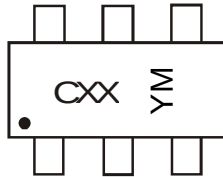


Marking Information

SOT363



CXX = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: F = 2018)
M = Month (ex: 9 = September)

Date Code Key

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Code	F	G	H	I	J	K	L	M	N	O	P

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 -10 to +40 -6 to +40 -5 to +12 -10 to +40 -5V Max -10 to +30 -5V Max -10 to +30 -10 to +40	V
Output Current	I _O	30 30 70 100 50 100 100 100 100 20	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)>	DCX124EU	V _{IN}	+10 to -40	V
	DCX144EU		+10 to -40	
	DCX114YU		+6 to -40	
	DCX123JU		+5 to -12	
	DCX114EU		+10 to -40	
	DCX143TU		+5V Max	
	DCX143EU		+10 to -30	
	DCX114TU		+5V Max	
	DCX143ZU		+5 to -30	
	DCX115EU		+10 to -40	
Output Current	DCX124EU	I _O	-30	mA
	DCX144EU		-30	
	DCX114YU		-70	
	DCX123JU		-100	
	DCX114EU		-50	
	DCX143TU		-100	
	DCX143EU		-100	
	DCX114TU		-100	
	DCX143ZU		-100	
	DCX115EU		-20	
Output Current		I _C (Max)	-100	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Notes 7 & 8)	P _D	200	mW
Thermal Resistance, Junction to Ambient Air (Note 7)	R _{θJA}	625	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Notes: 7. Mounted on FR-4 PC Board with minimum recommended pad layout.
8. 150mW per element must not be exceeded.

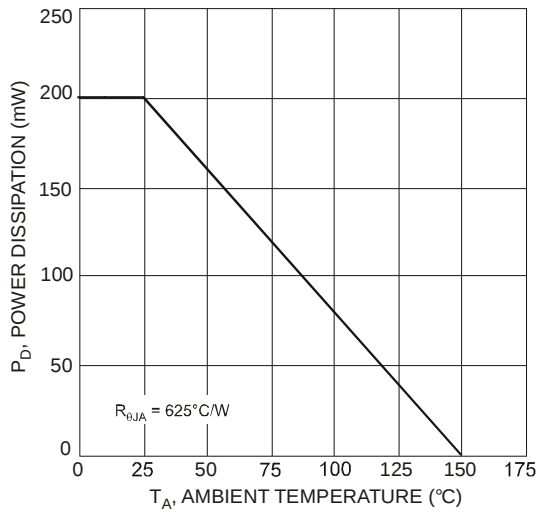
Electrical Characteristics NPN Section (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
R1 Only (DCX143TU & DCX114TU)							
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 DCX143TU I _C /I _B = 1mA / 0.1mA DCX114TU
DC Current Transfer Ratio		h _{FE}	100	250	600	—	I _C = 1mA, V _{CE} = 5V
Input Resistor (R ₁) Tolerance		ΔR ₁	-30	—	+30	%	—
Gain-Bandwidth Product		f _T	—	250	—	MHz	V _{CE} = 10V, I _E = -5mA, f = 100MHz
R1/R2 Only							
Input Voltage	DCX124EU	V _{I(OFF)}	0.5	1.1	—	V	V _{CC} = 5V, I _O = 100μA
	DCX144EU		0.5	1.1			
	DCX114YU		0.3	—			
	DCX123JU		0.5	—			
	DCX114EU		0.5	1.1			
	DCX143EU		0.5	1.16			
	DCX143ZU		0.5	—			
	DCX115EU		0.5	—			
	DCX124EU	V _{I(ON)}	—	1.9	3.0		V _O = 0.3V, I _O = 5mA
	DCX144EU			1.9	3.0		V _O = 0.3V, I _O = 2mA
	DCX114YU			—	1.4		V _O = 0.3V, I _O = 1mA
	DCX123JU			—	1.1		V _O = 0.3V, I _O = 5mA
	DCX114EU			1.9	3.0		V _O = 0.3V, I _O = 10mA
	DCX143EU			1.99	3.0		V _O = 0.3V, I _O = 20mA
	DCX143ZU			—	1.3		V _O = 0.3V, I _O = 5mA
	DCX115EU			—	3		V _O = 0.3V, I _O = 1mA
Output Voltage	DCX124EU	V _{O(ON)}	—	0.1	0.3	V	I _O /I _I = 10mA / 0.5mA
	DCX144EU						I _O /I _I = 10mA / 0.5mA
	DCX114YU						I _O /I _I = 5mA / 0.25mA
	DCX123JU						I _O /I _I = 5mA / 0.25mA
	DCX114EU						I _O /I _I = 10mA / 0.5mA
	DCX143EU						I _O /I _I = 10mA / 0.5mA
	DCX143ZU						I _O /I _I = 5mA / 0.25mA
	DCX115EU						I _O /I _I = 10mA / 0.5mA
Input Current	DCX124EU	I _I	—	—	0.36	mA	V _I = 5V
	DCX144EU				0.18		
	DCX114YU				0.88		
	DCX123JU				3.6		
	DCX114EU				0.88		
	DCX143EU				0.88		
	DCX143ZU				1.8		
	DCX115EU				0.15		
Output Current		I _{O(OFF)}	—	—	0.5	μA	V _{CC} = 50V, V _I = 0V
DC Current Gain	DCX124EU	G _I	56	—	—	—	V _O = 5V, I _O = 5mA
	DCX124EUQ		60				V _O = 5V, I _O = 5mA
	DCX144EU		68				V _O = 5V, I _O = 5mA
	DCX114YU		68				V _O = 5V, I _O = 10mA
	DCX114YUQ		80				V _O = 5V, I _O = 10mA
	DCX123JU		80				V _O = 5V, I _O = 10mA
	DCX114EU		30				V _O = 5V, I _O = 5mA
	DCX143EU		50				V _O = 5V, I _O = 10mA
	DCX143ZU		80				V _O = 5V, I _O = 10mA
	DCX115EU		82				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		f _T	—	250	—	MHz	V _{CE} = 10V, I _E = 5mA, f = 100MHz

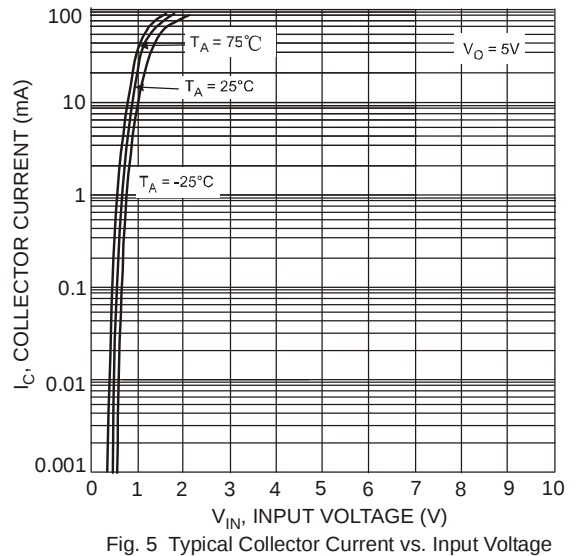
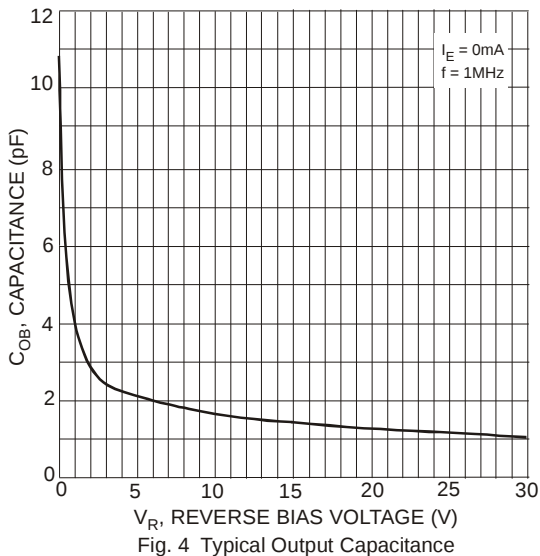
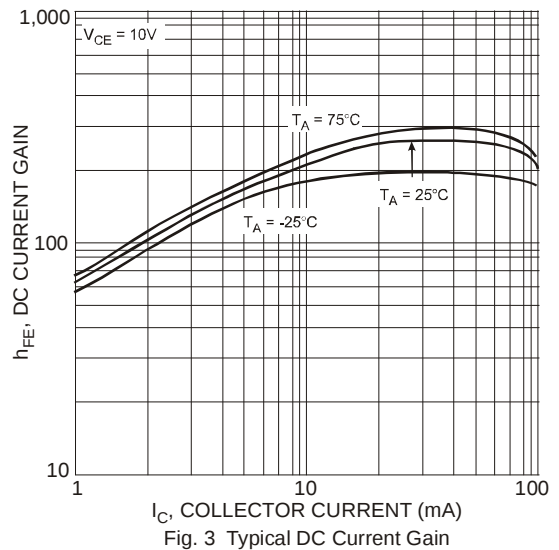
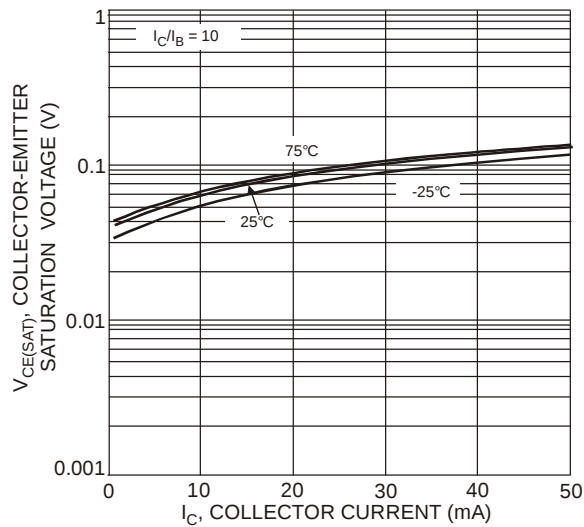
Electrical Characteristics PNP Section (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
R1 Only (DCX143TU & DCX114TU)							
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 DCX143TU I _C /I _B = 1mA / 0.1mA DCX114TU
DC Current Transfer Ratio		h _{FE}	100	250	600	—	I _C = -1mA, V _{CE} = -5V
Input Resistor (R ₁) Tolerance		ΔR ₁	-30	—	+30	%	—
Gain-Bandwidth Product		f _T	—	250	—	MHz	V _{CE} = -10V, I _E = 5mA, f = 100MHz
R1/R2 Only							
Input Voltage	DCX124EU	V _{I(OFF)}	-0.5	-1.1	—	V	V _{CC} = -5V, I _O = -100μA
	DCX144EU		-0.5	-1.1			
	DCX114YU		-0.3	—			
	DCX123JU		-0.5	—			
	DCX114EU		-0.5	-1.1			
	DCX143EU		-0.5	-1.16			
	DCX143ZU		-0.5	—			
	DCX115EU		-0.5	—			
	DCX124EU	V _{I(ON)}	—	-1.9	-3.0		V _O = -0.3V, I _O = -5mA
	DCX144EU		—	-1.9	-3.0		V _O = -0.3V, I _O = -2mA
	DCX114YU		—	—	-1.4		V _O = -0.3V, I _O = -1mA
	DCX123JU		—	—	-1.1		V _O = -0.3V, I _O = -5mA
	DCX114EU		—	-1.9	-3.0		V _O = -0.3V, I _O = -10mA
	DCX143EU		—	-2.5	-3.0		V _O = -0.3V, I _O = -20mA
	DCX143ZU		—	—	-1.3		V _O = -0.3V, I _O = -5mA
	DCX115EU		—	—	-3		V _O = -0.3V, I _O = -1mA
Output Voltage	DCX124EU	V _{O(ON)}	—	-0.1	-0.3	V	I _O /I _I = -10mA / -0.5mA
	DCX144EU						I _O /I _I = -10mA / -0.5mA
	DCX114YU						I _O /I _I = -5mA / -0.25mA
	DCX123JU						I _O /I _I = -5mA / -0.25mA
	DCX114EU						I _O /I _I = -10mA / -0.5mA
	DCX143EU						I _O /I _I = -10mA / -0.5mA
	DCX143ZU						I _O /I _I = -5mA / -0.25mA
	DCX115EU						I _O /I _I = -10mA / -0.5mA
Input Current	DCX124EU	I _I	—	—	-0.36 -0.18 -0.88 -3.6 -0.88 -0.88 -1.8 -0.15	mA	V _I = -5V
	DCX144EU						
	DCX114YU						
	DCX123JU						
	DCX114EU						
	DCX143EU						
	DCX143ZU						
	DCX115EU						
Output Current		I _{O(OFF)}	—	—	-0.5	μA	V _{CC} = 50V, V _I = 0V
DC Current Gain	DCX124EU	G _I	—	—	—	—	V _O = -5V, I _O = -5mA
	DCX124EUQ						V _O = -5V, I _O = -5mA
	DCX144EU						V _O = -5V, I _O = -5mA
	DCX114YU						V _O = -5V, I _O = -10mA
	DCX114YUQ						V _O = -5V, I _O = -10mA
	DCX123JU						V _O = -5V, I _O = -10mA
	DCX114EU						V _O = -5V, I _O = -5mA
	DCX143EU						V _O = -5V, I _O = -10mA
	DCX143ZU						V _O = -5V, I _O = -10mA
	DCX115EU						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		f _T	—	250	—	MHz	V _{CE} = -10V, I _E = -5mA, f = 100MHz

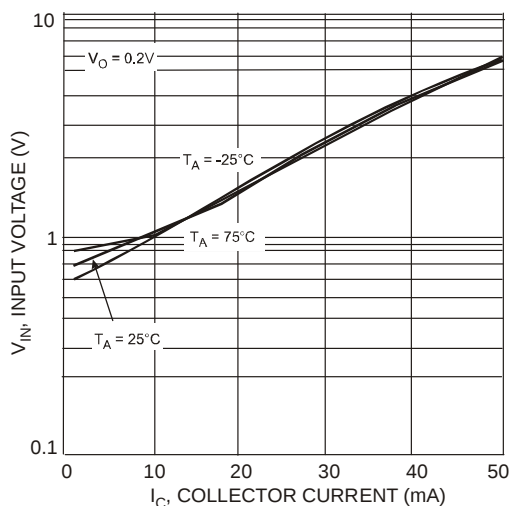
Typical Curves – Total Device



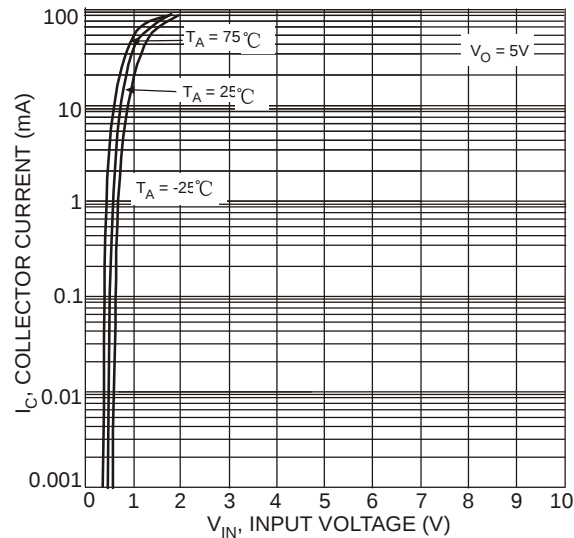
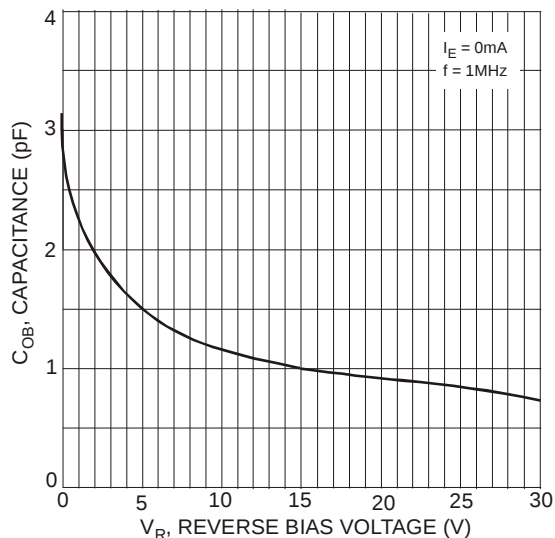
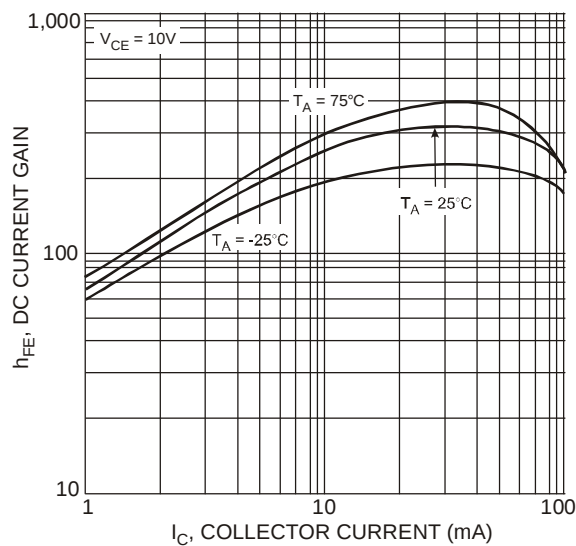
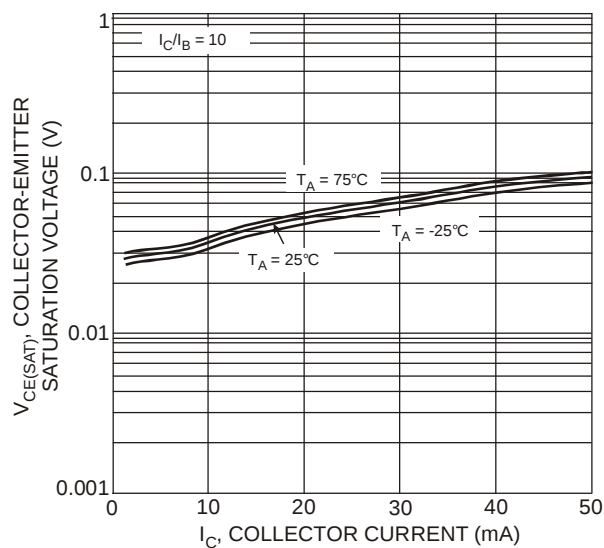
Typical Curves – DCX123JU PNP Section (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



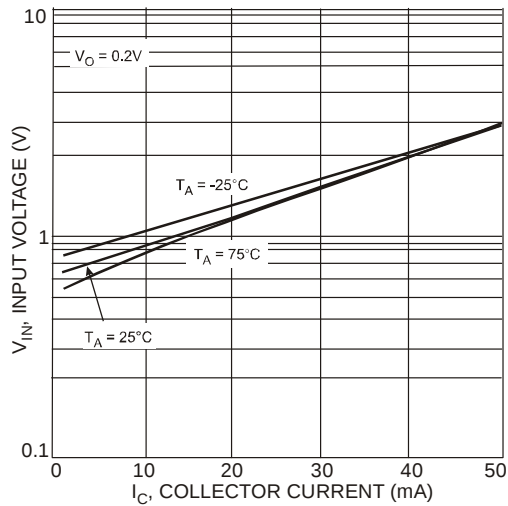
Typical Curves – DCX123JU PNP Section (Cont.)



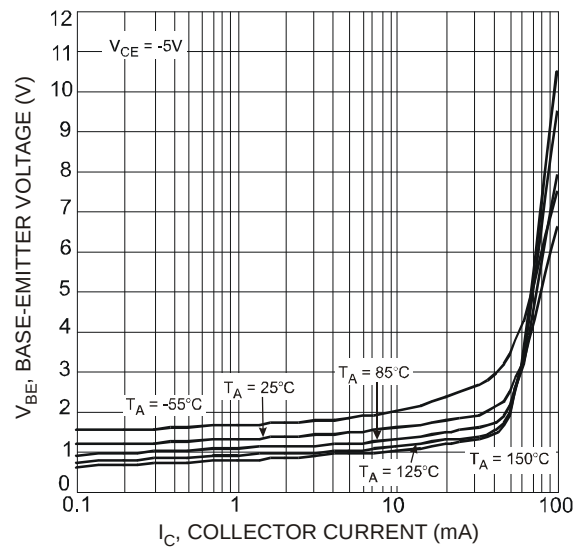
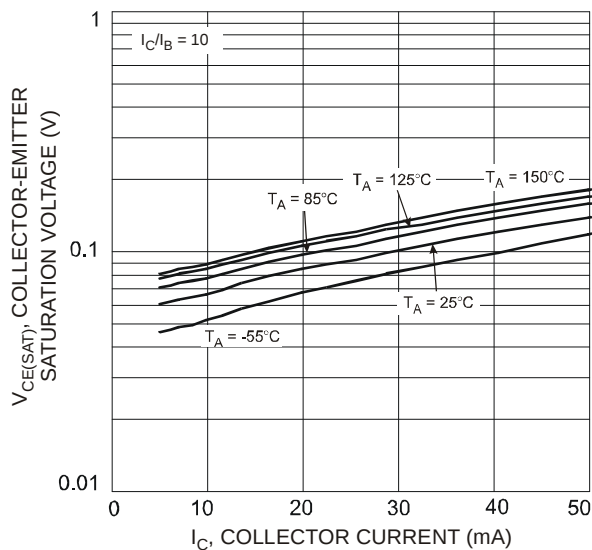
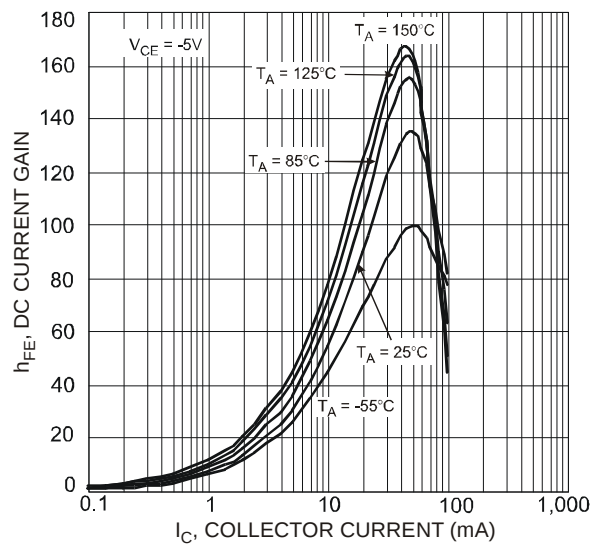
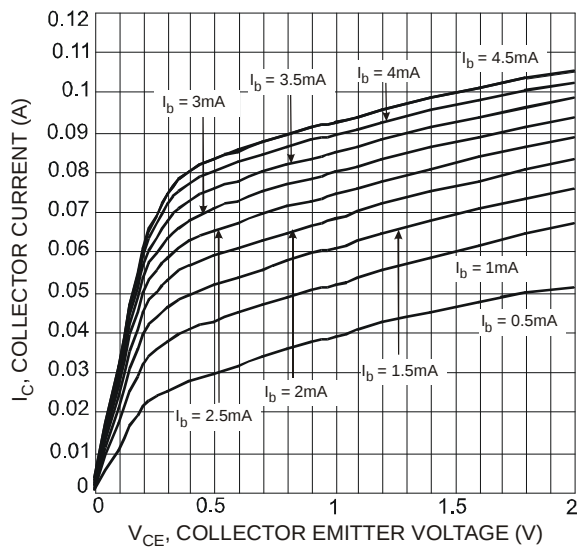
Typical Curves – DCX123JU NPN Section (@T_A = +25°C, unless otherwise specified.)



Typical Curves – DCX123JU NPN Section (Cont.)



Typical Curves – DCX143EU PNP Section (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Typical Curves – DCX143EU PNP Section (Cont.)

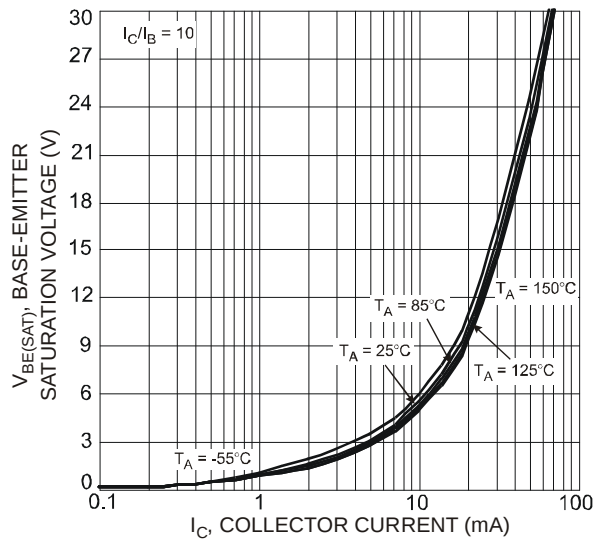


Fig. 16 Typical $V_{BE(SAT)}$ vs. I_C

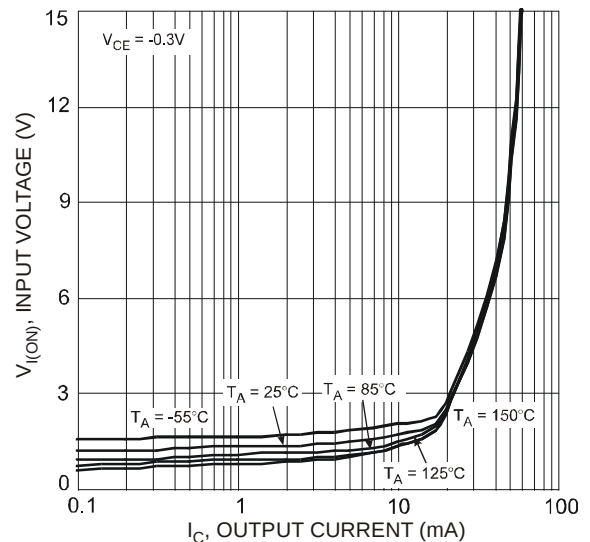


Fig. 17 Typical $V_{I(ON)}$ vs. I_C

Typical Curves – DCX143EU NPN Section (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

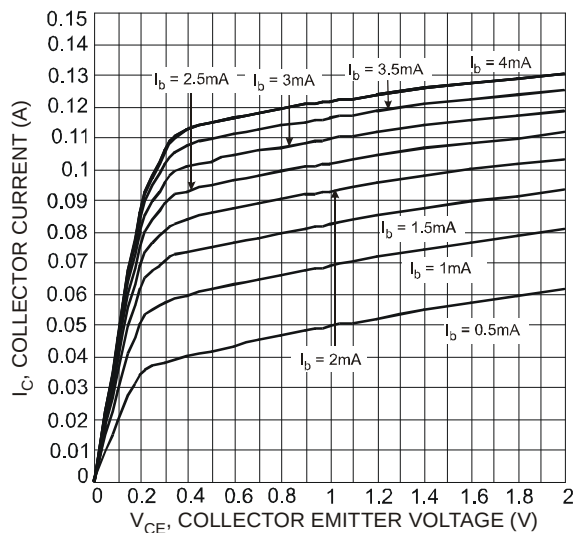


Fig. 18 Typical V_{CE} vs. I_C

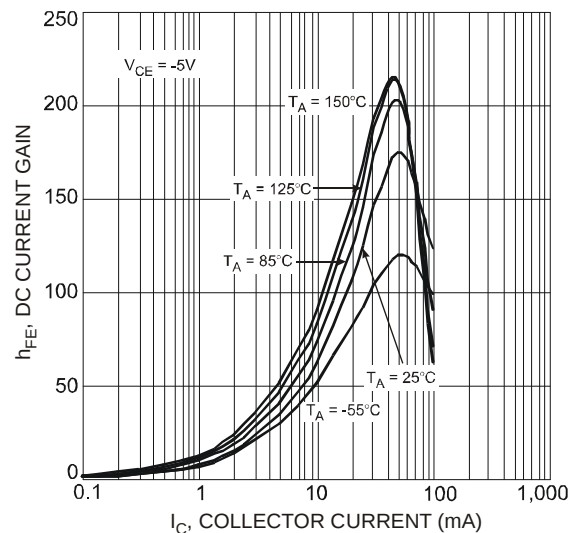


Fig. 19 Typical DC Current Gain

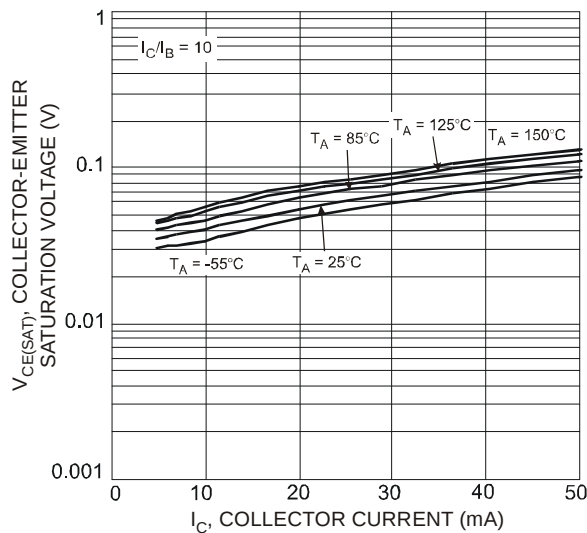


Fig. 20 Typical $V_{CE(SAT)}$ vs. I_C

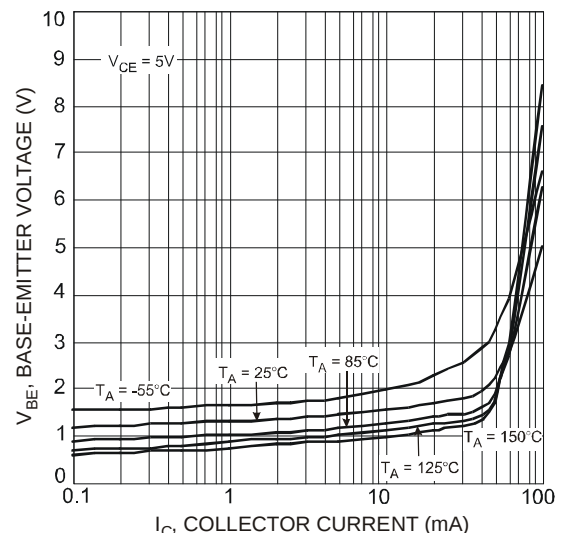
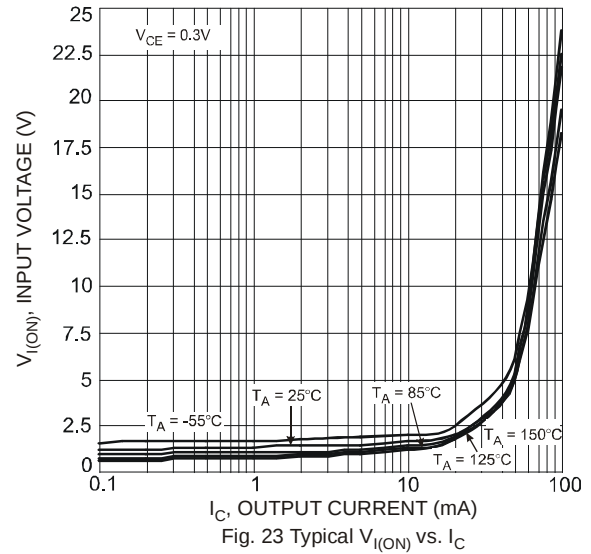
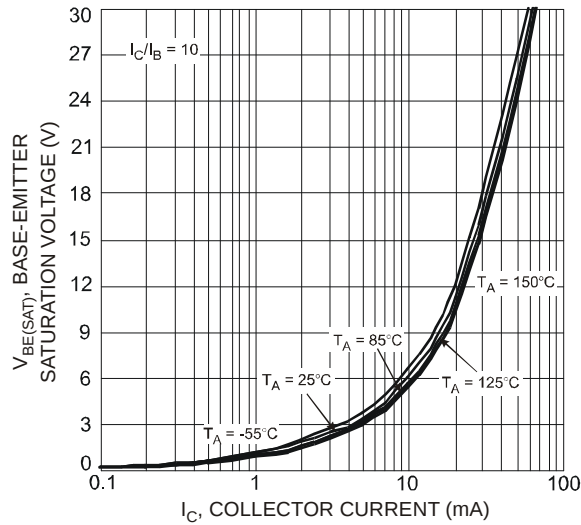
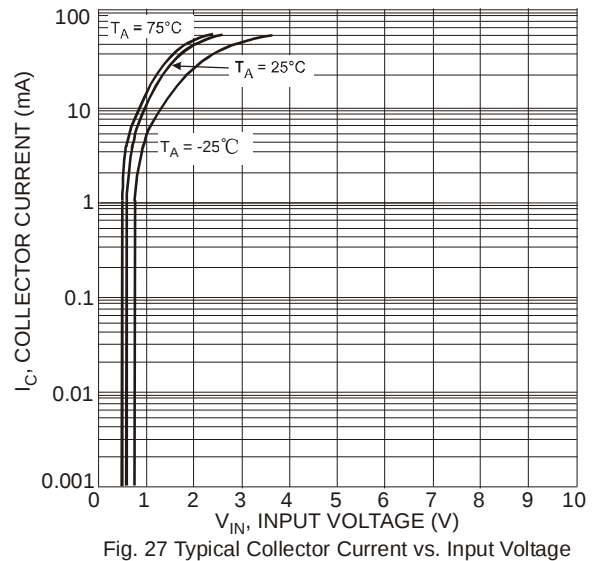
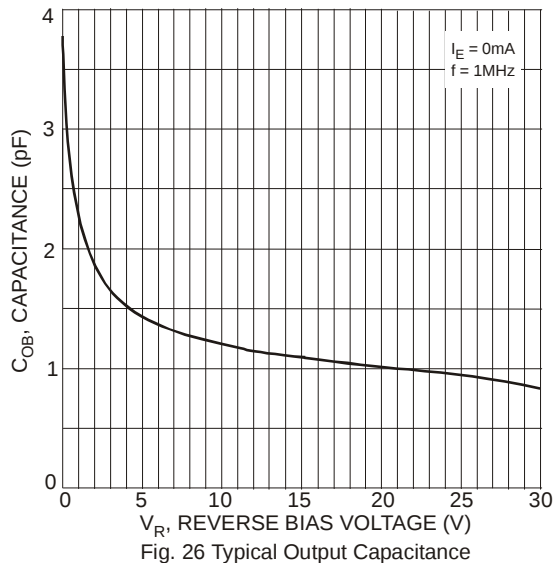
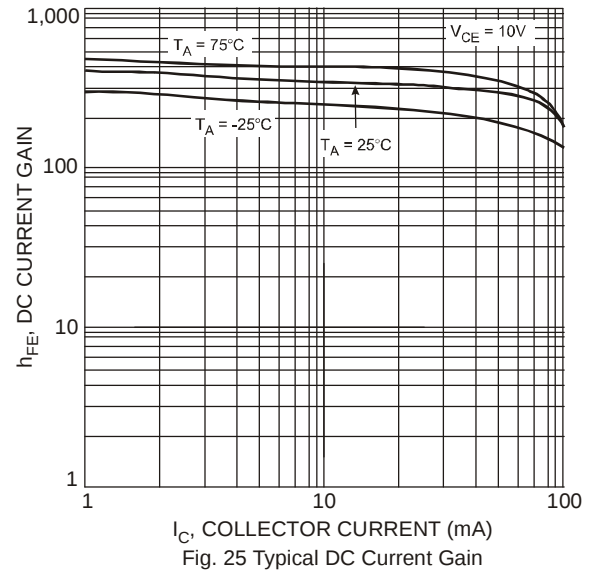
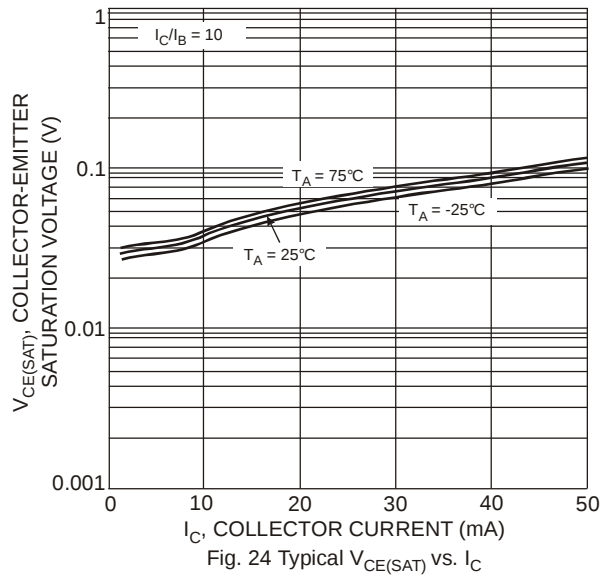


Fig. 21 Typical V_{BE} vs. I_C

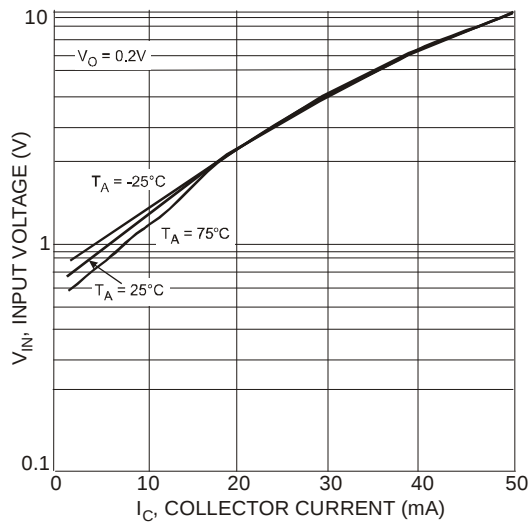
Typical Curves – DCX143EU NPN Section (Cont.)



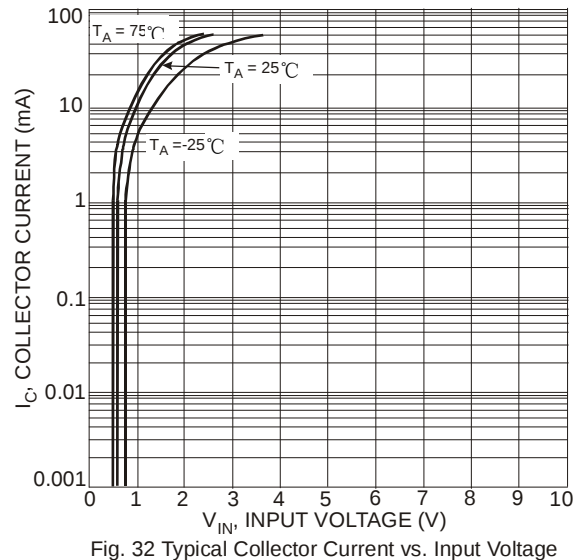
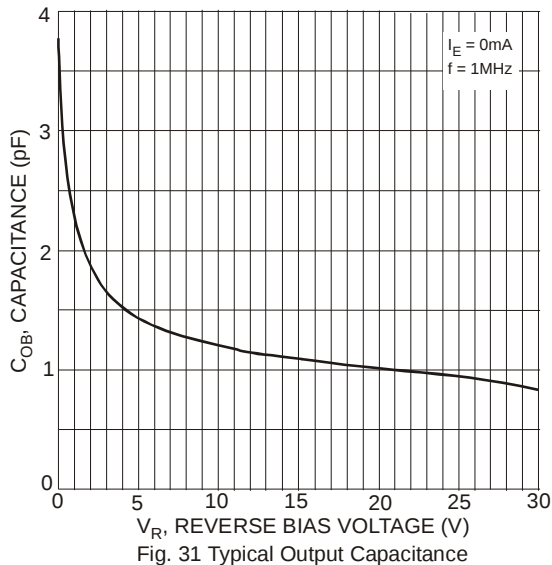
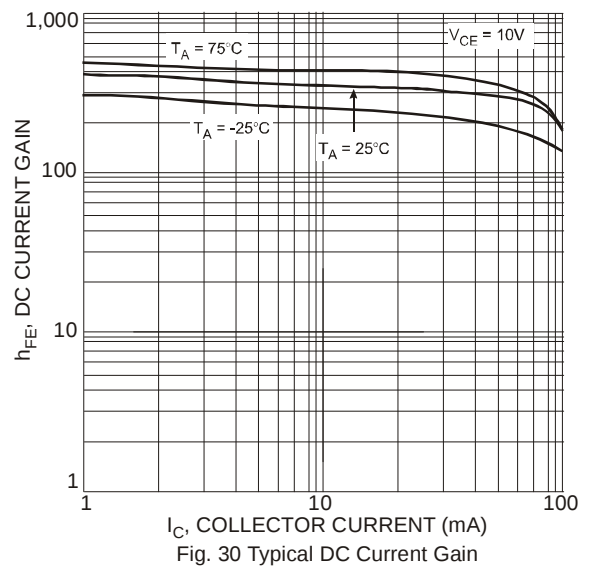
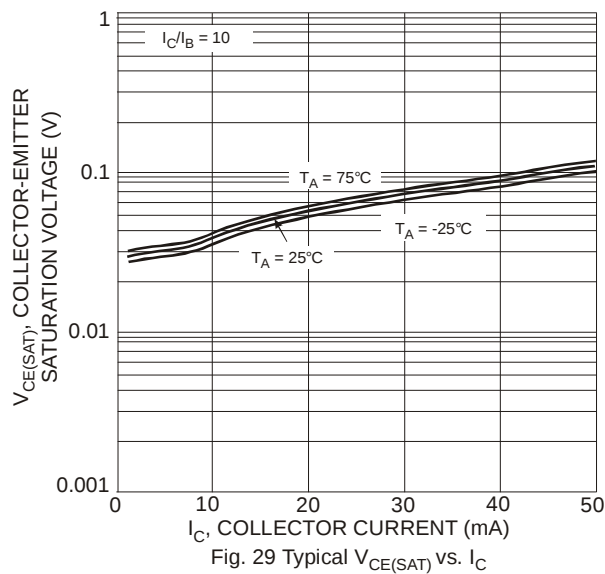
Typical Curves – DCX114TU PNP Section (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Typical Curves – DCX114TU PNP Section (Cont.)



Typical Curves – DCX114TU NPN Section (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Typical Curves – DCX114TU NPN Section (Cont.)

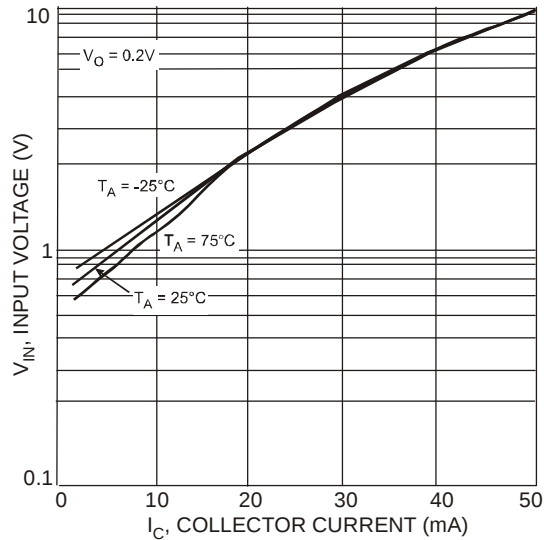
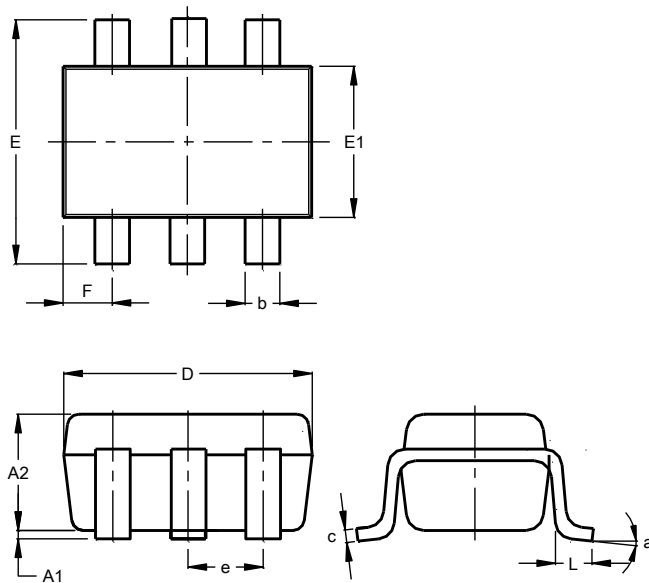


Fig. 33 Typical Input Voltage vs. Collector Current

Package Outline Dimensions

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

SOT363

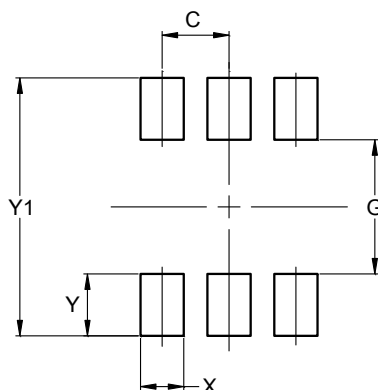


SOT363			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

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

IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes Incorporated.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or
2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2018, Diodes Incorporated

www.diodes.com