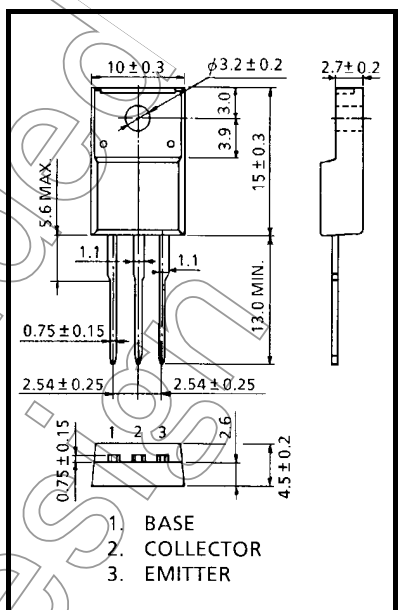
TOSHIBA Transistor Silicon PNP Epitaxial Type

2SA1930

Power Amplifier Applications
Driver Stage Amplifier Applications

- High transition frequency: f_T = 200 MHz (typ.)
- Complementary to 2SC5171

Unit: mm



JEDEC	—
JEITA	SC-67
TOSHIBA	2-10R1A

Weight: 1.7 g (typ.)

Absolute Maximum Ratings (Tc = 25°C)

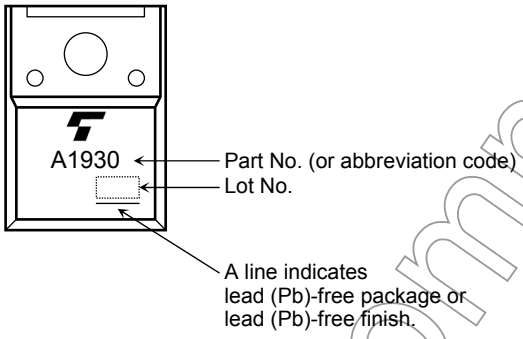
Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	−180	V
Collector-emitter voltage		V_{CEO}	−180	V
Emitter-base voltage		V_{EBO}	−5	V
Collector current		I_C	−2	A
Base current		I_B	−1	A
Collector power dissipation	Ta = 25°C	P_C	2.0	W
	Tc = 25°C		20	
Junction temperature		T_j	150	°C
Storage 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).

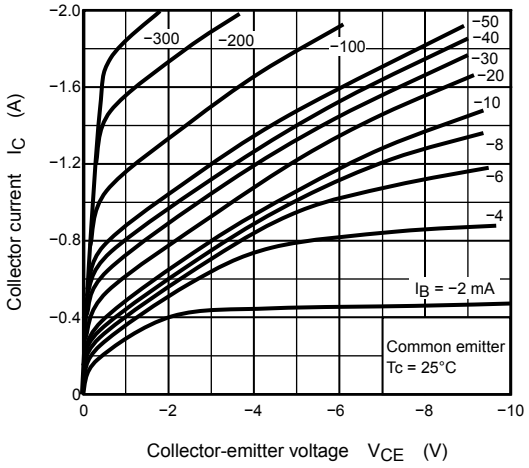
Electrical Characteristics (Tc = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	V_{CB} = −180 V, I_E = 0	—	—	−5.0	μA
Emitter cut-off current	I_{EBO}	V_{EB} = −5 V, I_C = 0	—	—	−5.0	μA
Collector-emitter breakdown voltage	$V_{(BR)\ CEO}$	I_C = −10 mA, I_B = 0	−180	—	—	V
DC current gain	h_{FE} (1)	V_{CE} = −5 V, I_C = −0.1 A	100	—	320	
	h_{FE} (2)	V_{CE} = −5 V, I_C = −1 A	50	—	—	
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	I_C = −1 A, I_B = −0.1 A	—	−0.24	−1.0	V
Base-emitter voltage	V_{BE}	V_{CE} = −5 V, I_C = −1 A	—	−0.68	−1.5	V
Transition frequency	f_T	V_{CE} = −10 V, I_C = −0.3 A	—	200	—	MHz
Collector output capacitance	C_{ob}	V_{CB} = −10 V, I_C = 0, f = 1 MHz	—	26	—	pF

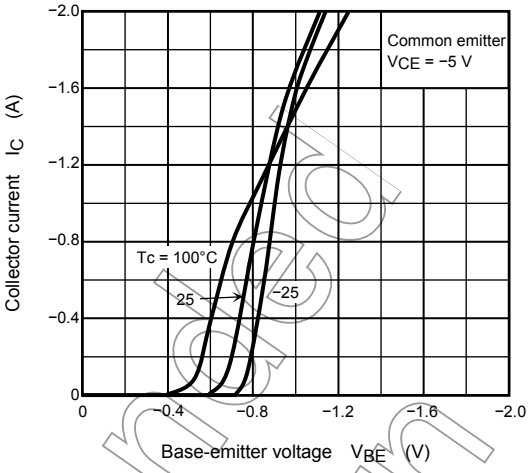
Marking



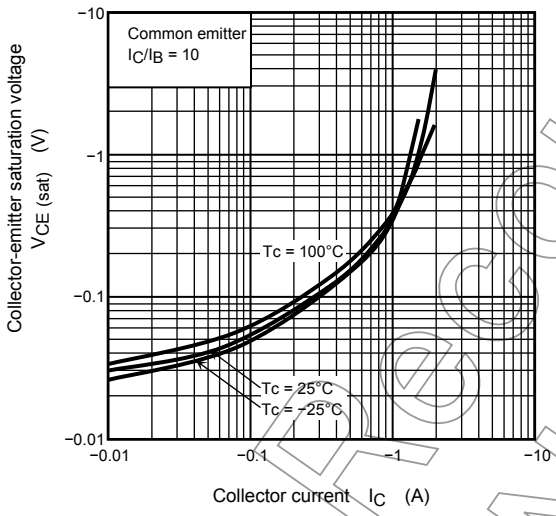
$I_C - V_{CE}$



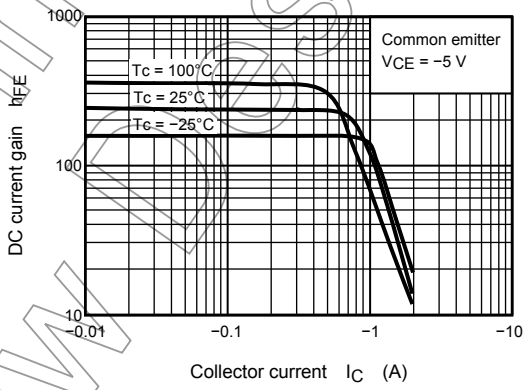
$I_C - V_{BE}$



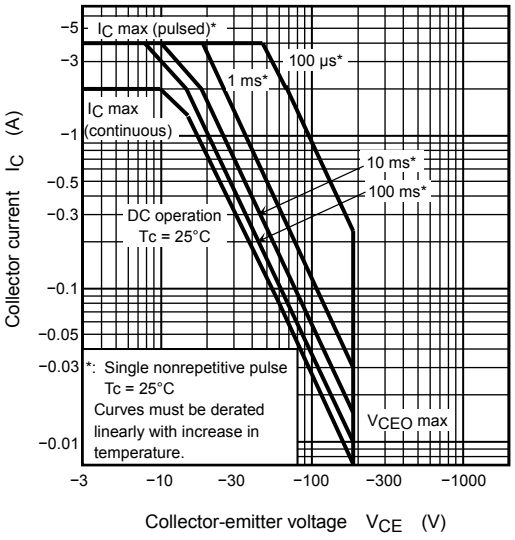
$V_{CE\ (sat)} - I_C$



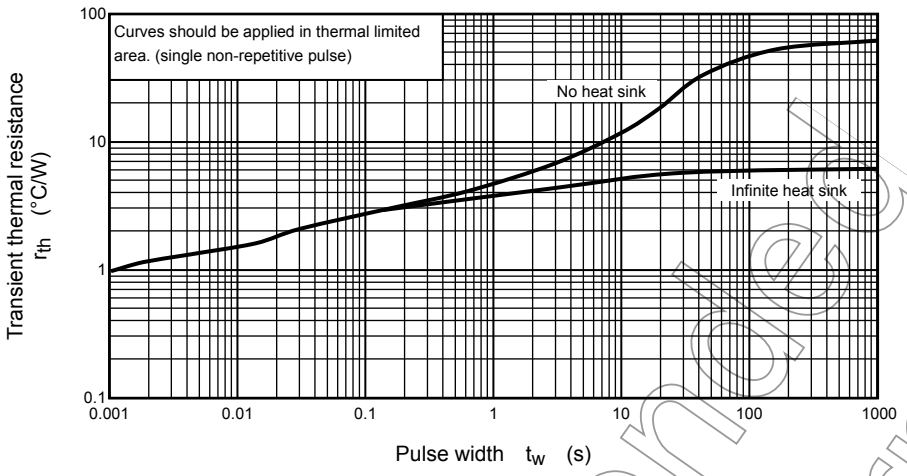
$h_{FE} - I_C$



Safe Operating Area



$r_{th} - t_w$



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TOSHIBA Transistor Silicon NPN Epitaxial Type

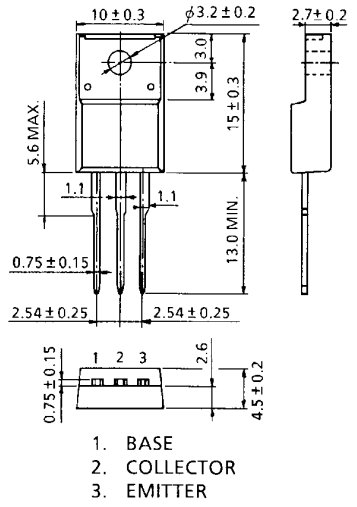
2SC5171

Power Amplifier Applications

Driver Stage Amplifier Applications

- High transition frequency: f_T = 200 MHz (typ.)
- Complementary to 2SA1930

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	2-10R1A

Weight: 1.7 g (typ.)

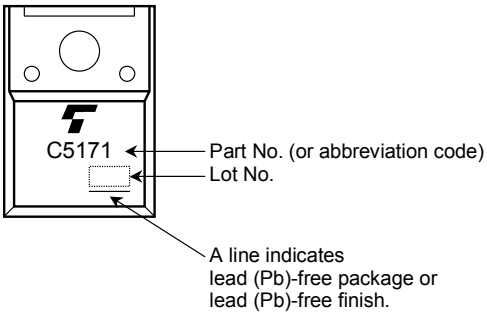
Maximum Ratings (Tc = 25°C)

Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	180	V
Collector-emitter voltage		V_{CEO}	180	V
Emitter-base voltage		V_{EBO}	5	V
Collector current		I_C	2	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

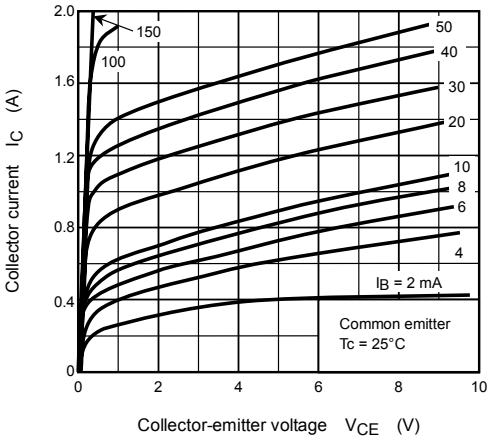
Electrical Characteristics (Tc = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	V_{CB} = 180 V, I_E = 0	—	—	5.0	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 5 V, I_C = 0	—	—	5.0	μA
Collector-emitter breakdown voltage	$V_{(BR)\ CEO}$	I_C = 10 mA, I_B = 0	180	—	—	V
DC current gain	$h_{FE\ (1)}$	V_{CE} = 5 V, I_C = 0.1 A	100	—	320	
	$h_{FE\ (2)}$	V_{CE} = 5 V, I_C = 1 A	50	—	—	
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	I_C = 1 A, I_B = 0.1 A	—	0.16	1.0	V
Base-emitter voltage	V_{BE}	V_{CE} = 5 V, I_C = 1 A	—	0.68	1.5	V
Transition frequency	f_T	V_{CE} = 5 V, I_C = 0.3 A	—	200	—	MHz
Collector output capacitance	C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	16	—	pF

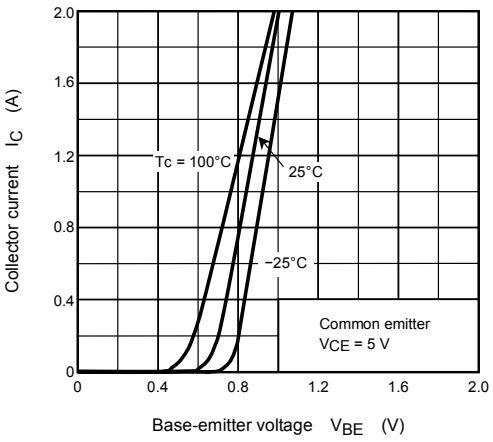
Marking


C5171
Part No. (or abbreviation code)
Lot No.
A line indicates
lead (Pb)-free package or
lead (Pb)-free finish.

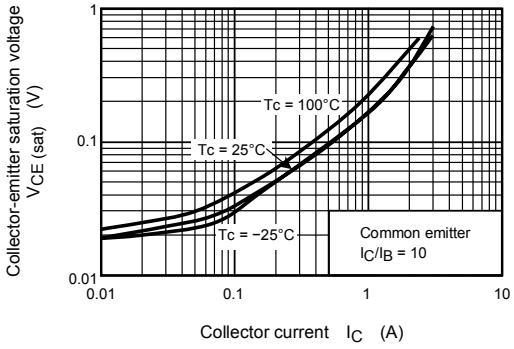
$I_C - V_{CE}$



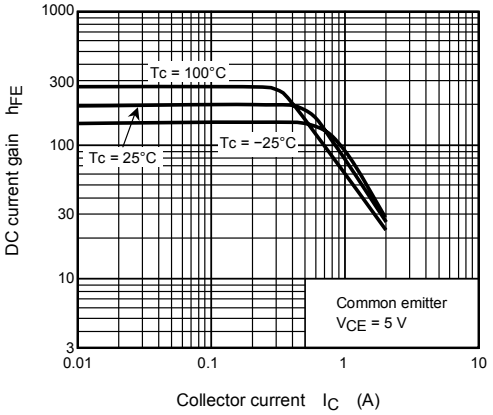
$I_C - V_{BE}$



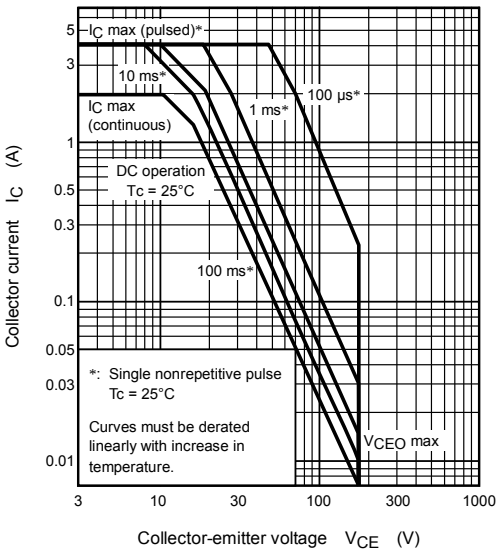
$V_{CE\ (sat)} - I_C$



$h_{FE} - I_C$



Safe Operating Area



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