TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

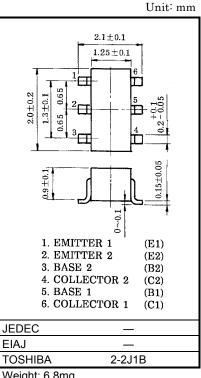
HN2A01FU

Audio Frequency General Purpose Amplifier Applications

- Small package (dual type) •
- High voltage and high current $: V_{CEO} = -50V$, IC = -150mA (max)
- $h_{\rm FE} = 120 \sim 400$ • High hFE
 - Excellent hFE linearity $: h_{FE} (I_C = -0.1 \text{mA}) / (I_C = -2 \text{mA})$
- = 0.95 (typ.)

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

Characteristic	Symbol	Rating	Unit
Collector-base voltage	V _{CBO}	-50	V
Collector-emitter voltage	V _{CEO}	-50	V
Emitter-base voltage	V _{EBO}	-5	V
Collector current	Ι _C	-150	mA
Base current	Ι _Β	-30	mA
Collector power dissipation	P _C *	200	mW
Junction temperature	Тј	125	°C
Storage temperature range	T _{stg}	-55~125	°C



* Total rating

Weight: 6.8mg

Electrical Characteristics (Ta = 25°C) (Q1, Q2 Common)

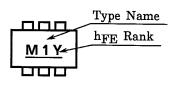
Characteristic	Symbol	Test Circuit	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current	I _{CBO}	—	$V_{CB} = -50V, I_E = 0$	—	—	-0.1	μA
Emitter cut-off current	I _{EBO}	_	$V_{EB} = -5V, I_C = 0$	_	_	-0.1	μA
DC current gain	h _{FE (Note)}	—	$V_{CE} = -6V$, $I_C = -2mA$	120	_	400	_
Collector-emitter saturation voltage	V _{CE (sat)}	_	I _C = −100mA, I _B = −10mA	_	-0.1	-0.3	V
Transition frequency	f _T	—	V _{CE} = −10V, I _C = −1mA	80	—	_	MH_{Z}
Collector output capacitance	C _{ob}	—	$V_{CB} = -10V, I_E = 0, f = 1MH_z$		4	7	pF

Note: hFE classification

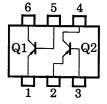
Y(Y): 120~240, GR(G): 200~400

() marking symbol

Marking

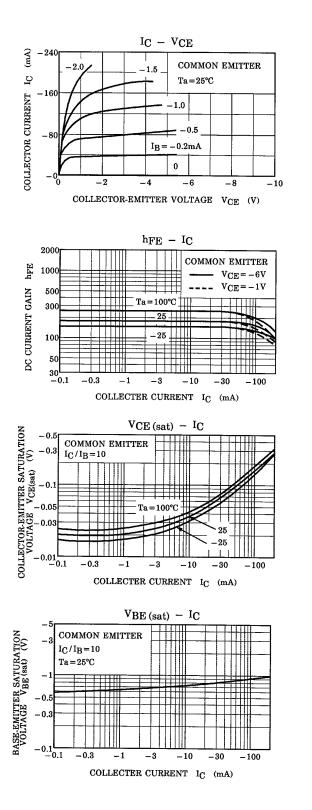


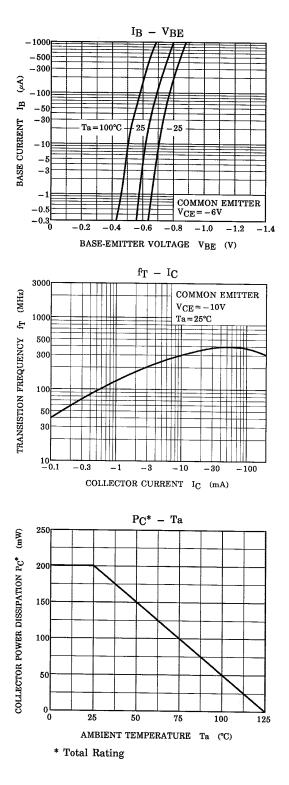
Equivalent Circuit (Top View)



TOSHIBA

(Q1, Q2 Common)





RESTRICTIONS ON PRODUCT USE

000707EAA

TOSHIBA is continually working to improve the quality and 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 comply with the standards of
safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of
such TOSHIBA products 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 TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc..

- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer's own risk.
- 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.

3