

TOSHIBA Transistor Silicon NPN Epitaxial Type

2SC3964

Switching Applications
Solenoid Drive Applications
Temperature Compensated for Audio Amplifier Output Stage

- High DC current gain: $h_{FE} = 500$ (min) ($I_C = 400$ mA)
- Low collector-emitter saturation voltage: $V_{CE(sat)} = 0.5$ V (max) ($I_C = 300$ mA)

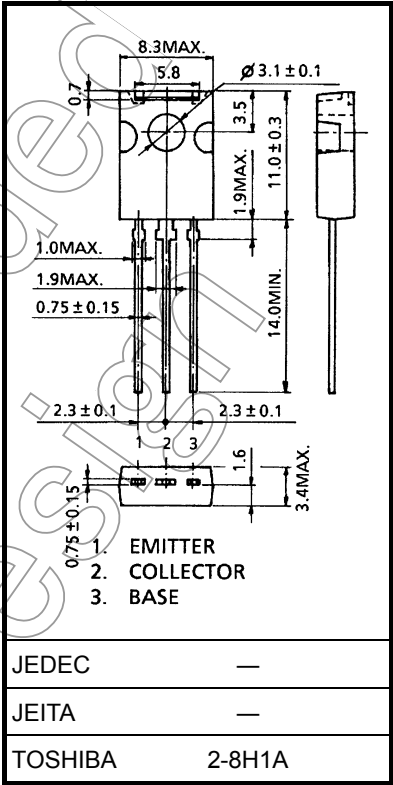
Absolute Maximum Ratings ($T_c = 25^{\circ}\text{C}$)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	40	V
Collector-emitter voltage	V_{CEO}	40	V
Emitter-base voltage	V_{EBO}	7	V
Collector current	I_C	2	A
Base current	I_B	0.5	A
Collector power dissipation	P_C	1.5	W
Junction temperature	T_j	150	$^{\circ}\text{C}$
Storage temperature range	T_{stg}	-55 to 150	$^{\circ}\text{C}$

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).

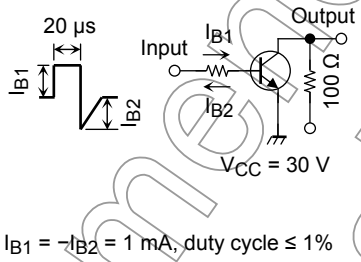
Industrial Applications

Unit: mm

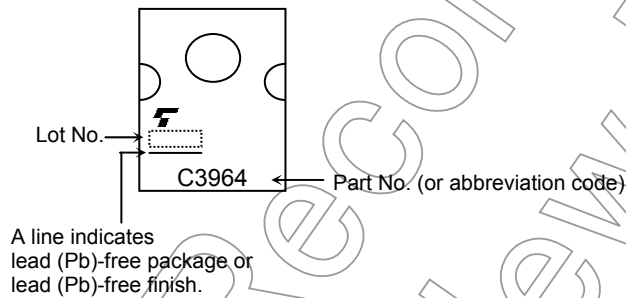


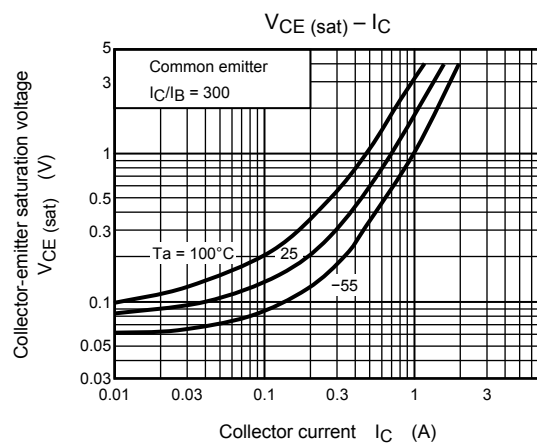
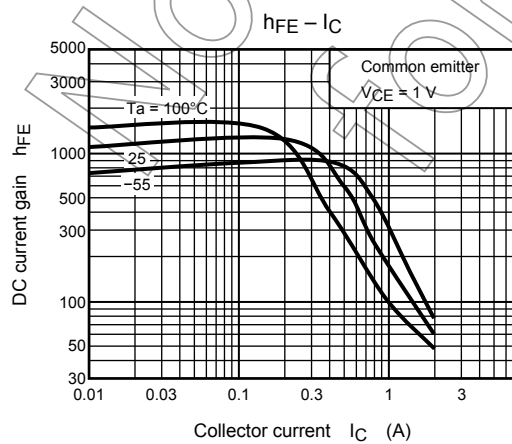
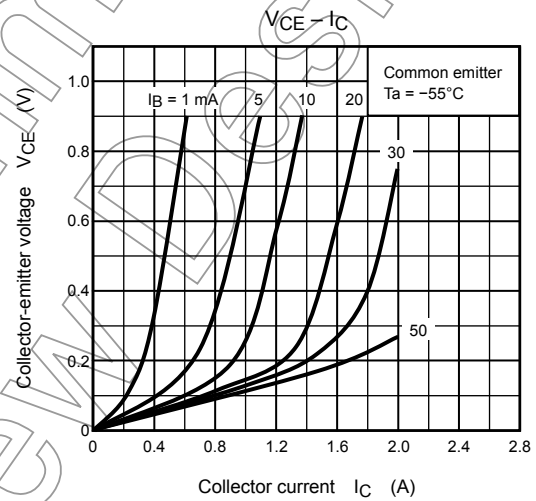
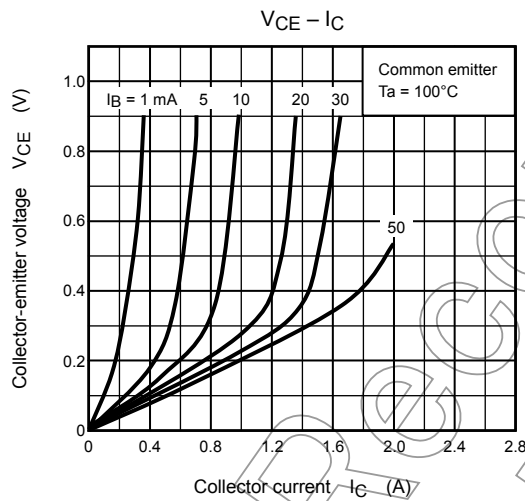
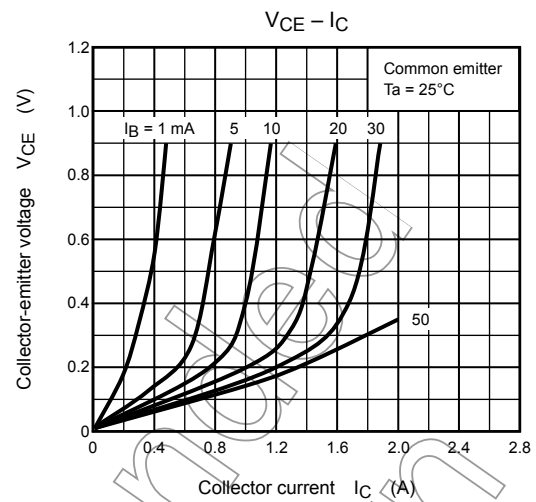
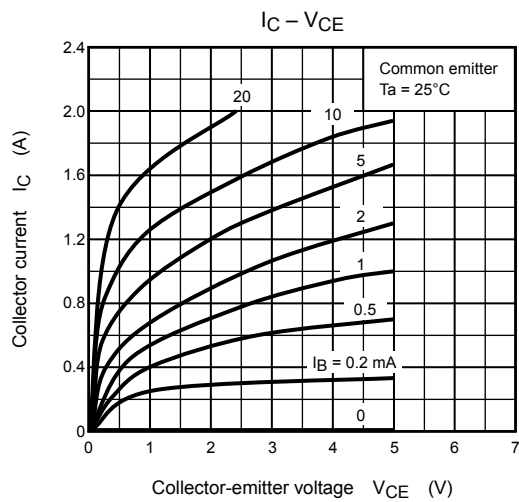
Weight: 0.82 g (typ.)

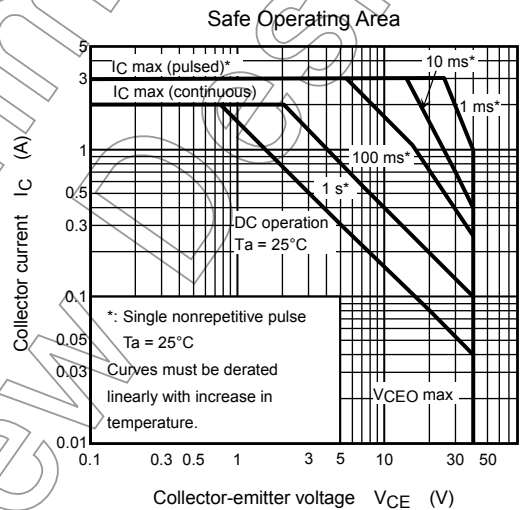
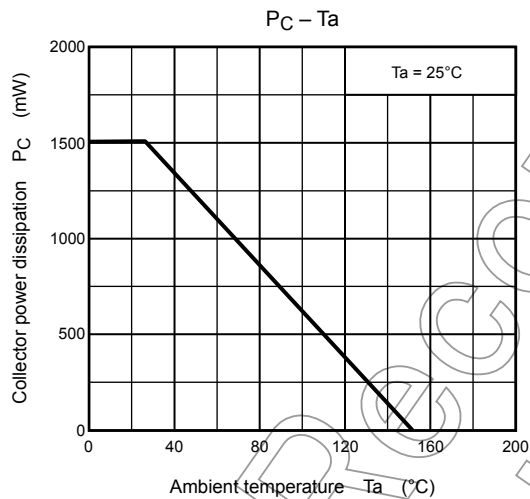
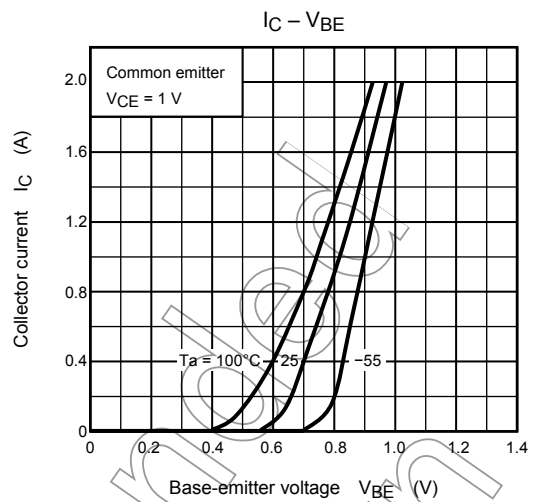
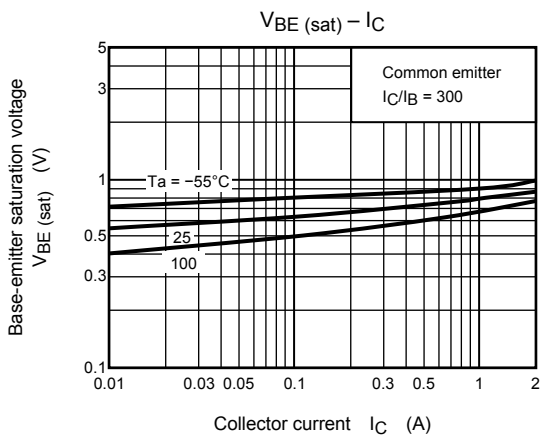
Electrical Characteristics (Tc = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 40\text{ V}, I_E = 0$	—	—	10	μA
Emitter cut-off current		I_{EBO}	$V_{EB} = 7\text{ V}, I_C = 0$	—	—	1	μA
Collector-emitter breakdown voltage		$V_{(BR) CEO}$	$I_C = 10\text{ mA}, I_B = 0$	40	—	—	V
DC current gain		h_{FE}	$V_{CE} = 1\text{ V}, I_C = 400\text{ mA}$	500	—	—	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 300\text{ mA}, I_B = 1\text{ mA}$	—	0.3	0.5	V
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = 300\text{ mA}, I_B = 1\text{ mA}$	—	—	1.1	V
Transition frequency		f_T	$V_{CE} = 2\text{ V}, I_C = 100\text{ mA}$	—	220	—	MHz
Collector output capacitance		C_{ob}	$V_{CB} = 10\text{ V}, I_B = 0, f = 1\text{ MHz}$	—	20	—	pF
Switching time	Turn-on time	t_{on}		—	1.0	—	μs
	Storage time	t_{stg}		—	3.0	—	
	Fall time	t_f		—	1.2	—	

Marking







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20070701-EN

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