

TENTATIVE

TOSHIBA MULTI CHIP DISCRETE DEVICE

HN7G01FU

POWER MANAGEMENT SWITCH APPLICATION

DRIVER CIRCUIT APPLICATION

INTERFACE CIRCUIT APPLICATION

Q1 (Transistor) : 2SA1955 Equivalent

Q2 (MOS-FET) : 2SK1830 Equivalent

Q1 (Transistor) MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V _{CBO}	−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

Q2 (MOS-FET) MAXIMUM RATINGS (Ta = 25°C)

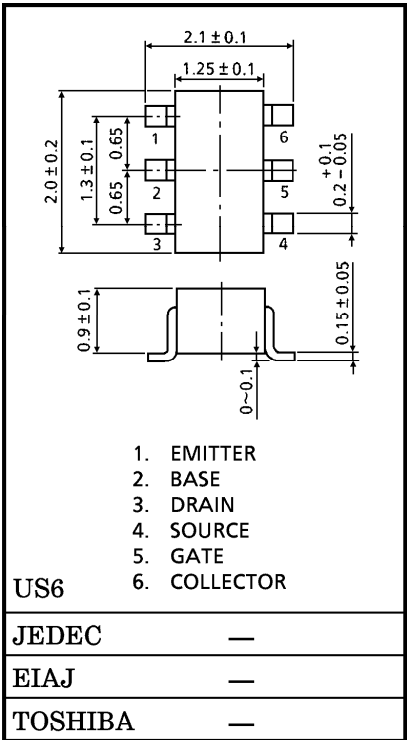
CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V _{DS}	20	V
Gate-Source Voltage	V _{GS}	10	V
Drain Current	I _D	50	mA

Q1, Q2 COMMON RATINGS (Ta = 25°C)

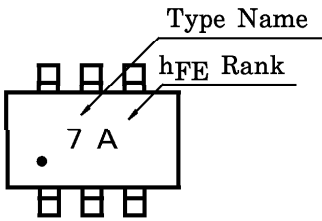
CHARACTERISTIC	SYMBOL	RATING	UNIT
Power Dissipation	P _C (*)	200	mW
Junction Temperature	T _j	125	°C
Storage Temperature Range	T _{stg}	−55~125	°C

(*) Total Rating

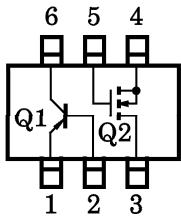
Unit in mm



MARKING



PIN ASSIGNMENT (TOP VIEW)



961001EAA1

- TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.

Q1 (Transistor) ELECTRICAL CHARACTERISTICS (Ta = 25°C)

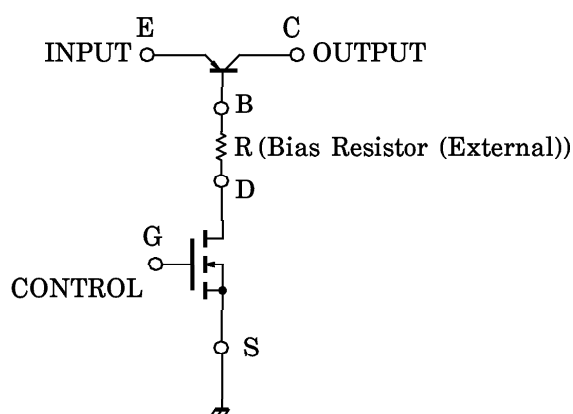
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	$V_{CB} = -15\text{ V}$, $I_E = 0$	—	—	-0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = -5\text{ V}$, $I_C = 0$	—	—	-0.1	mA
DC Current Gain	$h_{FE} (*)$	$V_{CE} = -2\text{ V}$, $I_C = -10\text{ mA}$	300	—	1000	
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

(*) h_{FE} Classification A : 300~600, B : 500~1000

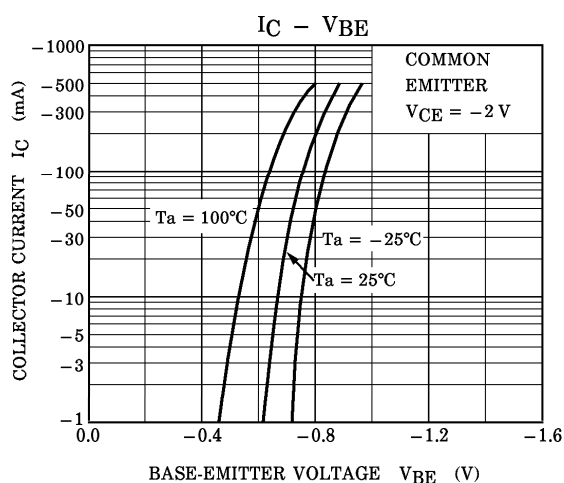
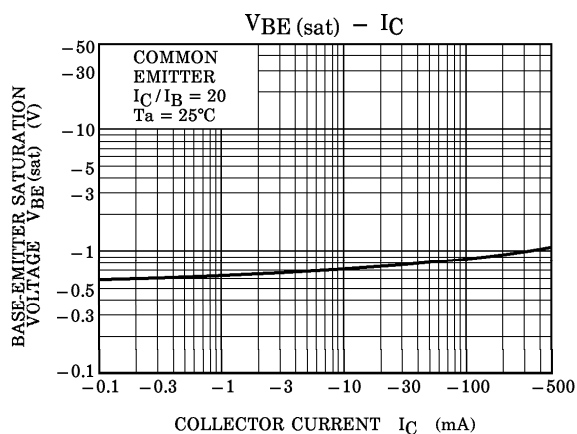
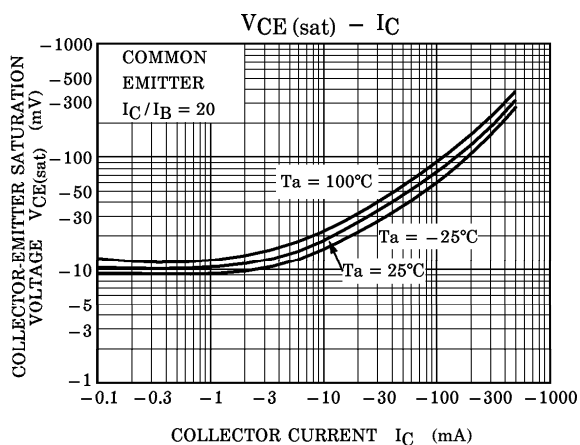
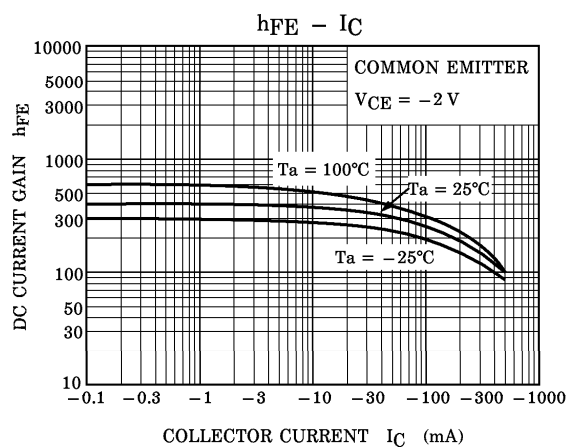
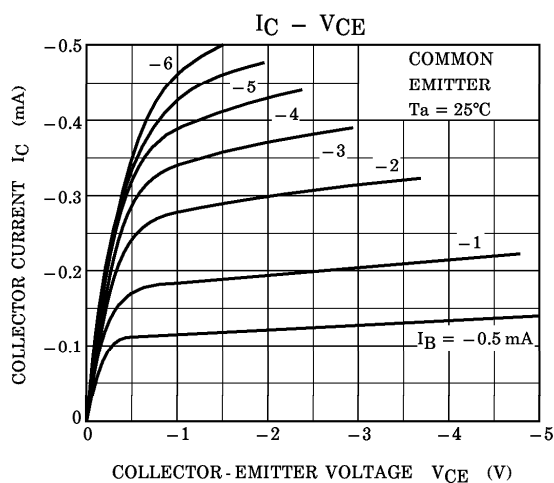
Q2 (MOS-FET) ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current	I_{GSS}	$V_{GS} = 10\text{ V}$, $V_{DS} = 0$	—	—	1	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}	$V_{DS} = 3\text{ V}$, $I_D = 0.1\text{ mA}$	0.5	—	1.5	V
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = 3\text{ V}$, $I_D = 10\text{ mA}$	20	—	—	mS
Drain-Source ON Resistance	$R_{DS(ON)}$	$I_D = 10\text{ mA}$, $V_{GS} = 2.5\text{ V}$	—	20	40	Ω

APPLICATION EXAMPLE (Power Management Switch)



○ Transistor



○ MOS-FET

