



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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Features

- $BV_{CEO} > -50V$
- $I_C = -2A$ high Continuous Collector Current
- High Gain Holds up
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

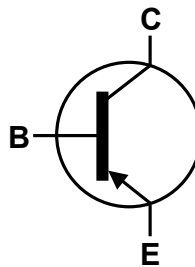
Mechanical Data

- Case: SOT89
- Case material: Molded Plastic. "Green" Molding Compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 
- Weight: 0.052 grams (Approximate)

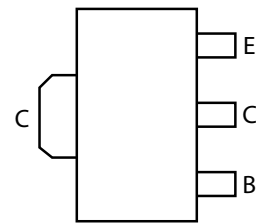
SOT89



Top View



Device Symbol



Top View
Pin Out

Ordering Information (Notes 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
2DA12130-13	P25X	13	12	2,500
2DA1213Y-13	P25Y	13	12	2,500
2DA1213Y-13R	P25Y	13	12	4,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>

Marking Information



xxxx = Product Type Marking Code:
P25X = 2DA12130
P25Y = 2DA1213Y
YWW = Date Code Marking
Y = Last digit of year (ex: 1 = 2011)
WW = Week code 01 - 53

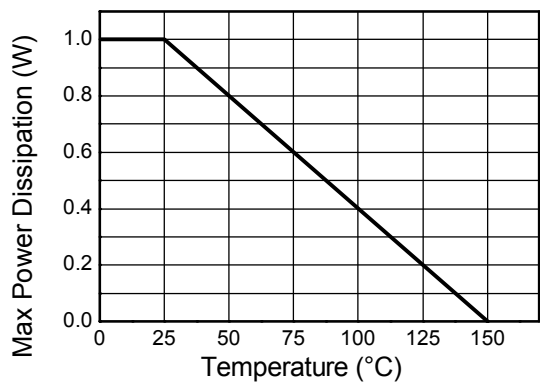
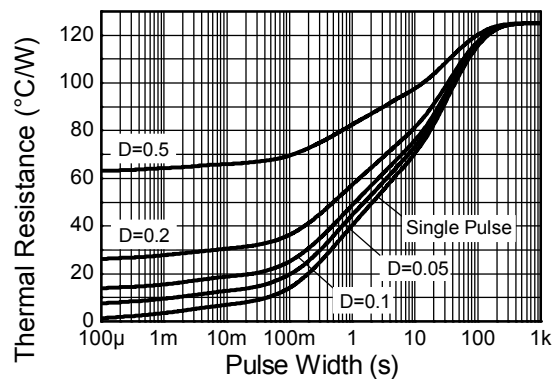
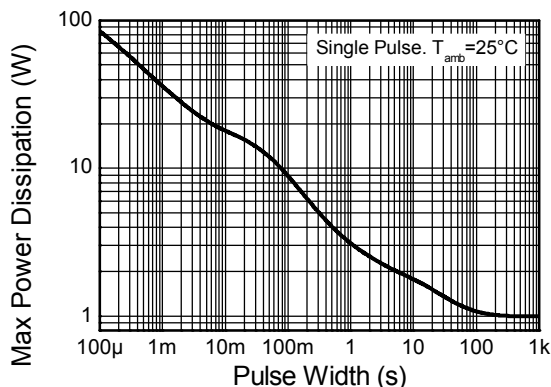
Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-50	V
Collector-Emitter Voltage	V _{CEO}	-50	V
Emitter-Base Voltage	V _{EBO}	-6	V
Continuous Collector Current	I _C	-2	A
Peak Pulse Current	I _{CM}	-2.5	A
Base Current	I _B	-500	mA

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	1	W
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	125	°C/W
Thermal Resistance, Junction to Leads (Note 6)	R _{θJL}	18.3	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Notes: 5. For a device surface mounted on 15mm x 15mm x 0.6mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in steady state condition.
 6. Thermal resistance from junction to solder-point (on the exposed collector pad).

Thermal Characteristics and Derating Information

Derating Curve

Transient Thermal Impedance

Pulse Power Dissipation

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	—	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 7)	BV_{CEO}	-50	—	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-6	—	—	V	$I_E = -100\mu\text{A}$
Collector Cut-off Current	I_{CBO}	—	—	-100	nA	$V_{CB} = -50\text{V}$
Emitter Cut-off Current	I_{EBO}	—	—	-100	nA	$V_{EB} = -5\text{V}$
DC Current Gain (Note 8)	2DA12130	70	—	140	—	$I_C = -500\text{mA}$, $V_{CE} = -2\text{V}$
	2DA1213Y	120	—	240	—	$I_C = -500\text{mA}$, $V_{CE} = -2\text{V}$
	2DA12130, 2DA1213Y	20	—	—	—	$I_C = -2\text{A}$, $V_{CE} = -2\text{V}$
Collector-Emitter Saturation Voltage (Note 7)	$V_{CE(sat)}$	—	—	-0.5	V	$I_C = -1\text{A}$, $I_B = -50\text{mA}$
Base-Emitter Turn-On Voltage (Note 7)	$V_{BE(sat)}$	—	—	-1.2	V	$I_C = -1\text{A}$, $I_B = -50\text{mA}$
Transition Frequency	f_T	—	160	—	MHz	$I_C = -100\text{mA}$, $V_{CE} = -2\text{V}$, $f = 100\text{MHz}$
Output Capacitance	C_{obo}	—	17	—	pF	$V_{CB} = -10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$
Turn-On Time	t_{on}	—	25	—	ns	$V_{CE} = -2\text{V}$, $I_C = -1\text{A}$, $I_{B1} = -I_{B2} = -50\text{mA}$
Storage Time	$t_{(s)}$	—	130	—	ns	
Fall Time	$t_{(f)}$	—	12	—	ns	

Note: 7. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

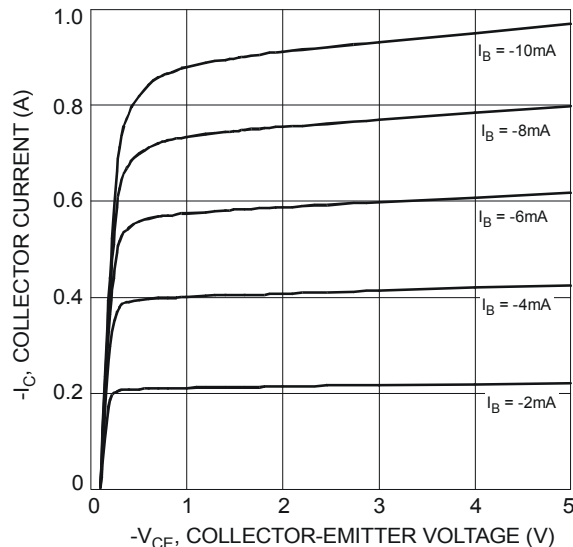


Figure 1 Typical Collector Current vs. Collector-Emitter Voltage

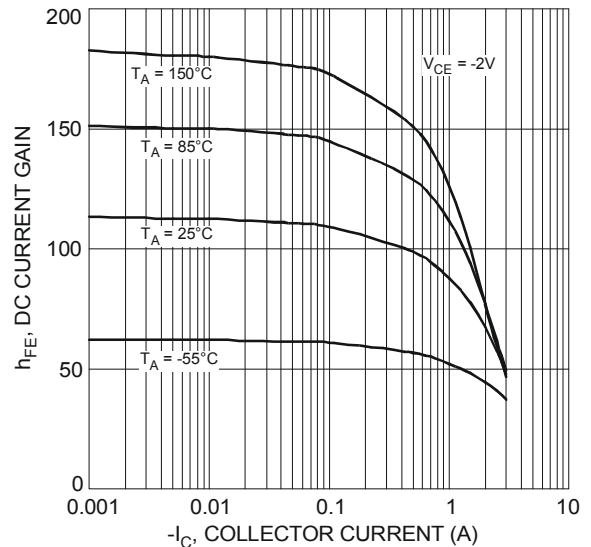


Figure 2 Typical DC Current Gain vs. Collector Current (2DA12130)

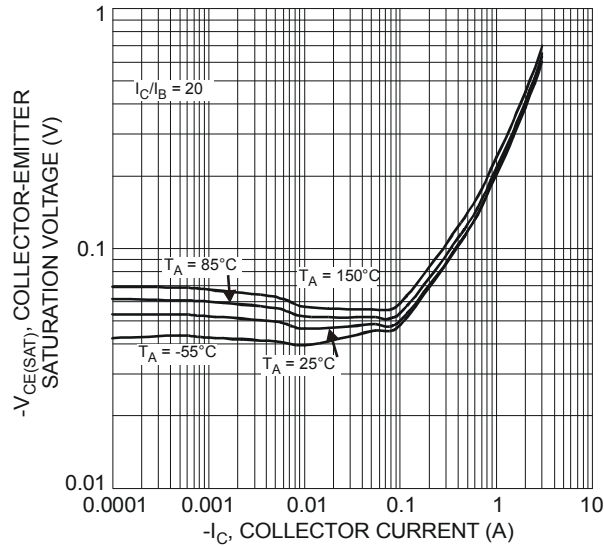


Figure 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

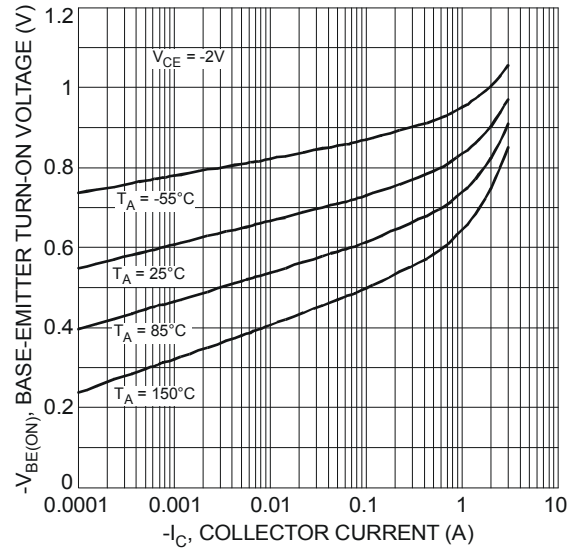


Figure 4 Typical Base-Emitter Turn-On Voltage vs. Collector Current

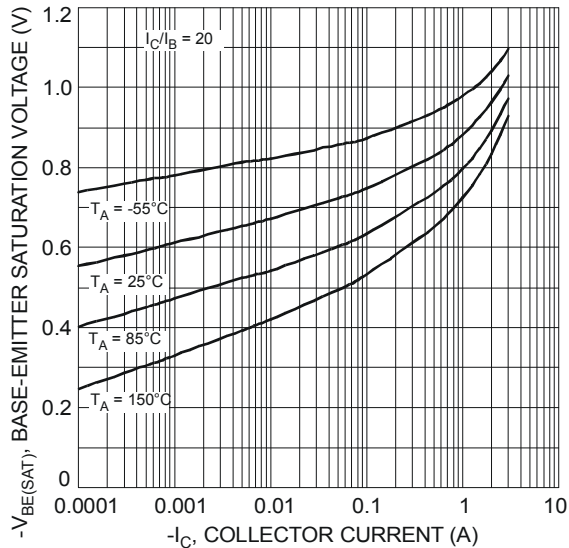


Figure 5 Typical Base-Emitter Saturation Voltage vs. Collector Current

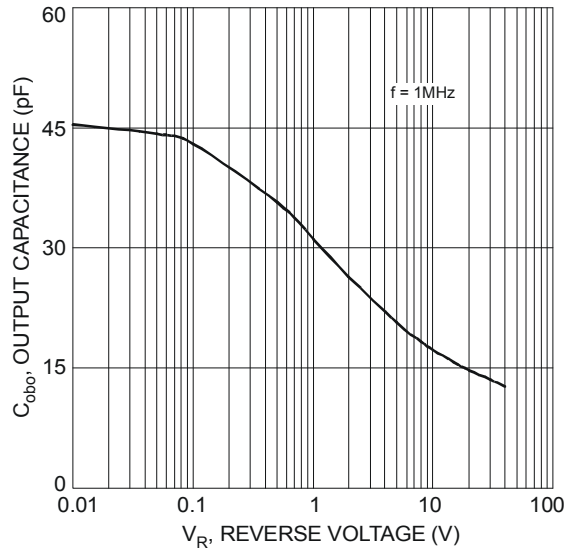


Figure 6 Typical Output Capacitance Characteristics

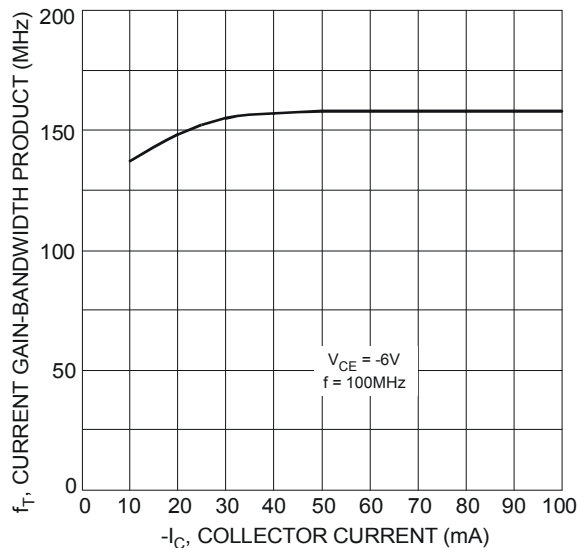
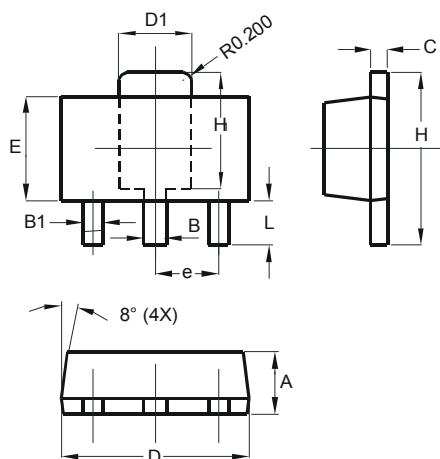


Figure 7 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

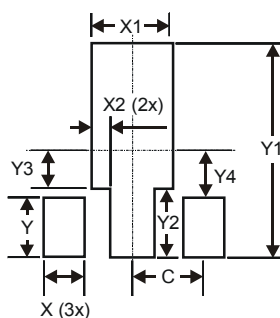
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SOT89		
Dim	Min	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.44
D	4.40	4.60
D1	1.62	1.83
E	2.29	2.60
e	1.50 Typ	
H	3.94	4.25
H1	2.63	2.93
L	0.89	1.20
All Dimensions in mm		

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
X	0.900
X1	1.733
X2	0.416
Y	1.300
Y1	4.600
Y2	1.475
Y3	0.950
Y4	1.125
C	1.500

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