TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

2SD1411A

HIGH CURRENT SWITCHING APPLICATIONS

POWER AMPLIFIER APPLICATIONS

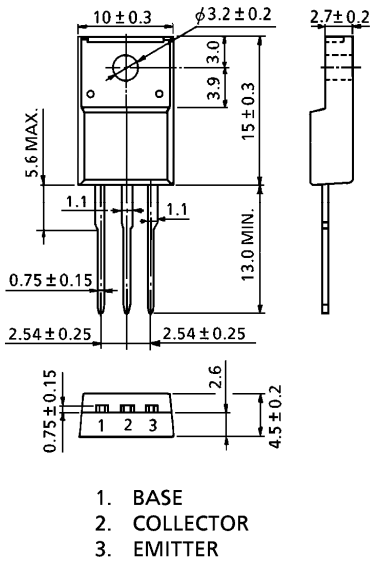
INDUSTRIAL APPLICATIONS

- Low Saturation Voltage : $V_{CE\ (sat)}$ = 0.5V (Max.) at I_C = 4A
- Complementary to 2SB1018A

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	100	V
Collector-Emitter Voltage		V_{CEO}	80	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current		I_C	7	A
Base Current		I_B	1	A
Collector Power Dissipation	Ta = 25°C	P_C	2.0	W
	Tc = 25°C		30	
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

Unit in mm

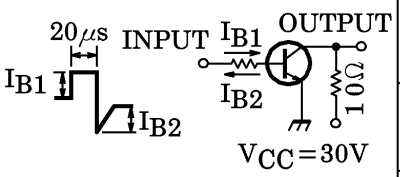


1. BASE
2. COLLECTOR
3. EMITTER

JEDEC	—
EIAJ	—
TOSHIBA	2-10R1A

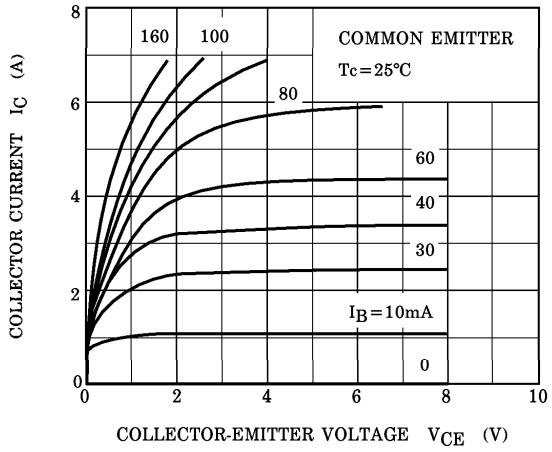
961001EAA1

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

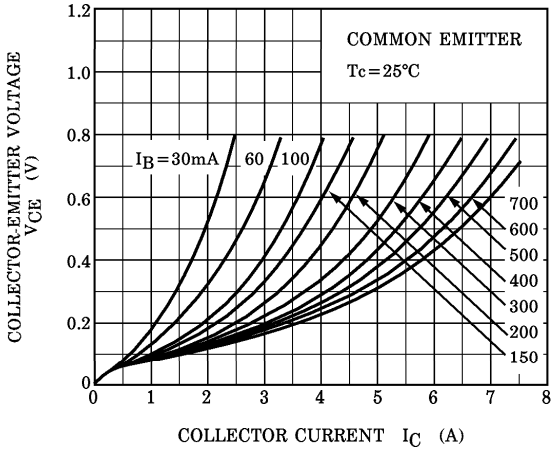
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	V_{CB} = 100V, I_E = 0	—	—	5	μA
Emitter Cut-off Current		I_{EBO}	V_{EB} = 5V, I_C = 0	—	—	5	μA
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	I_C = 50mA, I_B = 0	80	—	—	V
DC Current Gain		$h_{FE(1)}$ (Note)	V_{CE} = 1V, I_C = 1A	70	—	240	
		$h_{FE(2)}$	V_{CE} = 1V, I_C = 4A	30	—	—	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C = 4A, I_B = 0.4A	—	0.25	0.5	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	I_C = 4A, I_B = 0.4A	—	0.9	1.4	V
Transition Frequency		f_T	V_{CE} = 4V, I_C = 1A	—	10	—	MHz
Collector Output Capacitance		C_{ob}	V_{CB} = 10V, I_E = 0, f = 1MHz	—	200	—	pF
Switching Time	Turn-on Time	t_{on}	 $I_{B1} = -I_{B2} = 0.3A$, DUTY CYCLE ≦ 1%	—	0.4	—	μs
	Storage Time	t_{stg}		—	2.5	—	
	Fall Time	t_f		—	0.5	—	

(Note) $h_{FE(1)}$ Classification O : 70~140, Y : 120~240

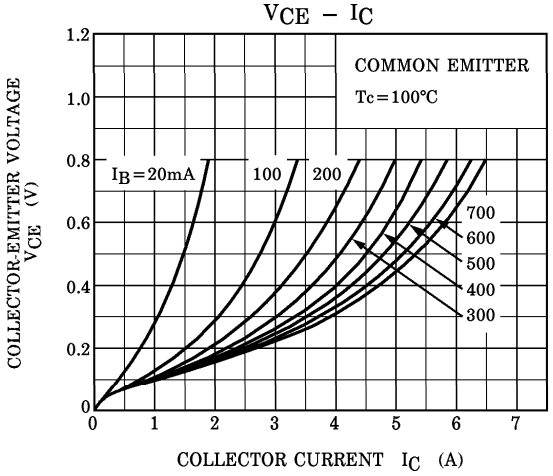
$I_C - V_{CE}$



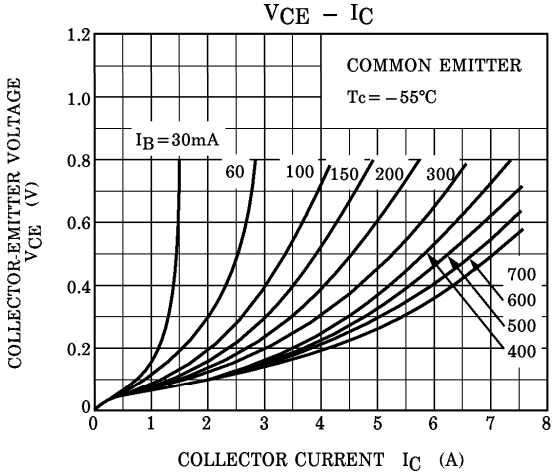
$V_{CE} - I_C$



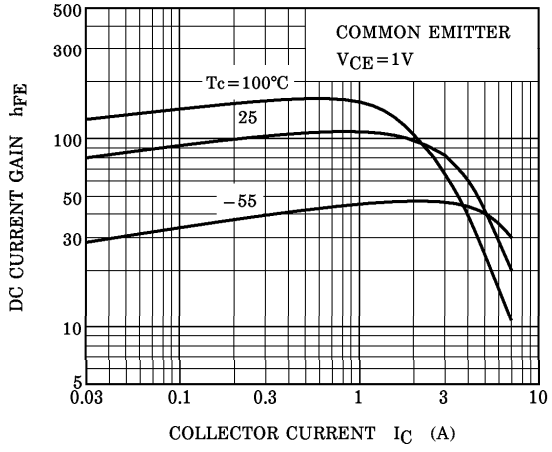
$V_{CE} - I_C$



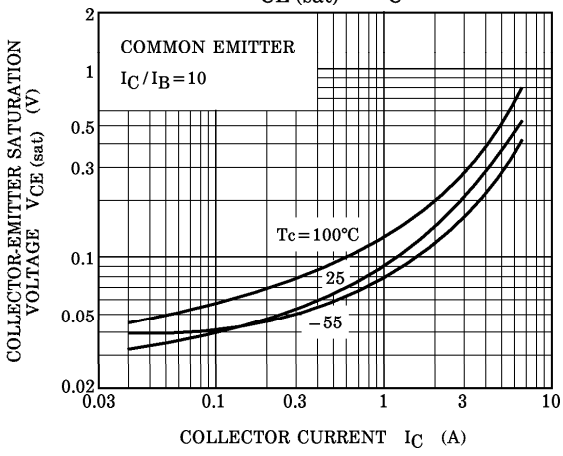
$V_{CE} - I_C$



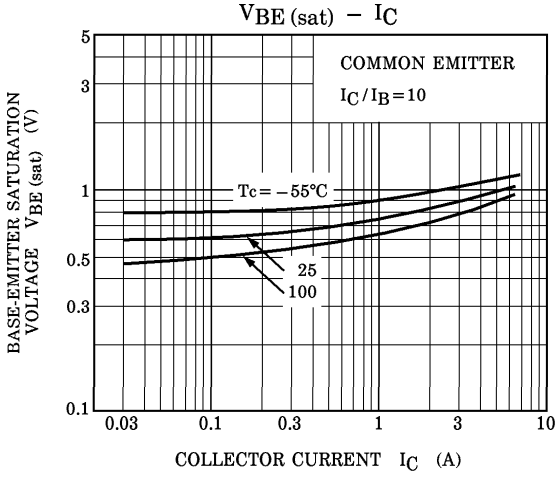
$h_{FE} - I_C$



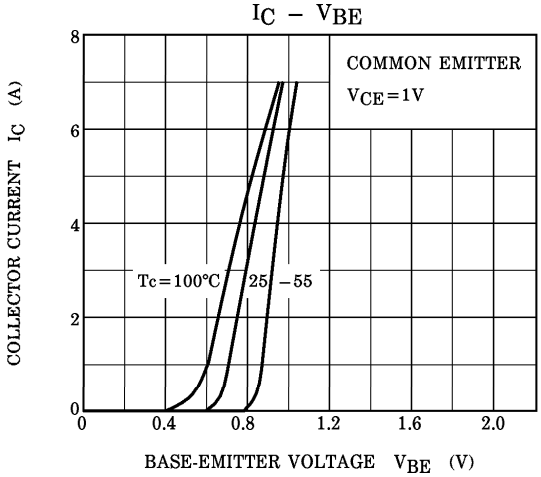
$V_{CE\,(sat)} - I_C$



$V_{BE\,(sat)}$ – I_C



I_C – V_{BE}



SAFE OPERATING AREA