

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)**

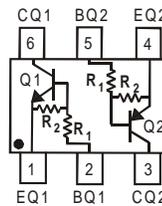
R1(NOM)	R2(NOM)
10kΩ	10kΩ



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 Ⓔ3
- Weight: 0.006 grams (Approximate)



Device Schematic

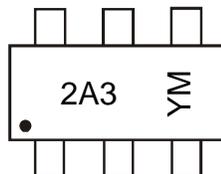
Ordering Information (Notes 4 & 5)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
ACX114EUQ-7R	Automotive	2A3	7	8	3,000
ACX114EUQ-13R	Automotive	2A3	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 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 http://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 <http://www.diodes.com/products/packages.html>.

Marking Information

SOT363



2A3 = 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_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Supply Voltage <Pin: (6) to (1)>	V _{CC}	50	V
Input Voltage <Pin: (2) to (1)>	V _{IN}	-10 to +40	V
Output Current	I _O	50	mA
Output Current	I _C (Max)	100	mA

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

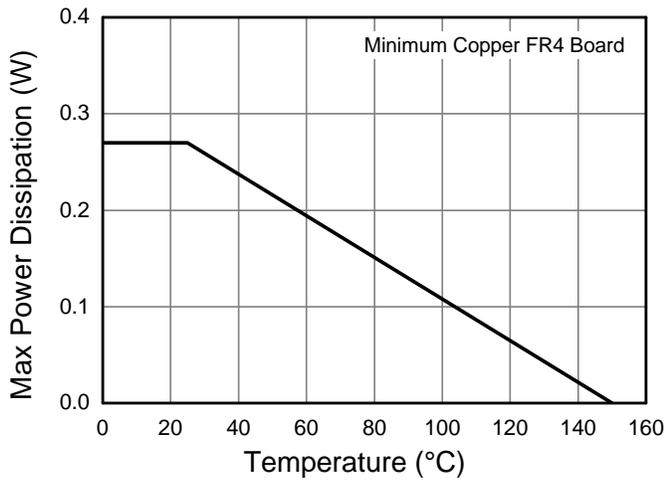
Characteristic	Symbol	Value	Unit
Supply Voltage <Pin: (4) to (3)>	V _{CC}	-50	V
Input Voltage <Pin: (5) to (4)>	V _{IN}	+10 to -40	V
Output Current	I _O	-50	mA
Output Current	I _C (Max)	-100	mA

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

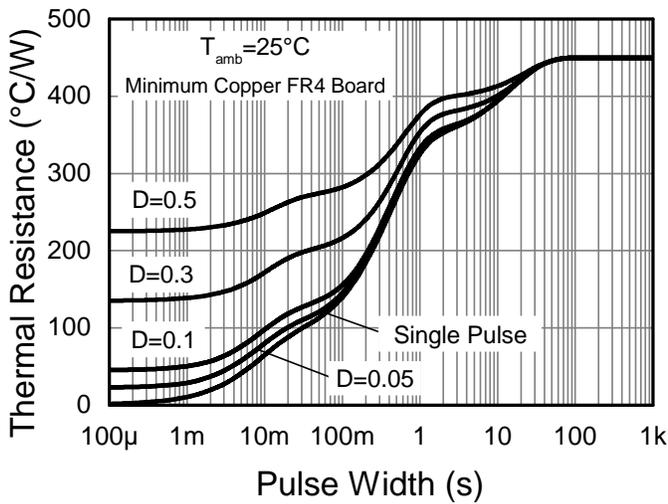
Characteristic	Symbol	Value	Unit
Power Dissipation (Notes 6 & 7)	P _D	270	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	R _{θJA}	450	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Notes: 6. Mounted on FR4 PC Board with minimum recommended pad layout
 7. 150mW per element must not be exceeded.

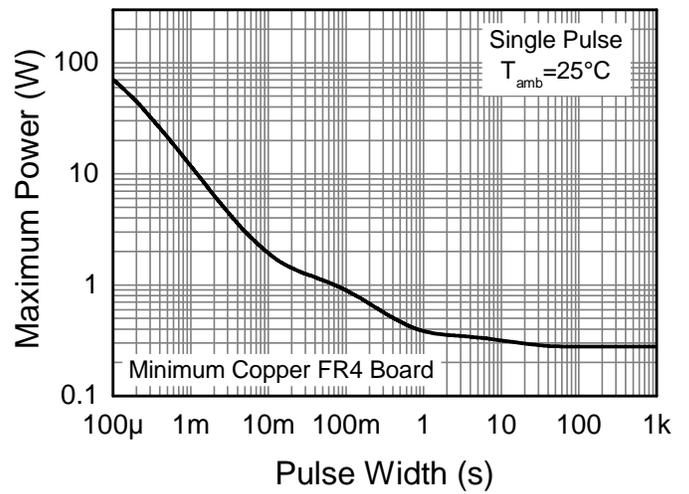
Thermal Characteristics and Derating Information



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

Electrical Characteristics NPN Section (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	V _{I(OFF)} (Note 8)	0.5	1.1	—	V	V _{CC} = 5V, I _O = 100μA
	V _{I(ON)} (Note 9)	—	1.9	3.0		V _O = 0.3V, I _O = 10mA
Output Voltage	V _{O(ON)}	—	0.1	0.3	V	I _O /I _I = 10mA / 0.5mA
Input Current	I _I	—	—	0.88	mA	V _I = 5V
Output Current	I _{O(OFF)}	—	—	0.5	μA	V _{CC} = 50V, V _I = 0V
DC Current Gain	G _I	30	—	—	—	V _O = 5V, I _O = 5mA
Input Resistor (R ₁) Tolerance	ΔR ₁	-30	—	+30	%	—
Resistance Ratio Tolerance	ΔR ₂ /R ₁	-20	—	+20	%	—
Gain-Bandwidth Product (Note 10)	f _T	—	250	—	MHz	V _{CE} = 10V, I _E = 5mA, f = 100MHz

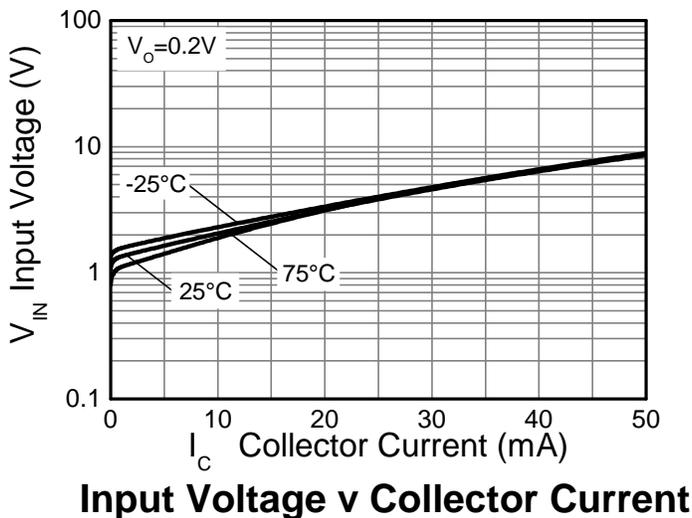
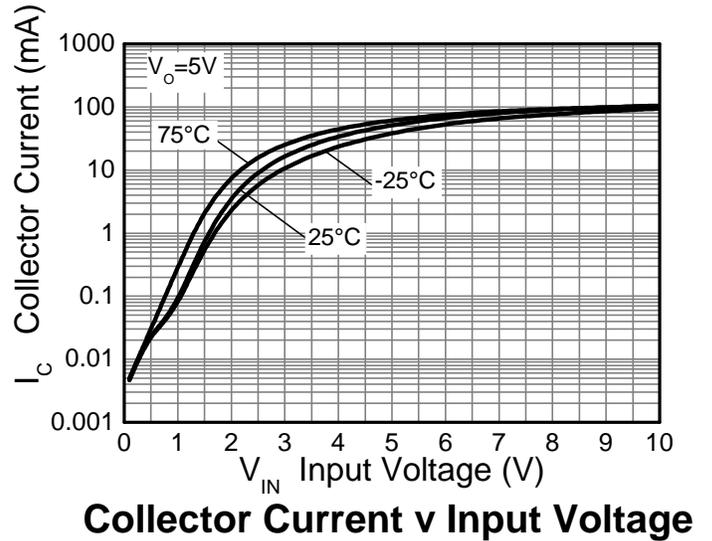
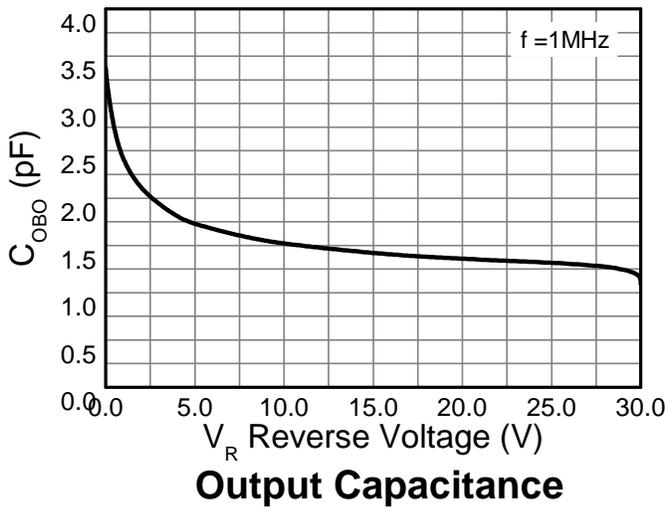
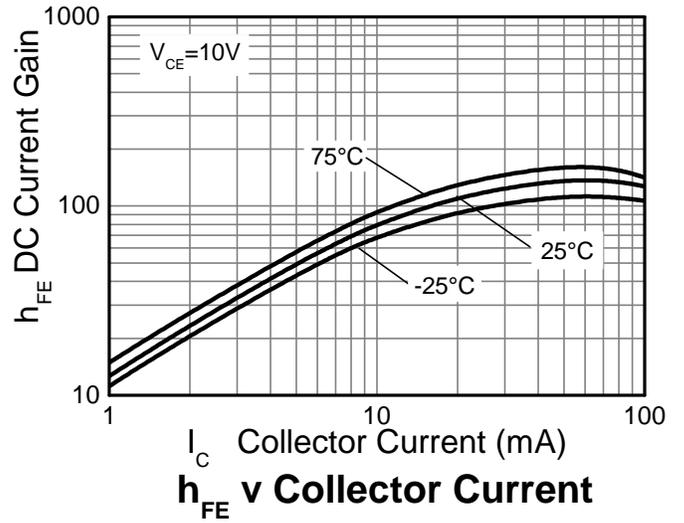
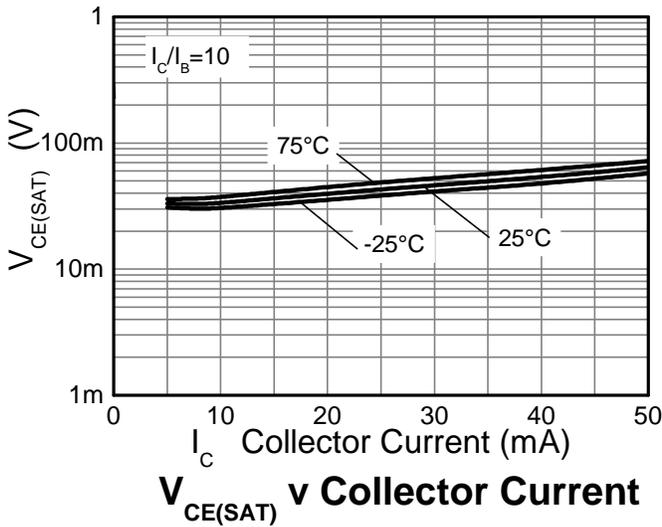
- Notes:
8. Guarantees that the device will be switched OFF if the Input Voltage is less than 0.5V.
 9. Guarantees that the device will be switched ON if the Input Voltage is more than 3V.
 10. Transistor - For Reference Only.

Electrical Characteristics PNP Section (@T_A = +25°C, unless otherwise specified.)

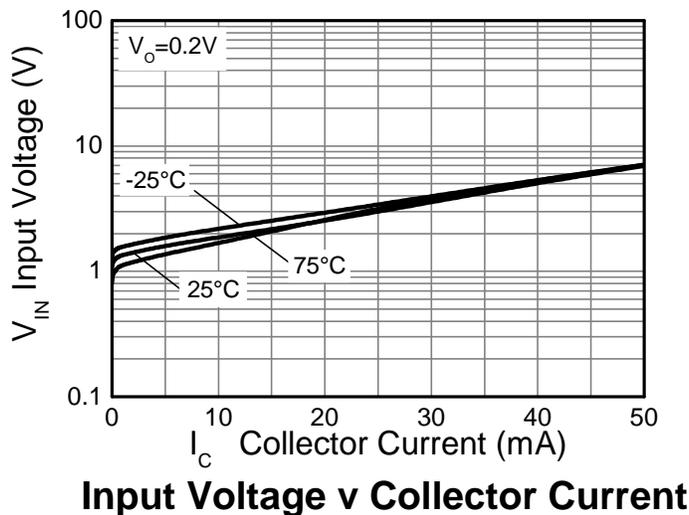
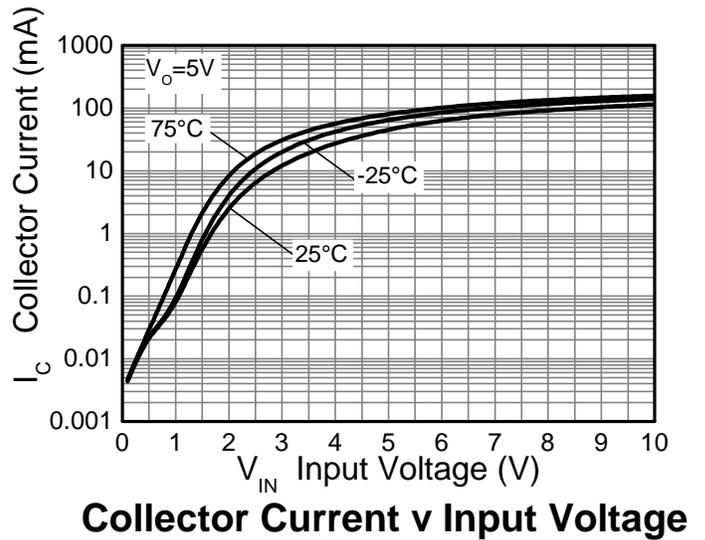
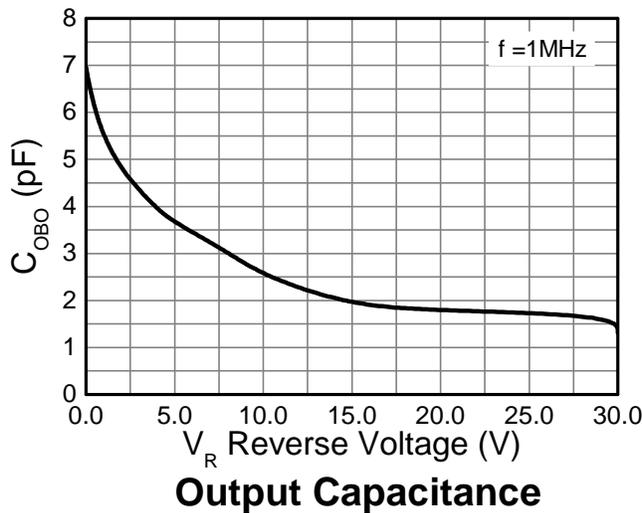
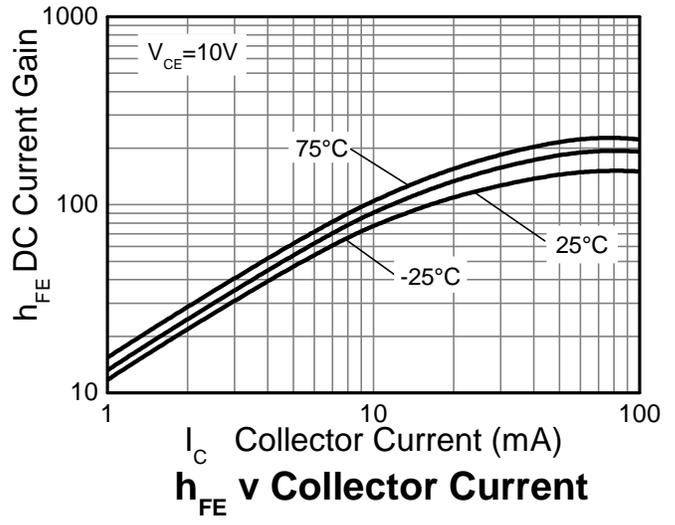
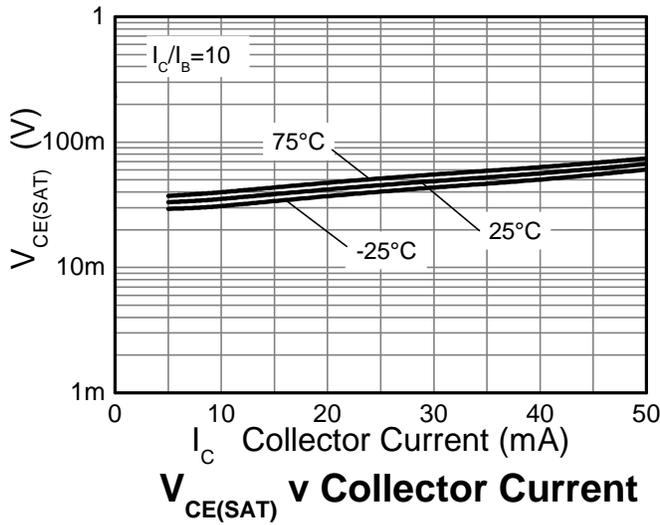
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	V _{I(OFF)} (Note 11)	-0.5	-1.1	—	V	V _{CC} = -5V, I _O = -100μA
	V _{I(ON)} (Note 12)	—	-1.9	-3.0		V _O = -0.3V, I _O = -10mA
Output Voltage	V _{O(ON)}	—	-0.1	-0.3	V	I _O /I _I = -10mA / -0.5mA
Input Current	I _I	—	—	-0.88	mA	V _I = -5V
Output Current	I _{O(OFF)}	—	—	-0.5	μA	V _{CC} = 50V, V _I = 0V
DC Current Gain	G _I	30	—	—	—	V _O = -5V, I _O = -5mA
Input Resistor (R ₁) Tolerance	ΔR ₁	-30	—	+30	%	—
Resistance Ratio Tolerance	ΔR ₂ /R ₁	-20	—	+20	%	—
Gain-Bandwidth Product (Note 10)	f _T	—	250	—	MHz	V _{CE} = -10V, I _E = -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 -3V.

Typical Curves – NPN Section (@T_A = +25°C, unless otherwise specified.)



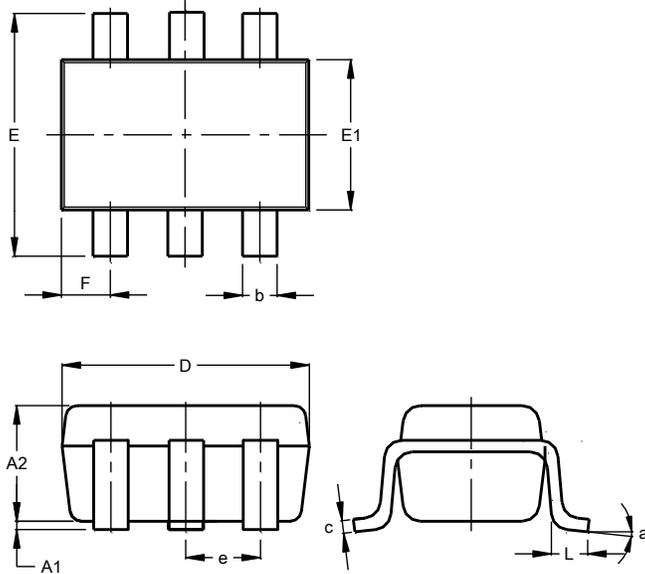
Typical Curves – PNP Section (@T_A = +25°C, unless otherwise specified.)



Package Outline Dimensions

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

SOT363

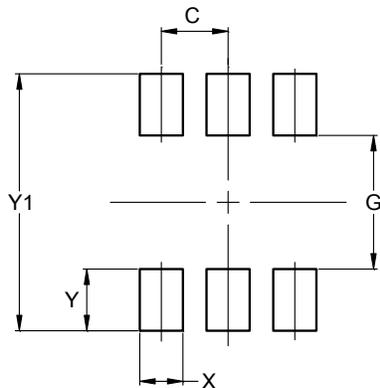


SOT363			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	1.00
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

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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