

TOSHIBA Transistor Silicon NPN Epitaxial Type

2SC6125

High-Speed Switching Applications

Power Amplifier Applications

- High DC current gain: $h_{FE} = 180$ to 390 ($I_C = 0.5$ A)
- Low collector-emitter saturation: $V_{CE(sat)} = 0.2$ V (max)
- High-speed switching: $t_f = 15$ ns (typ.)

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

Characteristic		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	40	V
Collector-emitter voltage		V_{CEO}	20	V
Emitter-base voltage		V_{EBO}	6	V
Collector current (Note 1)	DC	I_C	4	A
	Pulse	I_{CP}	7	
Base current		I_B	0.4	A
Collector power dissipation (Note 2)	DC	P_C	1	W
	$t = 10$ s	P_C	2.5	
Junction temperature		T_j	150	$^\circ\text{C}$
Storage temperature range		T_{stg}	-55 to 150	$^\circ\text{C}$

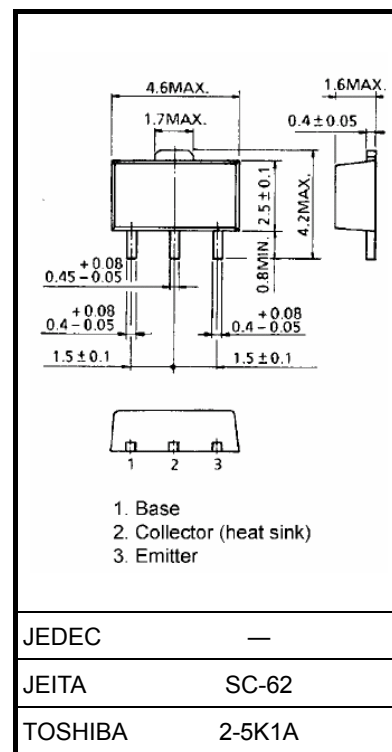
Note 1: Ensure that the channel temperature does not exceed 150°C during use of the device.

Note 2: Mounted on an FR4 board (glass-epoxy; 1.6 mm thick; Cu area, 645 mm^2)

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

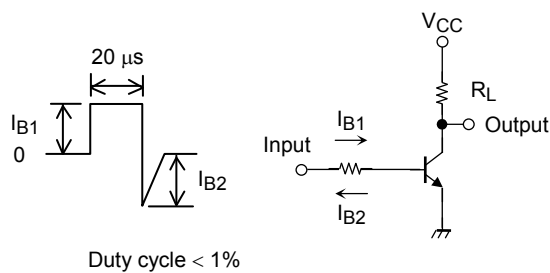


Weight: 0.05 g (typ.)

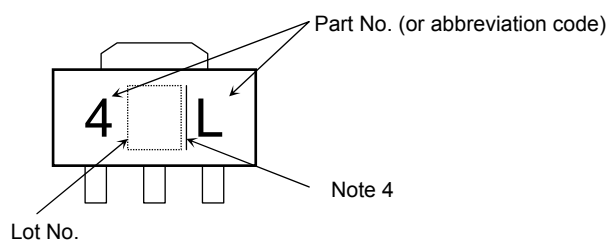
Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cutoff current		I_{CBO}	$V_{CB} = 40\text{ V}, I_E = 0$	—	—	100	nA
Emitter cutoff current		I_{EBO}	$V_{EB} = 6\text{ V}, I_C = 0$	—	—	100	nA
Collector-emitter breakdown voltage		$V_{(BR) CEO}$	$I_C = 10\text{ mA}, I_B = 0$	20	—	—	V
DC current gain		$h_{FE} (1)$	$V_{CE} = 2\text{ V}, I_C = 0.5\text{ A}$	180	—	390	
		$h_{FE} (2)$	$V_{CE} = 0.8\text{ V}, I_C = 2\text{ A}$	100	—	—	
Collector emitter saturation voltage		$V_{CE (sat)}$	$I_C = 1.6\text{ A}, I_B = 53\text{ mA}$	—	—	0.2	V
Base-emitter saturation voltage		$V_{BE (sat)}$	$I_C = 1.6\text{ A}, I_B = 53\text{ mA}$	—	—	1.1	V
Collector output capacitance		C_{ob}	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	18	—	pF
Switching time	Rise time	t_r	See Figure 1 circuit diagram $V_{CC} \approx 12\text{ V}, R_L = 7.5\ \Omega$ $I_{B1} = I_{B2} = 53\text{ mA}$	—	70	—	ns
	Storage time	t_{stg}		—	160	—	
	Fall time	t_f		—	15	—	

Figure 1. Switching Time Test Circuit & Timing Chart



Marking

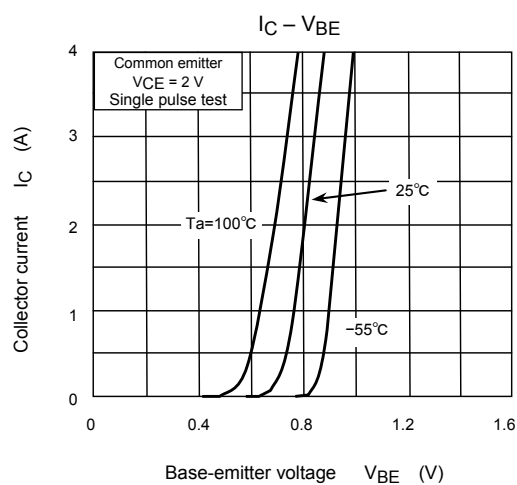
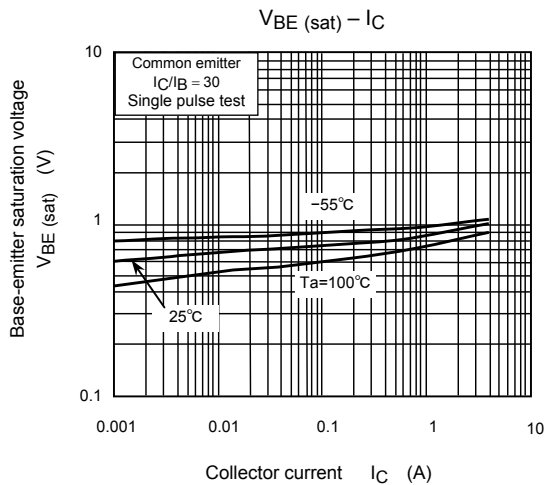
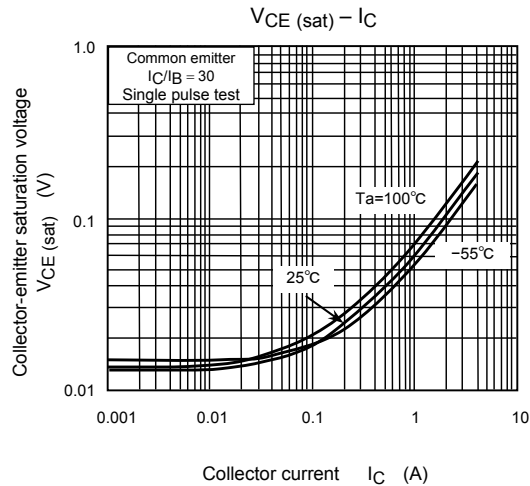
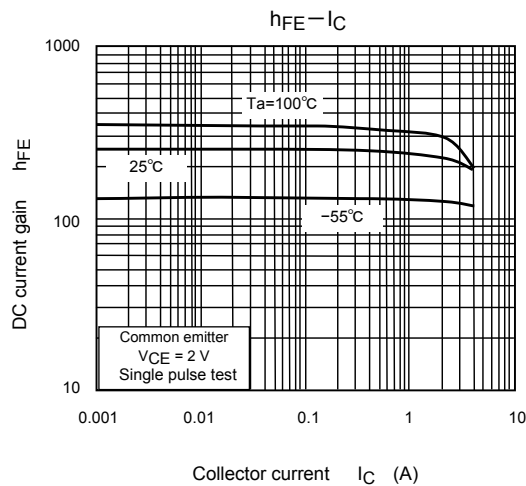
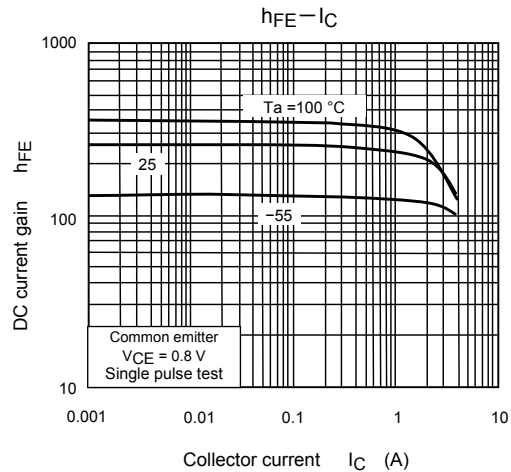
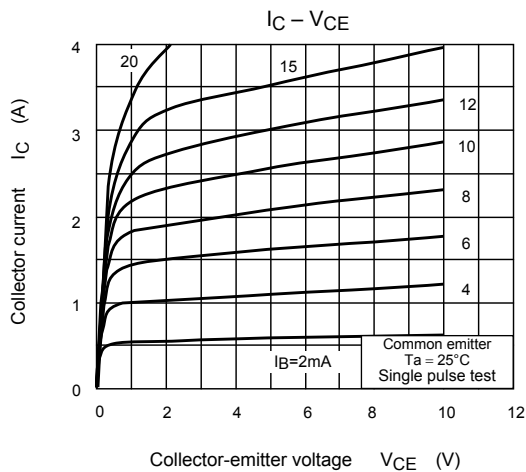


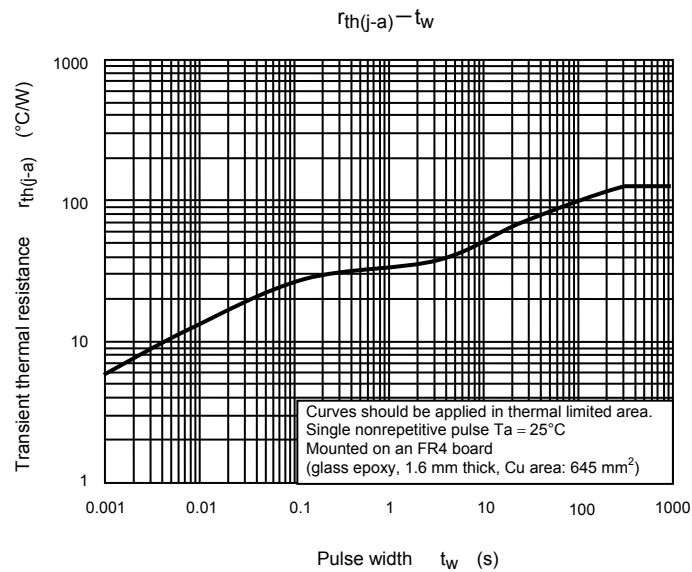
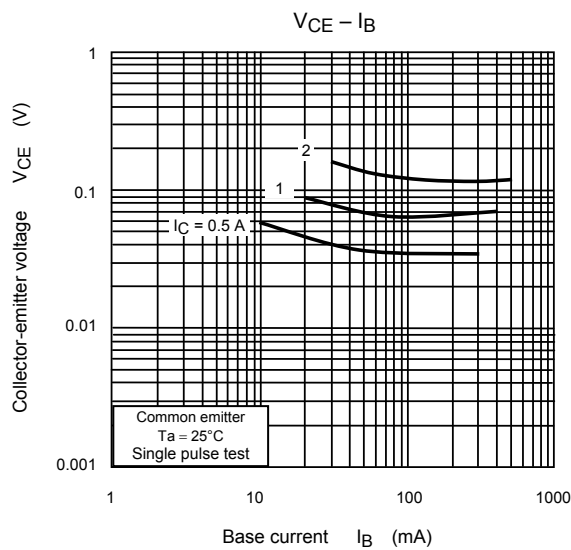
Note 4: A line beside a Lot No. identifies the indication of product Labels.

[[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

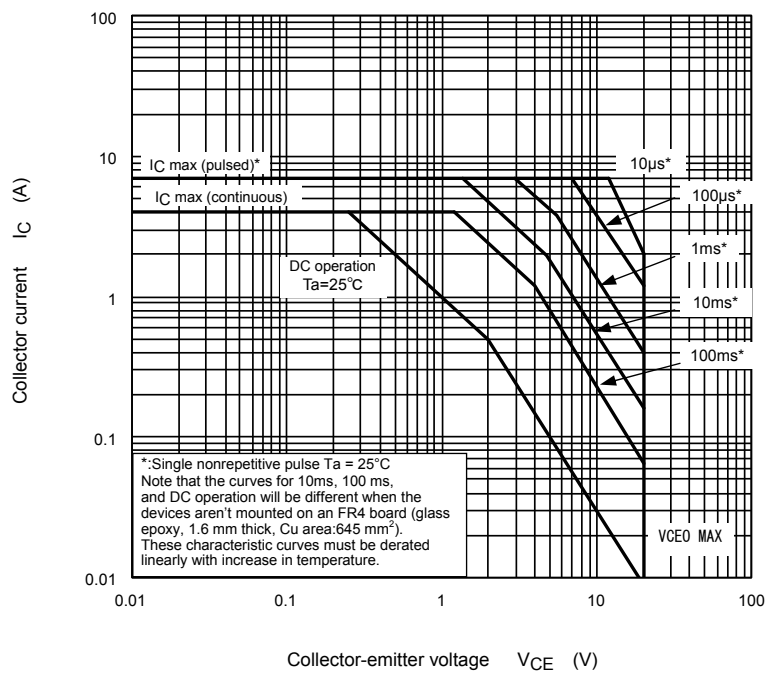
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The RoHS is the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.





Safe Operating Area



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