

TOSHIBA TRANSISTOR SILICON PNP EPITAXIAL TYPE (PCT PROCESS)

# 2SA1933

HIGH CURRENT SWITCHING APPLICATIONS

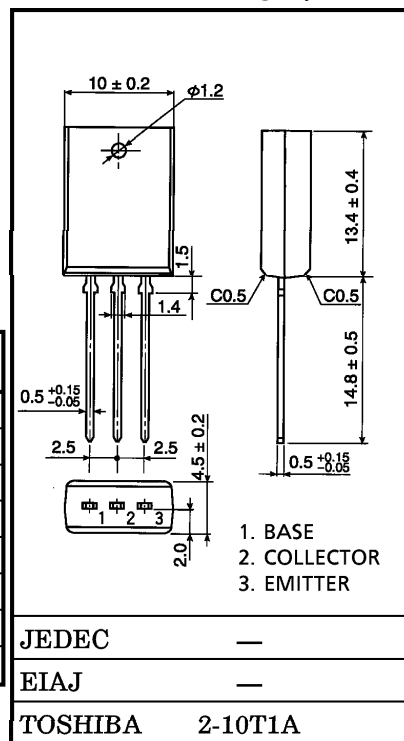
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Saturation Voltage  
:  $V_{CE(sat)} = -0.4V$  (Max.) at  $I_C = -3A$
- High Speed Switching Time :  $t_{stg} = 1.0\mu s$  (Typ.)
- Complementary to 2SC5175

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	$V_{EBO}$	-5	V
Collector Current	$I_C$	-5	A
Base Current	$I_B$	-1	A
Collector Power Dissipation	$P_C$	1.8	W
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55~150	$^\circ C$



ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )

Weight : 1.5g

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		$I_{CBO}$	$V_{CB} = -50V, I_E = 0$	—	—	-1	$\mu A$
Emitter Cut-off Current		$I_{EBO}$	$V_{EB} = -5V, I_C = 0$	—	—	-1	$\mu A$
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	$I_C = -10mA, I_B = 0$	-50	—	—	V
DC Current Gain		$h_{FE(1)}$	$V_{CE} = -1V, I_C = -1A$	100	—	320	
		$h_{FE(2)}$	$V_{CE} = -1V, I_C = -3A$	30	—	—	
Saturation Voltage	Collector-Emitter	$V_{CE(sat)}$	$I_C = -3A, I_B = -0.15A$	—	-0.2	-0.4	V
	Base-Emitter	$V_{BE(sat)}$	$I_C = -3A, I_B = -0.15A$	—	-0.9	-1.2	
Transition Frequency		$f_T$	$V_{CE} = -4V, I_C = -1A$	—	60	—	MHz
Collector Output Capacitance		$C_{ob}$	$V_{CB} = -10V, I_E = 0, f = 1MHz$	—	170	—	pF
Switching Time	Turn-on Time	$t_{on}$		—	0.1	—	$\mu s$
	Storage Time	$t_{stg}$		—	1.0	—	
	Fall Time	$t_f$		—	0.1	—	

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