

**TOSHIBA**

**2SC3709A**

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

# 2SC3709A

HIGH CURRENT SWITCHING APPLICATIONS

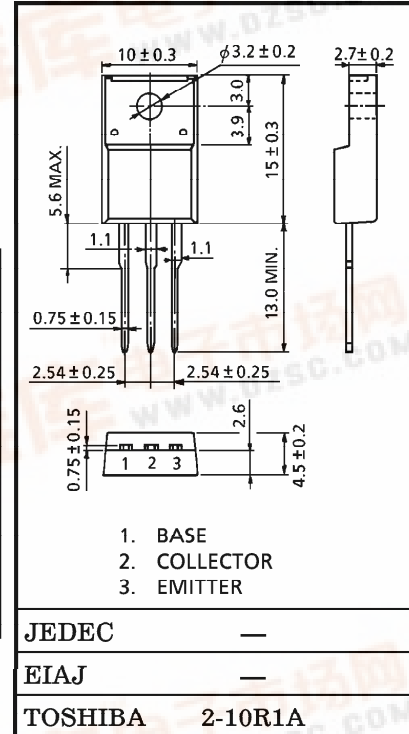
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Collector Saturation Voltage :  $V_{CE(sat)} = 0.4V$  (Max.)
- High Speed Switching Time :  $t_{stg} = 1.0\mu s$  (Typ.)
- Complementary to 2SA1451A

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	$I_C$	12	A
Base Current	$I_B$	2	A
Collector Power Dissipation ( $T_c = 25^\circ C$ )	$P_C$	30	W
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55~150	$^\circ C$



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT			
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 60V, I_E = 0$	—	—	10	$\mu A$			
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = 6V, I_C = 0$	—	—	10	$\mu A$			
Collector-Emitter Breakdown Voltage	$V_{(BR) CEO}$	$I_C = 50mA, I_B = 0$	50	—	—	V			
DC Current Gain	$h_{FE(1)}$ (Note)	$V_{CE} = 1V, I_C = 1A$	70	—	240				
	$h_{FE(2)}$	$V_{CE} = 1V, I_C = 6A$	40	—	—				
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 6A, I_B = 0.3A$	—	0.25	0.4	V			
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 6A, I_B = 0.3A$	—	0.9	1.2	V			
Transition Frequency	$f_T$	$V_{CE} = 5V, I_C = 1A$	—	90	—	MHz			
Collector Output Capacitance	$C_{ob}$	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	180	—	pF			
Switching Time	Turn-on Time	$t_{on}$				—	0.2	—	$\mu s$
	Storage Time	$t_{stg}$				—	1.0	—	
	Fall Time	$t_f$				$I_{B1} = -I_{B2} = 0.3A,$ $DUTY\ CYCLE \leq 1\%$	—	0.2	

(Note)  $h_{FE(1)}$  Classification    O : 70~140,    Y : 120~240

