PNP PRE-BIASED DUAL TRANSISTOR IN SOT363

Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDC)
- Built-In Biasing Resistors
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DDA (XXXX) UQ are suitable for automotive applications requiring specific change control; these parts are AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
  https://www.diodes.com/quality/product-definitions/

Mechanical Data

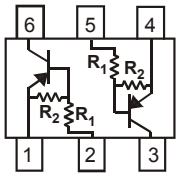
- Case: SOT363
- Case Material: Molded Plastic, "Green" Molding Compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.006 grams (Approximate)

Part Number	R1 (NOM)	R2 (NOM)
DDA124EU	22kΩ	22kΩ
DDA144EU	47kΩ	47kΩ
DDA114YU	10kΩ	47kΩ
DDA123JU	2.2kΩ	47kΩ
DDA114EU	10kΩ	10kΩ

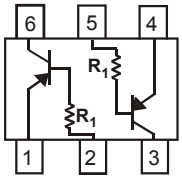
Part Number	R1 Only
DDA113TU	1kΩ
DDA143TU	4.7kΩ
DDA114TU	10kΩ

SOT363

Top View



R1, R2



R1 Only

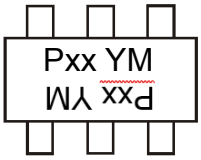
Device Schematic

Ordering Information (Notes 4, 5)

Product	Status	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DDA124EU-7-F	Active	Standard	P17	7	8	3,000
DDA124EUQ-7-F	Active	Automotive	P17	7	8	3,000
DDA124EUQ-13-F	Active	Automotive	P17	13	8	10,000
DDA144EU-7-F	Active	Standard	P20	7	8	3,000
DDA144EUQ-7-F	Active	Automotive	P20	7	8	3,000
DDA114YU-7-F	Active	Standard	P14	7	8	3,000
DDA114YUQ-7-F	NRND (Use ADA114YUQ)	Automotive	P14	7	8	3,000
DDA123JU-7-F	Active	Standard	P06	7	8	3,000
DDA114EU-7-F	Active	Standard	P13	7	8	3,000
DDA114EUQ-7-F	NRND (Use ADA114EUQ)	Automotive	P13	7	8	3,000
DDA113TU-7-F	Active	Standard	P01	7	8	3,000
DDA143TU-7-F	Active	Standard	P07	7	8	3,000
DDA143TUQ-7-F	Active	Automotive	P07	7	8	3,000
DDA143TUQ-13-F	Active	Automotive	P07	13	8	10,000
DDA114TU-7-F	Active	Standard	P12	7	8	3,000
DDA114TUQ-7-F	Active	Automotive	P12	7	8	3,000
DDA114TUQ-13-F	Active	Automotive	P12	13	8	10,000

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ 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 https://www.diodes.com/design/support/packaging/diodes-packaging/.
5. NRND = Not Recommended for New Design.

Marking Information



Pxx = Product Type Marking Code (See Ordering Information)
YM = Date Code Marking
Y = Year (ex: I = 2021)
M = Month (ex: 9 = September)

Date Code Key

Year	2018	……	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	F	……	I	J	K	L	M	N	O	P	R	S

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

Characteristic		Symbol	Value	Unit
Supply Voltage (1) to (6) and (4) to (3)		V_{CC}	-50	V
Input Voltage (1) to (2) and (4) to (5)	DDA124EU DDA144EU DDA114YU DDA123JU DDA114EU DDA113TU DDA143TU DDA114TU	V_{IN}	+10 to -40 +10 to -40 +6 to -40 +5 to -12 +10 to -40 +5V Max +5V Max +5V Max	V
Output Current	DDA124EU DDA144EU DDA114YU DDA123JU DDA114EU DDA113TU DDA143TU DDA114TU	I_O	-30 -30 -70 -100 -50 -100 -100 -100	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	200	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	625	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-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.

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

Characteristic (DDA113TU & DDA143TU & DDA114TU only)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	—	—	V	I_C = -50μA
Collector-Emitter Breakdown Voltage	BV_{CEO}	-50	—	—	V	I_C = -1mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	I_E = -50μA
Collector Cutoff Current	I_{CBO}	—	—	-0.5	μA	V_{CB} = -50V
Emitter Cutoff Current	I_{EBO}	—	—	-0.5	μA	V_{EB} = -4V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-0.3	V	I_C/I_B = -2.5mA / -0.25mA DDA143TU I_C/I_B = -1mA / -0.1mA DDA114TU I_C/I_B = -10mA / -1mA DDA113TU
DC Current Transfer Ratio	h_{FE}	100 160	250 —	600 600	—	I_C = -1mA, V_{CE} = -5V I_C = -1mA, V_{CE} = -5V DDA143TU/Q
Input Resistor (R_1) Tolerance	ΔR_1	-30	—	+30	%	—
Gain-Bandwidth Product (Note 8)	f_T	—	250	—	MHz	V_{CE} = -10V, I_E = 5mA, f = 100MHz

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDA124EU DDA144EU DDA114YU DDA123JU DDA114EU	$V_{I(off)}$	-0.5 -0.5 -0.3 -0.5 -0.5	-1.1 -1.1 — — -1.1	—	V	V_{CC} = -5V, I_O = -100μA
	DDA124EU DDA144EU DDA114YU DDA123JU DDA114EU	$V_{I(on)}$	—	-1.9 -1.9 — — –1.9	-3.0 -3.0 -1.4 -1.1 -3.0		V_O = -0.3, I_O = -5mA V_O = -0.3, I_O = -2mA V_O = -0.3, I_O = -1mA V_O = -0.3, I_O = -5mA V_O = -0.3, I_O = -10mA
Output Voltage	DDA124EU DDA144EU DDA114YU DDA123JU DDA114EU	$V_{O(on)}$	—	-0.1	-0.3	V	I_O/I_I = -10mA / -0.5mA I_O/I_I = -10mA / -0.5mA I_O/I_I = -5mA / -0.25mA I_O/I_I = -5mA / -0.25mA I_O/I_I = -10mA / -0.5mA
Input Current	DDA124EU DDA144EU DDA114YU DDA123JU DDA114EU	I_I	—	—	-0.36 -0.18 -0.88 -3.6 -0.88	mA	V_I = -5V
Output Current		$I_{O(off)}$	—	—	-0.5	μA	V_{CC} = -50V, V_I = -0V
DC Current Gain	DDA124EU DDA124EUQ DDA144EU DDA114YU DDA123JU DDA114EU	G_I	56 60 68 68 80 30	—	—	—	V_O = -5V, I_O = -5mA V_O = -5V, I_O = -5mA V_O = -5V, I_O = -5mA V_O = -5V, I_O = -10mA V_O = -5V, I_O = -10mA V_O = -5V, I_O = -5mA
Input Resistor (R_1) Tolerance		ΔR_1	-30	—	+30	%	—
Resistance Ratio Tolerance		R_2/R_1	-20	—	+20	%	—
Gain-Bandwidth Product (Note 8)		f_T	—	250	—	MHz	V_{CE} = -10V, I_E = -5mA, f = 100MHz

Note: 8. Transistor - For Reference Only.

Typical Curves – DDA123JU (@ T_A = +25°C, unless otherwise specified.)

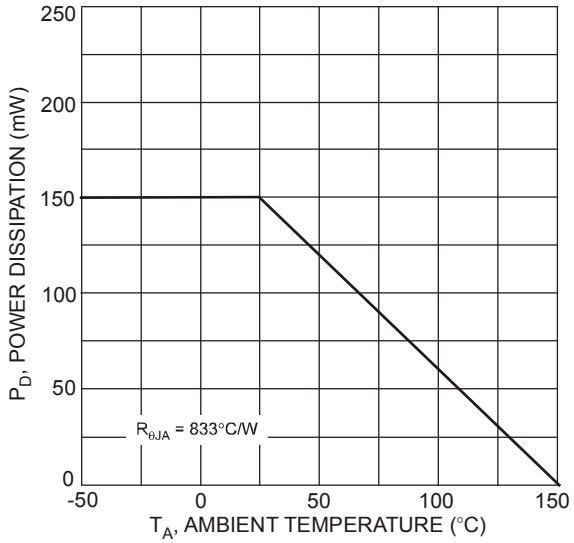


Fig. 1 Power Dissipation vs. Ambient Temperature

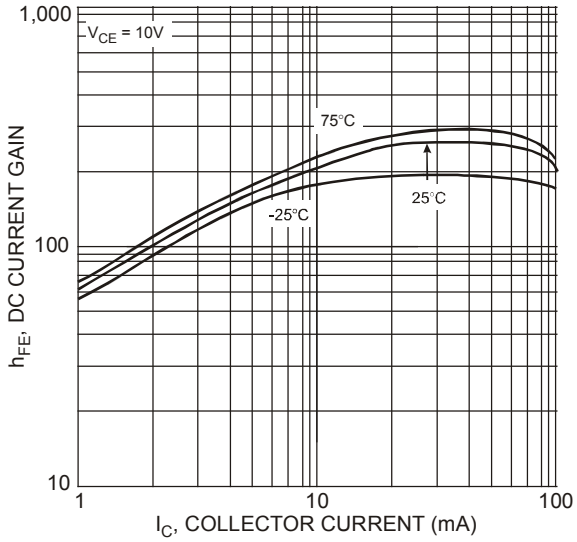


Fig. 2 Typical DC Current Gain vs. Collector Current

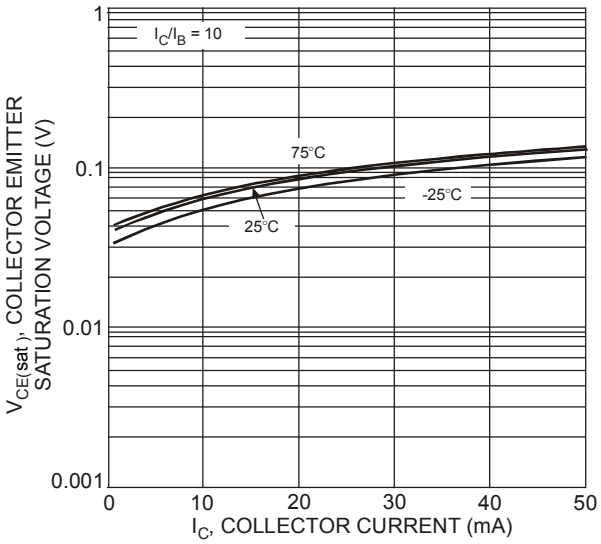


Fig. 3 Typical Collector Emitter Saturation Voltage vs. Collector Current

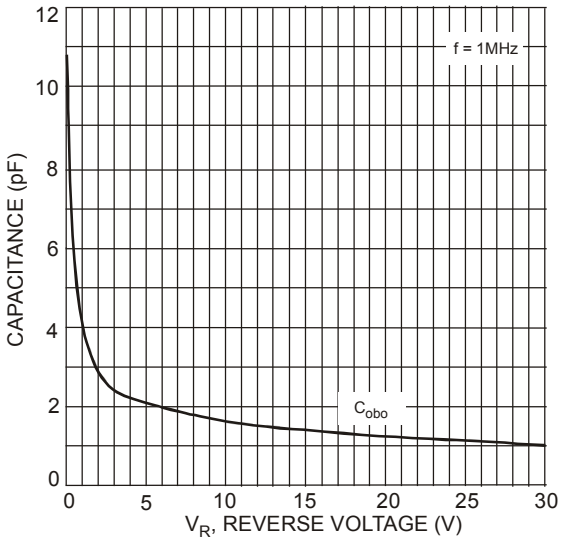


Fig. 4 Typical Capacitance Characteristics

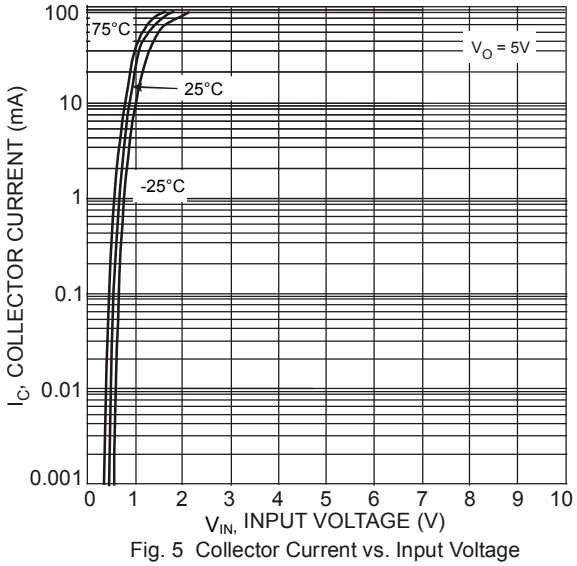


Fig. 5 Collector Current vs. Input Voltage

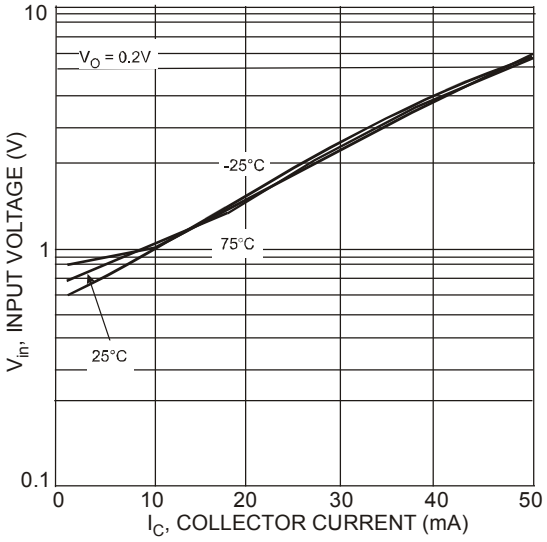


Fig. 6 Input Voltage vs. Collector Current

Typical Curves – DDA114TU (@ T_A = +25°C, unless otherwise specified.)

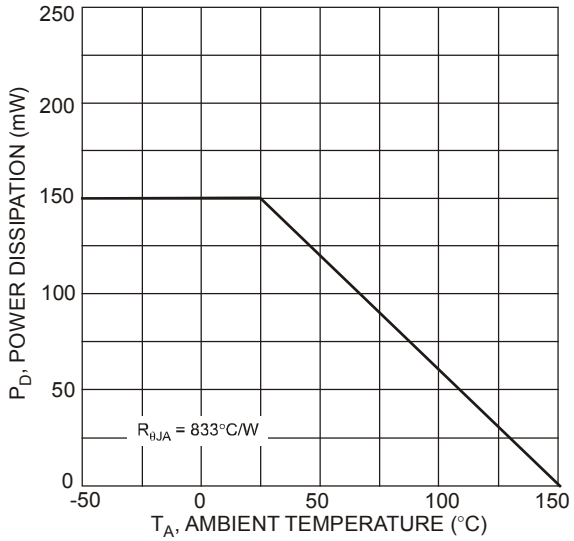


Fig.7 Power Dissipation vs. Ambient Temperature

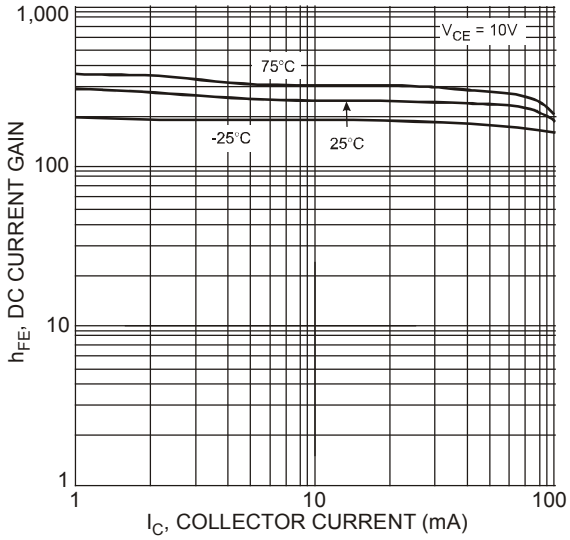


Fig.8 Typical DC Current Gain vs. Collector Current

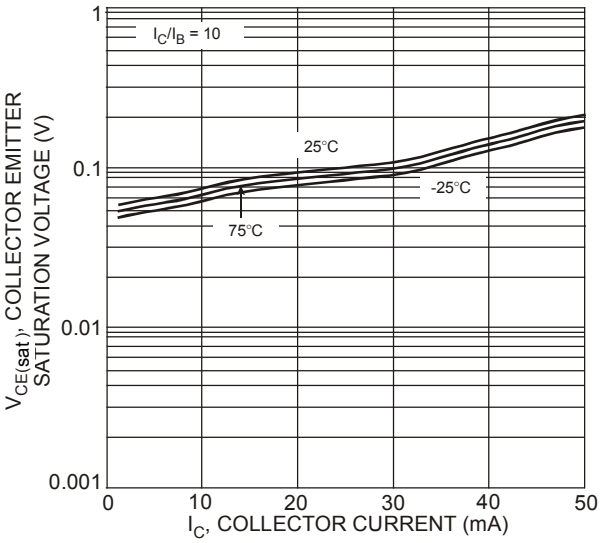


Fig.9 Typical Collector Emitter Saturation Voltage vs. Collector Current

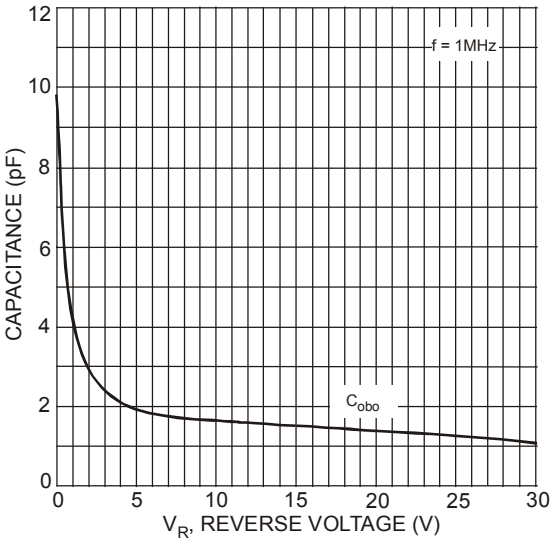


Fig.10 Typical Capacitance Characteristics

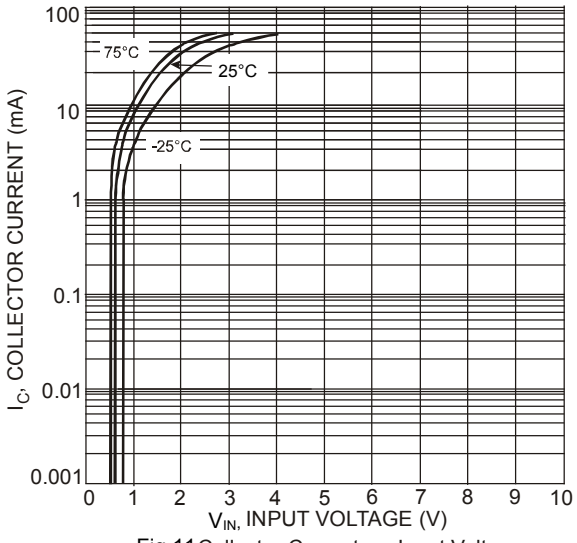


Fig.11 Collector Current vs. Input Voltage

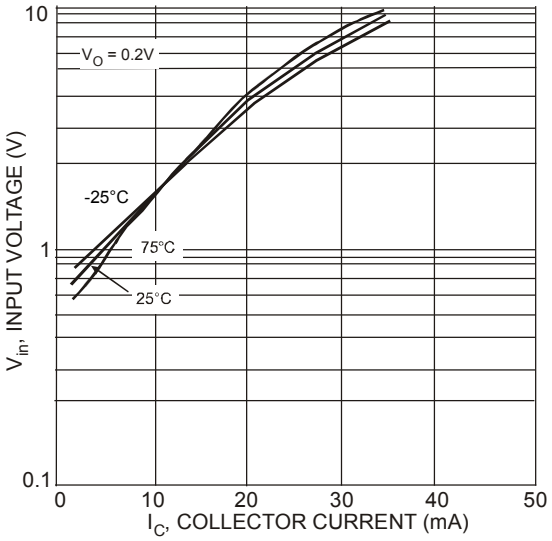
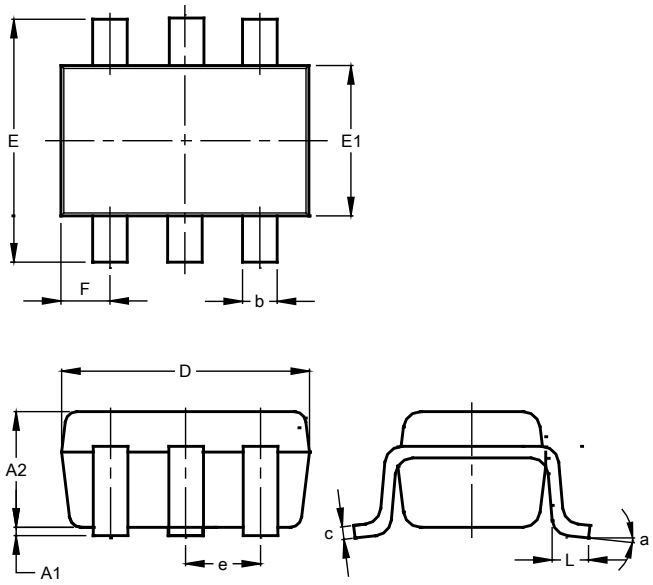


Fig.12 Input Voltage vs. Collector Current

Package Outline Dimensions

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

SOT363

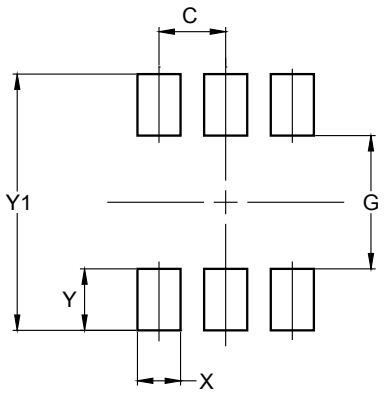


SOT363			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

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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