

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-40	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-40	V
Emitter-Base Voltage	V <sub>EBO</sub>	-5.0	V
Collector Current	I <sub>C</sub>	-200	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 7) Total Device	P <sub>D</sub>	200	mW
Thermal Resistance, Junction to Ambient (Note 7)	R <sub>θJA</sub>	625	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

**ESD Ratings** (Note 8)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

Notes: 7. For a device mounted on minimum recommended pad layout with 1oz copper that is on a single-sided 1.6mm FR4 PCB; the device is measured under still air conditions whilst operating in a steady-state.  
8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

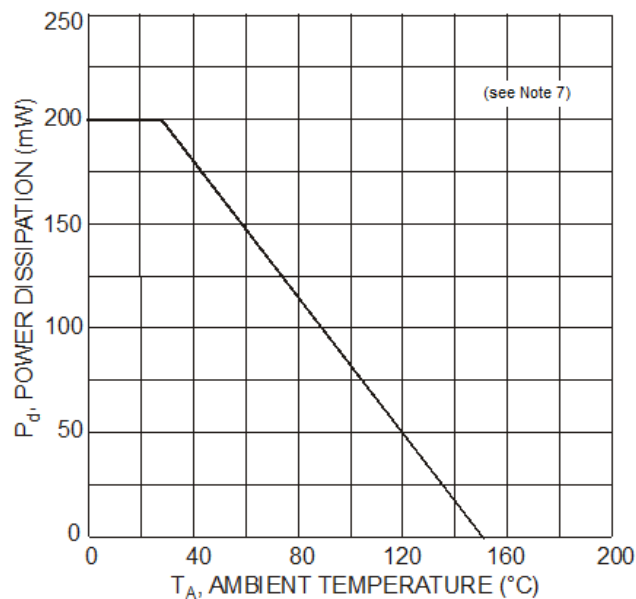
**Thermal Characteristics – Total Device**


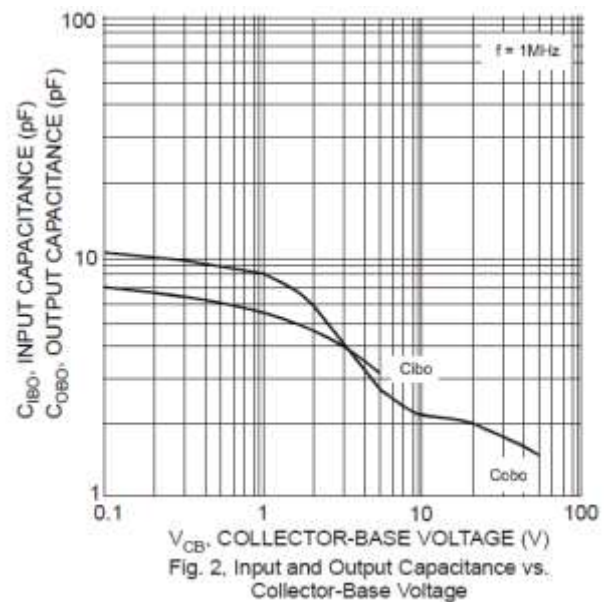
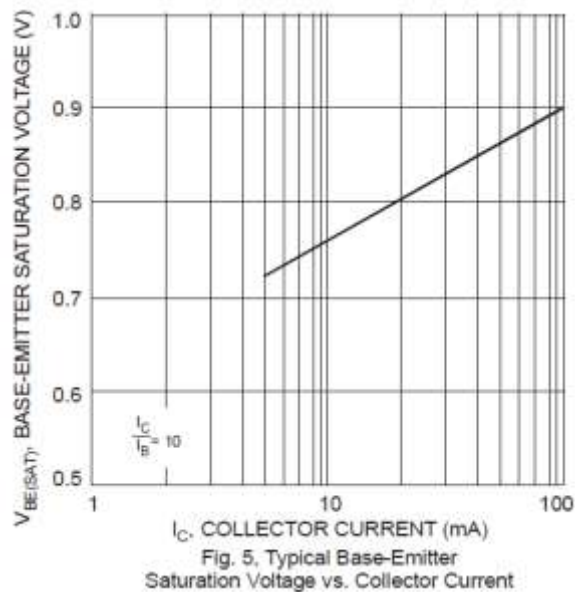
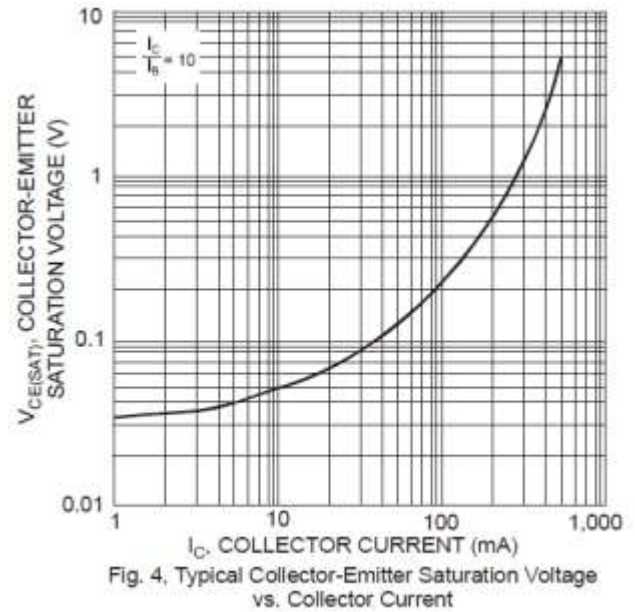
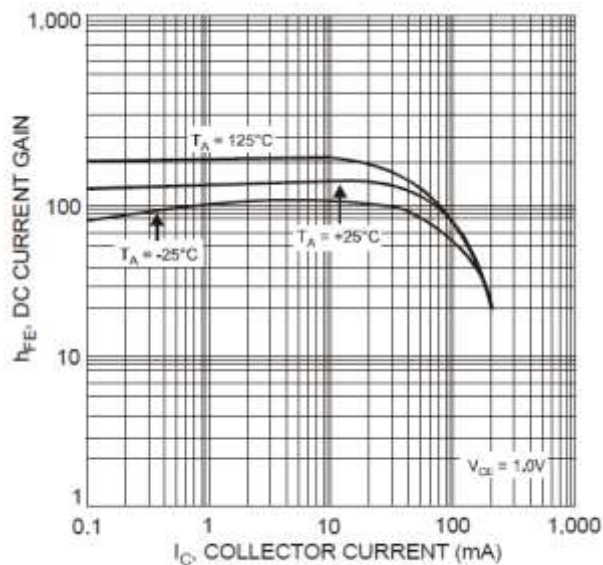
Fig. 1, Power Derating Curve (Total Device)

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

Characteristic	Symbol	Min	TYP	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-40	—	—	V	I <sub>C</sub> = -100μA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage (Note 9)	BV <sub>CEO</sub>	-40	—	—	V	I <sub>C</sub> = -1.0mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-5.0	—	—	V	I <sub>E</sub> = -100μA, I <sub>C</sub> = 0
Collector Cutoff Current	I <sub>CEX</sub>	—	—	-50	nA	V <sub>CE</sub> = -30V, V <sub>EB(OFF)</sub> = 3.0V
Base Cutoff Current	I <sub>BL</sub>	—	—	-50	nA	V <sub>CE</sub> = -30V, V <sub>EB(OFF)</sub> = 3.0V
<b>ON CHARACTERISTICS (Note 9)</b>						
DC Current Gain	h <sub>FE</sub>	60 80 100 60 30	—	— — 300 — —	—	I <sub>C</sub> = -100μA, V <sub>CE</sub> = -1.0V I <sub>C</sub> = -1.0mA, V <sub>CE</sub> = -1.0V I <sub>C</sub> = -10mA, V <sub>CE</sub> = -1.0V I <sub>C</sub> = -50mA, V <sub>CE</sub> = -1.0V I <sub>C</sub> = -100mA, V <sub>CE</sub> = -1.0V
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	—	—	-250 -400	mV	I <sub>C</sub> = -10mA, I <sub>B</sub> = -1.0mA I <sub>C</sub> = -50mA, I <sub>B</sub> = -5.0mA
Base-Emitter Saturation Voltage	V <sub>BE(SAT)</sub>	0.65 —	—	-850 -950	mV	I <sub>C</sub> = -10mA, I <sub>B</sub> = -1.0mA I <sub>C</sub> = -50mA, I <sub>B</sub> = -5.0mA
<b>MATCHING CHARACTERISTICS</b>						
DC Current Gain Matching (Note 10)	h <sub>FE1</sub> / h <sub>FE2</sub>	—	1	2	%	I <sub>C</sub> = -2mA, V <sub>CE</sub> = -5V
Base-Emitter Voltage Matching (Note 11)	V <sub>BE1</sub> - V <sub>BE2</sub>	—	1	2	mV	I <sub>C</sub> = -2mA, V <sub>CE</sub> = -5V
Collector-Emitter Saturation Voltage (Note 10)	V <sub>CE(SAT)1</sub> / V <sub>CE(SAT)2</sub>	—	1	2	%	I <sub>C</sub> = -10mA, I <sub>B</sub> = -1.0mA
Base-Emitter Saturation Voltage (Note 10)	V <sub>BE(SAT)1</sub> / V <sub>BE(SAT)2</sub>	—	1	2	%	I <sub>C</sub> = -10mA, I <sub>B</sub> = -1.0mA
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Output Capacitance	C <sub>OBO</sub>	—	—	4.5	pF	V <sub>CB</sub> = -5.0V, f = 1.0MHz, I <sub>E</sub> = 0
Input Capacitance	C <sub>IBO</sub>	—	—	10.0	pF	V <sub>EB</sub> = -0.5V, f = 1.0MHz, I <sub>C</sub> = 0
Input Impedance	h <sub>IE</sub>	2.0	—	12	kΩ	V <sub>CE</sub> = 10V, I <sub>C</sub> = 1.0mA, f = 1.0kHz
Voltage Feedback Ratio	h <sub>RE</sub>	0.1	—	10	x 10 <sup>-4</sup>	
Small Signal Current Gain	h <sub>FE</sub>	100	—	400	—	
Output Admittance	h <sub>OE</sub>	3.0	—	60	μS	
Current Gain-Bandwidth Product	f <sub>T</sub>	250	—	—	MHz	V <sub>CE</sub> = -20V, I <sub>C</sub> = -10mA, f = 100MHz
Noise Figure	NF	—	—	4.0	dB	V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -100μA, R <sub>S</sub> = 1.0kΩ, f = 1.0kHz
<b>SWITCHING CHARACTERISTICS</b>						
Delay Time	t <sub>D</sub>	—	—	35	ns	V <sub>CC</sub> = -3.0V, I <sub>C</sub> = -10mA, V <sub>BE(OFF)</sub> = 0.5V, I <sub>B1</sub> = -1.0mA
Rise Time	t <sub>R</sub>	—	—	35	ns	V <sub>CC</sub> = -3.0V, I <sub>C</sub> = -10mA, I <sub>B1</sub> = I <sub>B2</sub> = -1.0mA
Storage Time	t <sub>S</sub>	—	—	225	ns	
Fall Time	t <sub>F</sub>	—	—	75	ns	

- Notes:
9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.
  10. Is the ratio of one transistor compared to the other transistor.
  11. V<sub>BE1</sub> - V<sub>BE2</sub> is the absolute difference of one transistor compared to the other transistor.

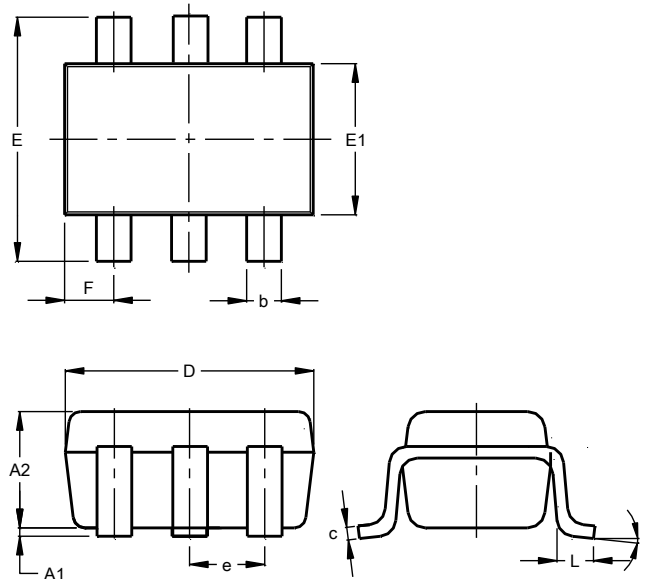
**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$  unless otherwise specified.)



## Package Outline Dimensions

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

**SOT363**

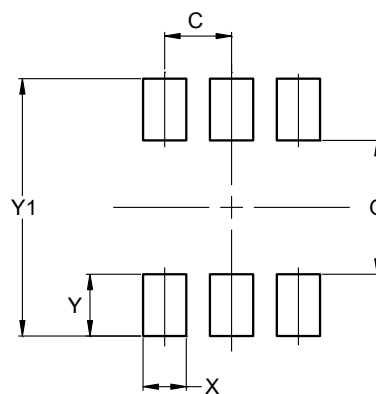


SOT363			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	1.00
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

## Suggested Pad Layout

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

**SOT363**



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.420
Y	0.600
Y1	2.500

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