

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

# 2SD1223

SWITCHING APPLICATIONS

HAMMER DRIVE, PULSE MOTOR DRIVE APPLICATIONS

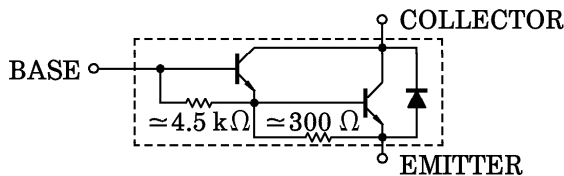
POWER AMPLIFIER APPLICATIONS

- High DC Current Gain  
:  $h_{FE(1)} = 2000$  (Min.)
- Low Saturation Voltage :  $V_{CE(sat)} = 1.5$  V (Max.)
- Complementary to 2SB908.

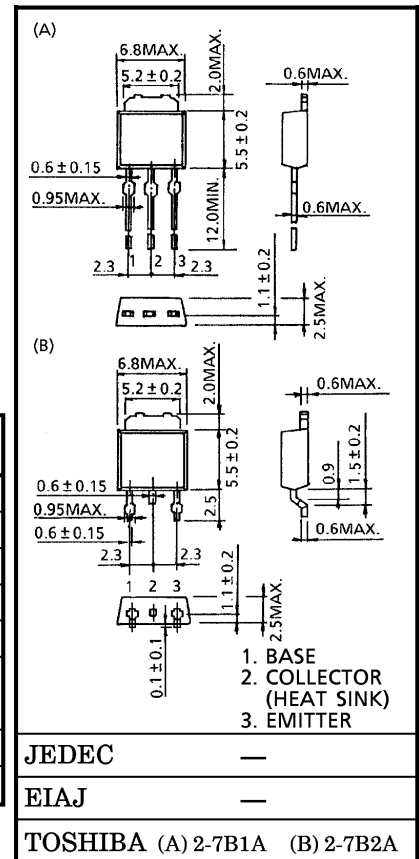
MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

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		$I_C$	4	A
Base Current		$I_B$	0.4	A
Collector Power	$T_a = 25^\circ\text{C}$	$P_C$	1.0	W
Dissipation	$T_c = 25^\circ\text{C}$		15	
Junction Temperature		$T_j$	150	$^\circ\text{C}$
Storage Temperature Range		$T_{stg}$	-55~150	$^\circ\text{C}$

EQUIVALENT CIRCUIT



Unit in mm

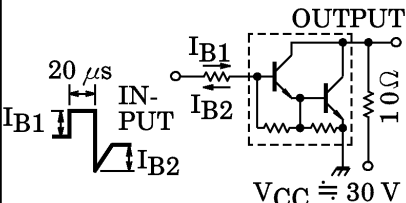


Weight : 0.36 g (Typ.)

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		$I_{CBO}$	$V_{CB} = 100\text{ V}, I_E = 0$	—	—	20	$\mu\text{A}$
Emitter Cut-off Current		$I_{EBO}$	$V_{EB} = 5\text{ V}, I_C = 0$	—	—	2.5	mA
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	$I_C = 10\text{ mA}, I_B = 0$	80	—	—	V
DC Current Gain		$h_{FE(1)}$	$V_{CE} = 2\text{ V}, I_C = 1\text{ A}$	2000	—	—	
		$h_{FE(2)}$	$V_{CE} = 2\text{ V}, I_C = 3\text{ A}$	1000	—	—	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = 3\text{ A}, I_B = 6\text{ mA}$	—	—	1.5	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	$I_C = 3\text{ A}, I_B = 6\text{ mA}$	—	—	2.0	V
Switching Time	Turn-on Time	$t_{on}$	 <p><math>I_{B1} = -I_{B2} = 6\text{ mA}</math>, DUTY CYCLE <math>\leq 1\%</math></p>	—	0.2	—	$\mu\text{s}$
	Storage Time	$t_{stg}$		—	1.5	—	
	Fall Time	$t_f$		—	0.6	—	

