TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

2SD1187

HIGH POWER SWITCHING APPLICATIONS

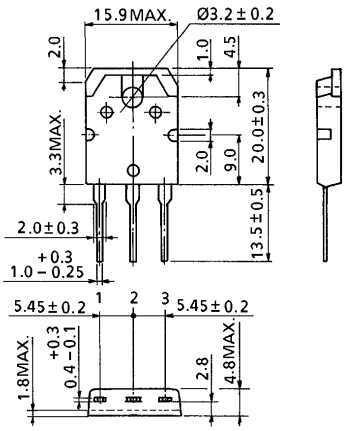
DC-DC CONVERTER AND DC-AC INVERTER APPLICATIONS

- Low Collector-Emitter Saturation Voltage : $V_{CE\ (sat)} = 0.5V$ (Max.) ($I_C = 6A$)
- High Collector Power Dissipation : $P_C = 80W$ (Tc = 25°C)

MAXIMUM RATINGS (Tc = 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	10	A
Base Current	I_B	2	A
Collector Power Dissipation (Tc = 25°C)	P_C	80	W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	−55~150	°C

Unit in mm

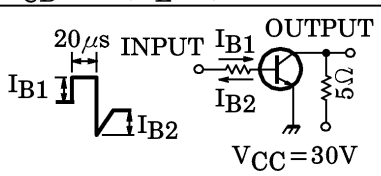


1. BASE
2. COLLECTOR (HEAT SINK)
3. EMITTER

JEDEC	—
JEITA	—
TOSHIBA	2-16B1A

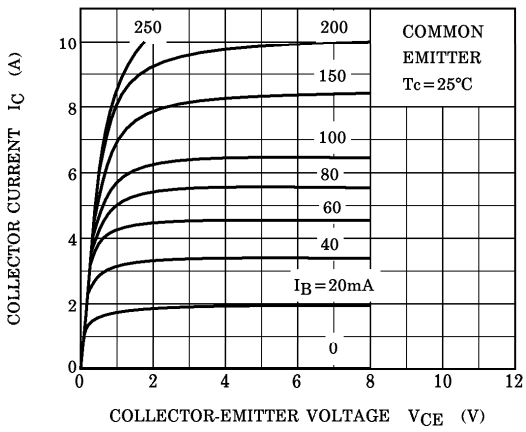
Weight : 4.6 g (Typ.)

ELECTRICAL CHARACTERISTICS (Tc = 25°C)

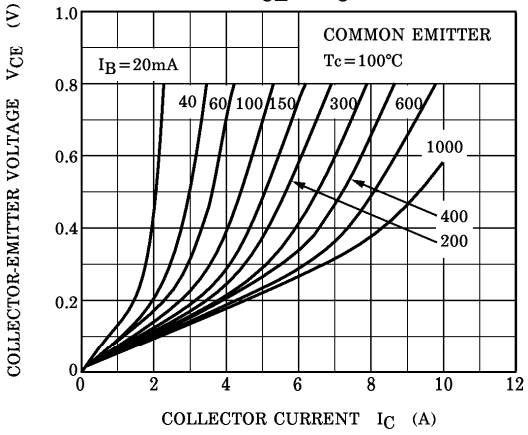
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	V_{CB} = 100V, I_E = 0	—	—	10	μA
Emitter Cut-off Current		I_{EBO}	V_{EB} = 5V, I_C = 0	—	—	10	μA
Collector-Emitter Breakdown Voltage		$V_{(BR)\,CEO}$	I_C = 50mA, I_B = 0	80	—	—	V
DC Current Gain		$h_{FE\,(1)}$ (Note)	V_{CE} = 1V, I_C = 1A	70	—	240	
		$h_{FE\,(2)}$	V_{CE} = 1V, I_C = 6A	30	—	—	
Collector-Emitter Saturation Voltage		$V_{CE\,(sat)}$	I_C = 6A, I_B = 0.3A	—	0.3	0.5	V
Base-Emitter Saturation Voltage		$V_{BE\,(sat)}$	I_C = 6A, I_B = 0.3A	—	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	—	350	—	pF
Switching Time	Turn-on Time	t_{on}		—	0.5	—	μs
	Storage Time	t_{stg}		—	2.5		
	Fall Time	t_f	$I_{B1} = -I_{B2} = 0.3A$, DUTY CYCLE ≦ 1%	—	0.8	—	

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

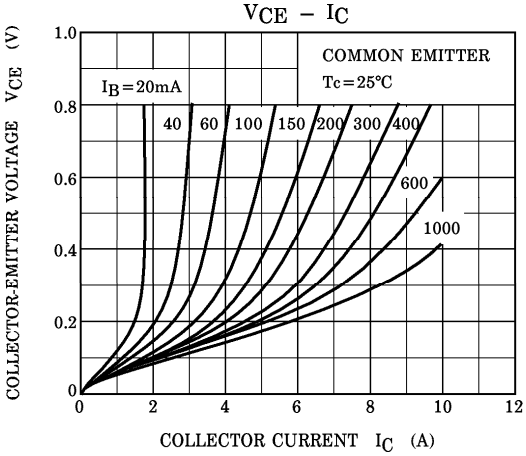
I_C – V_{CE}



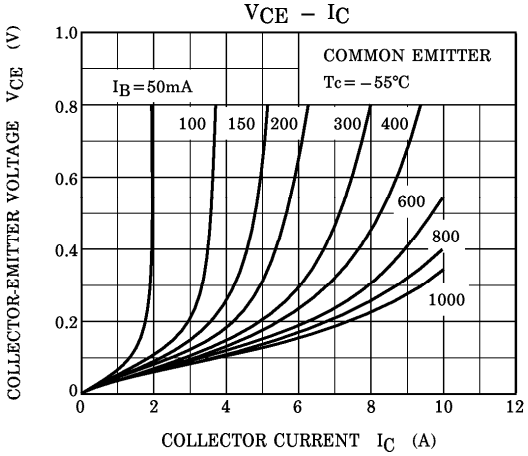
V_{CE} – I_C



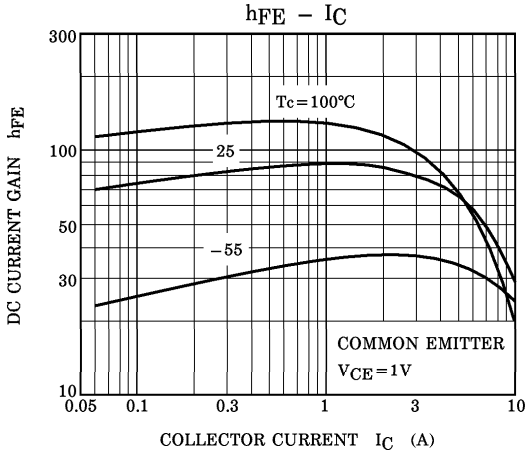
V_{CE} – I_C



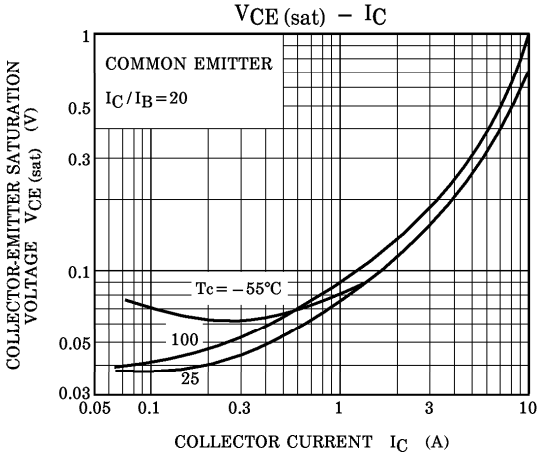
V_{CE} – I_C



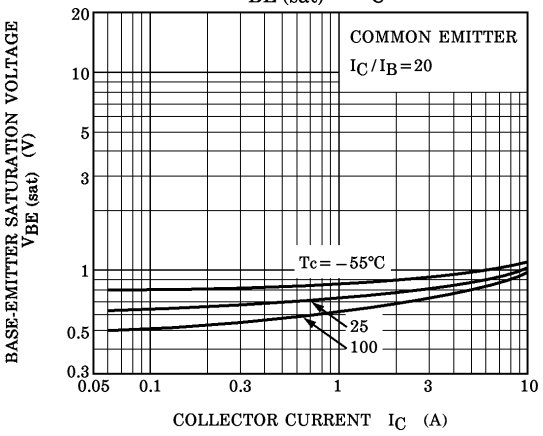
h_{FE} – I_C



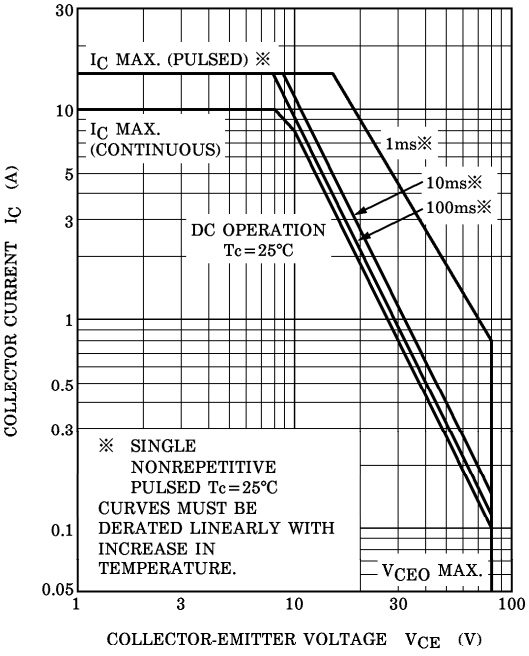
$V_{CE\,(sat)}$ – I_C



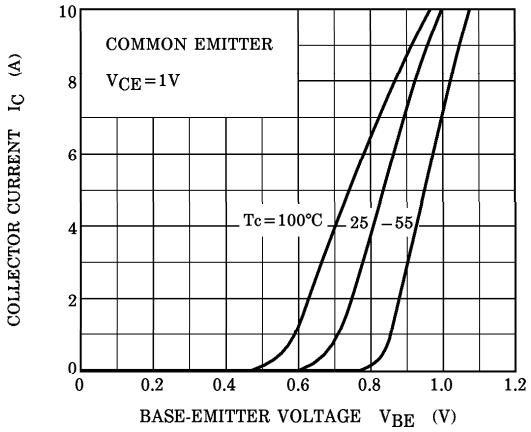
$V_{BE\,(sat)}$ – I_C



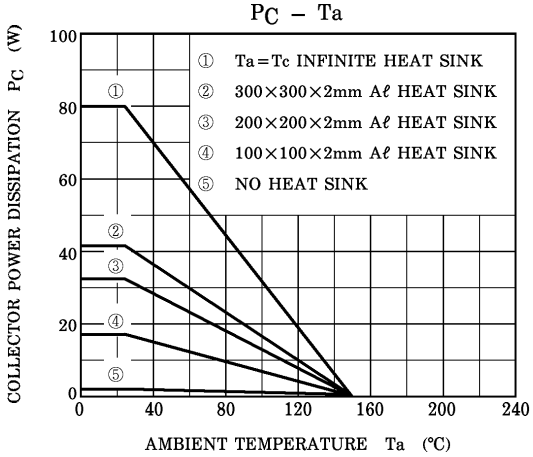
SAFE OPERATING AREA



I_C – V_{BE}



P_C – Ta



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