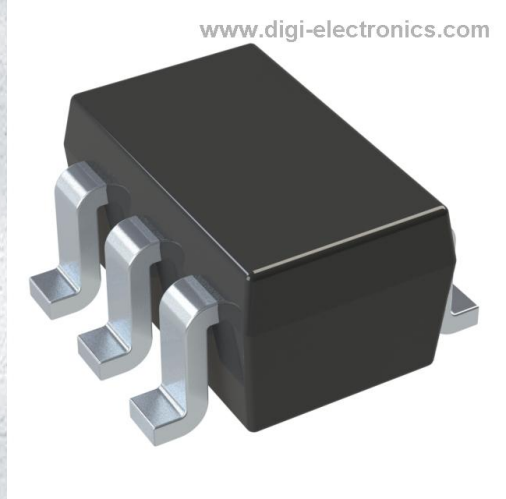
ACX114EUQ-13R Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number	ACX114EUQ-13R-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	ACX114EUQ-13R
Description	PREBIAS TRANSISTOR SOT363 T&R 10
Detailed Description	Pre-Biased Bipolar Transistor (BJT) 1 NPN, 1 PNP - Pre-Biased (Dual) 50V 100mA 250MHz 270mW Surface Mount SOT-363

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

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Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
ACX114EUQ-13R	Diodes Incorporated
Series:	Product Status:
-	Active
Transistor Type:	Current - Collector (Ic) (Max):
1 NPN, 1 PNP - Pre-Biased (Dual)	100mA
Voltage - Collector Emitter Breakdown (Max):	Resistor - Base (R1):
50V	10kOhms
Resistor - Emitter Base (R2):	DC Current Gain (hFE) (Min) @ Ic, Vce:
10kOhms	30 @ 5mA, 5V
Vce Saturation (Max) @ Ib, Ic:	Current - Collector Cutoff (Max):
300mV @ 500µA, 10mA	500nA
Frequency - Transition:	Power - Max:
250MHz	270mW
Grade:	Qualification:
Automotive	AEC-Q101
Mounting Type:	Package / Case:
Surface Mount	6-TSSOP, SC-88, SOT-363
Supplier Device Package:	Base Product Number:
SOT-363	ACX114

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.21.0075	

Lead-free Green

ACX114EUQ

SMALL SIGNAL COMPLEMENTARY PRE-BIASED DUAL TRANSISTOR

Features

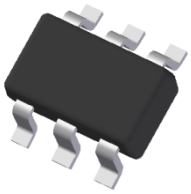
- Epitaxial Planar Die Construction
- Built-In Biasing Resistors
- Surface Mount Package Suited for Automated Assembly
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

R1(NOM)	R2(NOM)
10kΩ	10kΩ

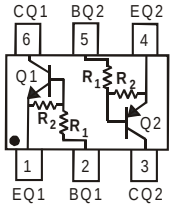
Mechanical Data

- 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)

SOT363



Top View



Device Schematic

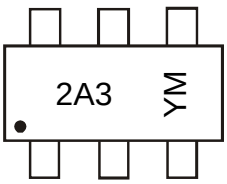
Ordering Information (Notes 4 & 5)

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

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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)	$R_{\theta JA}$	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.

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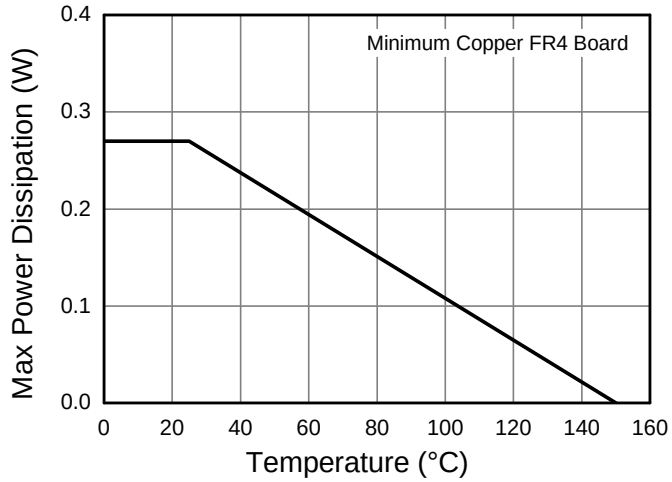
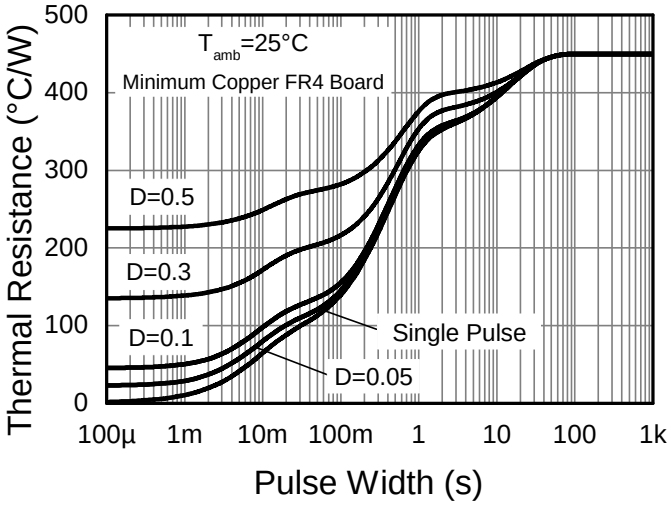
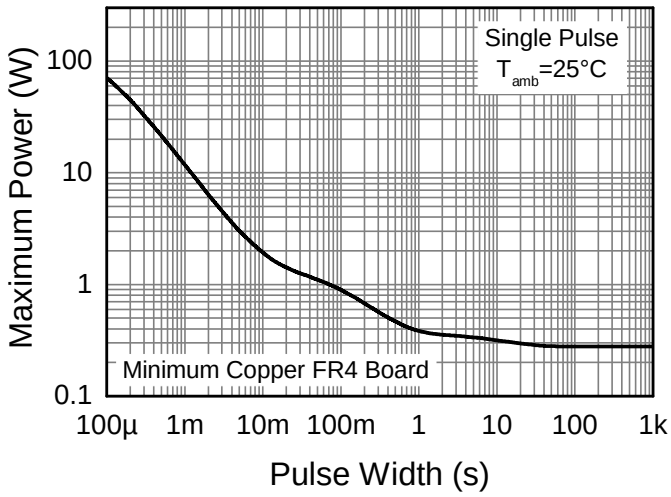
Thermal Characteristics and Derating Information



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

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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	$\Delta R_2/R_1$	-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	$\Delta R_2/R_1$	-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.

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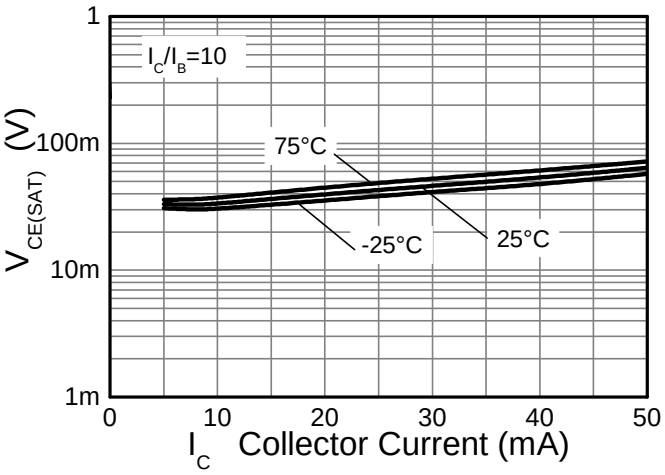
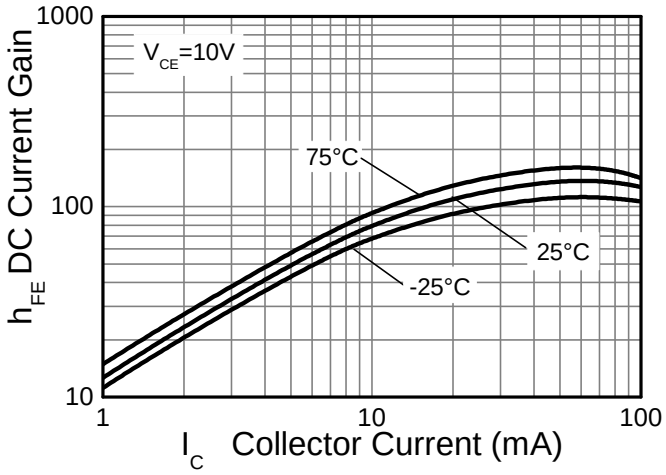
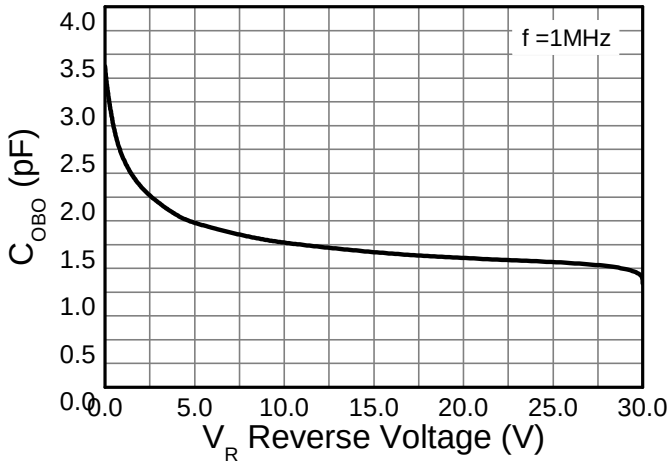
Typical Curves – NPN Section (@T_A = +25°C, unless otherwise specified.)



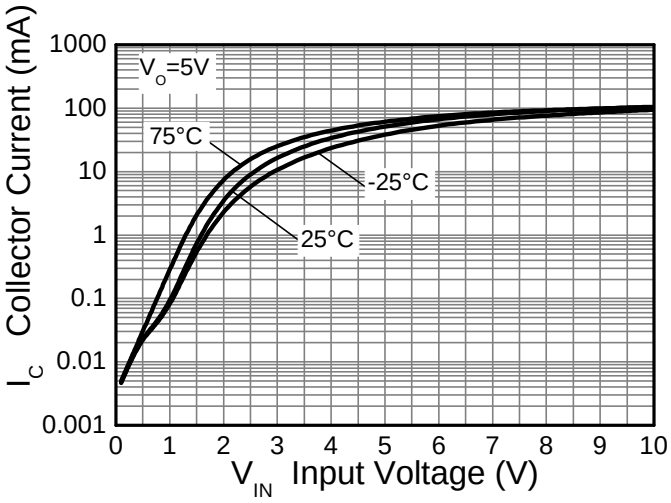
$V_{CE(SAT)}$ v Collector Current



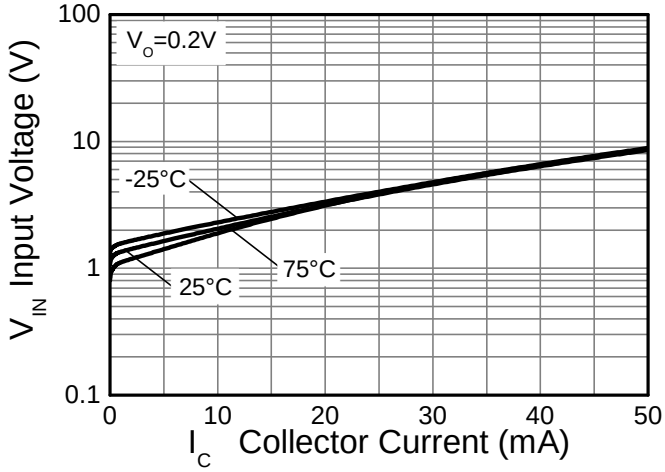
h_{FE} v Collector Current



Output Capacitance



Collector Current v Input Voltage



Input Voltage v Collector Current

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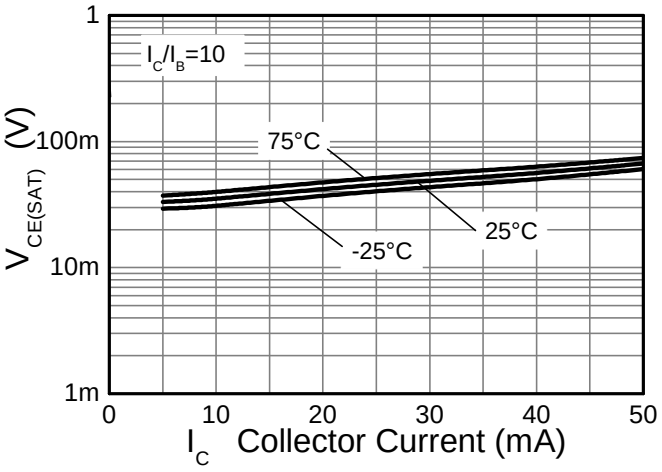
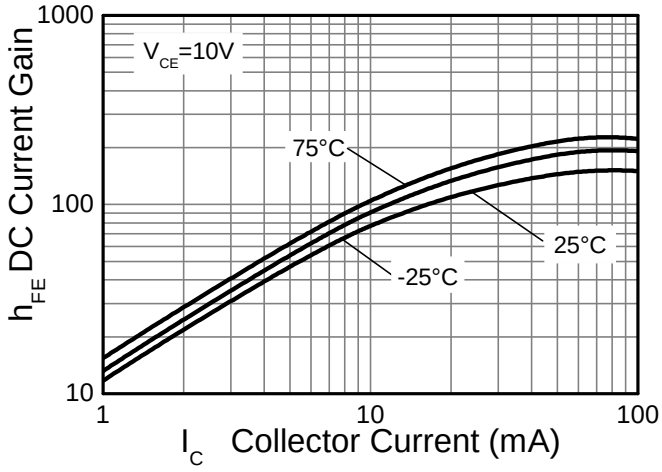
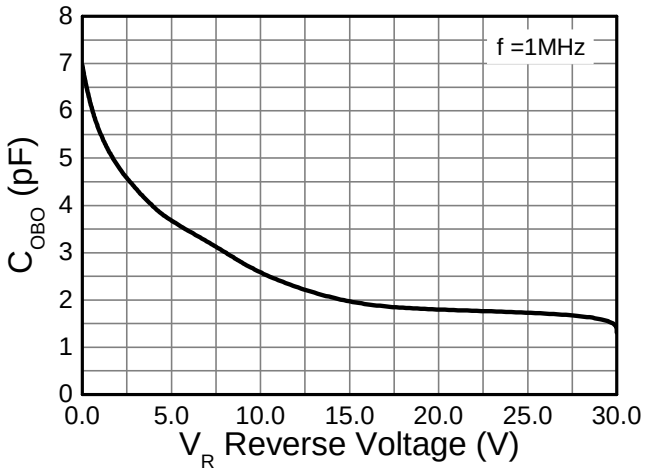
Typical Curves – PNP Section (@T_A = +25°C, unless otherwise specified.)



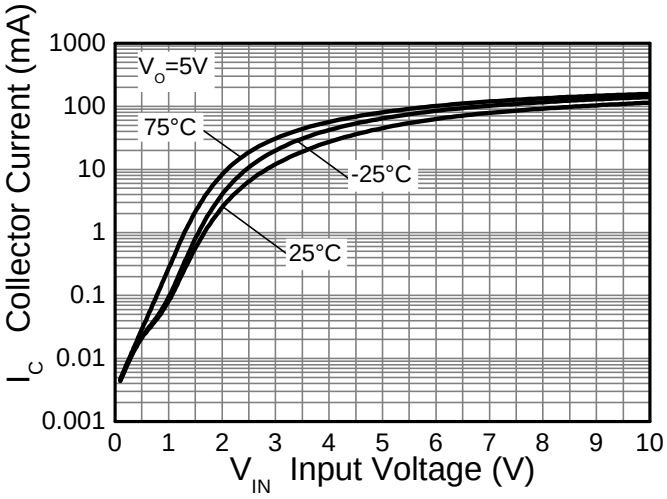
$V_{CE(SAT)}$ v Collector Current



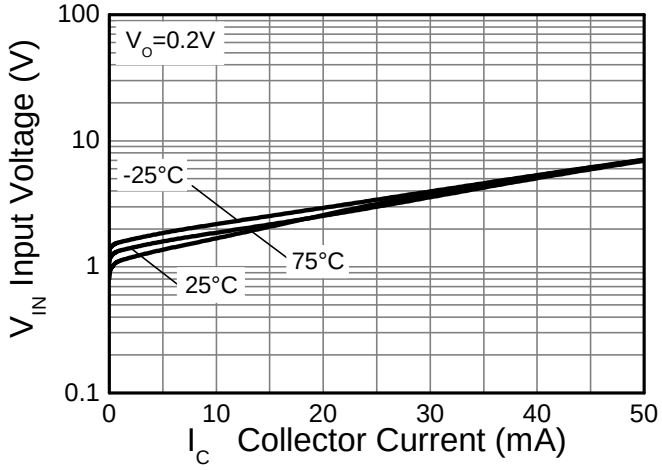
h_{FE} v Collector Current



Output Capacitance



Collector Current v Input Voltage



Input Voltage v Collector Current

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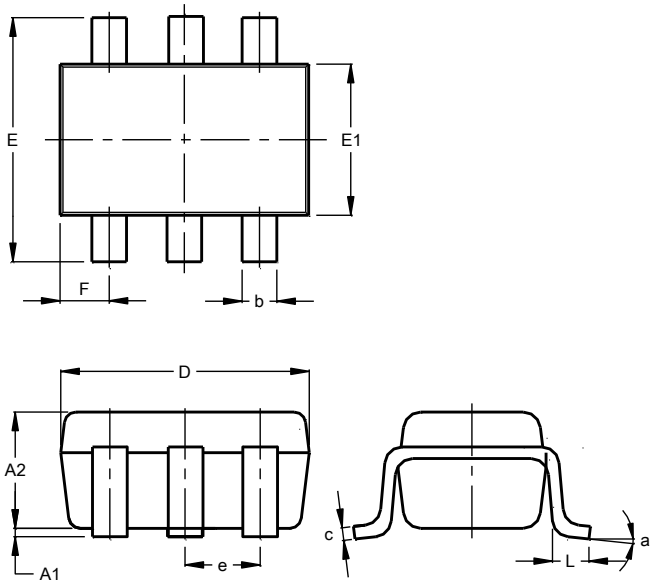
Package Outline Dimensions

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

SOT363

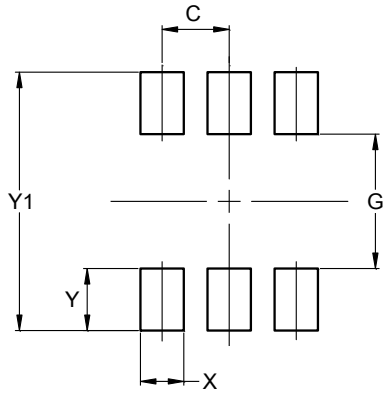


SOT363			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.90	1.00	1.00
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

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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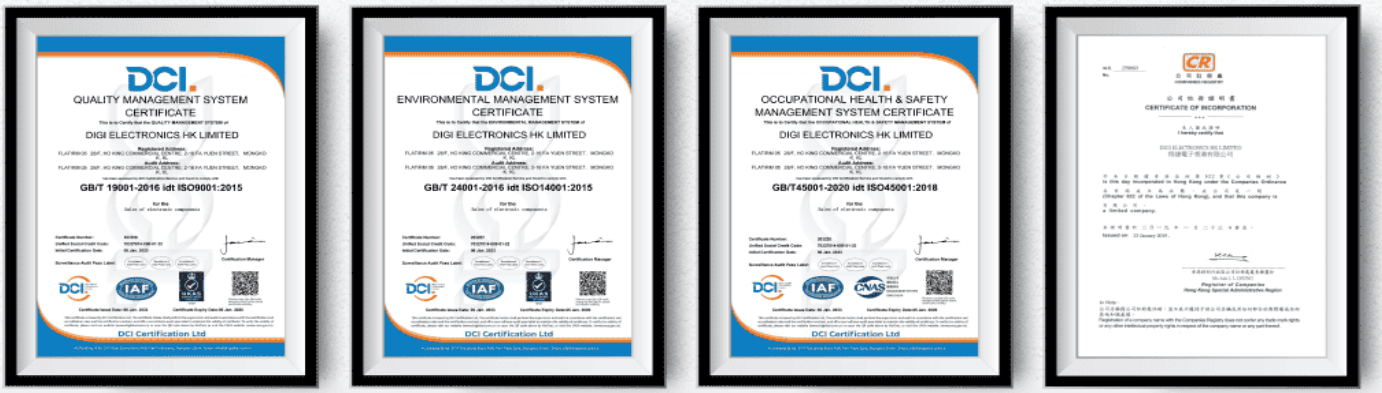

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