

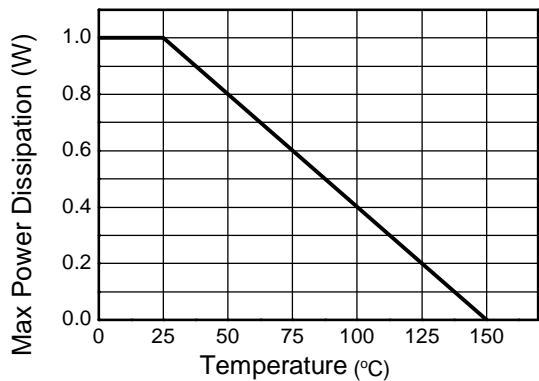
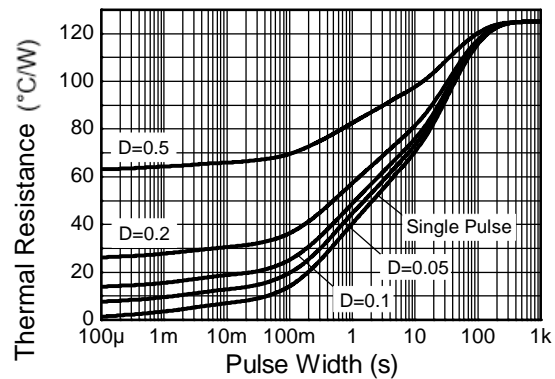
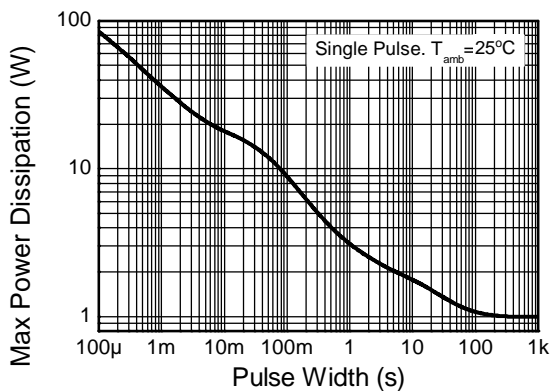
**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	-50	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-50	V
Emitter-Base Voltage	V <sub>EB0</sub>	-6	V
Continuous Collector Current	I <sub>C</sub>	-2	A
Peak Pulse Current	I <sub>CM</sub>	-2.5	A
Base Current	I <sub>B</sub>	-500	mA

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	1	W
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	125	°C/W
Thermal Resistance, Junction to Leads (Note 6)	R <sub>θJL</sub>	18.3	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-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 7)	2DA1213O	70	—	140	—	$I_C = -500\text{mA}$ , $V_{CE} = -2\text{V}$
	2DA1213Y	120		240		$I_C = -500\text{mA}$ , $V_{CE} = -2\text{V}$
	2DA1213O, 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  $\leq 2\%$ .

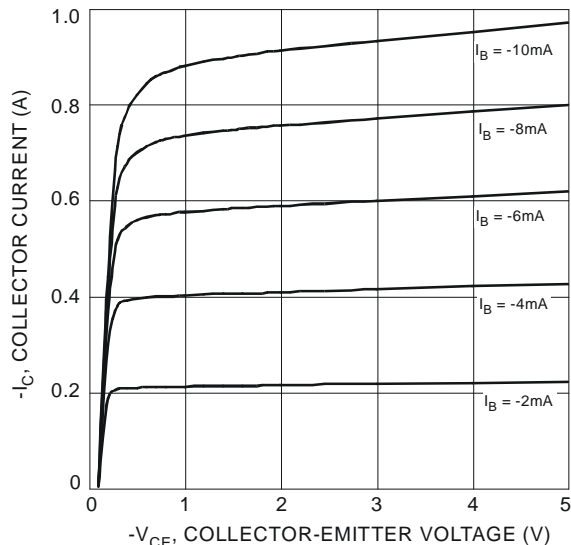
**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)


Figure 1 Typical Collector Current vs. Collector-Emitter Voltage

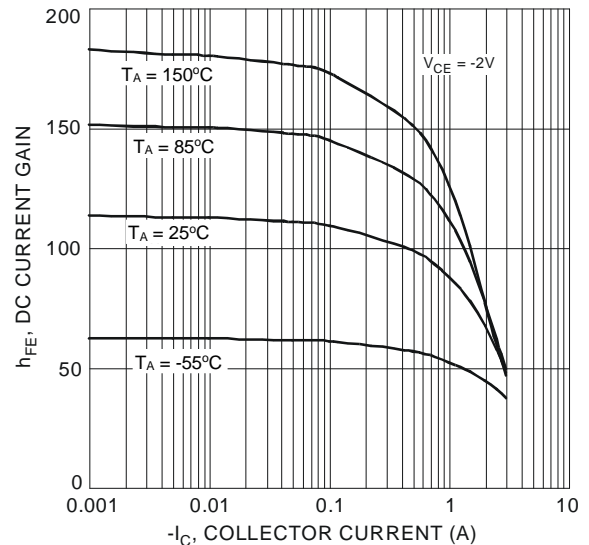


Figure 2 Typical DC Current Gain vs. Collector Current (2DA1213O)

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

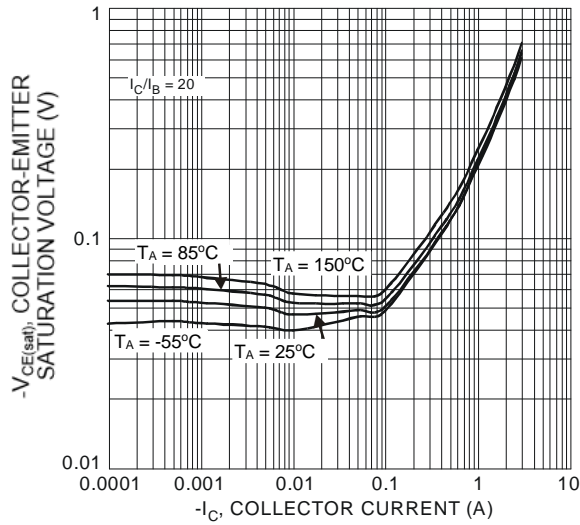


Figure 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

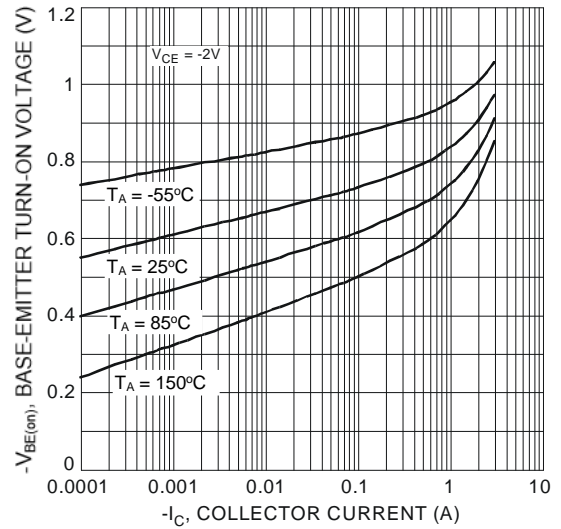


Figure 4 Typical Base-Emitter Turn-On Voltage vs. Collector Current

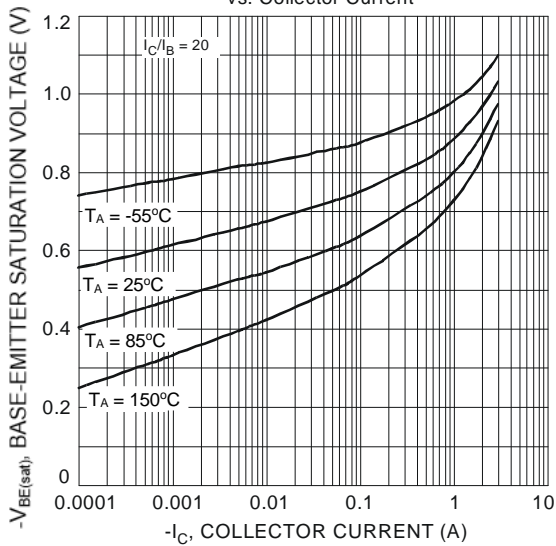


Figure 5 Typical Base-Emitter Saturation Voltage vs. Collector Current

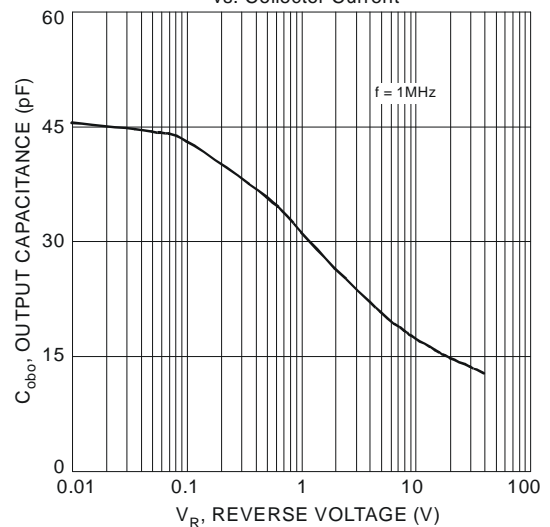


Figure 6 Typical Output Capacitance Characteristics

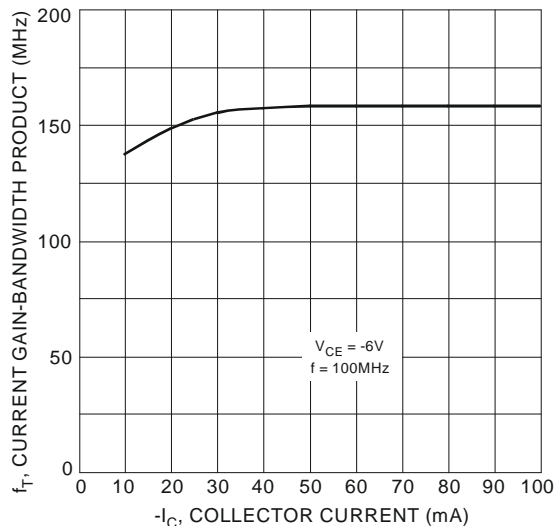
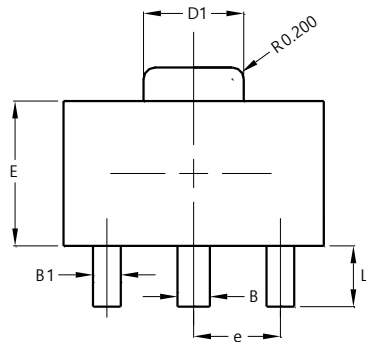


Figure 7 Typical Gain-Bandwidth Product vs. Collector Current

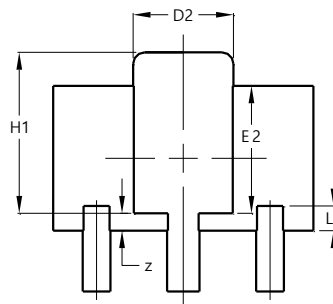
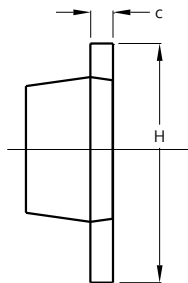
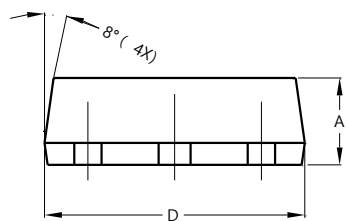
## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT89**



TOP VIEW



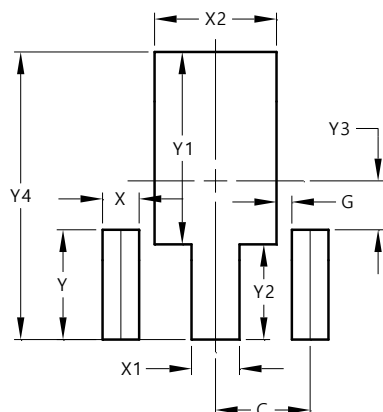
BOTTOM VIEW

SOT89			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SOT89**



Dimensions	Value (in mm)
C	1.500
G	0.244
X	0.580
X1	0.760
X2	1.933
Y	1.730
Y1	3.030
Y2	1.500
Y3	0.770
Y4	4.530

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