

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

2SD1160

SWITCHING APPLICATIONS

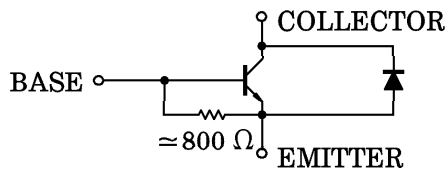
SUITABLE FOR MOTOR DRIVE APPLICATIONS

- High DC Current Gain
- Low Saturation Voltage : 0.6 V MAX.
- Built-in Free Wheel Diode

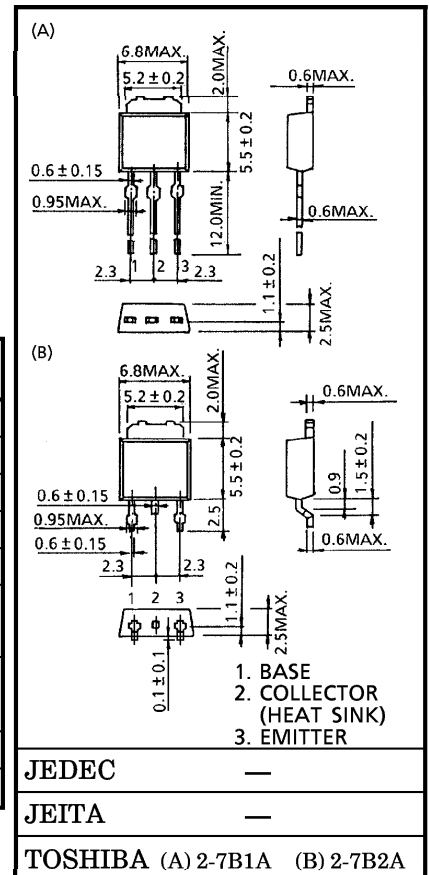
MAXIMUM RATINGS (T_c = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V _{CB0}	50	V
Collector-Emitter Voltage		V _{CEO}	20	V
Emitter-Base Voltage		V _{EB0}	6	V
Collector Current	DC	I _C	2	A
	Pulse	I _{CP}	4	A
Diode Forward Surge Current (t = 1 s)		I _{FP}	1	A
Collector Power Dissipation	T _a = 25°C	P _C	1.0	W
	T _c = 25°C		10	
Junction Temperature		T _j	150	°C
Storage Temperature Range		T _{stg}	-55~150	°C

EQUIVALENT CIRCUIT



Unit in mm

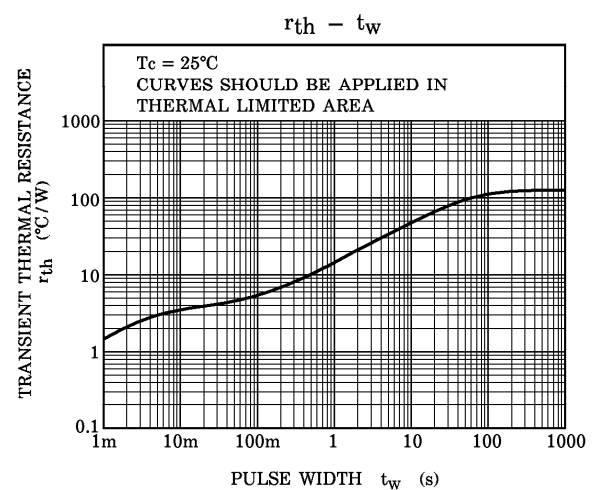
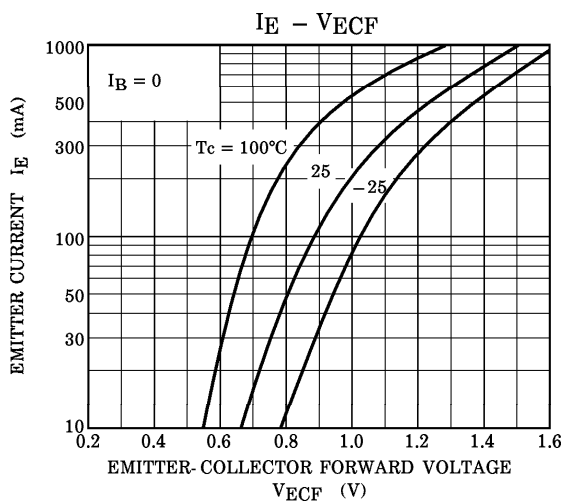
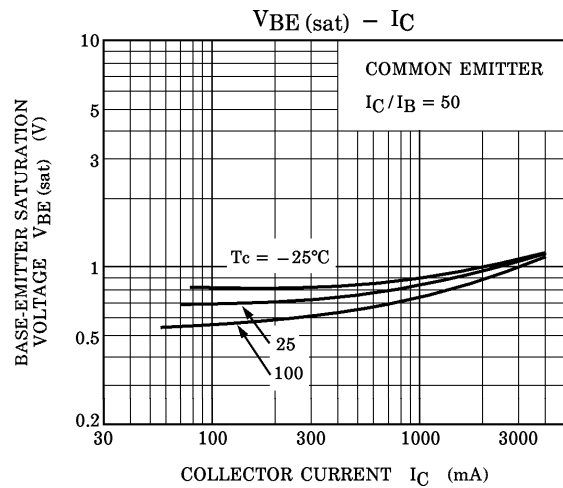
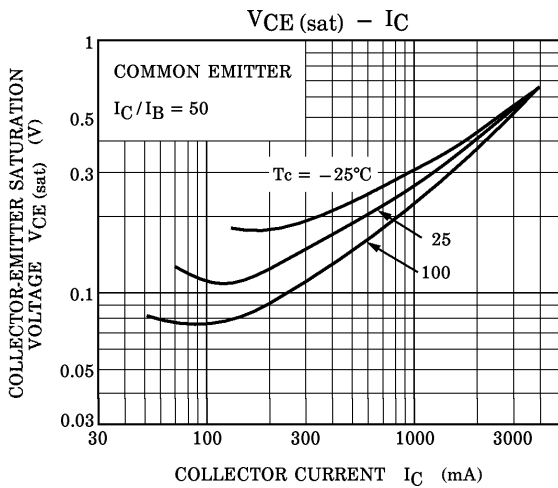
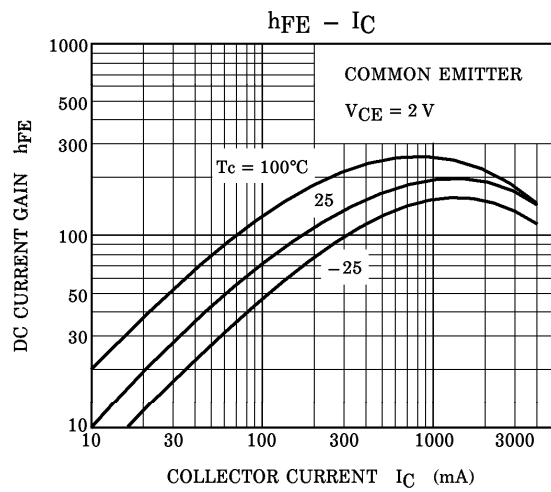
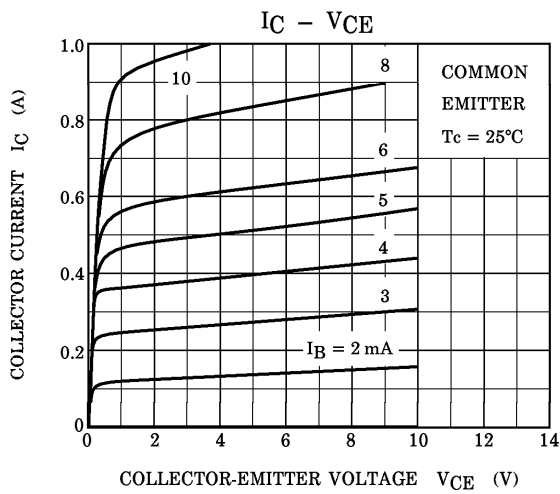


ELECTRICAL CHARACTERISTICS (T_c = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I _{CB0}	V _{CB} = 50 V, I _E = 0	—	—	1	μA
Emitter Cut-off Current	I _{EB0}	V _{EB} = 5 V, I _C = 0	2.5	6.25	15	mA
Collector-Emitter Sustaining Voltage	V _{CEO (SUS)}	I _C = 20 mA, L = 40 mH	20	—	—	V
DC Current Gain	h _{FE (1)} (Note)	V _{CE} = 2 V, I _C = 1 A	100	—	300	
DC Current Gain	h _{FE (2)}	V _{CE} = 2 V, I _C = 2 A	60	—	—	
Collector-Emitter Saturation Voltage	V _{CE (sat)}	I _C = 2 A, I _B = 40 mA	—	0.4	0.6	V
Base-Emitter Saturation Voltage	V _{BE (sat)}	I _C = 2 A, I _B = 40 mA	—	—	1.5	V
Diode Forward Voltage	V _{ECF}	I _E = 1 A, I _B = 0	—	—	2.0	V

(Note 1) : According to the value of h_{FE (1)}, 2SD1160 is classified as follows.

CLASSIFICATION	MIN.	MAX.
2SD1160-O	100	200
2SD1160-Y	150	300



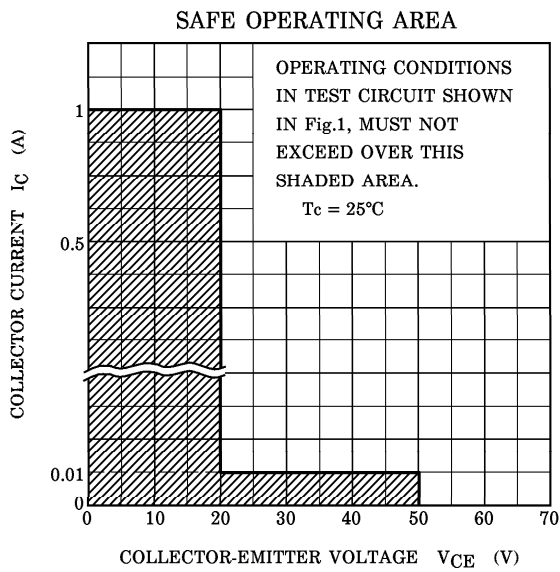
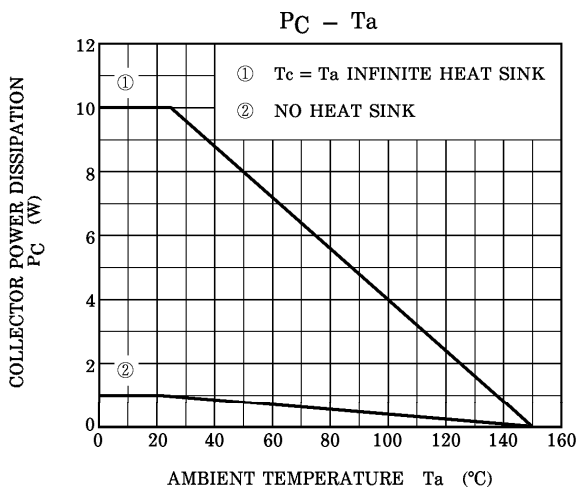
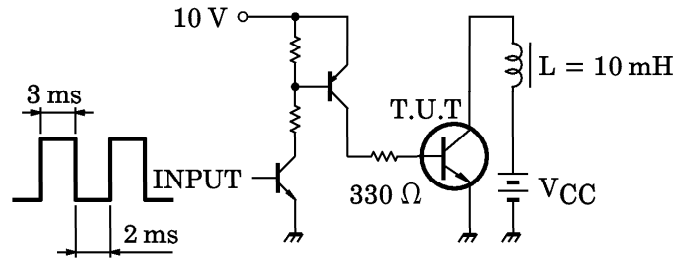


Fig.1 SAFE OPERATING AREA TEST CIRCUIT



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