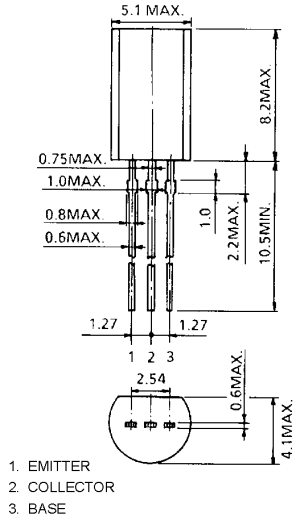
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

2SA1013

Color TV Verttical Deflection Output Applications
Power Switching Applications

- High voltage: V_{CEO} = −160 V
- Large continuous collector current capability
- Recommended for vertical deflection output & sound output applications for line-operated TV.
- Complementary to 2SC2383.

Unit: mm



JEDEC	TO-92MOD
JEITA	—
TOSHIBA	2-5J1A

Weight: 0.36 g (typ.)

Maximum Ratings (Ta = 25°C)

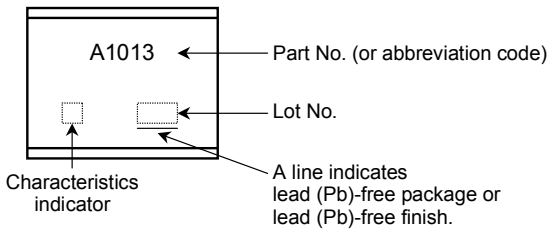
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	−160	V
Collector-emitter voltage	V_{CEO}	−160	V
Emitter-base voltage	V_{EBO}	−6	V
Collector current	I_C	−1	A
Base current	I_B	−0.5	A
Collector power dissipation	P_C	900	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−55 to 150	°C

Electrical Characteristics (Ta = 25°C)

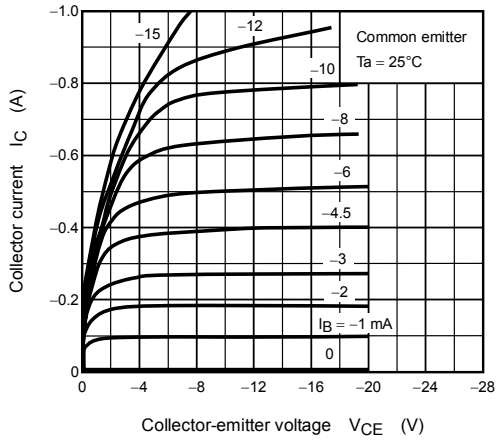
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	V_{CB} = −150 V, I_E = 0	—	—	−1.0	μA
Emitter cut-off current	I_{EBO}	V_{EB} = −6 V, I_C = 0	—	—	−1.0	μA
Collector-emitter breakdown voltage	$V_{(BR)\ CEO}$	I_C = −10 mA, I_B = 0	−160	—	—	V
DC current gain	h_{FE} (Note)	V_{CE} = −5 V, I_C = −200 mA	60	—	200	
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	I_C = −500 mA, I_B = −50 mA	—	—	−1.5	V
Base-emitter voltage	V_{BE}	V_{CE} = −5 V, I_C = −5 mA	−0.45	—	−0.75	V
Transition frequency	f_T	V_{CE} = −5 V, I_C = −200 mA	15	50	—	MHz
Collector output capacitance	C_{ob}	V_{CB} = −10 V, I_E = 0, f = 1 MHz	—	—	35	pF

Note: h_{FE} classification R: 60 to 120, O: 100 to 200

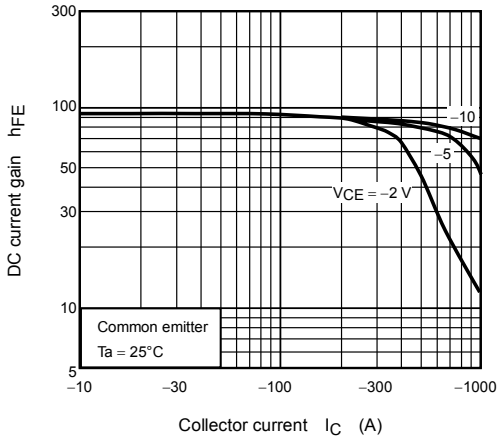
Marking



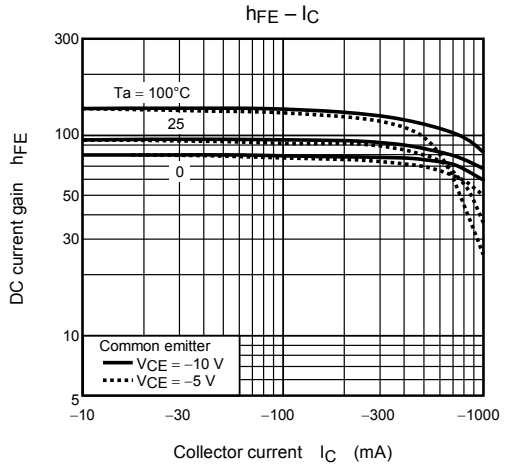
$I_C - V_{CE}$



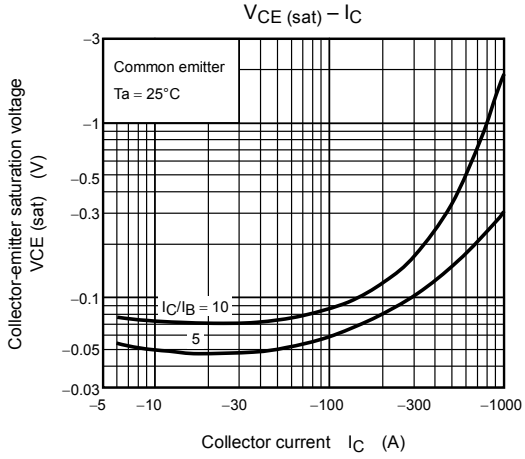
$h_{FE} - I_C$



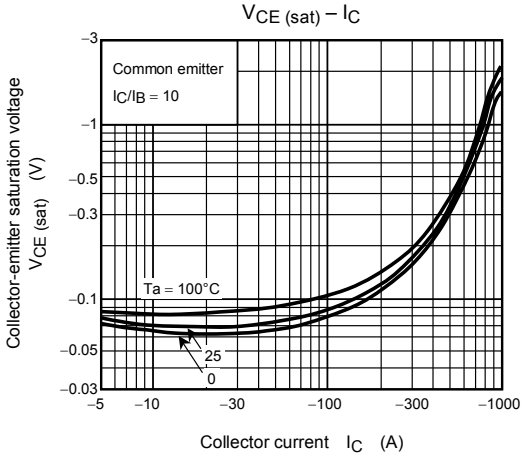
$h_{FE} - I_C$



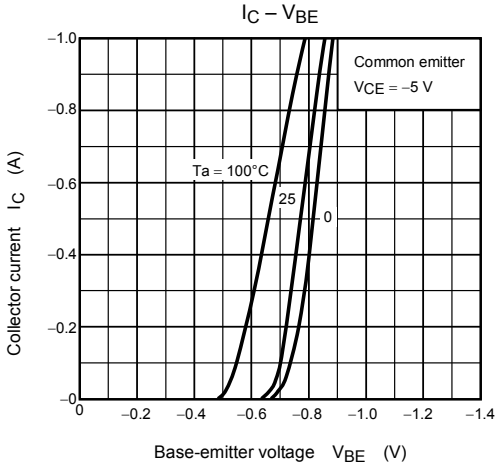
$V_{CE\ (sat)} - I_C$



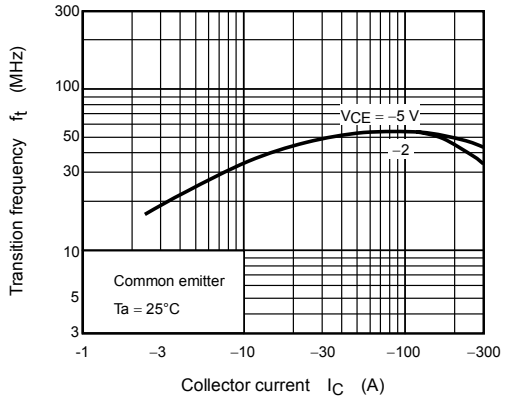
$V_{CE\ (sat)} - I_C$



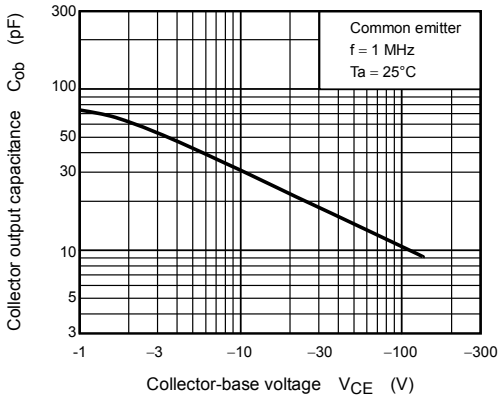
$I_C - V_{BE}$



$f_T - I_C$



$C_{ob} - V_{CB}$



Safe Operating Area

