

TOSHIBA Transistor Silicon PNP Epitaxial Type

## 2SA2097

High-Speed Switching Applications

DC-DC Converter Applications

Unit: mm

- High DC current gain:  $h_{FE} = 200$  to  $500$  ( $I_C = -0.5$  A)
- Low collector-emitter saturation:  $V_{CE(sat)} = -0.27$  V (max)
- High-speed switching:  $t_f = 55$  ns (typ.)

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

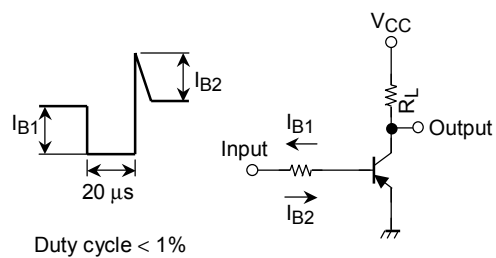
Characteristics		Symbol	Rating	Unit
Collector-base voltage		$V_{CBO}$	-50	V
Collector-emitter voltage		$V_{CEO}$	-50	V
Emitter-base voltage		$V_{EBO}$	-7	V
Collector current	DC	$I_C$	-5	A
	Pulse	$I_{CP}$	-10	
Base current		$I_B$	-0.5	A
Collector power dissipation	$T_a = 25^\circ\text{C}$	$P_c$	1	W
	$T_c = 25^\circ\text{C}$		20	
Junction temperature		$T_j$	150	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	-55 to 150	$^\circ\text{C}$

JEDEC	—
JEITA	SC-64
TOSHIBA	2-7J1A

Weight: 0.36 g (typ.)

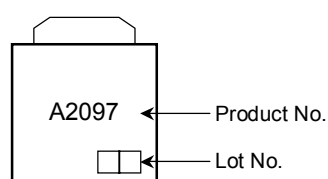
Electrical Characteristics ( $T_a = 25^\circ\text{C}$ )

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		$I_{CBO}$	$V_{CB} = -50$ V, $I_E = 0$	—	—	-100	nA
Emitter cut-off current		$I_{EBO}$	$V_{EB} = -7$ V, $I_C = 0$	—	—	-100	nA
Collector-emitter brakedown voltage		$V_{(BR) CEO}$	$I_C = -10$ mA, $I_B = 0$	-50	—	—	V
DC current gain		$h_{FE} (1)$	$V_{CE} = -2$ V, $I_C = -0.5$ A	200	—	500	
		$h_{FE} (2)$	$V_{CE} = -2$ V, $I_C = -1.6$ A	100	—	—	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = -1.6$ A, $I_B = -53$ mA	—	—	-0.27	V
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = -1.6$ A, $I_B = -53$ mA	—	—	-1.10	V
Switching time	Rise time	$t_r$	See Figure 1 circuit diagram $V_{CC} = -24$ V, $R_L = 15 \Omega$ $I_{B1} = -I_{B2} = -53$ mA	—	63	—	ns
	Storage time	$t_{stg}$		—	280	—	
	Fall time	$t_f$		—	55	—	

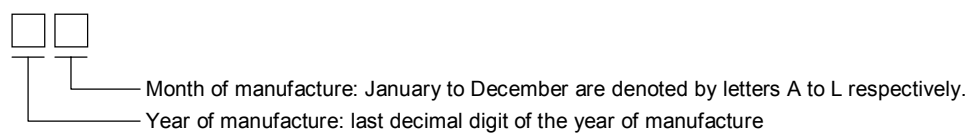


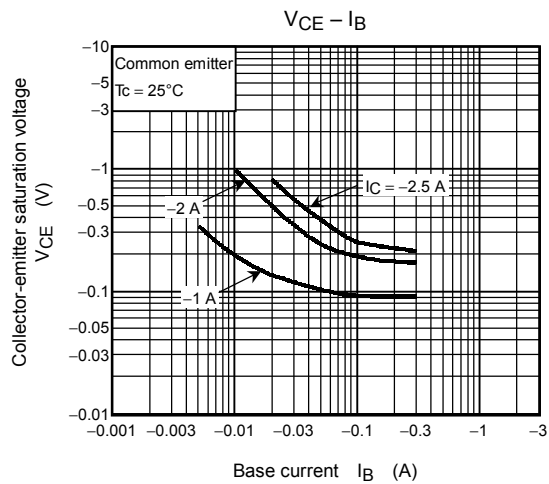
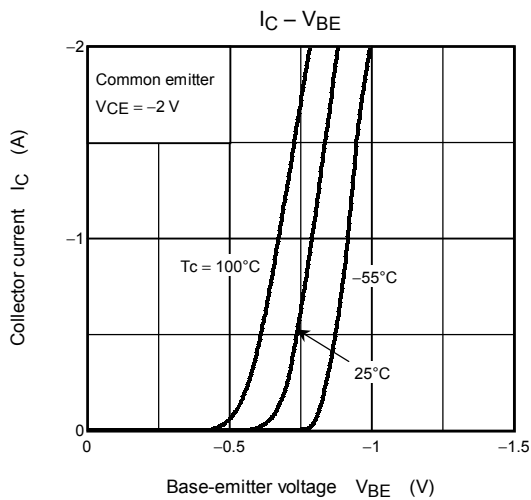
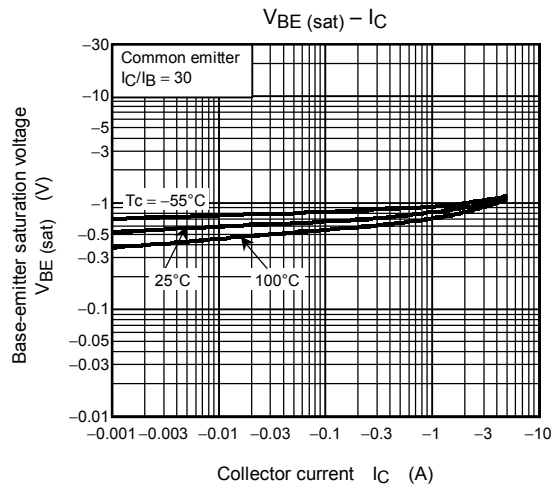
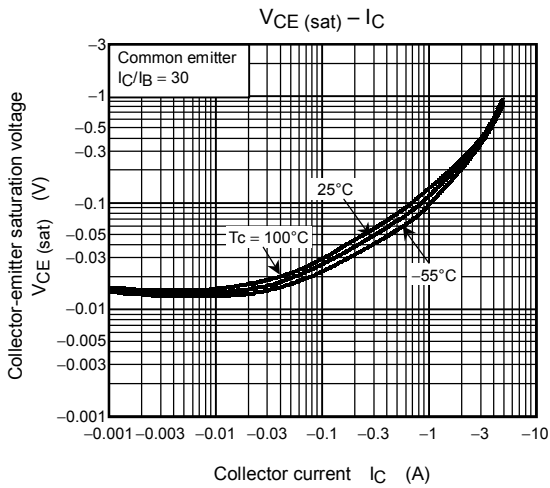
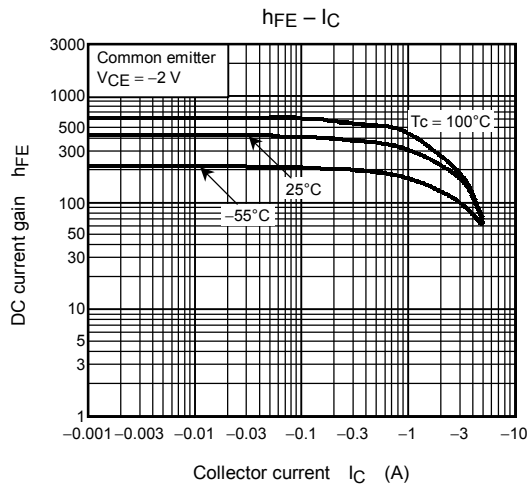
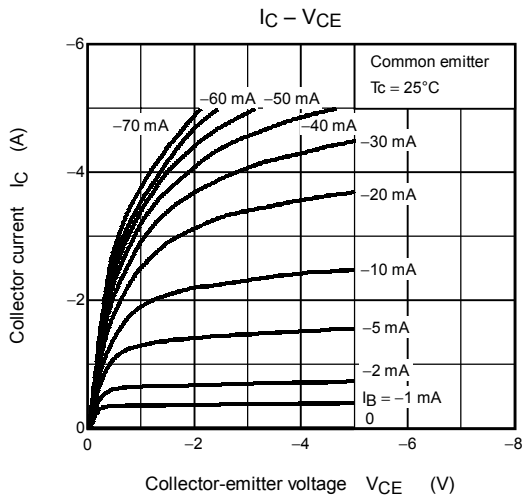
**Figure 1 Switching Time Test Circuit & Timing Chart**

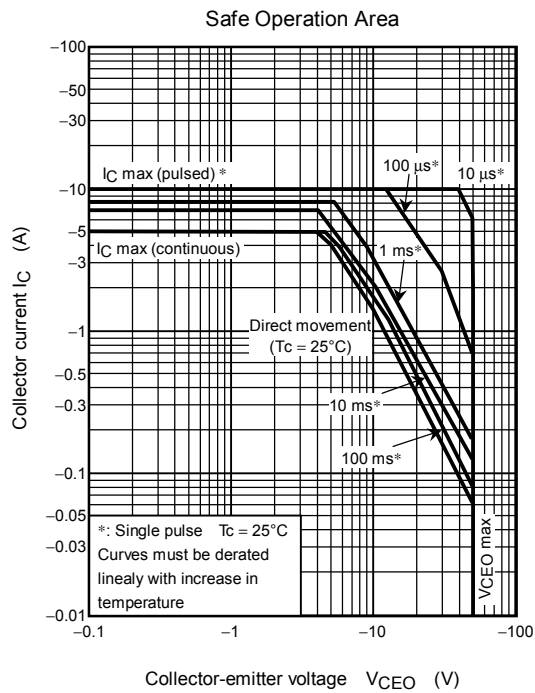
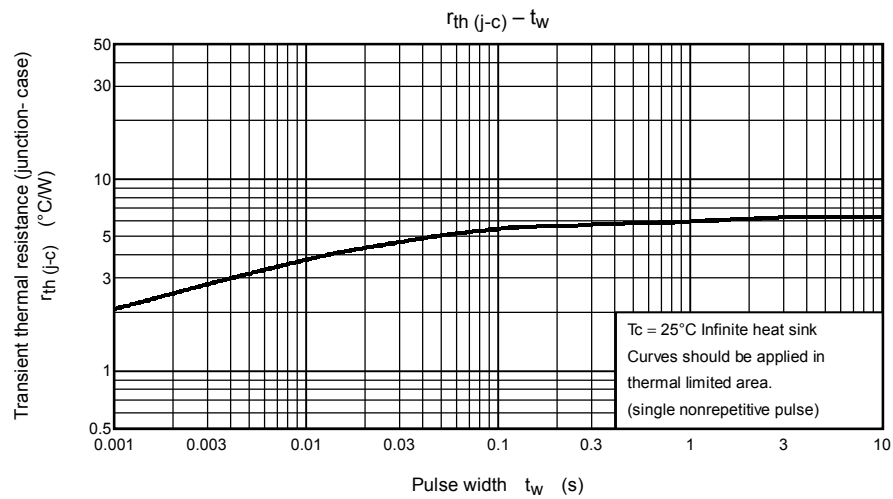
## Marking



## Explanation of Lot No.







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