TOSHIBA TRANSISTOR SILICON PNP EPITAXIAL TYPE (PCT PROCESS)

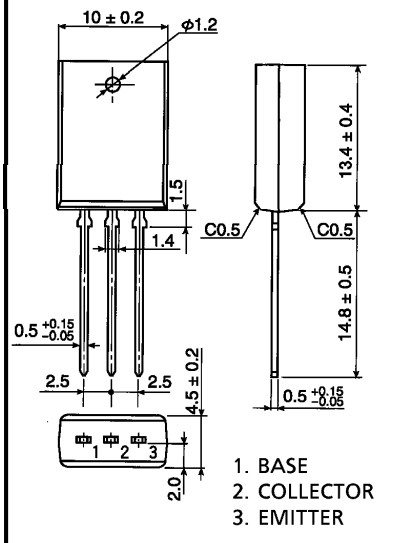
2SA1933

HIGH CURRENT SWITCHING APPLICATIONS

INDUSTRIAL APPLICATIONS

Unit in mm

- Low Saturation Voltage
  : $V_{CE\,(sat)} = -0.4V$ (Max.) at $I_C = -3A$
- High Speed Switching Time : $t_{stg} = 1.0\mu s$ (Typ.)
- Complementary to 2SC5175



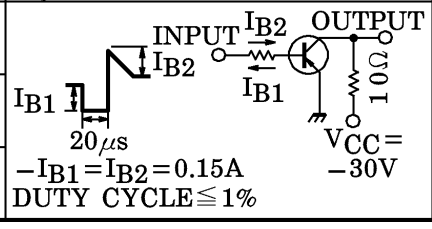
JEDEC	—
EIAJ	—
TOSHIBA	2-10T1A

Weight : 1.5g

MAXIMUM RATINGS (Ta = 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}	−5	V
Collector Current	I_C	−5	A
Base Current	I_B	−1	A
Collector Power Dissipation	P_C	1.8	W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	−55~150	°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	$V_{CB} = -50V$, $I_E = 0$	—	—	−1	μA
Emitter Cut-off Current		I_{EBO}	$V_{EB} = -5V$, $I_C = 0$	—	—	−1	μA
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	$I_C = -10mA$, $I_B = 0$	−50	—	—	V
DC Current Gain		$h_{FE\,(1)}$	$V_{CE} = -1V$, $I_C = -1A$	100	—	320	
		$h_{FE\,(2)}$	$V_{CE} = -1V$, $I_C = -3A$	30	—	—	
Saturation Voltage	Collector-Emitter	$V_{CE\,(sat)}$	$I_C = -3A$, $I_B = -0.15A$	—	−0.2	−0.4	V
	Base-Emitter	$V_{BE\,(sat)}$	$I_C = -3A$, $I_B = -0.15A$	—	−0.9	−1.2	
Transition Frequency		f_T	$V_{CE} = -4V$, $I_C = -1A$	—	60	—	MHz
Collector Output Capacitance		C_{ob}	$V_{CB} = -10V$, $I_E = 0$, f = 1MHz	—	170	—	pF
Switching Time	Turn-on Time	t_{on}		—	0.1	—	μs
	Storage Time	t_{stg}		—	1.0	—	
	Fall Time	t_f		—	0.1	—	

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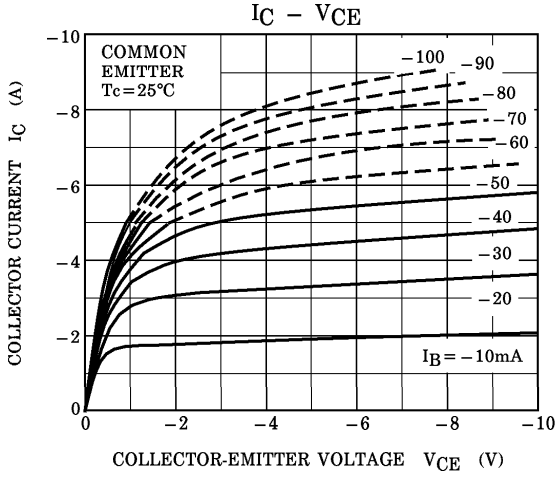
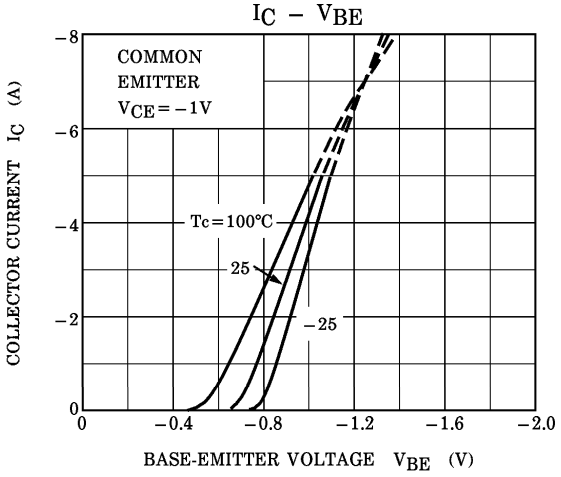
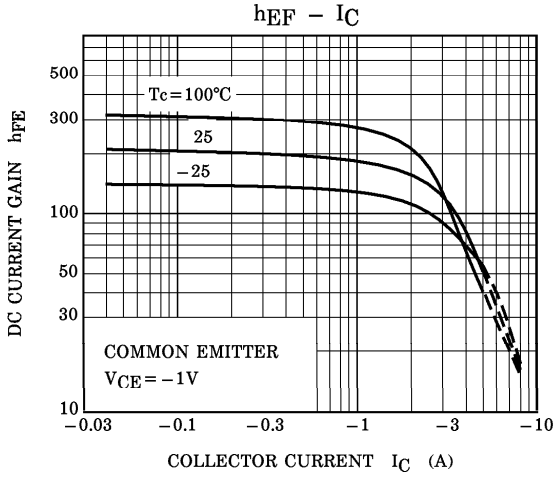
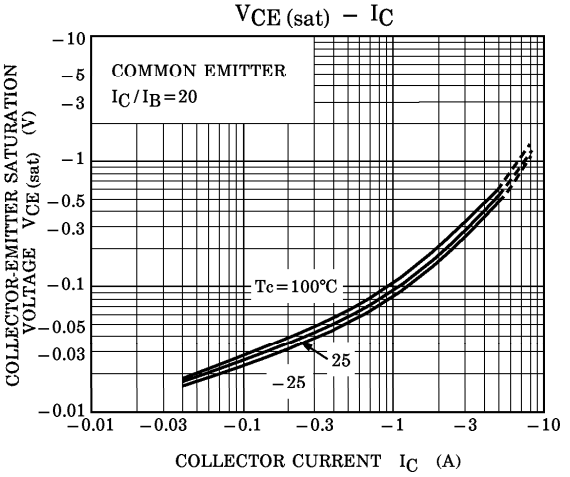
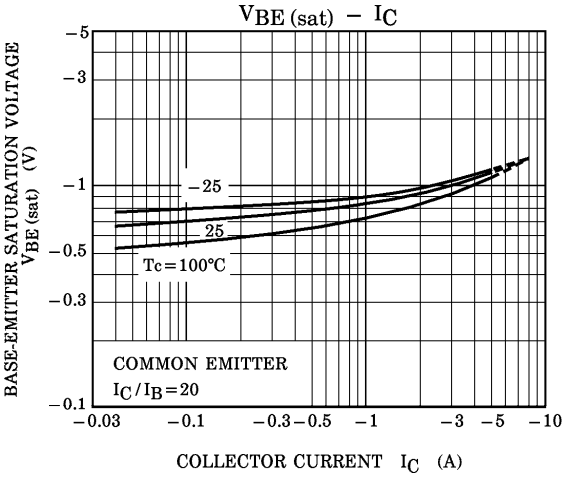
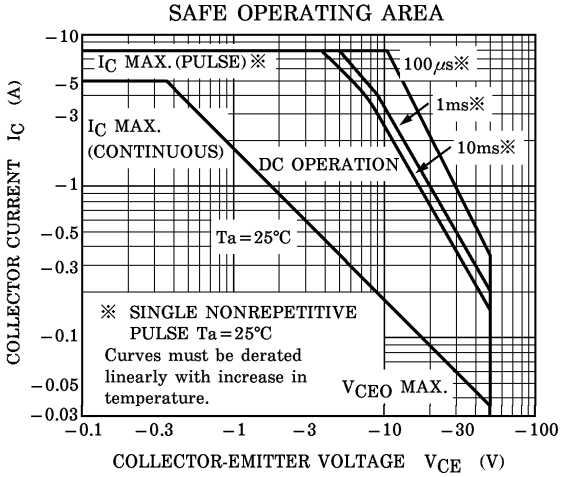

IC – VCE
COMMON EMITTER
Tc=25°C
−100
−90
−80
−70
−60
−50
−40
−30
−20
IB=−10mA
COLLECTOR CURRENT IC (A)
COLLECTOR-EMITTER VOLTAGE VCE (V)


IC – VBE
COMMON EMITTER
VCE=−1V
Tc=100°C
25
−25
COLLECTOR CURRENT IC (A)
BASE-EMITTER VOLTAGE VBE (V)


hEF – IC
Tc=100°C
25
−25
COMMON EMITTER
VCE=−1V
DC CURRENT GAIN hFE
COLLECTOR CURRENT IC (A)


VCE (sat) – IC
COMMON EMITTER
IC/IB=20
Tc=100°C
25
−25
COLLECTOR-EMITTER SATURATION VOLTAGE VCE (sat) (V)
COLLECTOR CURRENT IC (A)


VBE (sat) – IC
−25
25
Tc=100°C
COMMON EMITTER
IC/IB=20
BASE-EMITTER SATURATION VOLTAGE VBE (sat) (V)
COLLECTOR CURRENT IC (A)


SAFE OPERATING AREA
IC MAX. (PULSE)※
100μs※
1ms※
10ms※
IC MAX. (CONTINUOUS)
DC OPERATION
Ta=25°C
※ SINGLE NONREPETITIVE PULSE Ta=25°C
Curves must be derated linearly with increase in temperature.
VCEO MAX.
COLLECTOR CURRENT IC (A)
COLLECTOR-EMITTER VOLTAGE VCE (V)