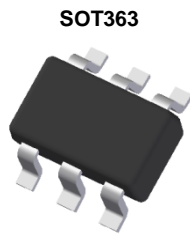


**SMALL SIGNAL COMPLEMENTARY PRE-BIASED DUAL TRANSISTOR**
**Features**

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors
- Surface Mount Package Suited for Automated Assembly
- **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**
- **PPAP Capable (Note 4)**

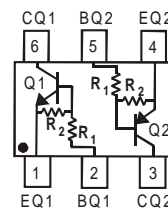
R1(NOM)	R2(NOM)
4.7kΩ	47kΩ



Top View

**Mechanical Data**

- Case: SOT363
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.006 grams (Approximate)

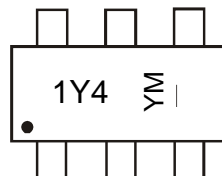


Device Schematic

**Ordering Information** (Note 5)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
ACX143ZUQ-7R	Automotive	1Y4	7	8	3,000
ACX143ZUQ-13R	Automotive	1Y4	13	8	10,000

- 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](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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/product-compliance-definitions/>.
  5. -7R /-13R are parts rotated in the pocket tape by +180°.  
For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

**Marking Information**
**SOT363**


1Y4 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: E = 2017)  
 M = Month (ex: 9 = September)

## Date Code Key

Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	
Code	E	F	G	H	I	J	K	L	M	N	O	
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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

Characteristic	Symbol	Value	Unit
Supply Voltage <Pin: (6) to (1)>	V <sub>CC</sub>	50	V
Input Voltage <Pin: (2) to (1)>	V <sub>IN</sub>	-10 to +30	V
Output Current	I <sub>O</sub>	100	mA
Output Current	I <sub>C</sub> (Max)	100	mA

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

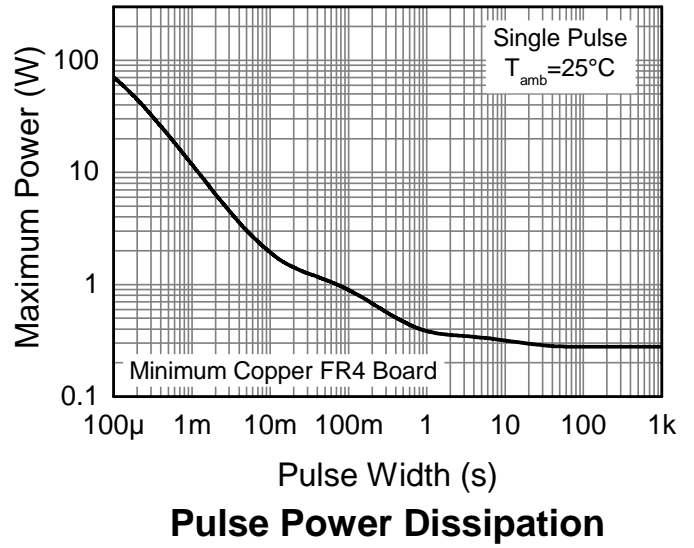
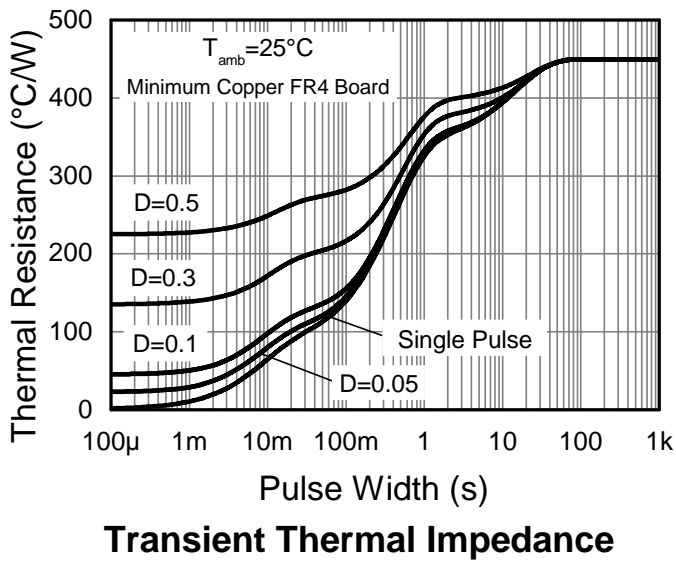
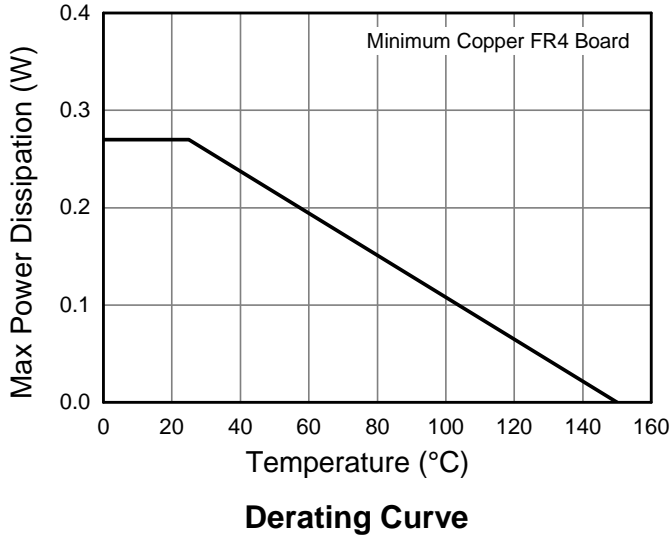
Characteristic	Symbol	Value	Unit
Supply Voltage <Pin: (4) to (3)>	V <sub>CC</sub>	-50	V
Input Voltage <Pin: (5) to (4)>	V <sub>IN</sub>	+5 to -30	V
Output Current	I <sub>O</sub>	-100	mA
Output Current	I <sub>C</sub> (Max)	-100	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Notes 6 & 7)	P <sub>D</sub>	270	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	R <sub>θJA</sub>	450	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes:
- 6. Mounted on FR-4 PC Board with minimum recommended pad layout.
  - 7. 150mW per element must not be exceeded.

**Thermal Characteristics and Derating Information**



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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	V <sub>I(OFF)</sub> (Note 8)	0.5	—	—	V	V <sub>CC</sub> = 5V, I <sub>O</sub> = 100μA
	V <sub>I(ON)</sub> (Note 9)	—	—	1.3		V <sub>O</sub> = 0.3V, I <sub>O</sub> = 5mA
Output Voltage	V <sub>O(ON)</sub>	—	0.1	0.3	V	I <sub>O</sub> /I <sub>I</sub> = 5mA / 0.25mA
Input Current	I <sub>I</sub>	—	—	1.8	mA	V <sub>I</sub> = 5V
Output Current	I <sub>O(OFF)</sub>	—	—	0.5	μA	V <sub>CC</sub> = 50V, V <sub>I</sub> = 0V
DC Current Gain	G <sub>I</sub>	80	—	—	—	V <sub>O</sub> = 5V, I <sub>O</sub> = 10mA
Input Resistor (R <sub>1</sub> ) Tolerance	ΔR <sub>1</sub>	-30	—	+30	%	—
Resistance Ratio Tolerance	ΔR <sub>2</sub> /R <sub>1</sub>	-20	—	+20	%	—
Gain-Bandwidth Product (Note 10)	f <sub>T</sub>	—	250	—	MHz	V <sub>CE</sub> = 10V, I <sub>E</sub> = 5mA, f = 100MHz

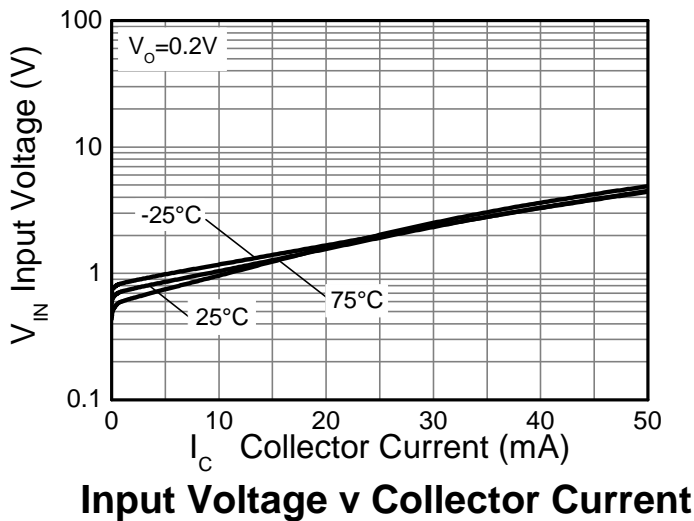
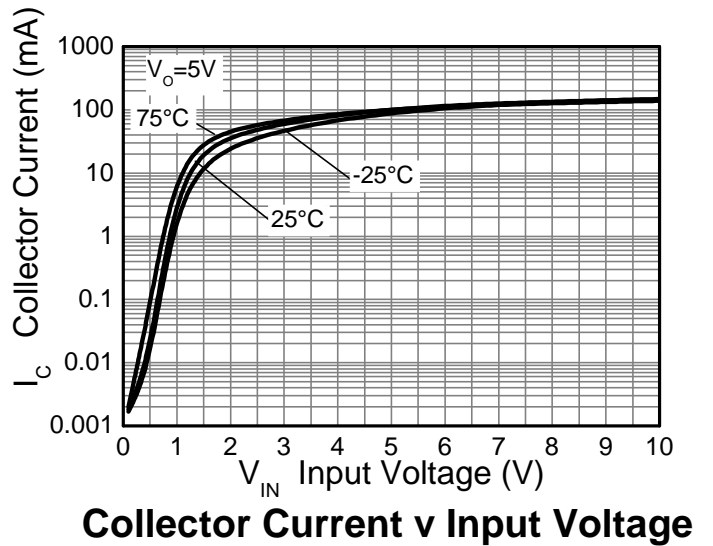
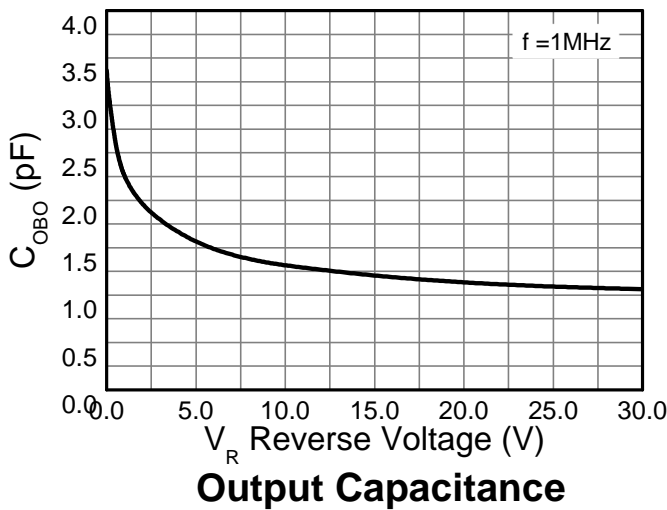
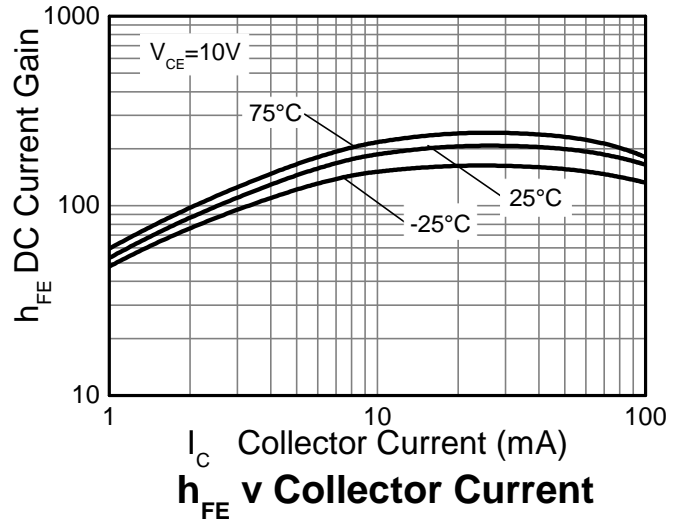
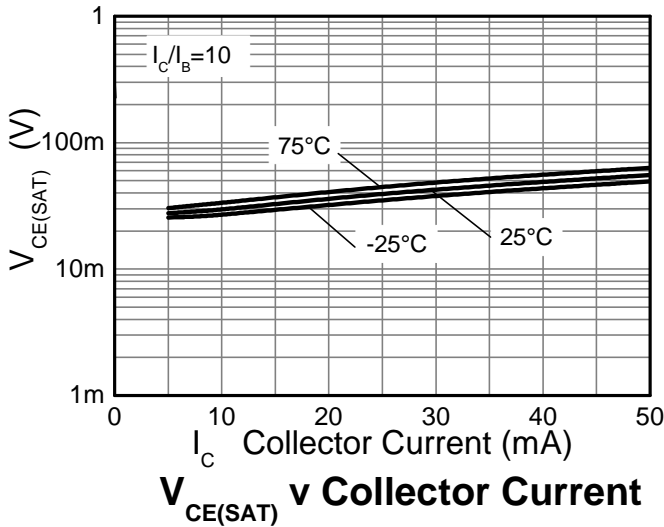
- Notes:
- 8. Guarantees that the device will be switched OFF if the Input Voltage is less than 0.5V.
  - 9. Guarantees that the device will be switched ON if the Input Voltage is more than 1.3V.
  - 10. Transistor - For Reference Only.

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

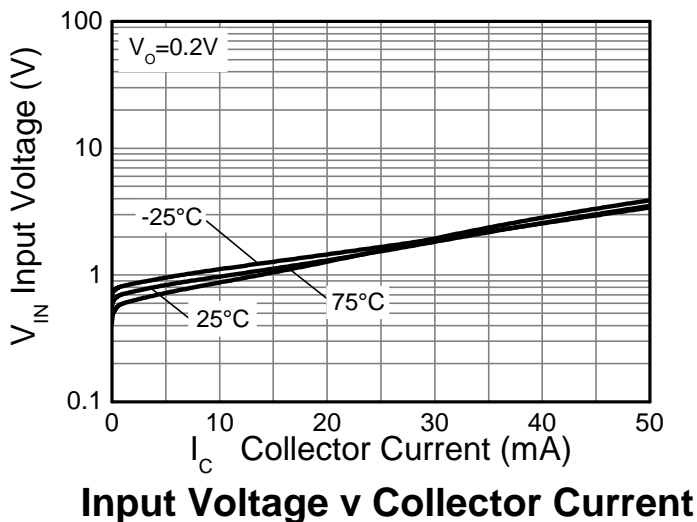
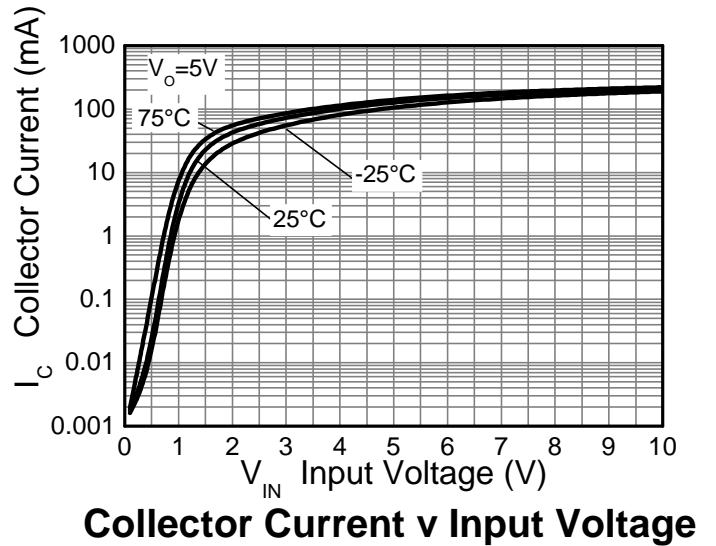
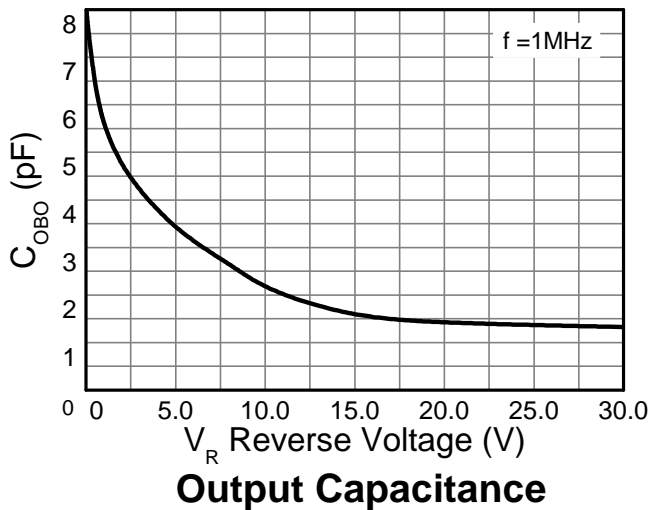
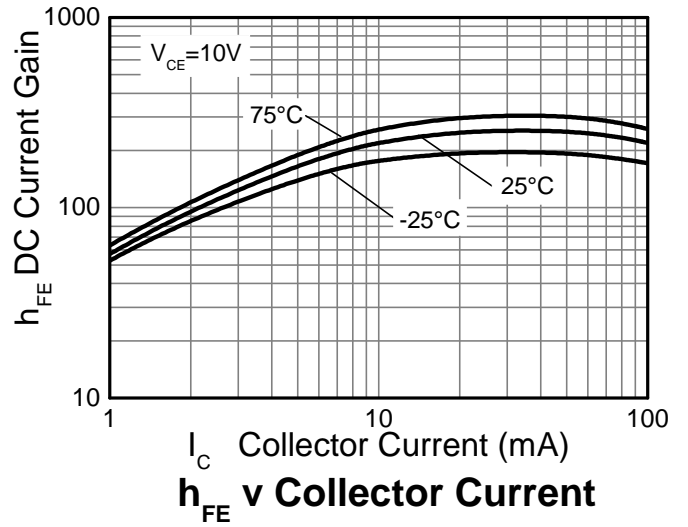
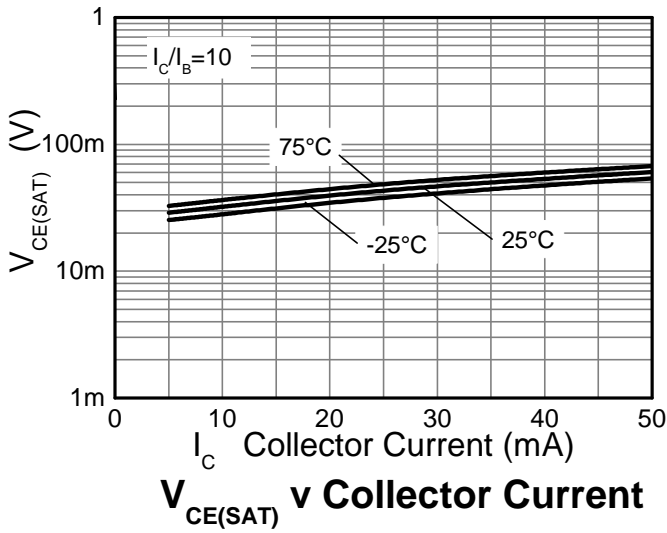
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	V <sub>I(OFF)</sub> (Note 11)	-0.5	—	—	V	V <sub>CC</sub> = -5V, I <sub>O</sub> = -100μA
	V <sub>I(ON)</sub> (Note 12)	—	—	-1.3		V <sub>O</sub> = -0.3V, I <sub>O</sub> = -5mA
Output Voltage	V <sub>O(ON)</sub>	—	-0.1	-0.3	V	I <sub>O</sub> /I <sub>I</sub> = -5mA / -0.25mA
Input Current	I <sub>I</sub>	—	—	-1.8	mA	V <sub>I</sub> = -5V
Output Current	I <sub>O(OFF)</sub>	—	—	-0.5	μA	V <sub>CC</sub> = 50V, V <sub>I</sub> = 0V
DC Current Gain	G <sub>I</sub>	80	—	—	—	V <sub>O</sub> = -5V, I <sub>O</sub> = -10mA
Input Resistor (R <sub>1</sub> ) Tolerance	ΔR <sub>1</sub>	-30	—	+30	%	—
Resistance Ratio Tolerance	ΔR <sub>2</sub> /R <sub>1</sub>	-20	—	+20	%	—
Gain-Bandwidth Product (Note 10)	f <sub>T</sub>	—	250	—	MHz	V <sub>CE</sub> = -10V, I <sub>E</sub> = -5mA, f = 100MHz

- Notes:
- 11. Guarantees that the device will be switched OFF if the Input Voltage is less than -0.5V.
  - 12. Guarantees that the device will be switched ON if the Input Voltage is more than -1.3V.

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



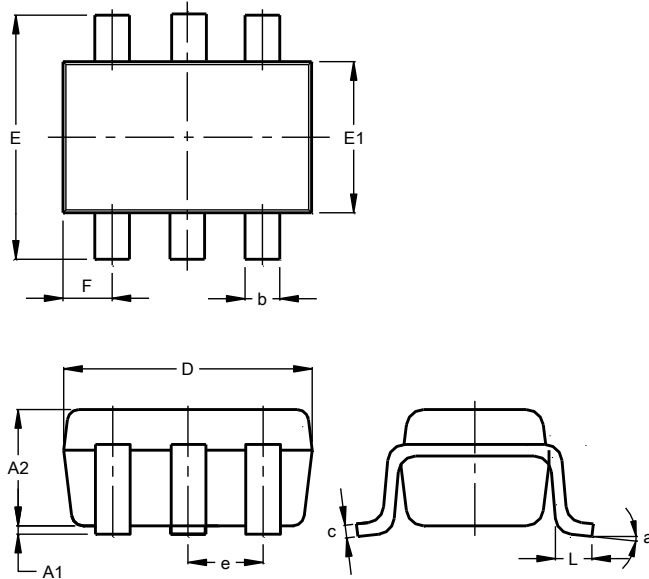
**Typical Electrical Characteristics – PNP Section** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)



**Package Outline Dimensions**

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

**SOT363**

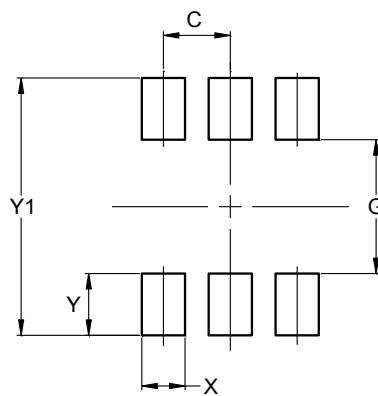


SOT363			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	1.00
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

**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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