TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS) (DARLINGTON)

2SD1140

MICRO MOTOR DRIVE, HAMMER DRIVE APPLICATIONS.

SWITCHING APPLICATIONS.

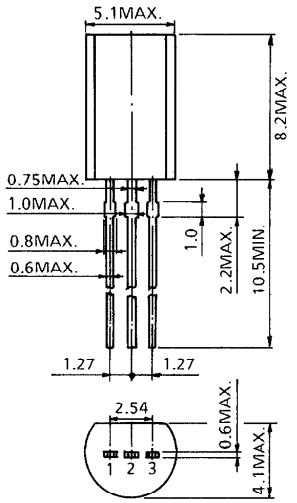
POWER AMPLIFIER APPLICATIONS.

- High DC Current Gain
  : h_{FE} = 4000 (Min.)
- Low Saturation Voltage
  : $V_{CE\ (sat)}$ = 1.5V (Max.)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	30	V
Collector-Emitter Voltage	V_{CEO}	30	V
Emitter-Base Voltage	V_{EBO}	10	V
Collector Current	I_C	1.5	A
Base Current	I_B	50	mA
Collector Power Dissipation	P_C	900	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	−55~150	°C

Unit in mm

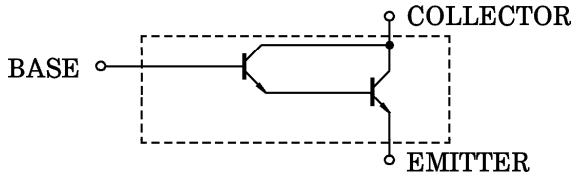


1. EMITTER
2. COLLECTOR
3. BASE

JEDEC	TO-92MOD
EIAJ	—
TOSHIBA	2-5J1A

Weight : 0.36g (Typ.)

EQUIVALENT CIRCUIT



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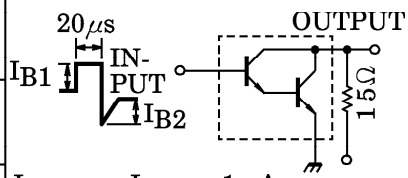
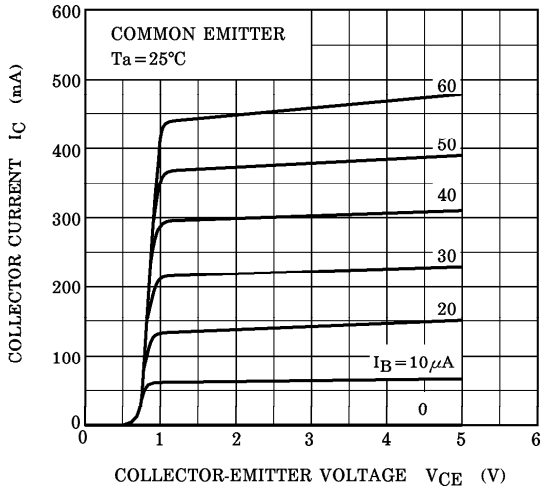
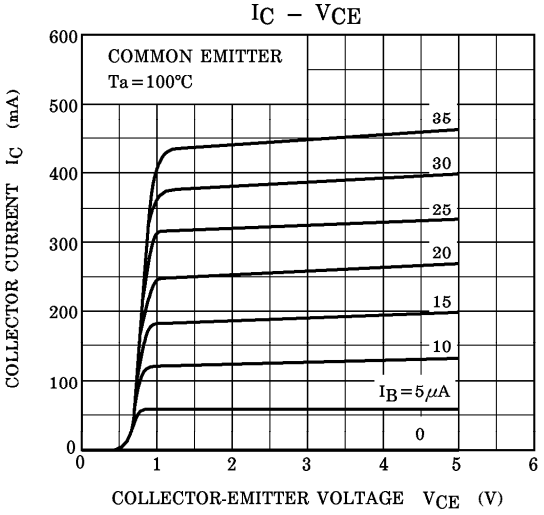
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	V_{CB} = 30V, I_E = 0	—	—	10	μA
Emitter Cut-off Current		I_{EBO}	V_{EB} = 10V, I_C = 0	—	—	10	μA
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	I_C = 10mA, I_B = 0	30	—	—	V
DC Current Gain		h_{FE}	V_{CE} = 2V, I_C = 150mA	4000	—	—	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C = 1A, I_B = 1mA	—	—	1.5	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	I_C = 1A, I_B = 1mA	—	—	2.2	V
Switching Time	Turn-on Time	t_{on}		—	0.2	—	μs
	Storage Time	t_{stg}		—	0.6	—	
	Fall Time	t_f	$I_{B(1)} = -I_{B(2)}$ = 1mA, DUTY CYCLE ≦ 1%, V_{CC} = 15V	—	0.3	—	

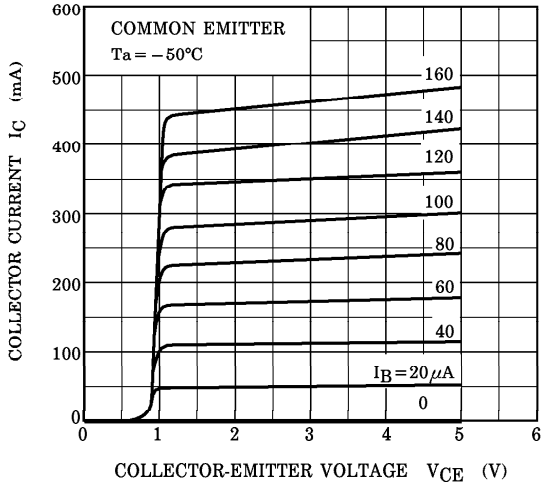
$I_C - V_{CE}$



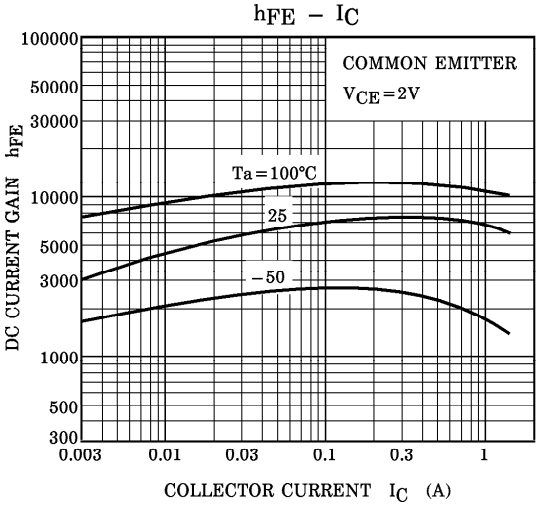
$I_C - V_{CE}$



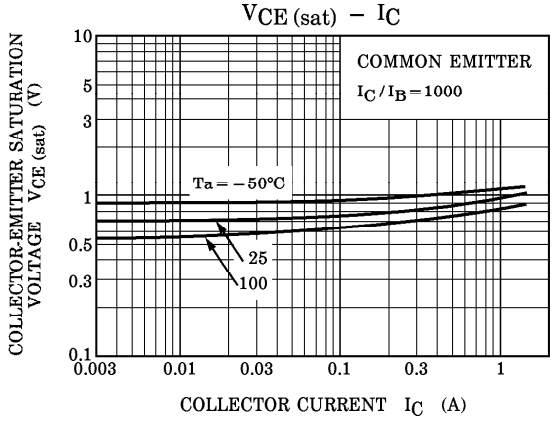
$I_C - V_{CE}$



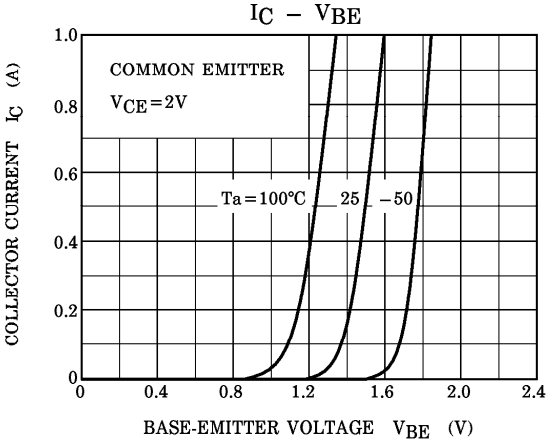
$h_{FE} - I_C$



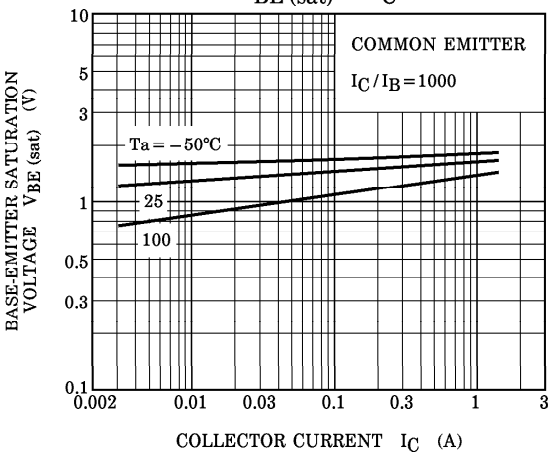
$V_{CE\,(sat)} - I_C$



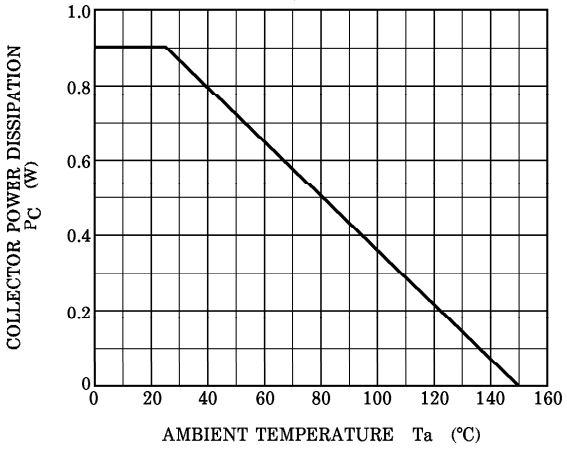
$I_C - V_{BE}$



$V_{BE\,(sat)}$ – I_C



P_C – Ta



SAFE OPERATING AREA