

TOSHIBA Transistor Silicon NPN Triple Diffused Planar Type

## 2SC4686, 2SC4686A

TV Dynamic Focus Applications

High-Voltage Switching Applications

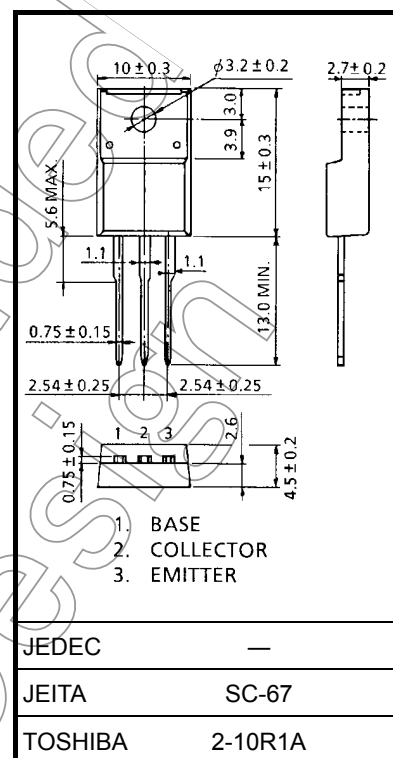
High-Voltage Amplifier Applications

Unit: mm

- High voltage:  $V_{CEO} = 1200 \text{ V (max)}$  (2SC4686A)
- Small collector output capacitance:  $C_{ob} = 2.2 \text{ pF (typ.)}$  ( $V_{CB} = 100 \text{ V}$ )

### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Characteristics		Symbol	Rating	Unit
Collector-base voltage		$V_{CBO}$	1500	V
Collector-emitter voltage	2SC4686	$V_{CEO}$	1000	V
	2SC4686A		1200	
Emitter-base voltage		$V_{EBO}$	5	V
Collector current	DC	$I_C$	50	mA
	Pulse	$I_{CP}$	100	
Base current		$I_B$	25	mA
Collector power dissipation	$T_a = 25^\circ\text{C}$	$P_C$	2	W
	$T_c = 25^\circ\text{C}$		10	
Junction temperature		$T_j$	150	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	-55 to 150	$^\circ\text{C}$



Weight: 1.7 g (typ.)

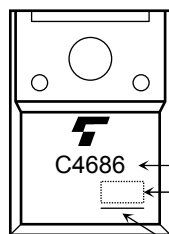
Note 1: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) 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		$I_{CBO}$	$V_{CB} = 1200\text{ V}, I_E = 0$	—	—	1.0	$\mu\text{A}$
Emitter cut-off current		$I_{EBO}$	$V_{EB} = 5\text{ V}, I_C = 0$	—	—	10	$\mu\text{A}$
Collector-base breakdown voltage		$V_{(BR) CBO}$	$I_C = 100\text{ }\mu\text{A}, I_E = 0$	1500	—	—	V
Collector-emitter breakdown voltage	2SC4686	$V_{(BR) CEO}$	$I_C = 1\text{ mA}, I_B = 0$	1000	—	—	V
	2SC4686A			1200	—	—	
DC current gain		$h_{FE}$	$V_{CE} = 5\text{ V}, I_C = 3\text{ mA}$	15	—	60	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 10\text{ mA}, I_B = 2\text{ mA}$	—	0.16	1.5	V
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = 10\text{ mA}, I_B = 2\text{ mA}$	—	0.7	1.5	V
Transition frequency		$f_T$	$V_{CE} = 10\text{ V}, I_C = 3\text{ mA}$	—	5.5	—	MHz
Collector output capacitance		$C_{ob}$	$V_{CB} = 100\text{ V}, f = 1\text{ MHz}, I_E = 0$	—	2.2	—	pF

**Marking**



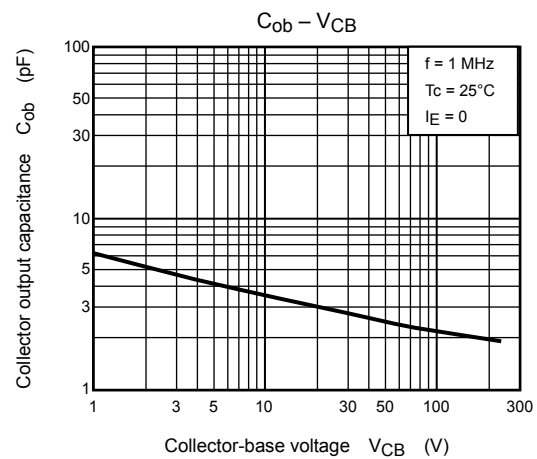
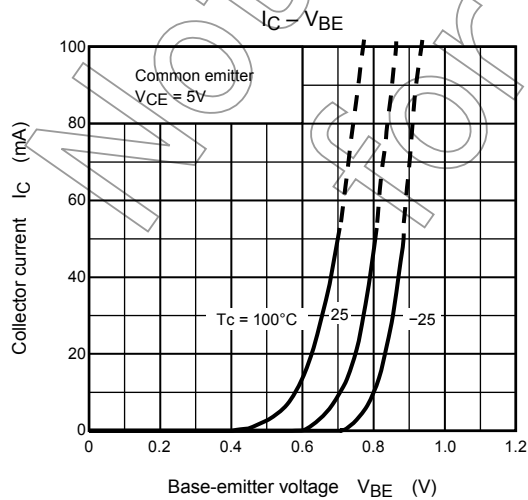
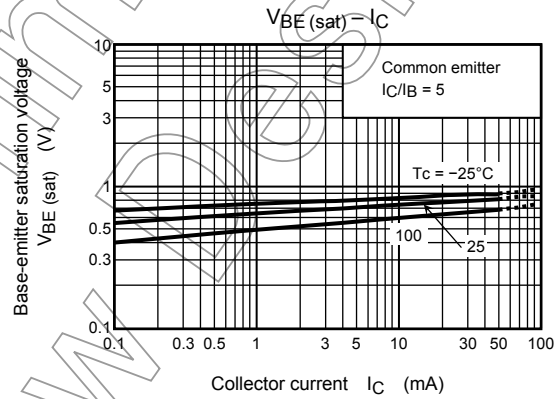
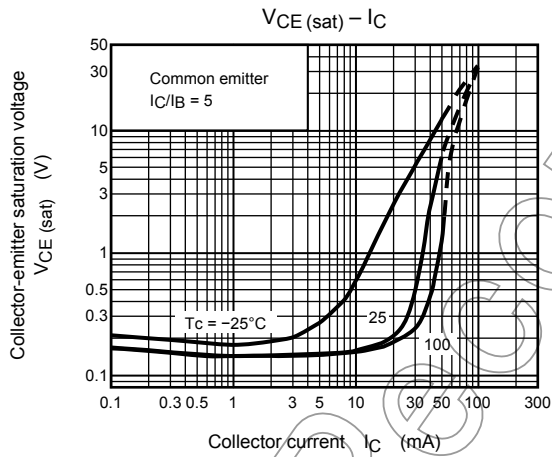
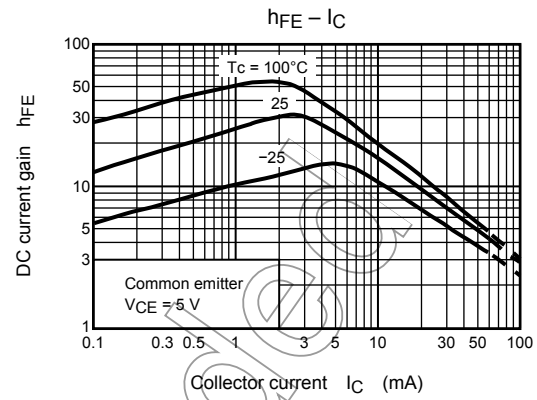
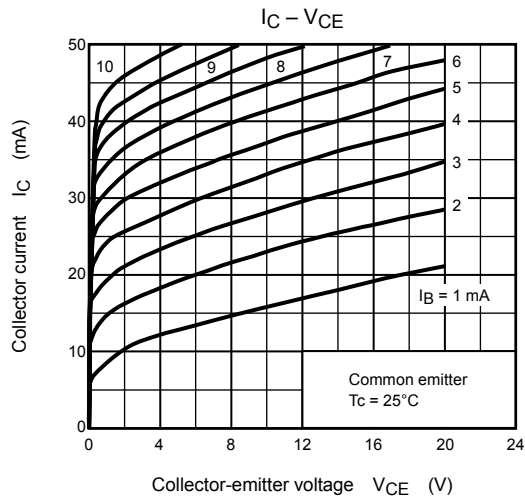
*1	Part No. (or abbreviation code)	Part No.
	C4686	2SC4686
	C4686A	2SC4686A

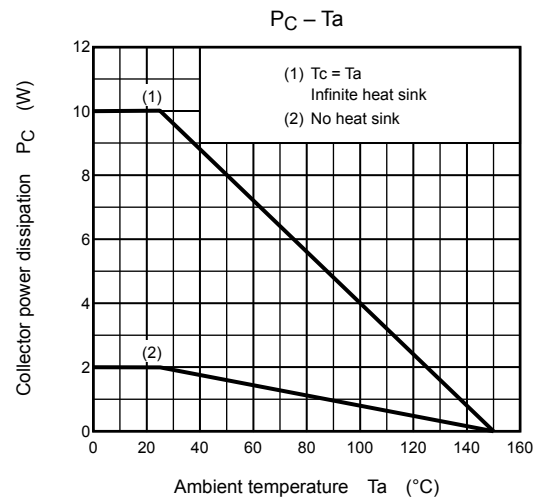
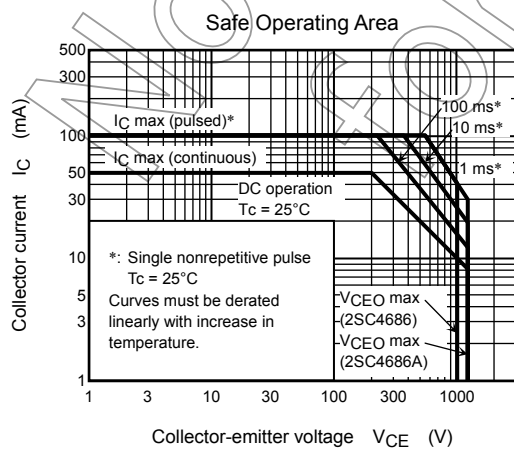
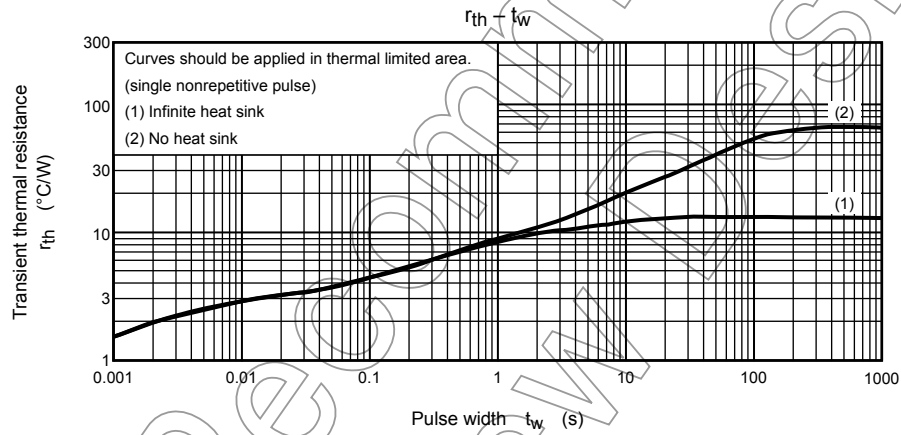
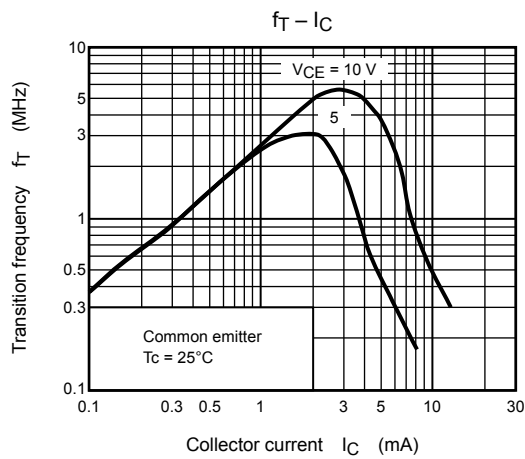
Note 2: A line under a Lot No. identifies the indication of product Labels.

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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