

TOSHIBA Transistor Silicon PNP Triple Diffused Type

# 2SB1667(SM)

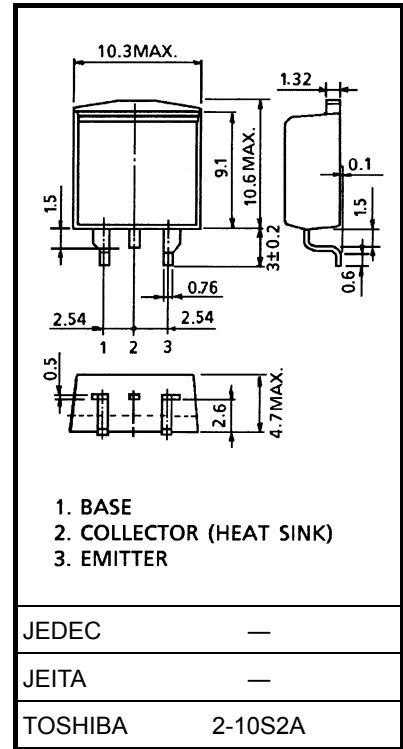
Audio Frequency Power Amplifier Applications

Unit: mm

- Low saturation voltage:  $V_{CE(sat)} = -1.7\text{ V (max)}$   
 $(I_C = -3\text{ A, } I_B = -0.3\text{ A})$

## Absolute Maximum Ratings (Ta = 25°C)

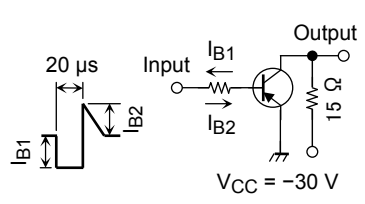
Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	-60	V
Collector-emitter voltage	$V_{CEO}$	-60	V
Emitter-base voltage	$V_{EBO}$	-7	V
Collector current	$I_C$	-3	A
Base current	$I_B$	-0.5	A
Collector power dissipation	$P_C$	Ta = 25°C	1.5
		Tc = 25°C	25
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$	-55 to 150	°C



Weight: 1.4 g (typ.)

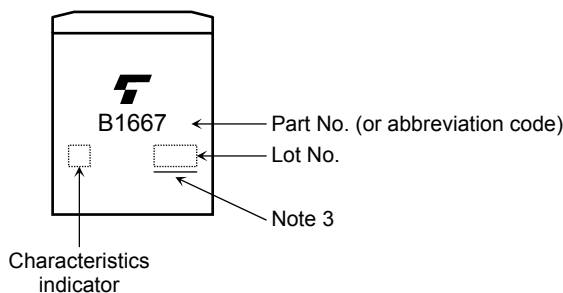
Note1: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) 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).

## Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		$I_{CBO}$	$V_{CB} = -60\text{ V}, I_E = 0$	—	—	-100	$\mu\text{A}$
Emitter cut-off current		$I_{EBO}$	$V_{EB} = -7\text{ V}, I_C = 0$	—	—	-100	$\mu\text{A}$
Collector-emitter breakdown voltage		$V_{(BR)CEO}$	$I_C = -50\text{ mA}, I_B = 0$	-60	—	—	V
DC current gain		$h_{FE(1)}$ (Note 2)	$V_{CE} = -5\text{ V}, I_C = -0.5\text{ A}$	60	—	300	
		$h_{FE(2)}$	$V_{CE} = -5\text{ V}, I_C = -3\text{ A}$	20	—	—	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = -3\text{ A}, I_B = -0.3\text{ A}$	—	-0.5	-1.7	V
Base-emitter voltage		$V_{BE}$	$V_{CE} = -5\text{ A}, I_C = -0.5\text{ A}$	—	-0.7	-1.0	V
Transition frequency		$f_T$	$V_{CE} = -5\text{ V}, I_C = -0.5\text{ A}$	—	9	—	MHz
Collector output capacitance		$C_{ob}$	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	150	—	pF
Switching time	Turn-on time	$t_{on}$		—	0.4	—	$\mu\text{s}$
	Storage time	$t_{stg}$		—	1.7	—	
	Fall time	$t_f$		$I_{B1} = 0.2\text{ A}, I_{B2} = 0.2\text{ A},$ duty cycle $\leq 1\%$	—	0.5	

Note 2:  $h_{FE(1)}$  classification O: 60 to 120, Y: 100 to 200, GR: 150 to 300

## Marking

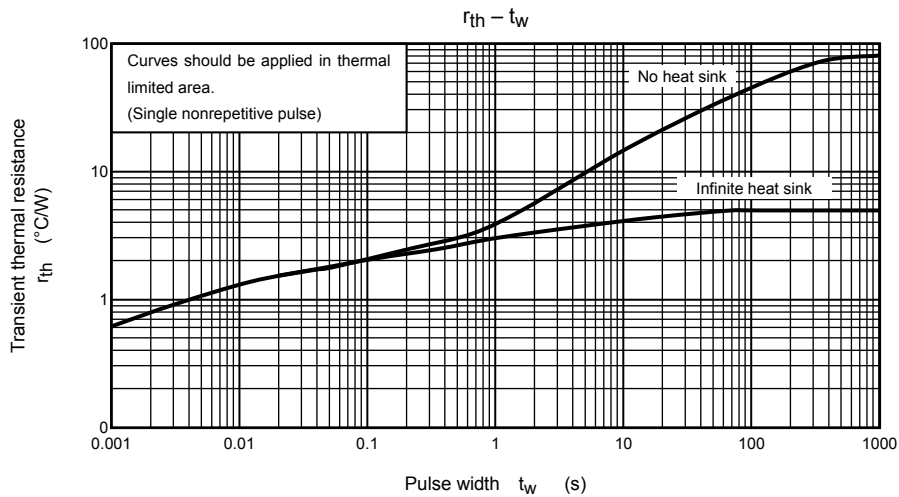
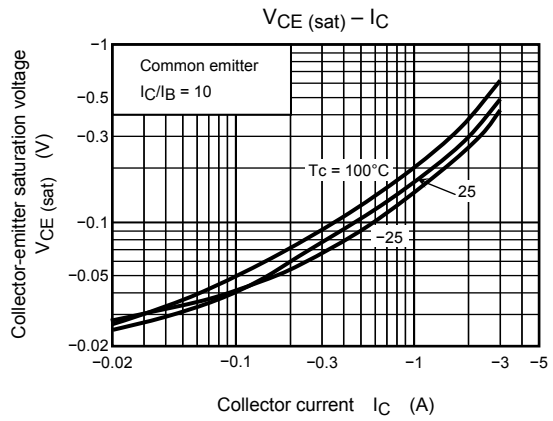
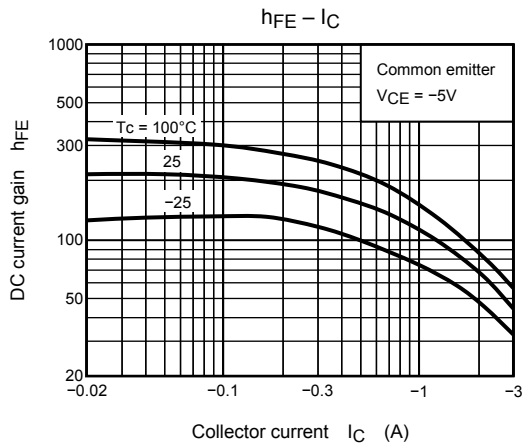
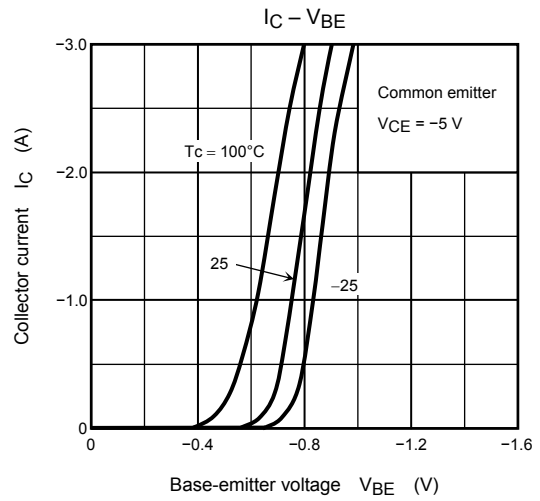
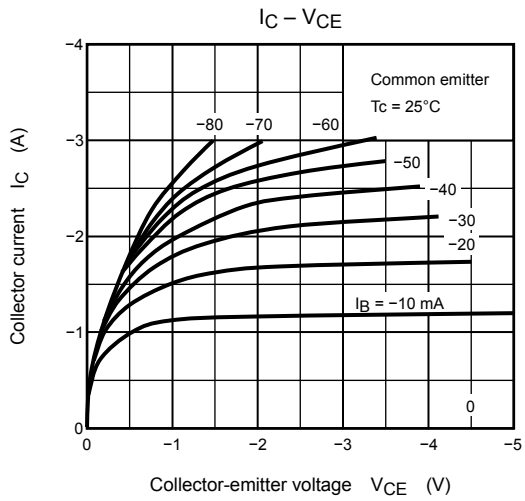


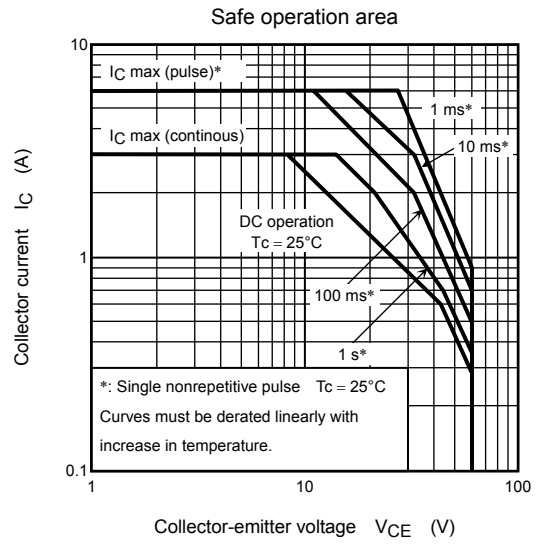
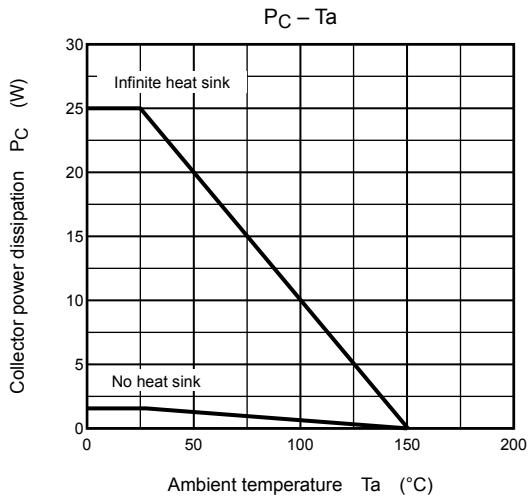
Note 3: A line under a Lot No. identifies the indication of product Labels.

Not underlined:  $[[Pb]]/INCLUDES > MCV$

Underlined:  $[[G]]/RoHS COMPATIBLE$  or  $[[G]]/RoHS [[Pb]]$

Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product. The RoHS is the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.





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