

TOSHIBA Transistor Silicon NPN Epitaxial Type

# 2SC3964

Switching Applications

Solenoid Drive Applications

Temperature Compensated for Audio Amplifier Output Stage

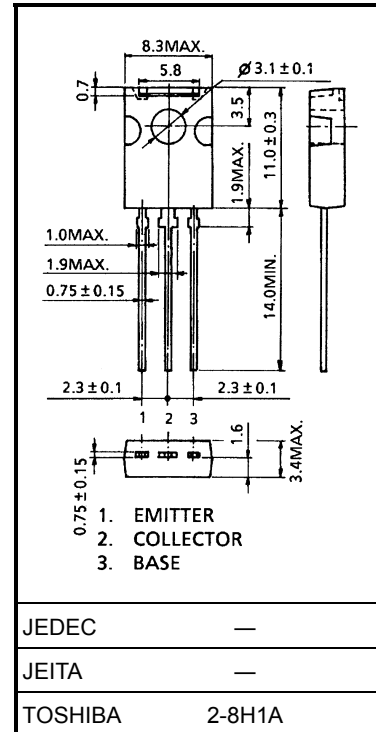
Industrial Applications

Unit: mm

- 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)

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

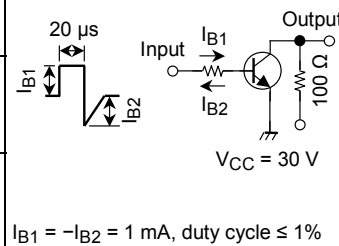
Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	40	V
Collector-emitter voltage	$V_{CEO}$	40	V
Emitter-base voltage	$V_{EBO}$	7	V
Collector current	$I_C$	2	A
Base current	$I_B$	0.5	A
Collector power dissipation	$P_C$	1.5	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature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



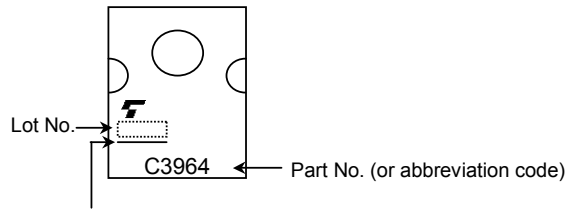
Weight: 0.82 g (typ.)

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

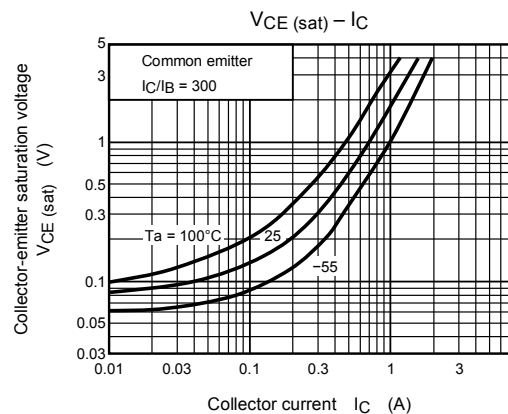
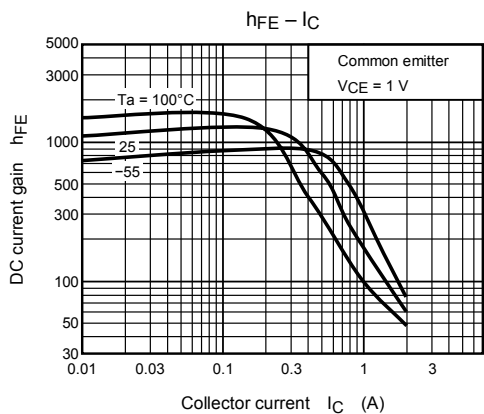
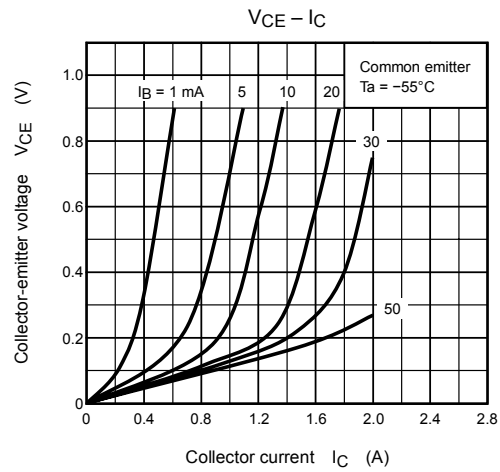
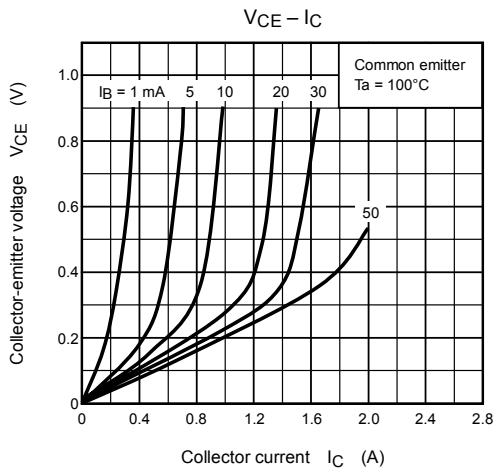
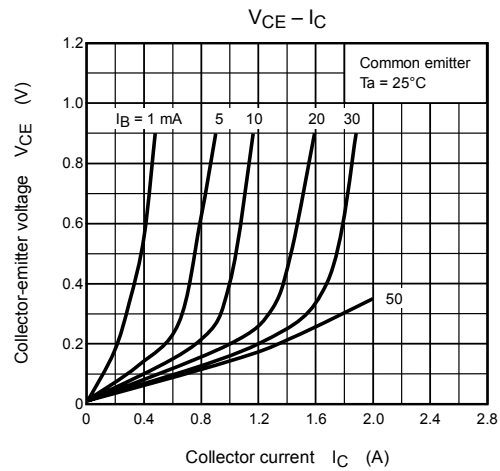
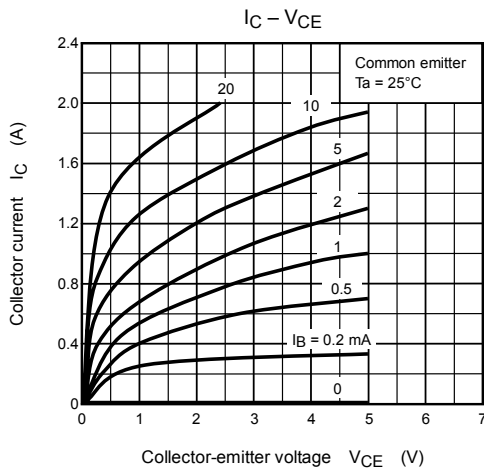
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	$V_{CB} = 40$ V, $I_E = 0$	—	—	10	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 7$ V, $I_C = 0$	—	—	1	$\mu\text{A}$
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 10$ mA, $I_B = 0$	40	—	—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

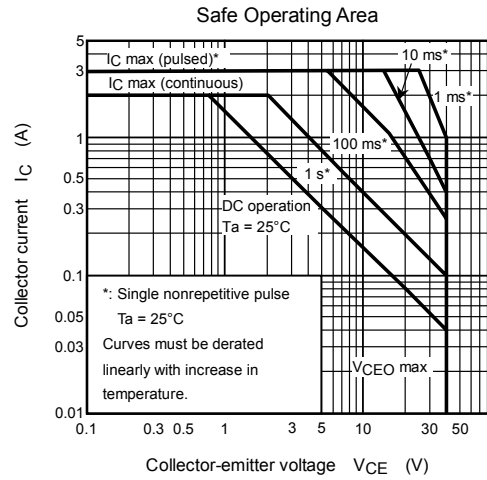
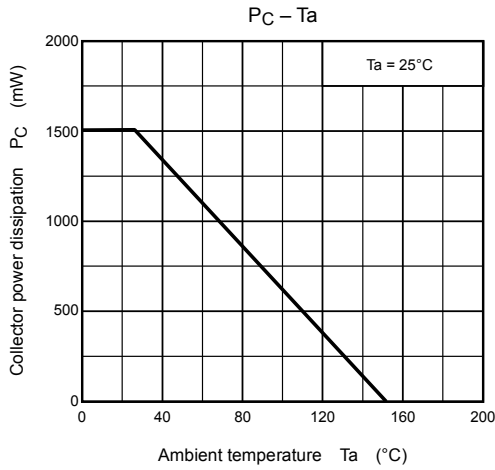
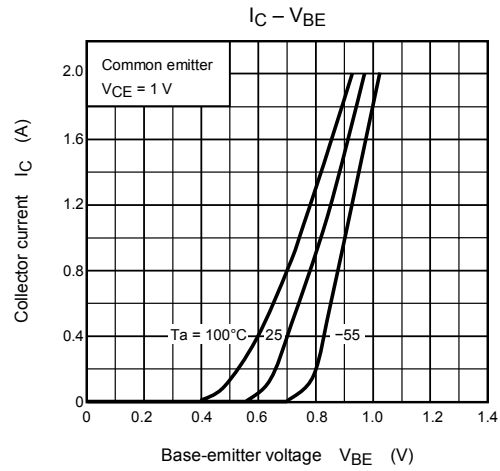
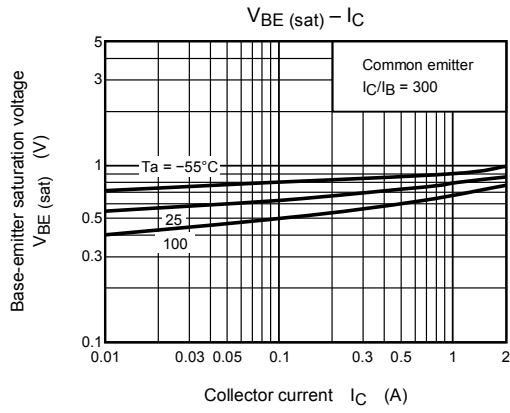


## Marking



A line indicates  
lead (Pb)-free package or  
lead (Pb)-free finish.





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