TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (DARLINGTON)

2SD1658

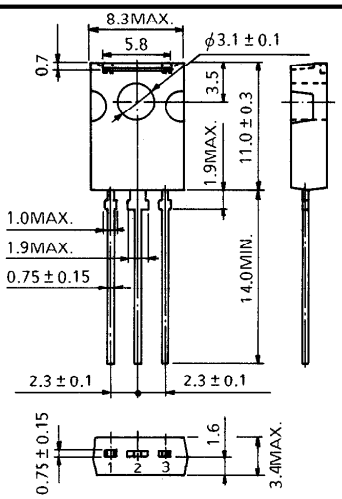
MICRO MOTOR DRIVE, HAMMER DRIVE APPLICATIONS

SWITCHING APPLICATIONS

POWER AMPLIFIER APPLICATIONS

- High DC Current Gain : h_{FE} = 2000 (Min.)
- Low Saturation Voltage
  : $V_{CE\ (sat)}$ = 1.5V (Max.)
- Zener Diode Included Between Collector and Base.

Unit in mm



1. EMITTER
2. COLLECTOR
3. BASE

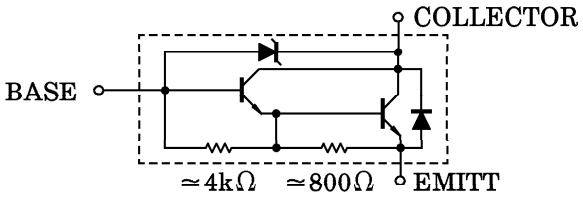
JEDEC	—
EIAJ	—
TOSHIBA	2-8H1A

Weight : 0.82g (Typ.)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	60±10	V
Collector-Emitter Voltage		V_{CEO}	60±10	V
Emitter-Base Voltage		V_{EBO}	8	V
Collector Current		I_C	2	A
Base Current		I_B	0.5	A
Collector Power Dissipation	Ta = 25°C	P_C	1.5	W
	Tc = 25°C		10	
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

EQUIVALENT CIRCUIT



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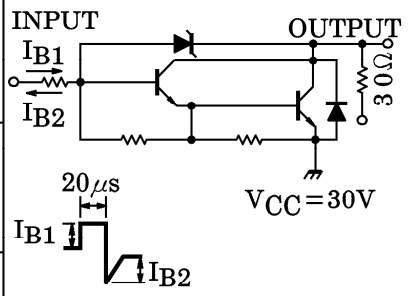
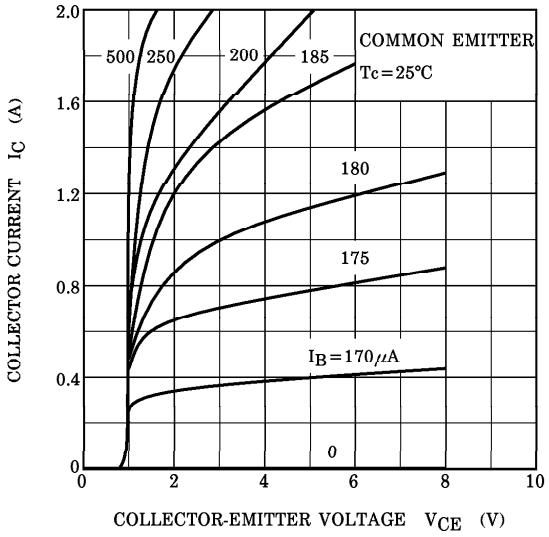
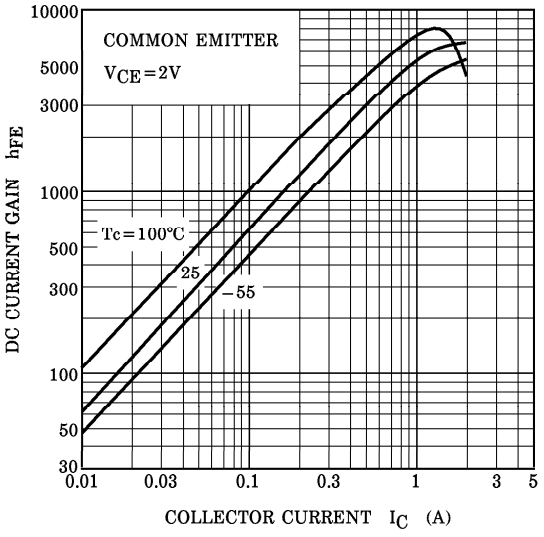
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	V_{CB} = 45V, I_E = 0	—	—	10	μA
Emitter Cut-off Current		I_{EBO}	V_{EB} = 8V, I_C = 0	—	—	4	mA
Collector-Emitter Breakdown Voltage		$V_{(BR)\,CEO}$	I_C = 10mA, I_B = 0	50	60	70	V
DC Current Gain		h_{FE}	V_{CE} = 2V, I_C = 1A	2000	—	—	
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	—	—	2.0	V
Transition Frequency		f_T	V_{CE} = 2V, I_C = 0.5A	—	100	—	MHz
Collector Output Capacitance		C_{ob}	V_{CB} = 10V, I_E = 0, f = 1MHz	—	20	—	pF
Switching Time	Turn-on Time	t_{on}	 $I_{B1} = -I_{B2}$ = 1mA, DUTY CYCLE ≦ 1%	—	0.4	—	μs
	Storage Time	t_{stg}		—	4.0	—	
	Fall Time	t_f		—	0.6	—	

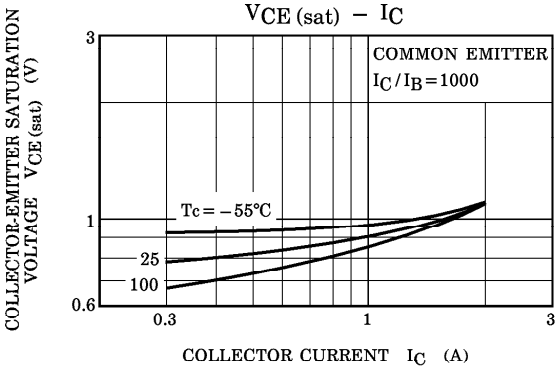
I_C – V_{CE}



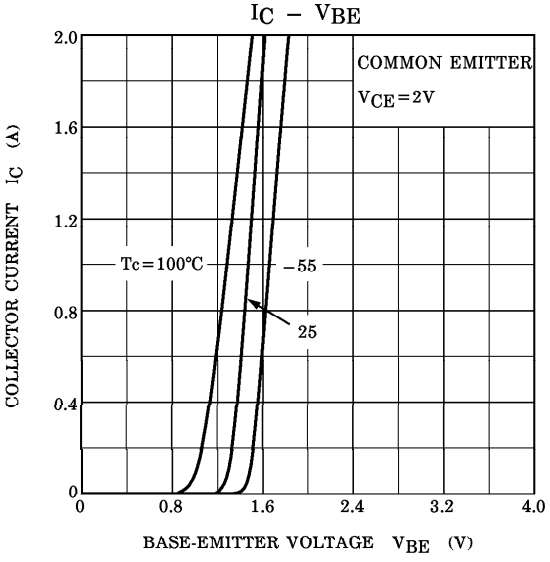
h_{FE} – I_C



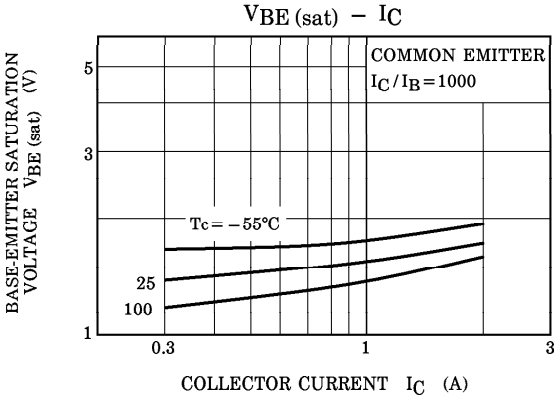
$V_{CE\,(sat)}$ – I_C



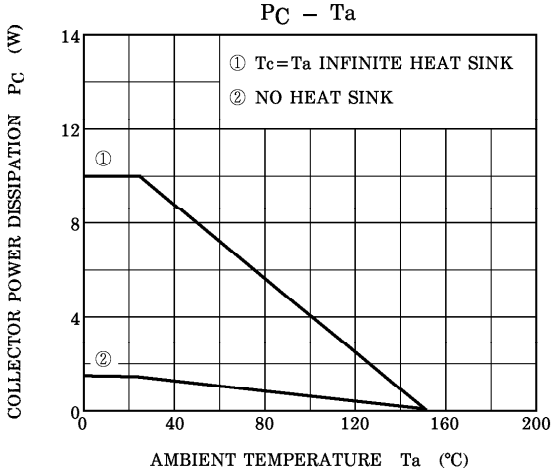
I_C – V_{BE}



$V_{BE\,(sat)}$ – I_C



P_C – Ta



SAFE OPERATING AREA