

HITACHI TRANSISTORS

For Horizontal Deflection Output of Color TV

2SC1413

2SC1413A

The Hitachi 2SC1413 and 2SC1413A are silicon NPN triple diffused type power transistor specifically designed for the horizontal output stage in power-transformer-less television receivers.

Featuring high collector to base breakdown voltage of 1500V, low saturation voltage up to 5A, and large area of safe operation, this transistor is intended for use as deflecting 20 inches color picture tube with 110 degrees of deflection angle.

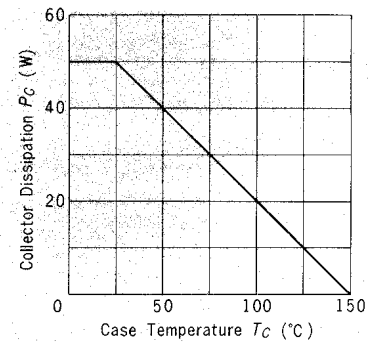
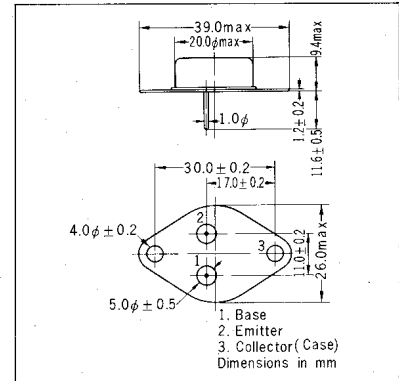
ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

Item	Symbol	2SC1413	2SC1413A	Unit
Collector to Base Voltage	V_{CB0}	1200	1500	V
Collector to Emitter Voltage	V_{CEO}	500	500	V
Emitter to Base Voltage	V_{EBO}	6	6	V
Collector Current	I_C	5	5	A
Peak Collector Current	$i_{C(peak)}$	16	16	A
Collector Dissipation *	P_C	50	50	W
Collector Dissipation **	P_C	20	20	W
Junction Temperature	T_j	150	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-45~+150	-45~+150	$^\circ\text{C}$
Lead Temperature ***	T_l	230	230	$^\circ\text{C}$

* Value at $T_C=25^\circ\text{C}$

** Value when attach on the heat sink plate (200mmx300mmx1.5mm aluminium)

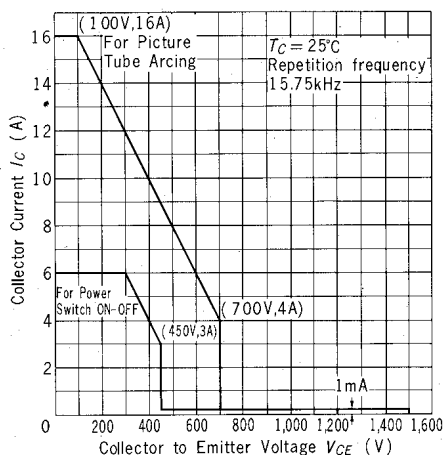
*** Value at distance not closer than 1mm to seating plate for 10 sec. max.



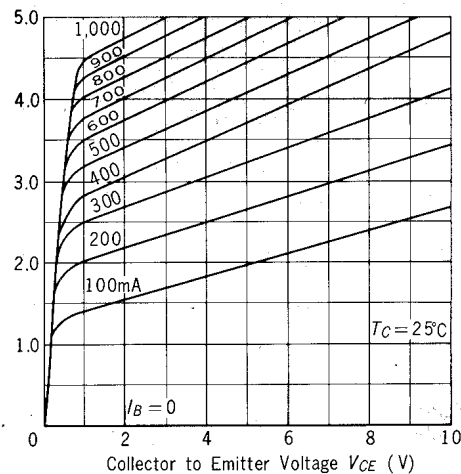
Maximum Collector Dissipation Curve

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

Item	Symbol	Test Conditions	2SC1413			2SC1413 A			Unit
			min.	typ.	max.	min.	typ.	max.	
Collector to Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=10\text{mA}, R_{BE}=\infty$	500	-	-	500	-	-	V
Emitter to Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\text{mA}, I_C=0$	6	-	-	6	-	-	V
Collector Cut-off Current	I_{CBX}	$V_{CB}=1200\text{V}, V_{EB}=1.5\text{V}$	-	-	1	-	-	-	mA
		$V_{CB}=1500\text{V}, V_{EB}=1.5\text{V}$	-	-	-	-	-	1	mA
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=5\text{A}, I_B=1.2\text{A}$	-	-	10	-	-	10	V
Base to Emitter Voltage	V_{BE}	$I_C=5\text{A}, I_B=1.2\text{A}$	-	-	2	-	-	2	V
Fall Time	t_f	$I_C=3\text{A}, I_{B1}=0.9\text{A}, I_{B2}=-1.2\text{A}, L_B=10\mu\text{H}$	-	-	1	-	-	1	μs



Area of Safe Operation



Typical Output Characteristics (1)

Silicon NPN Power Transistors

2SC1413A

DESCRIPTION

- With TO-3 package
- High voltage ,high speed

APPLICATIONS

- For TV horizontal deflection output applications

PINNING(see fig.2)

PIN	DESCRIPTION
1	Base
2	Emitter
3	Collector

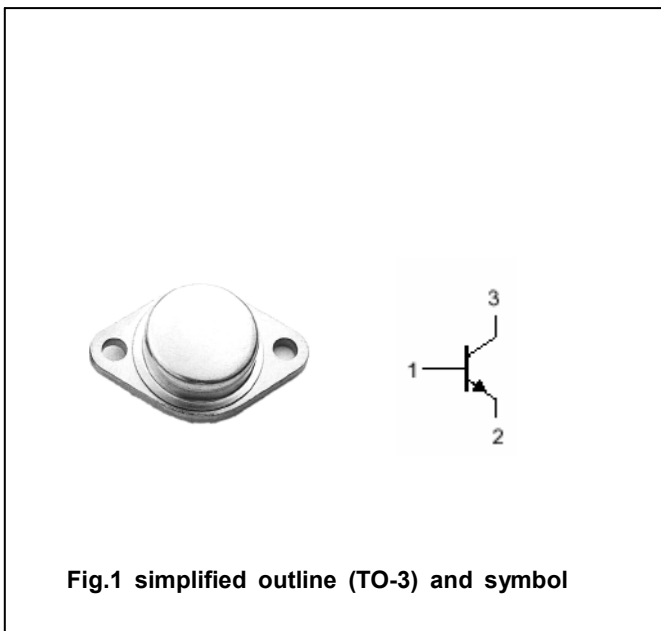


Fig.1 simplified outline (TO-3) and symbol

Absolute maximum ratings(Ta=□)

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V _{CBO}	Collector-base voltage	Open emitter	1500	V
V _{CEO}	Collector-emitter voltage	Open base	500	V
V _{EBO}	Emitter-base voltage	Open collector	5	V
I _C	Collector current		5	A
P _T	Total power dissipation	T _C =25□	50	W
T _j	Junction temperature		150	□
T _{stg}	Storage temperature		-55~150	□

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2SC1413A

CHARACTERISTICS

T_j=25 °C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V _{CEO(SUS)}	Collector-emitter sustaining voltage	I _C =0.1A; I _B =0	500			V
V _{(BR)EBO}	Emitter-base breakdown voltage	I _E =1.0mA; I _C =0	5			V
V _{CEsat}	Collector-emitter saturation voltage	I _C =5 A; I _B =1.2 A			10	V
V _{BEsat}	Base-emitter saturation voltage	I _C =5 A; I _B =1.2 A			2	V
I _{CBO}	Collector cut-off current	V _{CB} =1500V; I _E =0			1.0	mA
I _{EBO}	Emitter cut-off current	V _{EB} =5V; I _C =0			1.0	mA
h _{FE}	DC current gain	I _C =1A; V _{CE} =5V	8			

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PACKAGE OUTLINE

