

TOSHIBA TRANSISTOR SILICON PNP EPITAXIAL TYPE (PCT PROCES)

# 2SA1681

POWER AMPLIFIER APPLICATIONS

POWER SWITCHING APPLICATIONS

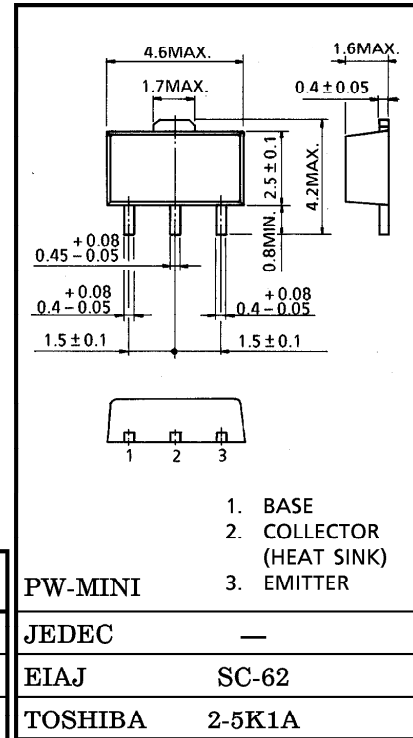
- Low Saturation Voltage :  $V_{CE(sat)} = -0.5V$  (Max.)  
( $I_C = -1A$ )
- High Speed Switching Time:  $t_{stg} = 300ns$  (Typ.)
- Small Flat Package
- $P_C = 1 \sim 2W$  (Mounted on Ceramic Substrate)
- Complementary to 2SC4409

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CBO}$	-60	V
Collector-Emitter Voltage	$V_{CEO}$	-50	V
Emitter-Base Voltage	$V_{EBO}$	-6	V
Collector Current	$I_C$	-2	A
Base Current	$I_B$	-0.2	A
Collector Power Dissipation	$P_C$	500	mW
Collector Power Dissipation	$P_C^*$	1000	mW
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55~150	$^\circ C$

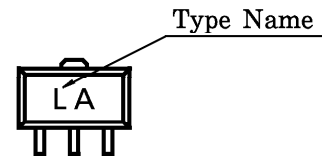
\* : Mounted on ceramic substrate (250mm<sup>2</sup>×0.8t)

Unit in mm



Weight : 0.05g

Marking



961001EAA2

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		ICBO	V <sub>CB</sub> = -60V, I <sub>E</sub> = 0	—	—	-0.1	μA
Emitter Cut-off Current		IEBO	V <sub>EB</sub> = -6V, I <sub>C</sub> = 0	—	—	-0.1	μA
Collector-Emitter Breakdown Voltage		V (BR) CEO	I <sub>C</sub> = -10mA, I <sub>B</sub> = 0	-50	—	—	V
DC Current Gain		h <sub>FE</sub> (1)	V <sub>CE</sub> = -2V, I <sub>C</sub> = -100mA	120	—	400	
		h <sub>FE</sub> (2)	V <sub>CE</sub> = -2V, I <sub>C</sub> = -1.5A	40	—	—	
Collector-Emitter Saturation Voltage		V <sub>CE</sub> (sat)	I <sub>C</sub> = -1A, I <sub>B</sub> = -0.05A	—	—	-0.5	V
Base-Emitter Saturation Voltage		V <sub>BE</sub> (sat)	I <sub>C</sub> = -1A, I <sub>B</sub> = -0.05A	—	—	-1.2	V
Transition Frequency		f <sub>T</sub>	V <sub>CE</sub> = -2V, I <sub>C</sub> = -100mA	—	100	—	MHz
Collector Output Capacitance		C <sub>ob</sub>	V <sub>CB</sub> = -10V, I <sub>E</sub> = 0, f = 1MHz	—	23	—	pF
Switching Time	Turn-on Time	t <sub>on</sub>	<p> <math>20\mu s</math>  <math>-I_{B1} = I_{B2} = 0.05A</math>                      DUTY CYCLE <math>\leq 1\%</math> </p>	—	0.1	—	μs
	Storage Time	t <sub>stg</sub>		—	0.3	—	
	Fall Time	t <sub>f</sub>		—	0.1	—	

