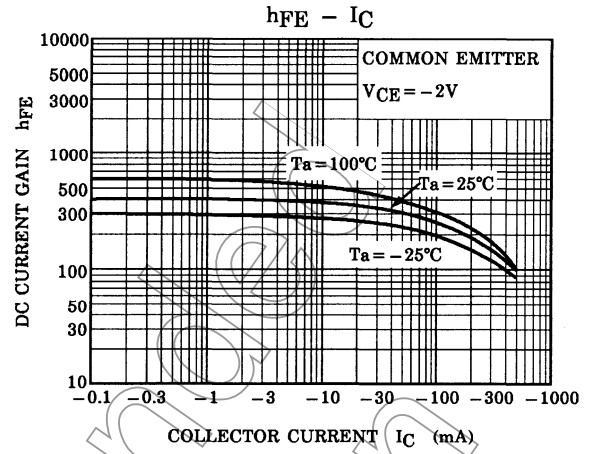
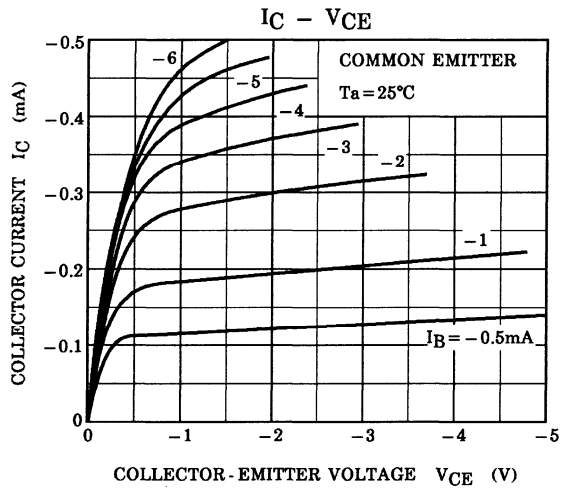
Marking



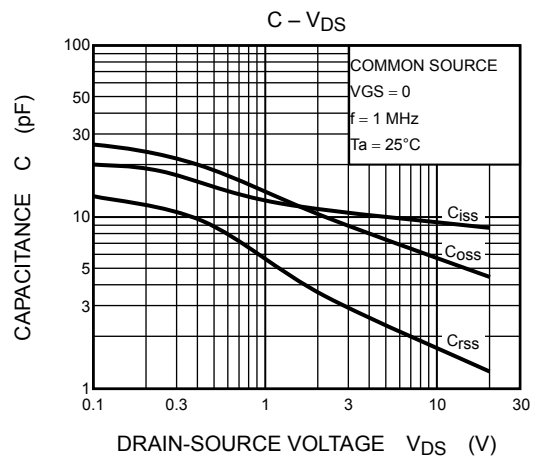
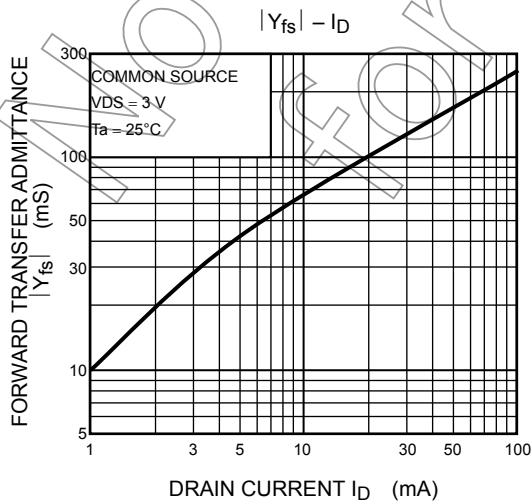
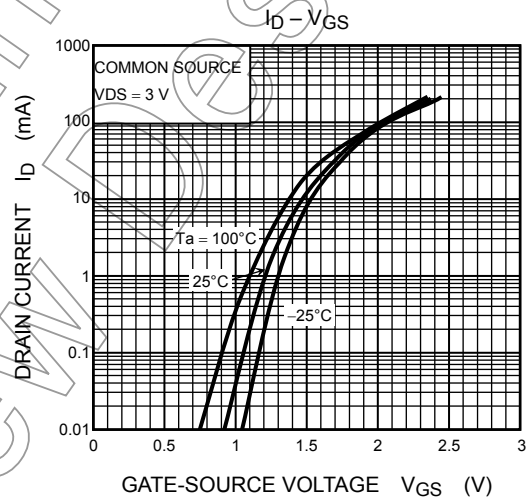
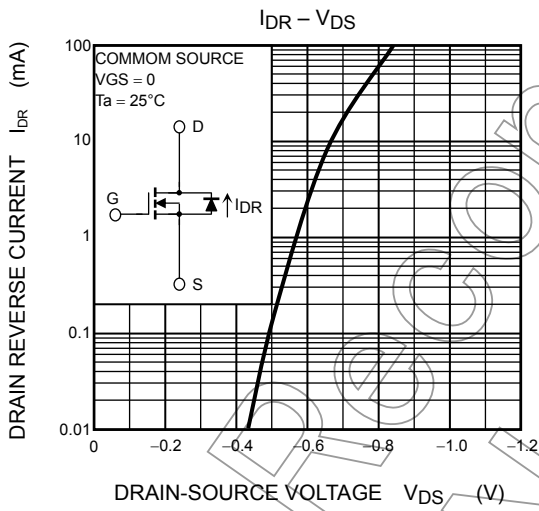
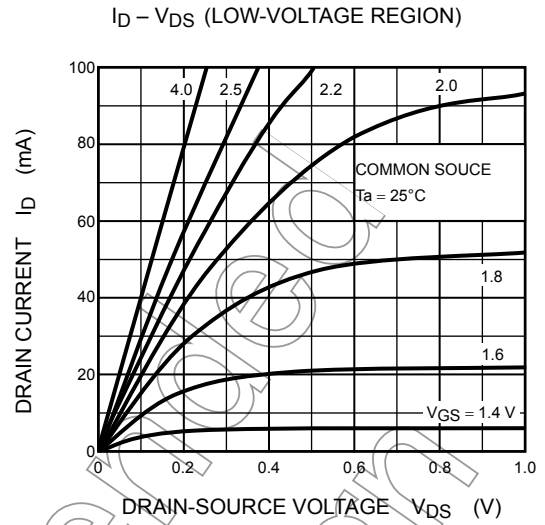
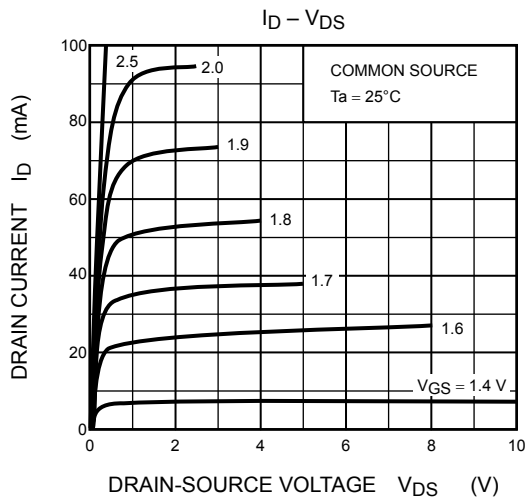
Equivalent Circuit (Top View)



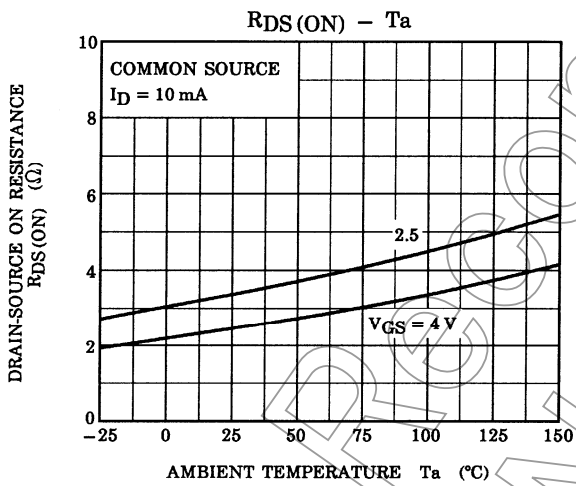
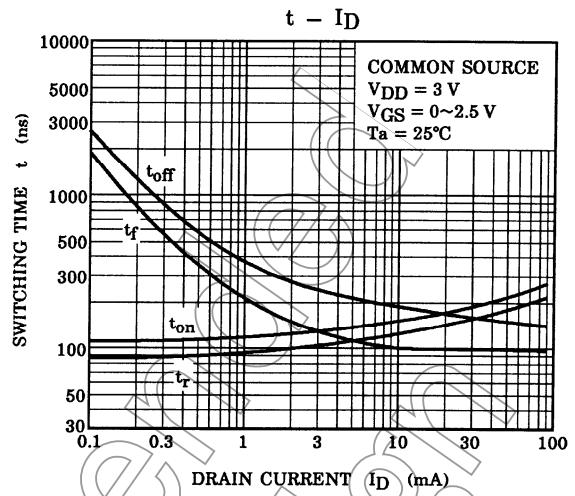
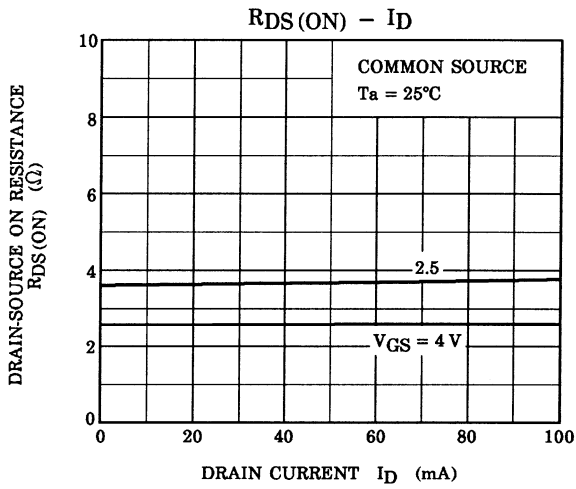
Q1



Q2

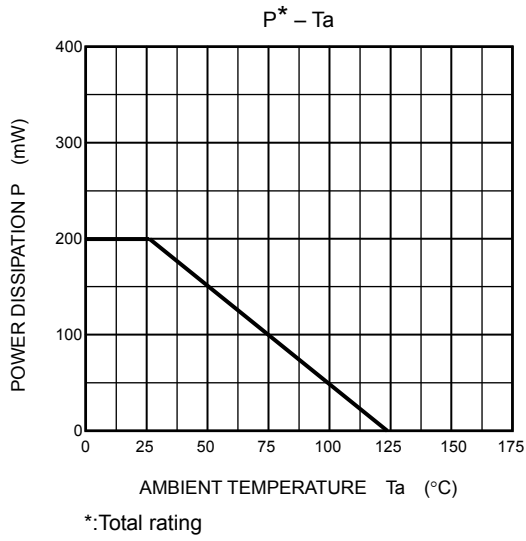


Q2



Not for New Design

Q1, Q2 common



Not Recommended for New Design

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