

TOSHIBA Transistor Silicon NPN Epitaxial Type

# 2SC6124

Power Amplifier Applications  
 Power Switching Applications

Low collector emitter saturation voltage  
 $V_{CE(sat)} = 0.5 \text{ V (max)} \quad (I_C = 1 \text{ A})$   
 High-speed switching:  $t_{stg} = 400 \text{ ns (typ.)}$   
 Complementary to 2SA2206

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

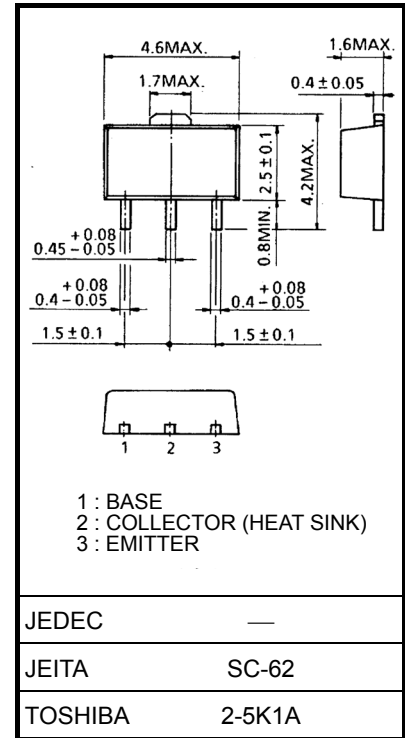
Characteristic	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	160	V
Collector-emitter voltage	$V_{CEX}$	160	V
	$V_{CEO}$	80	V
Emitter-base voltage	$V_{EBO}$	7	V
Collector current	DC	$I_C$	2
	Pulse	$I_{CP}$	4
Base current	$I_B$	0.5	A
Collector power dissipation	t = 10 s	$P_C$	2.5
	DC	(Note 1)	1.0
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$	-55 to 150	°C

Note 1: Mounted on an FR4 board (glass-epoxy; 1.6 mm thick; Cu area, 645 mm<sup>2</sup>)

Note 2: 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).

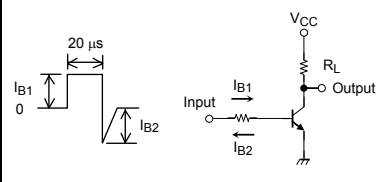
Unit: mm



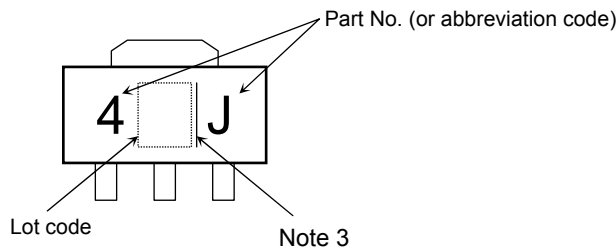
Weight: 0.05 g (typ.)

Start of commercial production  
 2007-01

## Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit	
Collector cut-off current	$I_{CBO}$	$V_{CB} = 160\text{ V}, I_E = 0$	—	—	1	$\mu\text{ A}$	
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 7\text{ V}, I_C = 0$	—	—	1	$\mu\text{ A}$	
Collector-emitter breakdown voltage	$V_{(BR) CEO}$	$I_C = 10\text{ mA}, I_B = 0$	80	—	—	V	
DC current gain	$h_{FE} (1)$	$V_{CE} = 2\text{ V}, I_C = 1\text{ mA}$	80	—	—		
	$h_{FE} (2)$	$V_{CE} = 2\text{ V}, I_C = 0.5\text{ A}$	100	—	200		
	$h_{FE} (3)$	$V_{CE} = 2\text{ V}, I_C = 1\text{ A}$	60	—	—		
Collector-emitter saturation voltage	$V_{CE(sat)} (1)$	$I_C = 0.5\text{ A}, I_B = 50\text{ mA}$	—	—	0.30	V	
	$V_{CE(sat)} (2)$	$I_C = 1\text{ A}, I_B = 100\text{ mA}$	—	—	0.50	V	
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 1\text{ A}, I_B = 100\text{ mA}$	—	—	1.50	V	
Transition frequency	$f_T$	$V_{CE} = 2\text{ V}, I_C = 0.5\text{ A}$	—	150	—	MHz	
Collector output capacitance	$C_{ob}$	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	14	—	pF	
Switching time	Rise time	$t_r$		—	50	—	ns
	Storage time	$t_{stg}$		—	400	—	
	Fall time	$t_f$		$I_{B1} = I_{B2} = 100\text{ mA}$ Duty cycle $\leq 1\%$	—	150	

## Marking

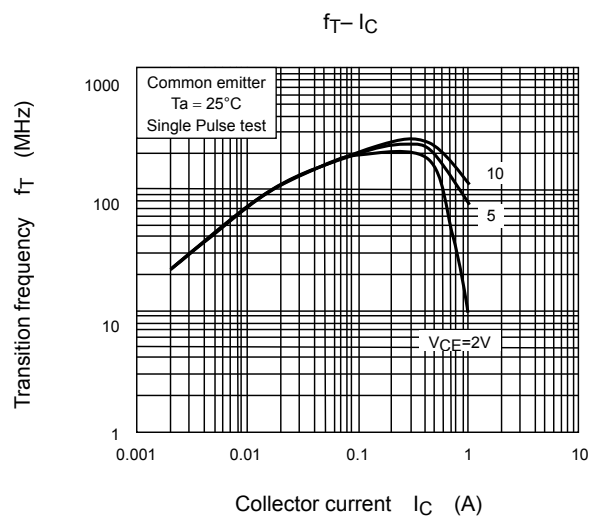
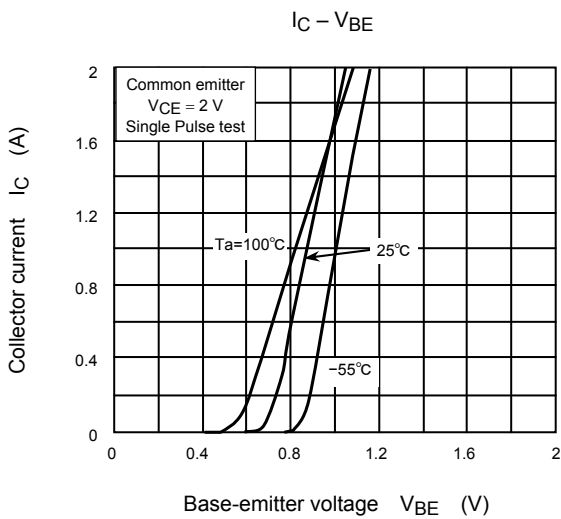
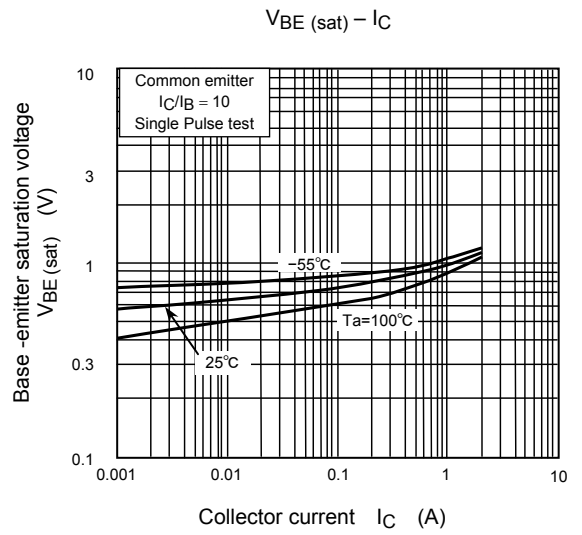
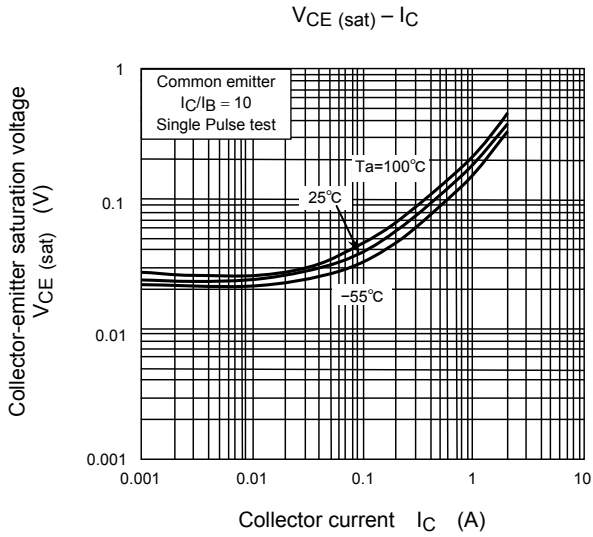
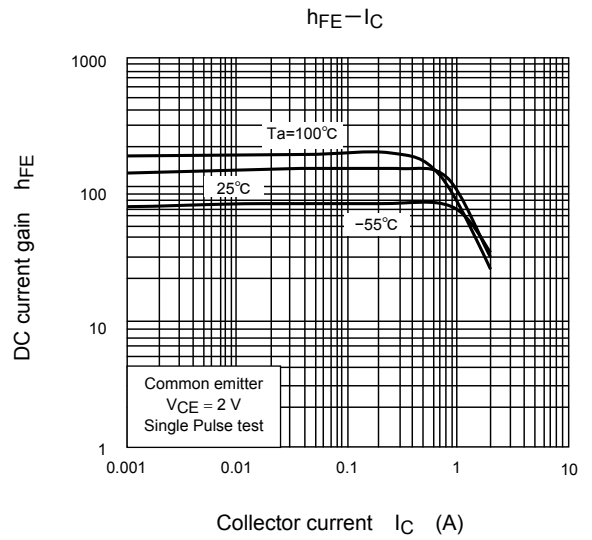
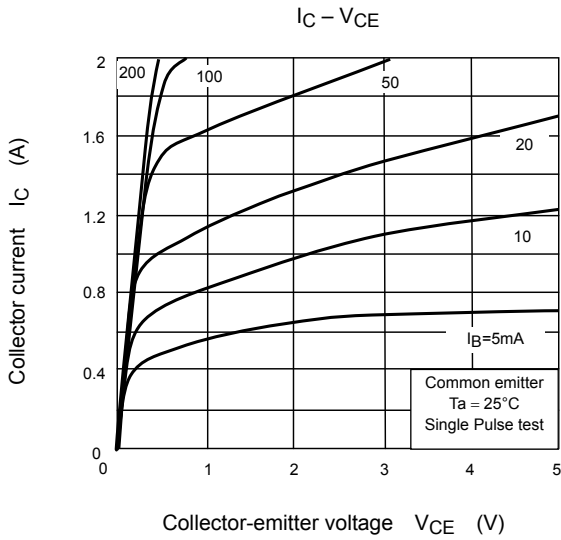


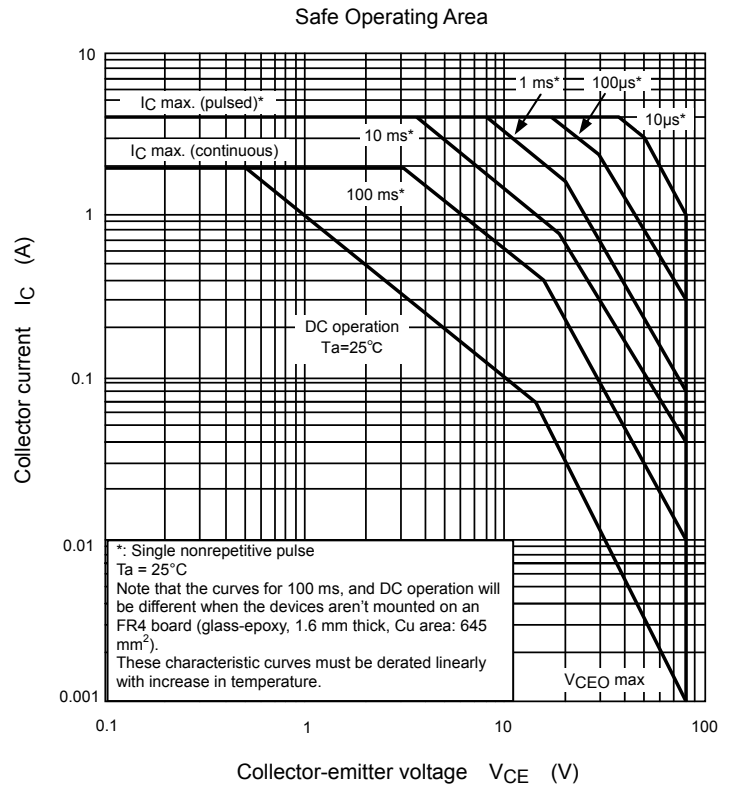
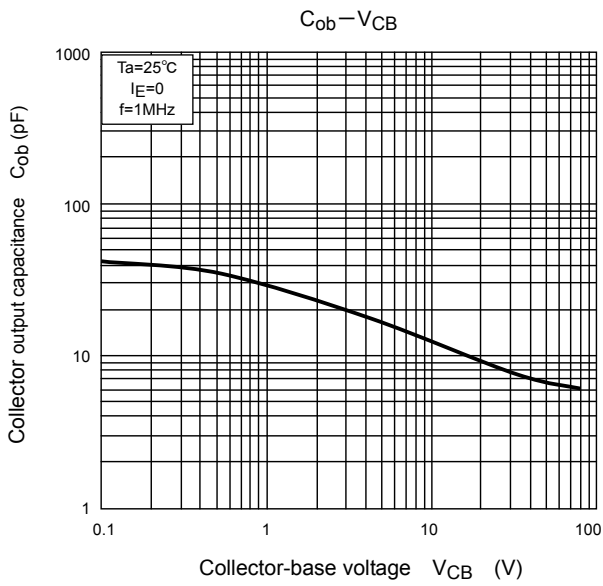
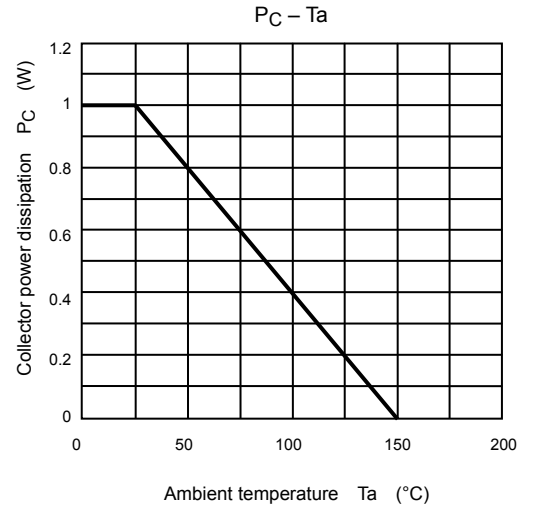
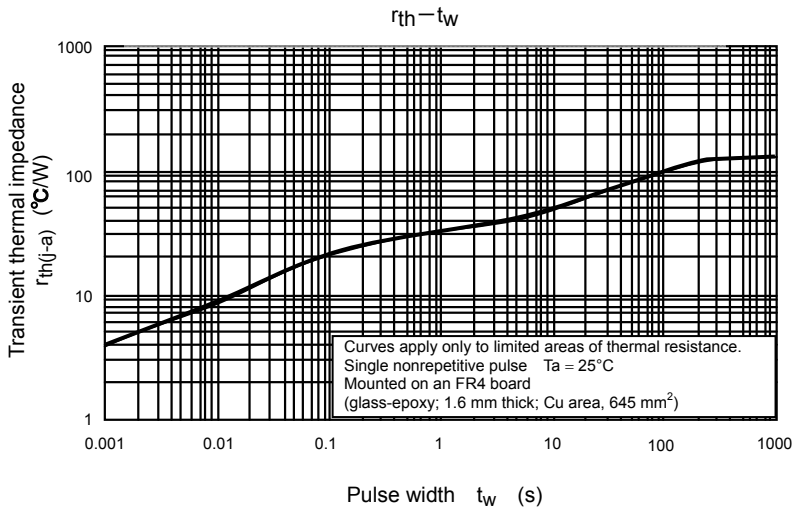
Note 3: A line beside a Lot No. identifies the indication of product Labels.

[[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 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.





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