

TOSHIBA Transistor Silicon NPN Epitaxial Type

# 2SC6126

High-Speed Switching Applications  
 DC-DC Converter Applications  
 LCD Backlighting Applications

- High DC current gain:  $h_{FE} = 250$  to  $400$  ( $I_C = 0.3$  A)
- Low collector-emitter saturation:  $V_{CE(sat)} = 0.18$  V (max)
- High-speed switching:  $t_f = 40$  ns (typ.)

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

Characteristic		Symbol	Rating	Unit
Collector-base voltage		$V_{CBO}$	120	V
Collector-emitter voltage		$V_{CEX}$	120	V
		$V_{CEO}$	50	V
Emitter-base voltage		$V_{EBO}$	6	V
Collector current (Note1)	DC	$I_C$	3	A
	Pulse	$I_{CP}$	5	
Base current		$I_B$	1.5	A
Collector power dissipation	DC	$P_C$ (Note2)	1.0	W
	t = 10 s		2.5	
Junction temperature		$T_j$	150	°C
Storage temperature range		$T_{stg}$	-55 to 150	°C

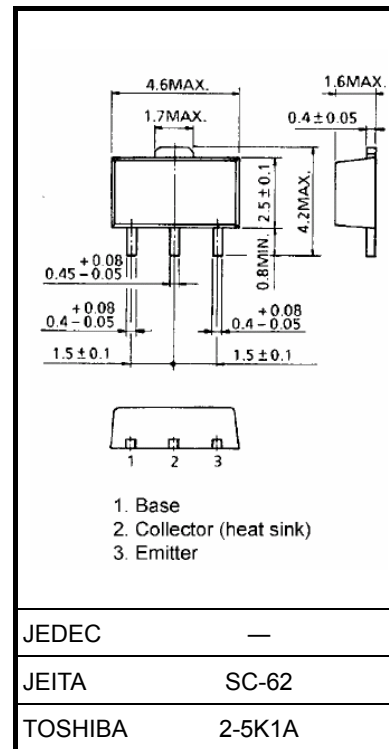
Note 1: Please use devices on condition that the junction temperature is below 150°C.

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

Note 3: 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



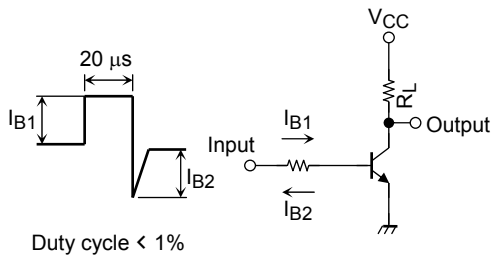
Weight: 0.05 g (typ.)

Start of commercial production  
 2007-03

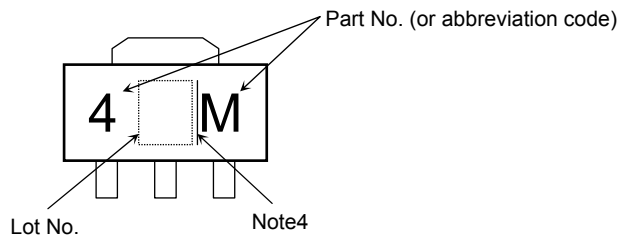
**Electrical Characteristics (Ta = 25°C)**

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cutoff current		$I_{CBO}$	$V_{CB} = 120\text{ V}, I_E = 0$	—	—	100	nA
Emitter cutoff current		$I_{EBO}$	$V_{EB} = 6\text{ V}, I_C = 0$	—	—	100	nA
Collector-emitter breakdown voltage		$V_{(BR)CEO}$	$I_C = 10\text{ mA}, I_B = 0$	50	—	—	V
DC current gain		$h_{FE}(1)$	$V_{CE} = 2\text{ V}, I_C = 0.3\text{ A}$	250	—	400	
		$h_{FE}(2)$	$V_{CE} = 2\text{ V}, I_C = 1.0\text{ A}$	100	—	—	
Collector emitter saturation voltage		$V_{CE(sat)}$	$I_C = 1.0\text{ A}, I_B = 33\text{ mA}$	—	—	0.18	V
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = 1.0\text{ A}, I_B = 33\text{ mA}$	—	—	1.1	V
Collector output capacitance		$C_{ob}$	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	10.5	—	pF
Switching time	Rise time	$t_r$	See Figure 1 circuit diagram $V_{CC} \approx 20\text{ V}, R_L = 20\ \Omega$ $I_{B1} = 33\text{ mA}$ $I_{B2} = 33\text{ mA}$	—	30	—	ns
	Storage time	$t_{stg}$		—	500	—	
	Fall time	$t_f$		—	40	—	

**Figure 1. Switching Time Test Circuit & Timing Chart**



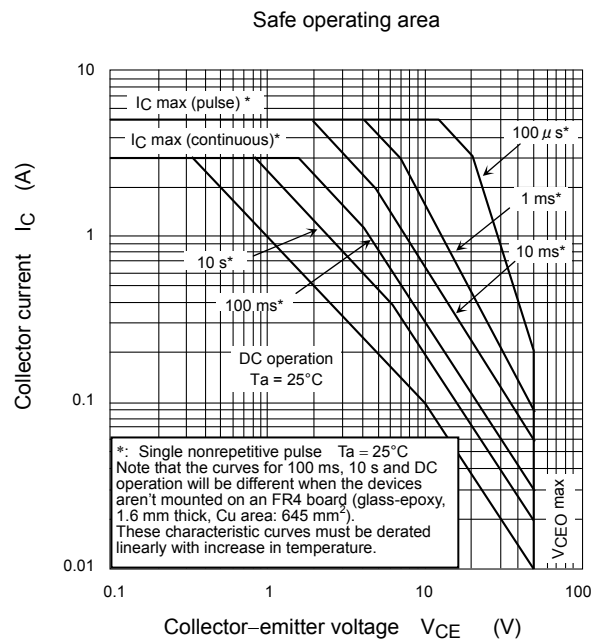
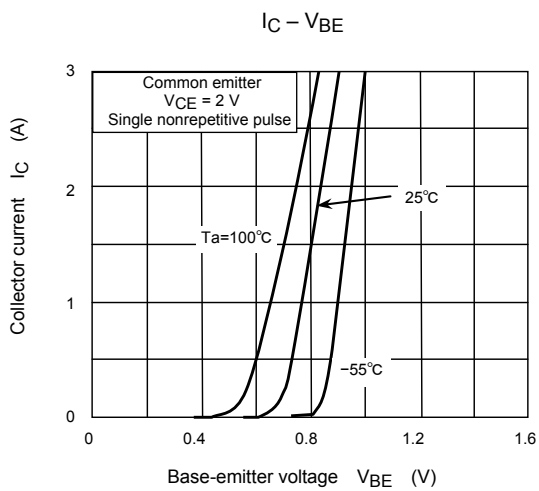
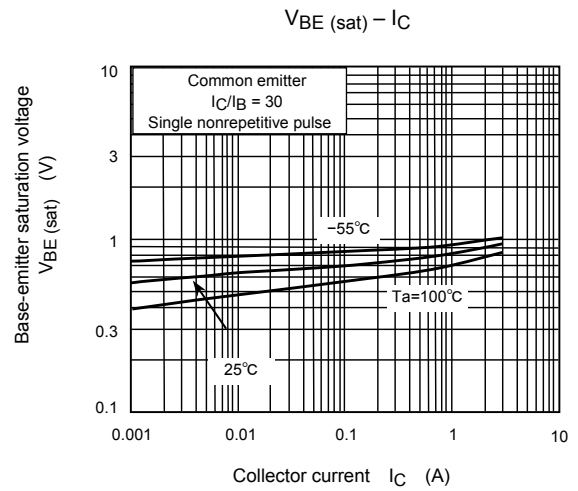
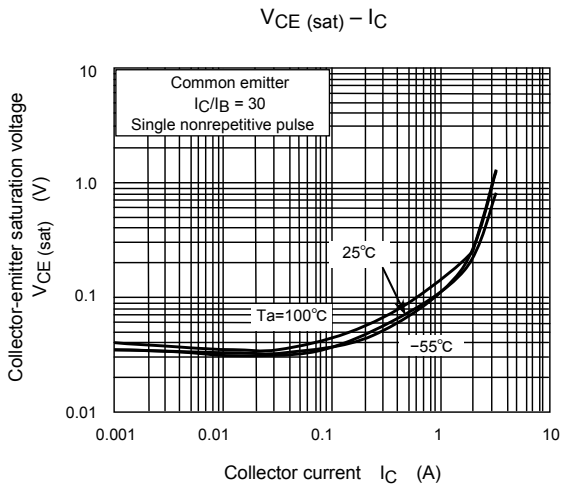
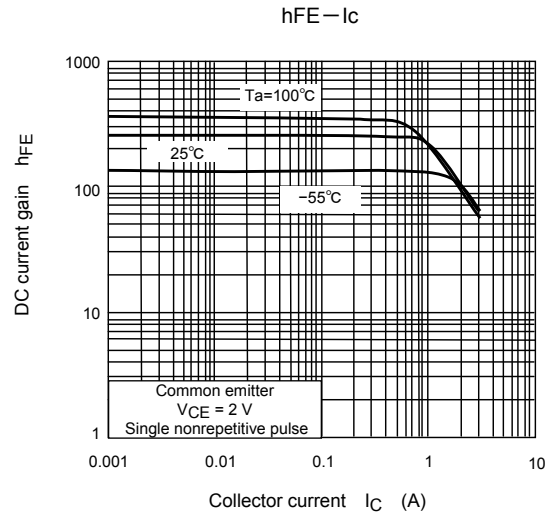
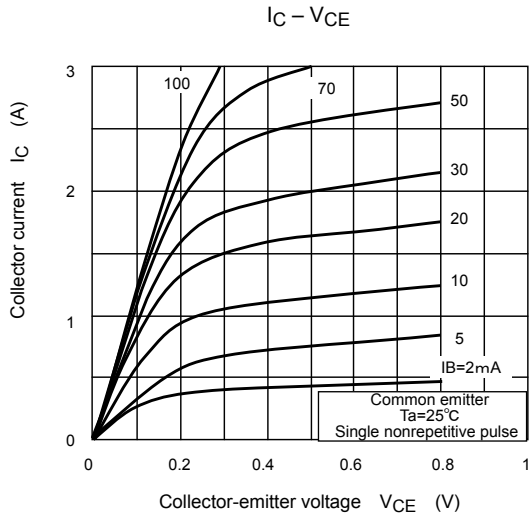
**Marking**

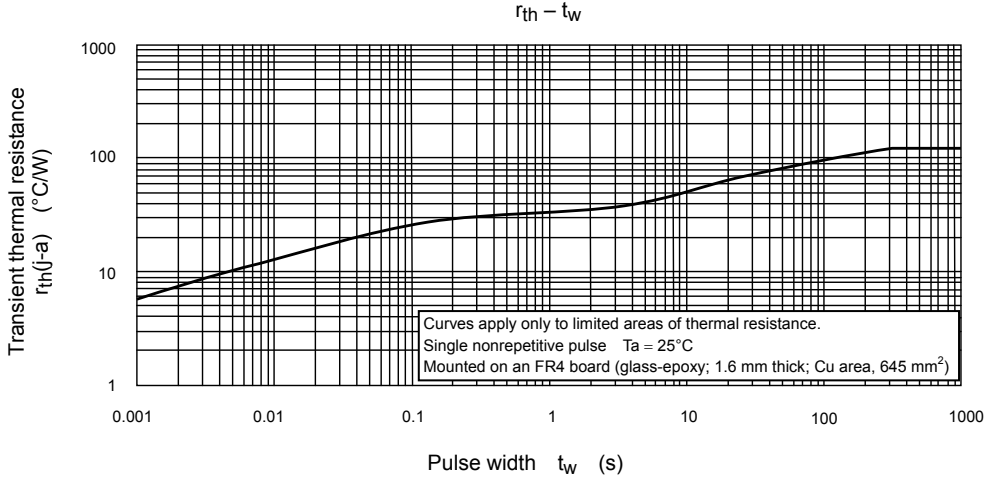


Note4 :A line to the right of a Lot No. identifies the indication of product Labels  
[[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

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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