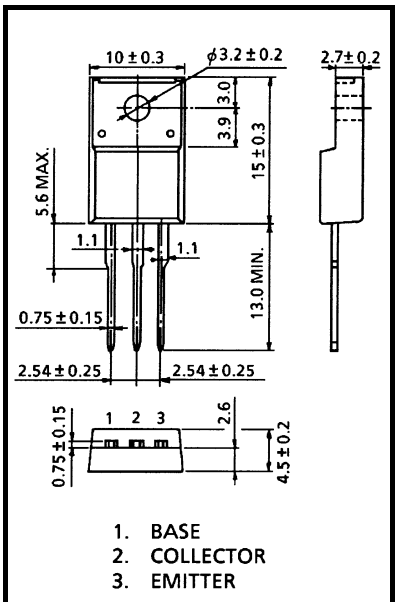
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT PROCESS)

2SA1931

High-Current Switching Applications

- Low saturation voltage: $V_{CE\ (sat)}$ = –0.4 V (max)
- High-speed switching time: t_{stg} = 1.0 μs (typ.)
- Complementary to 2SC4881

Unit: mm



JEDEC	—
JEITA	SC-67
TOSHIBA	2-10R1A

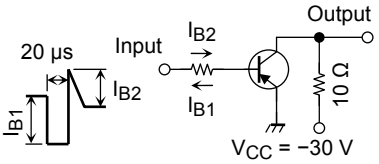
Weight: 1.7 g (typ.)

Absolute Maximum Ratings (Tc = 25°C)

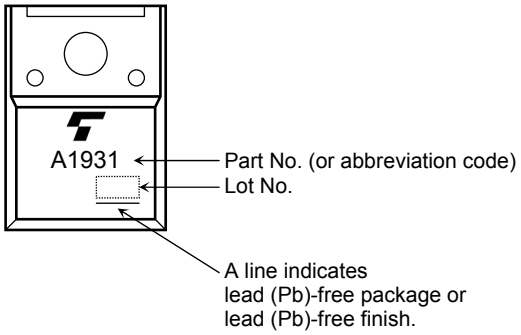
Characteristic		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	−60	V
Collector-emitter voltage		V_{CEO}	−50	V
Emitter-base voltage		V_{EBO}	−7	V
Collector current		I_C	−5	A
Base current		I_B	−1	A
Collector power dissipation	Ta = 25°C	P_C	2.0	W
	Tc = 25°C		20	
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55 to 150	°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).

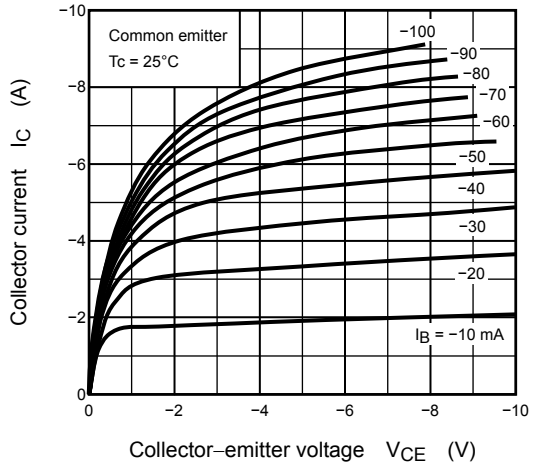
Electrical Characteristics (Tc = 25°C)

Characteristic		Symbol	Test Conditions	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	V_{CB} = −50 V, I_E = 0	—	—	−1	μA
Emitter cut-off current		I_{EBO}	V_{EB} = −7 V, I_C = 0	—	—	−1	μA
Collector-emitter breakdown voltage		$V_{(BR)\ CEO}$	I_C = −10 mA, I_B = 0	−50	—	—	V
DC current gain		$h_{FE\ (1)}$	V_{CE} = −1 V, I_C = 1 A	100	—	300	
		$h_{FE\ (2)}$	V_{CE} = −1 V, I_C = −3 A	60	—	—	
Collector-emitter saturation voltage		$V_{CE\ (sat)}$	I_C = −2 A, I_B = −0.2 A	—	−0.2	−0.4	V
Base-emitter saturation voltage		$V_{BE\ (sat)}$	I_C = −2 A, I_B = −0.2 A	—	−0.9	−1.5	V
Transition frequency		f_T	V_{CB} = −1 V, I_C = −1 A	—	60	—	MHz
Collector output capacitance		C_{ob}	V_{CB} = −10 V, I_E = 0, f = 1 MHz	—	100	—	pF
Switching time	Turn-on time	t_{on}		—	0.1	—	μs
	Storage time	t_{stg}		—	1.0	—	
	Fall time	t_f	$-I_{B1} = I_{B2}$ = 0.15 A, duty cycle ≤ 1%	—	0.1	—	

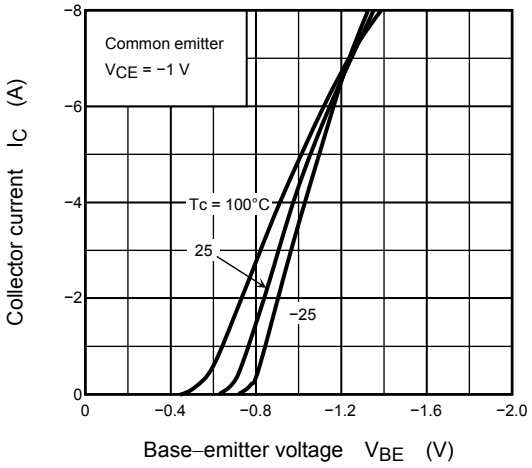
Marking



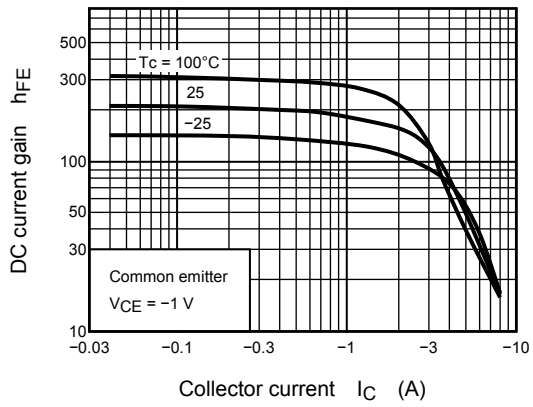
$I_C - V_{CE}$



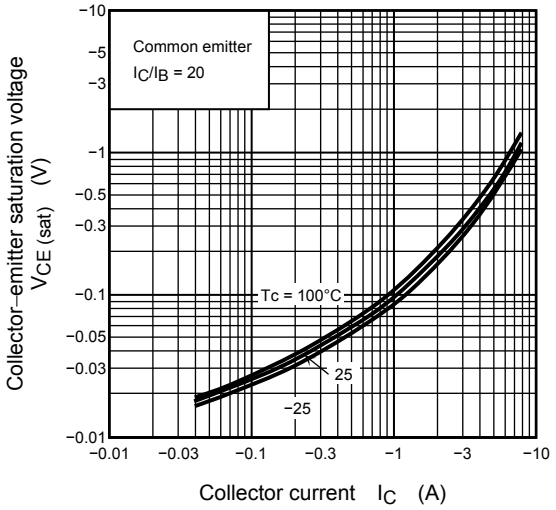
$I_C - V_{BE}$



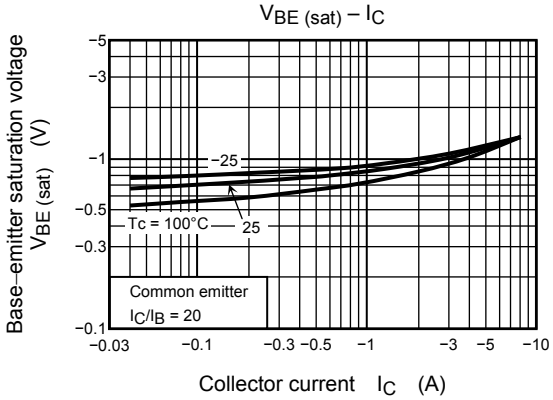
$h_{FE} - I_C$



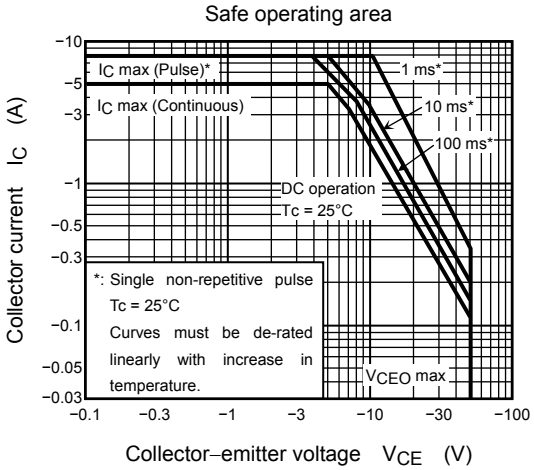
$V_{CE\ (sat)} - I_C$



$V_{BE\ (sat)} - I_C$



Safe operating area



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