Unit: mm

TOSHIBA Transistor Silicon NPN Epitaxial Type

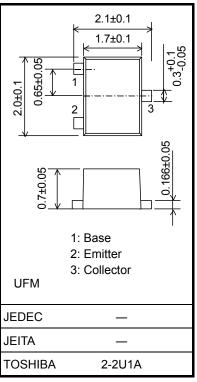
2SC6100

High-Speed Switching Applications DC-DC Converter Applications Strobe Applications

- High DC current gain: $h_{FE} = 400$ to 1000 (IC = 0.3 A)
- Low collector-emitter saturation voltage: $V_{CE (sat)} = 0.14 \text{ V (max)}$
- High-speed switching: tf = 120 ns (typ.)

Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit	
Collector-base voltage		V_{CBO}	100	V	
Collector-emitter voltage		V _{CEX}	80	V	
Collector-emitter voltage		V _{CEO}	50	V	
Emitter-base voltage		V _{EBO}	5	٧	
Collector current	DC	IC	2.5	Α	
	Pulse	I _{CP}	4.0		
Base current		ΙB	250	mA	
Collector power dissipation		Pc (Note 1)	800	mW	
		P _{C (Note 2)}	500		
Junction temperature		Tj	150	°C	
Storage temperature range		T _{stg}	-55 to 150	°C	



Weight: 6.6 mg (typ.)

Note1: Mounted on ceramic board.

 $(25.4 \text{ mm} \times 25.4 \text{ mm} \times 0.8 \text{ mmt}, \text{ Cu Pad: } 645 \text{ mm}^2)$

Note2: Mounted on FR4 board.

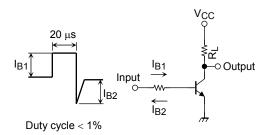
 $(25.4 \text{ mm} \times 25.4 \text{ mm} \times 1.6 \text{ mmt}, \text{ Cu Pad: } 645 \text{ mm}^2)$

Note: 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	Тур.	Max	Unit
Collector cut-off current		I _{CBO}	V _{CB} = 100 V, I _E = 0	_	_	100	nA
Emitter cut-off current		I _{EBO}	V _{EB} = 7 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 V, I _C = 0.3 A	400	_	1000	
		h _{FE} (2)	V _{CE} = 2 V, I _C = 1 A	200	_	_	
Collector-emitter saturation voltage		V _{CE} (sat)	I _C = 1 A, I _B = 20 mA	_	_	0.14	V
Base-emitter saturation voltage		V _{BE} (sat)	I _C = 1 A, I _B = 20 mA	_	_	1.10	V
Collector output capacitance		C _{ob}	V _{CB} = 10 V, I _E = 0, f = 1 MHz	_	13	_	pF
Switching time	Rise time	t _r	See Figure 1.	_	40	_	ns
	Storage time	t _{stg}	$V_{CC} \approx 30 \text{ V}, R_L = 30 \Omega$	_	500	_	
	Fall time	t _f	$I_{B1} = -I_{B2} = 33.3 \text{ mA}$	_	120	_	



Marking .

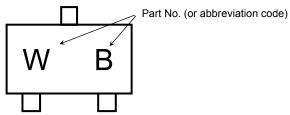
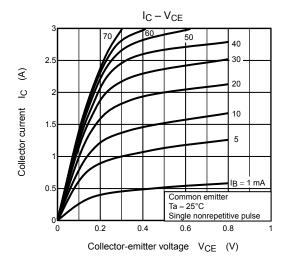
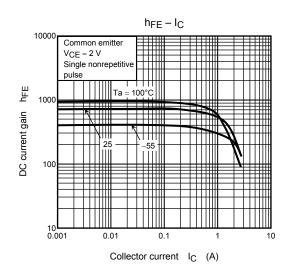
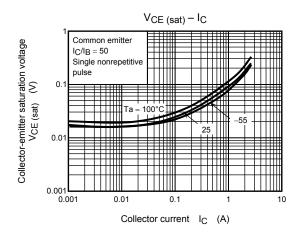
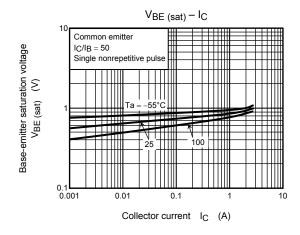


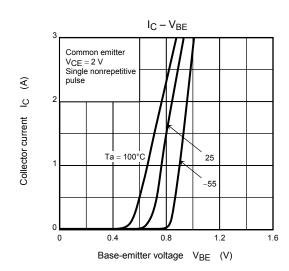
Figure 1 Switching Time Test Circuit & Timing Chart



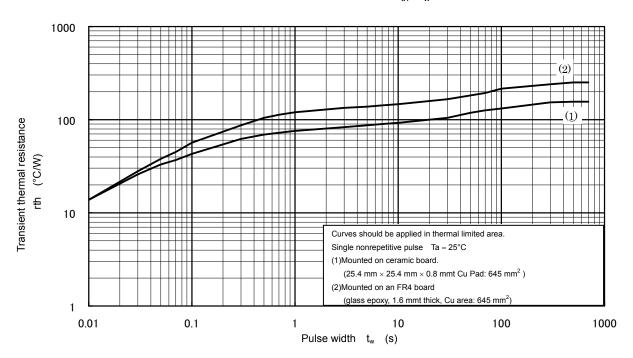


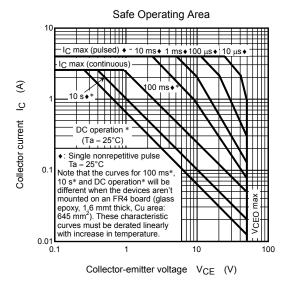






Transient Thermal Resistance $r_{th} - t_w$





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