

TOSHIBA Transistor Silicon PNP Triple Diffused Type (PCT process)

# 2SA1384

High Voltage Control Applications  
 Plasma Display, Nixie Tube Driver Applications  
 Cathode Ray Tube Brightness Control Applications

- High voltage:  $V_{CBO} = -300\text{ V}$ ,  $V_{CEO} = -300\text{ V}$
- Low saturation voltage:  $V_{CE(sat)} = -0.5\text{ V (max)}$
- Small collector output capacitance:  $C_{ob} = 6\text{ pF (typ.)}$
- Complementary to 2SC3515
- Small flat package
- $P_C = 1.0\text{ to }2.0\text{ W}$  (mounted on a ceramic substrate)

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

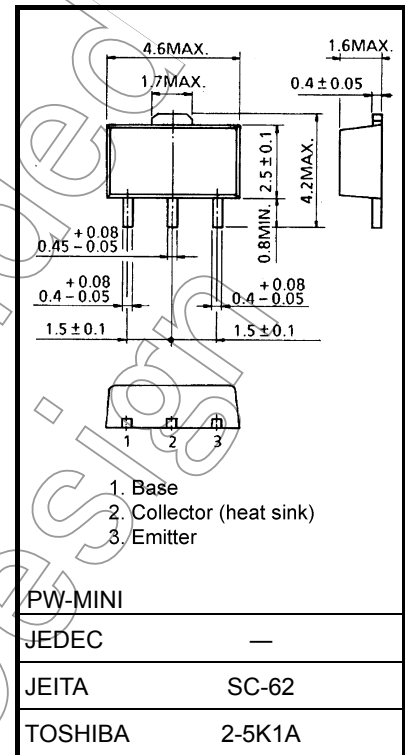
Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	-300	V
Collector-emitter voltage	$V_{CEO}$	-300	V
Emitter-base voltage	$V_{EBO}$	-8	V
Collector current	$I_C$	-100	mA
Base current	$I_B$	-20	mA
Collector power dissipation	$P_C$	500	mW
	$P_C$ (Note 1)	1000	
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$	-55 to 150	°C

Note 1: 2SA1384 mounted on a ceramic substrate (250 mm<sup>2</sup> × 0.8 mm t)

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



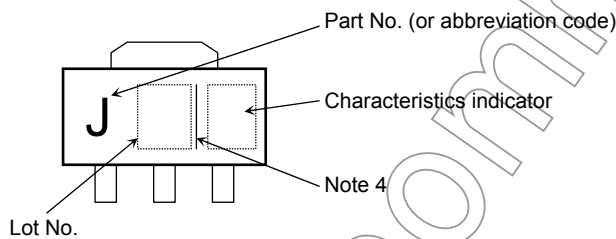
Weight: 0.05 g (typ.)

## Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	$V_{CB} = -300\text{ V}, I_E = 0\text{ A}$	—	—	-0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -8\text{ V}, I_C = 0\text{ A}$	—	—	-0.1	$\mu\text{A}$
Collector-base breakdown voltage	$V_{(BR) CBO}$	$I_C = -0.1\text{ mA}, I_E = 0\text{ A}$	-300	—	—	V
Collector-emitter breakdown voltage	$V_{(BR) CEO}$	$I_C = -1\text{ mA}, I_B = 0\text{ A}$	-300	—	—	V
DC current gain	$h_{FE} (1)$ (Note 3)	$V_{CE} = -10\text{ V}, I_C = -20\text{ mA}$	30	—	150	
	$h_{FE} (2)$	$V_{CE} = -10\text{ V}, I_C = -1\text{ mA}$	20	—	—	
Collector-emitter saturation voltage	$V_{CE (sat)}$	$I_C = -20\text{ mA}, I_B = -2\text{ mA}$	—	—	-0.5	V
Base-emitter saturation voltage	$V_{BE (sat)}$	$I_C = -20\text{ mA}, I_B = -2\text{ mA}$	—	—	-1.0	V
Transition frequency	$f_T$	$V_{CE} = -10\text{ V}, I_C = -20\text{ mA}$	50	70	—	MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = -20\text{ V}, I_E = 0\text{ A}, f = 1\text{ MHz}$	—	6	8	pF

Note 3:  $h_{FE} (1)$  classification R: 30 to 90, O: 50 to 150

## Marking



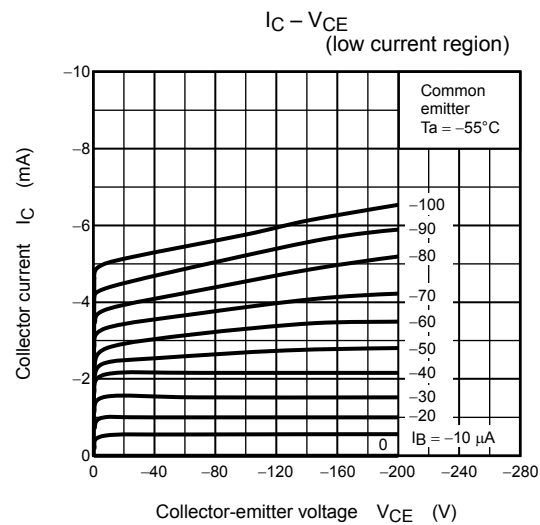
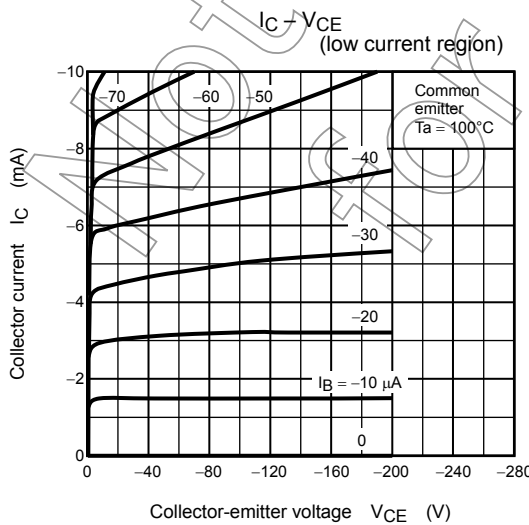
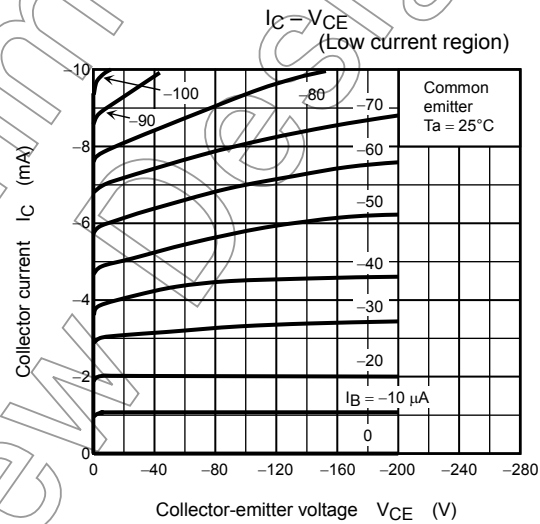
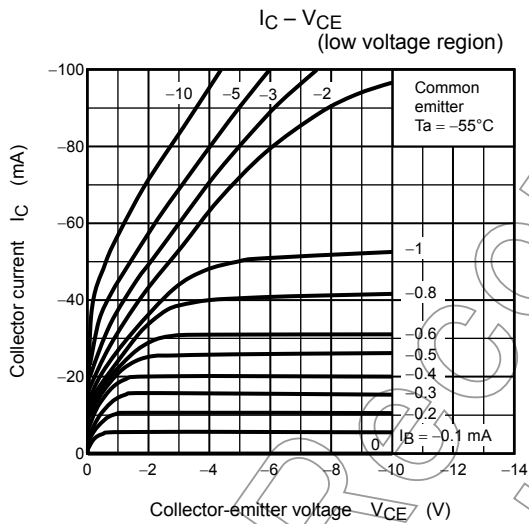
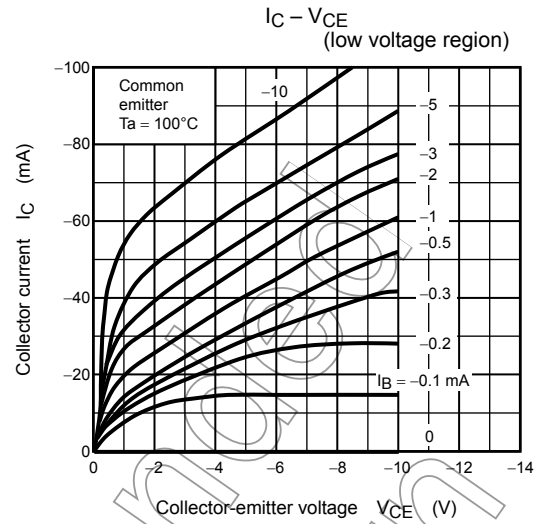
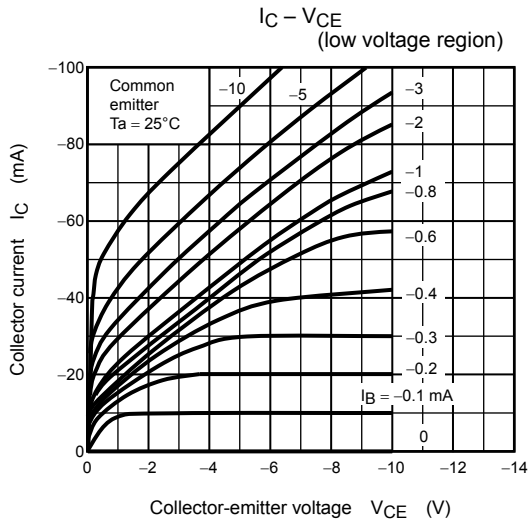
Note 4: A line beside a Lot No. identifies the indication of product Labels.

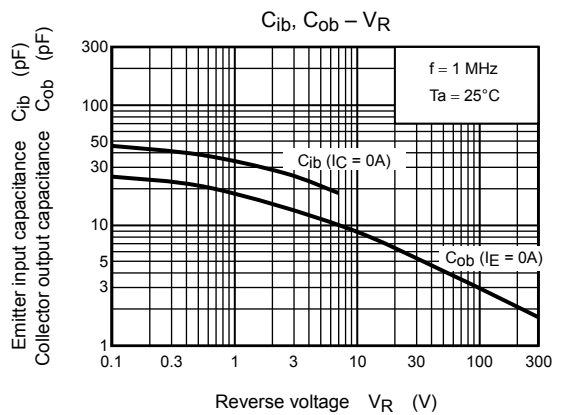
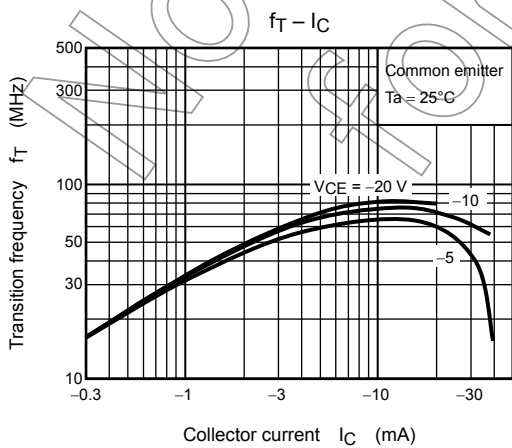
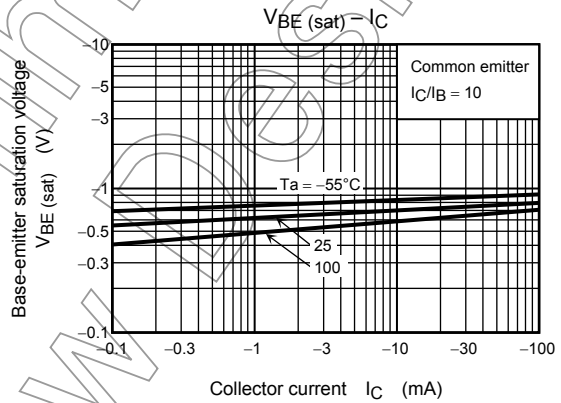
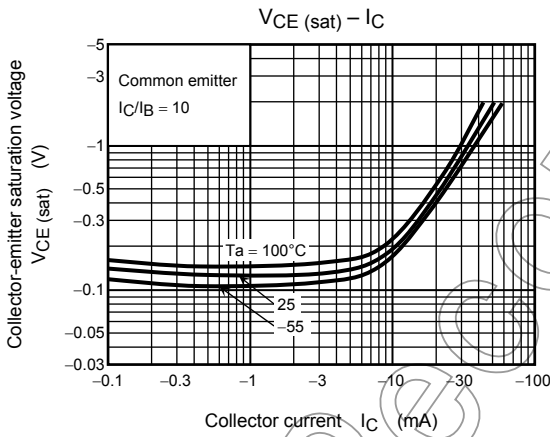
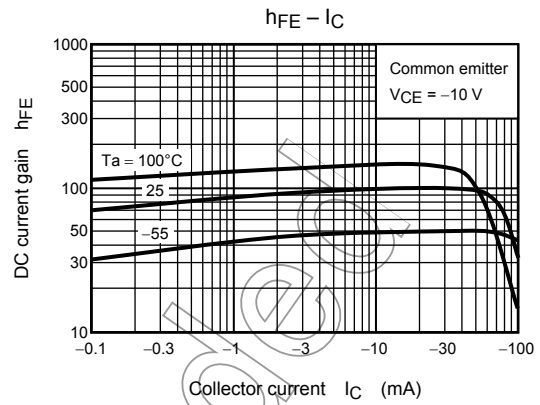
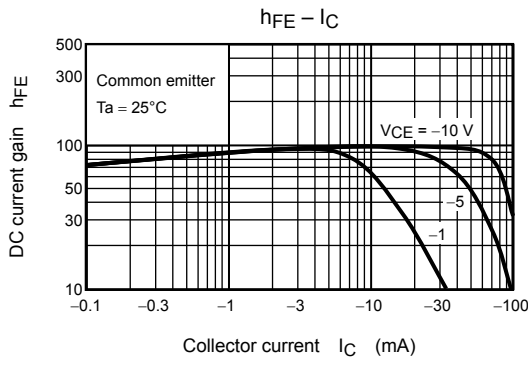
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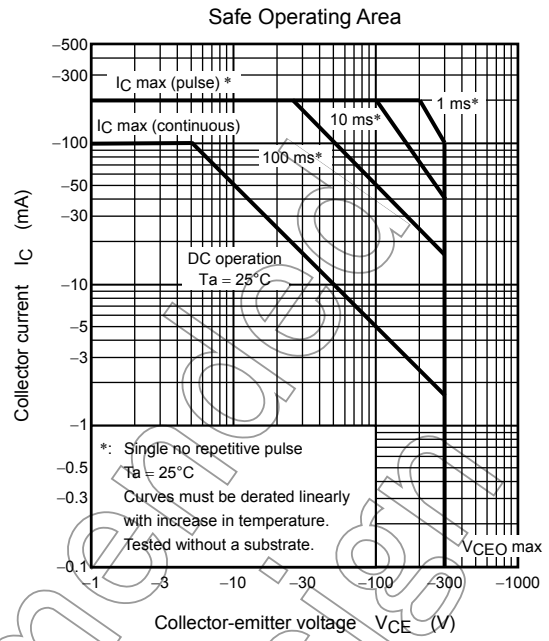
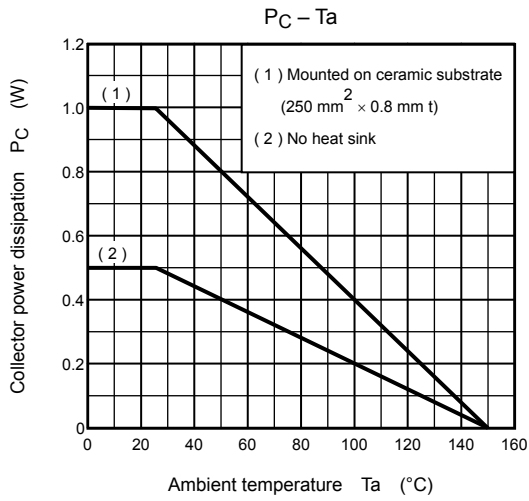
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Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product.

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.







Not Recommended for New Design

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