

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

2SD1412A

HIGH CURRENT SWITCHING APPLICATIONS

POWER AMPLIFIER APPLICATIONS

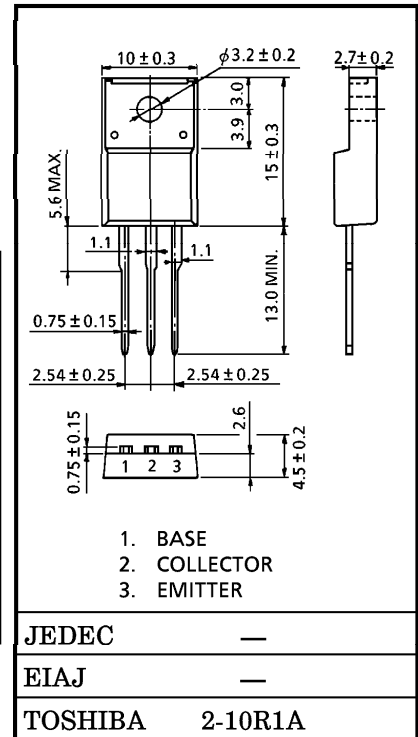
INDUSTRIAL APPLICATIONS

Unit in mm

- Low Saturation Voltage : $V_{CE(sat)} = 0.4V$ (Max.) at $I_C = 4A$

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CB0}	70	V
Collector-Emitter Voltage	V_{CE0}	50	V
Emitter-Base Voltage	V_{EB0}	5	V
Collector Current	I_C	7	A
Base Current	I_B	1	A
Collector Power	P_C	2.0	W
Dissipation		30	
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}	$V_{CB} = 70V, I_E = 0$	—	—	30	μA	
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 5V, I_C = 0$	—	—	50	μA	
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		
	$h_{FE} (2)$	$V_{CE} = 1V, I_C = 4A$	30	—	—		
Collector-Emitter Saturation Voltage	$V_{CE} (sat)$	$I_C = 4A, I_B = 0.4A$	—	0.2	0.4	V	
Base-Emitter Saturation Voltage	$V_{BE} (sat)$	$I_C = 4A, I_B = 0.4A$	—	0.9	1.2	V	
Transition Frequency	f_T	$V_{CE} = 4V, I_C = 1A$	—	10	—	MHz	
Collector Output Capacitance	C_{ob}	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	250	—	pF	
Switching Time	Turn-on Time	t_{on}		—	0.2	—	μs
	Storage Time	t_{stg}		—	2.5	—	
	Fall Time	t_f		$I_{B1} = -I_{B2} = 0.3A,$ $DUTY\ CYCLE \leq 1\%$	—	0.5	

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

