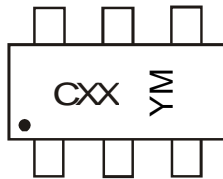


Marking Information

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}	DCX124EU	-10 to +40
		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	-10 to +30
DCX115EU	-10 to +40		
Output Current	I _O	DCX124EU	30
		DCX144EU	30
		DCX114YU	70
		DCX123JU	100
		DCX114EU	50
		DCX143TU	100
		DCX143EU	100
		DCX114TU	100
Output Current	I _C (Max)	DCX143ZU	100
		DCX115EU	20

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	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	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	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	—	—	—	—	V _O = -5V, I _O = -5mA	
	DCX124EUQ						56	V _O = -5V, I _O = -5mA
	DCX144EU						60	V _O = -5V, I _O = -5mA
	DCX114YU						68	V _O = -5V, I _O = -5mA
	DCX114YUQ						68	V _O = -5V, I _O = -10mA
	DCX123JU						80	V _O = -5V, I _O = -10mA
	DCX114EU						80	V _O = -5V, I _O = -10mA
	DCX143EU						30	V _O = -5V, I _O = -5mA
	DCX143ZU						40	V _O = -5V, I _O = -10mA
DCX115EU	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		

Typical Curves – Total Device

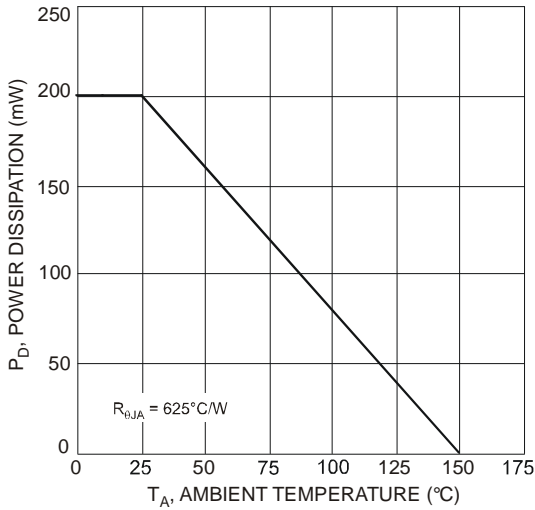


Fig. 1 Power Derating Curve

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

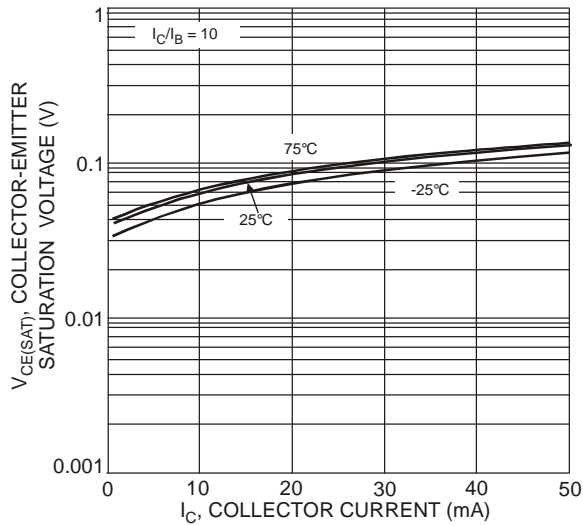


Fig. 2 Typical V_{CE(SAT)} vs. I_C

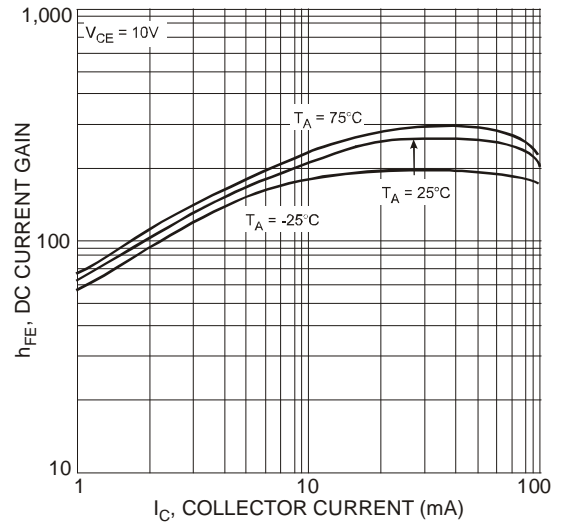


Fig. 3 Typical DC Current Gain

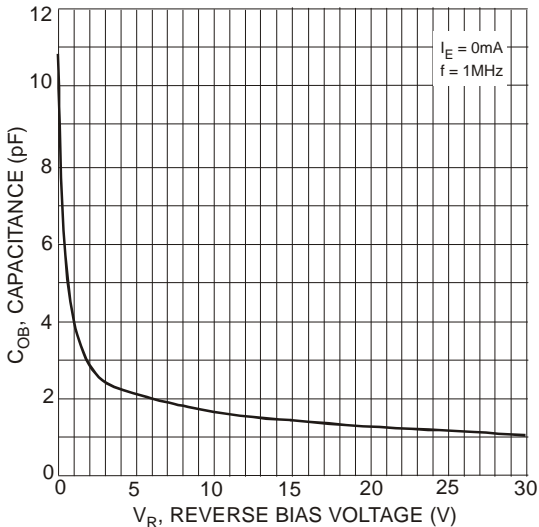


Fig. 4 Typical Output Capacitance

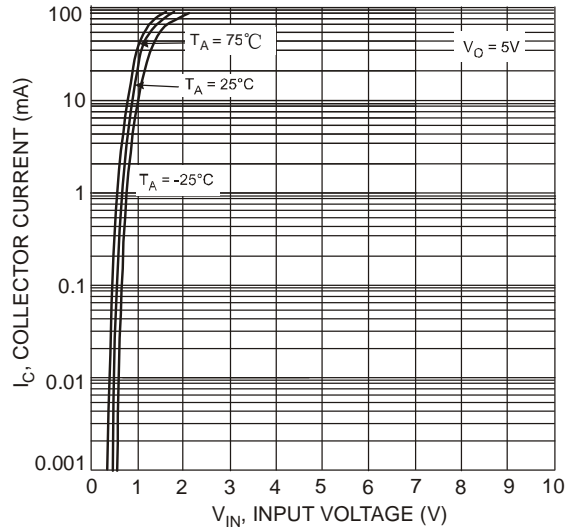


Fig. 5 Typical Collector Current vs. Input Voltage

Typical Curves – DCX123JU PNP Section (Cont.)

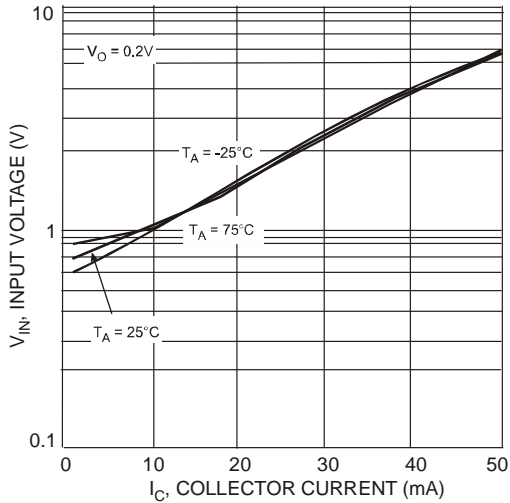


Fig. 6 Typical Input Voltage vs. Collector Current

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

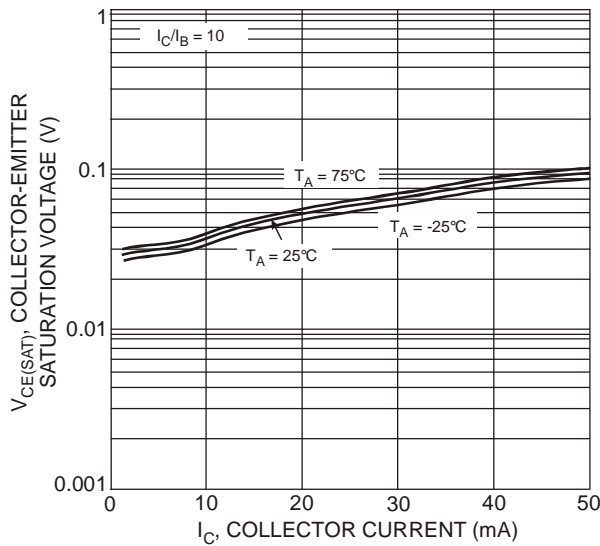


Fig. 7 Typical V_{CE(SAT)} vs. I_C

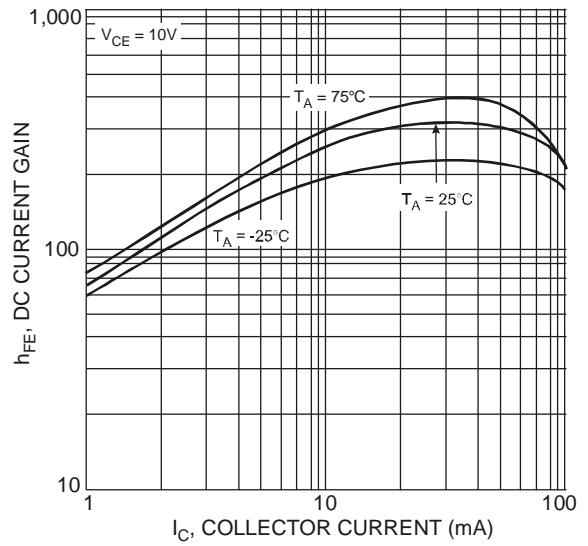


Fig. 8 Typical DC Current Gain

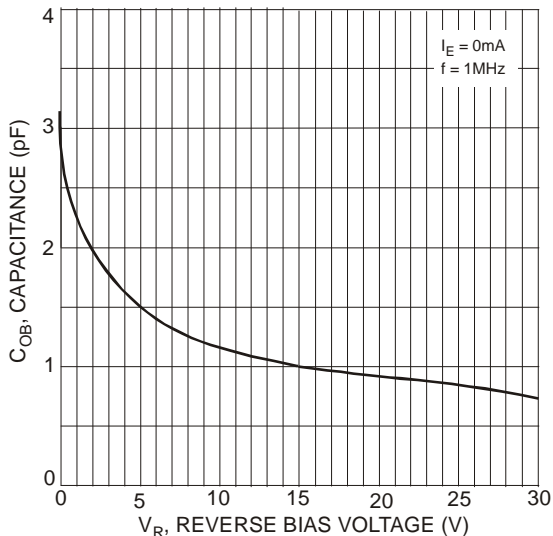


Fig. 9 Typical Output Capacitance

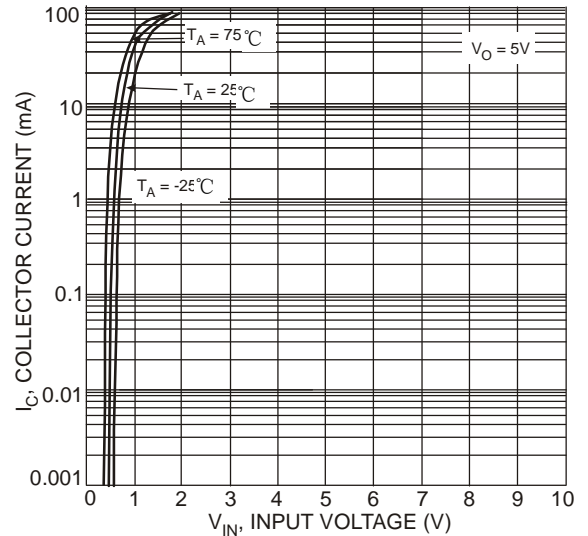


Fig. 10 Typical Collector Current vs. Input Voltage

Typical Curves – DCX123JU NPN Section (Cont.)

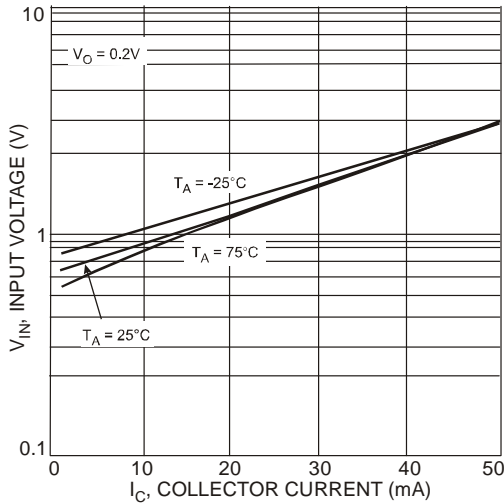


Fig. 11 Typical Input Voltage vs. Collector Current

Typical Curves – DCX143EU PNP Section (@T_A = +25°C, unless otherwise specified.)

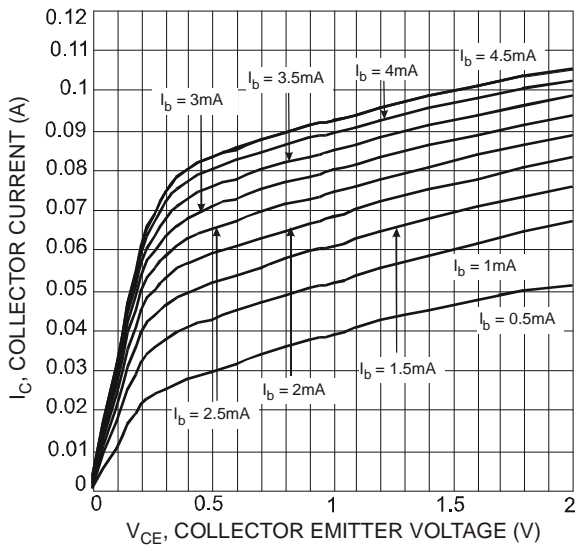


Fig. 12 Typical V_{CE} vs. I_C

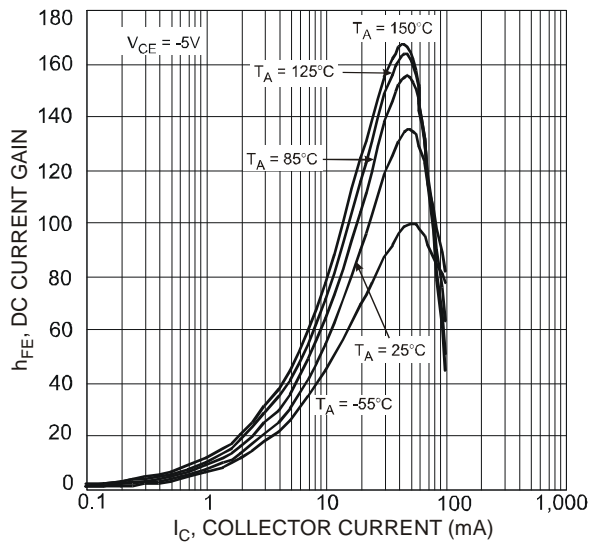


Fig. 13 Typical DC Current Gain

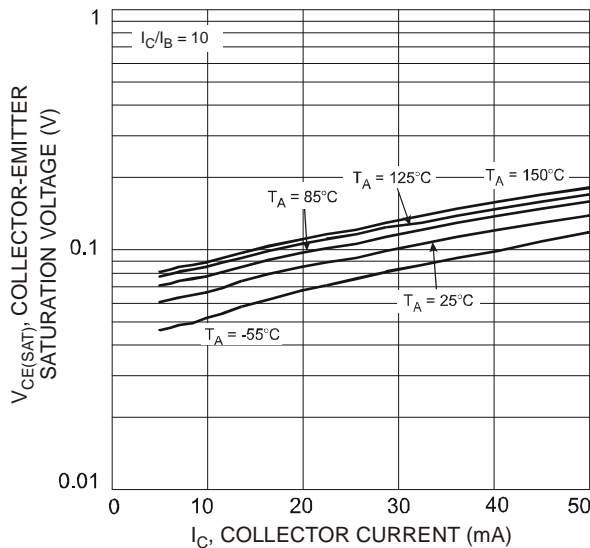


Fig. 14 Typical V_{CE(SAT)} vs. I_C

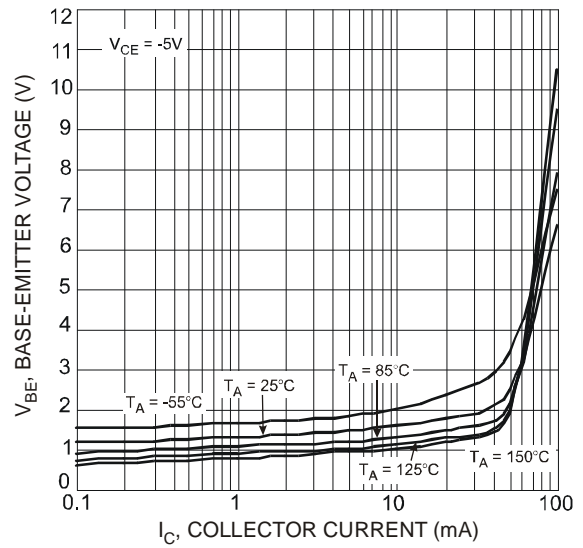


Fig. 15 Typical V_{BE} vs. I_C

Typical Curves – DCX143EU PNP Section (Cont.)

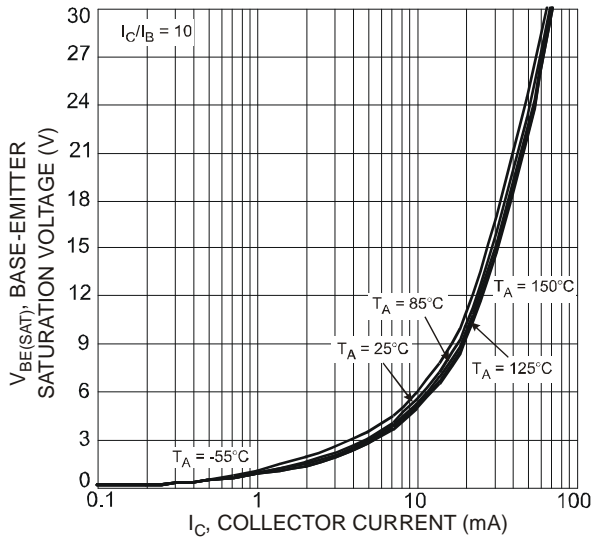


Fig. 16 Typical $V_{BE(SAT)}$ vs. I_C

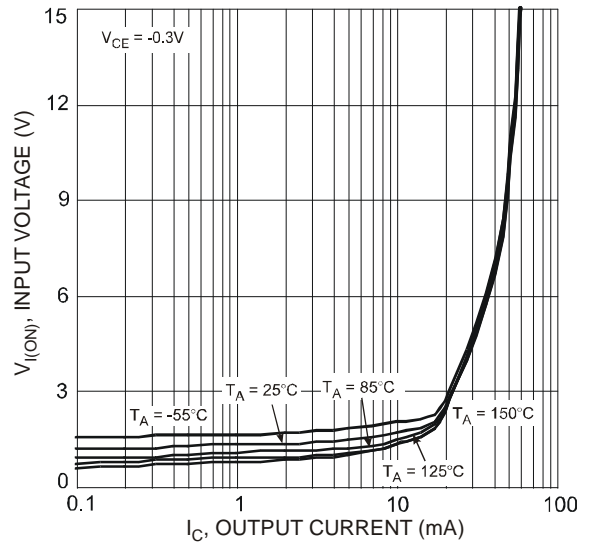


Fig. 17 Typical $V_{I(ON)}$ vs. I_C

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

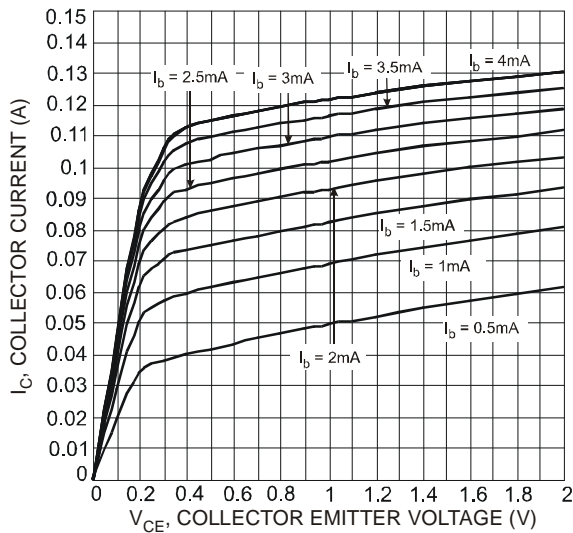


Fig. 18 Typical V_{CE} vs. I_C

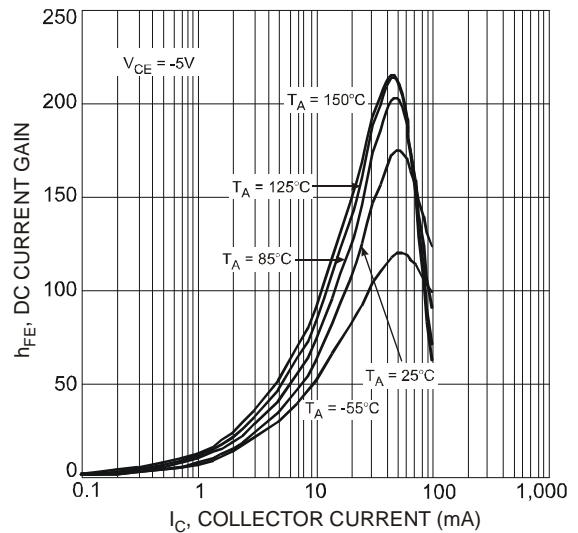


Fig. 19 Typical DC Current Gain

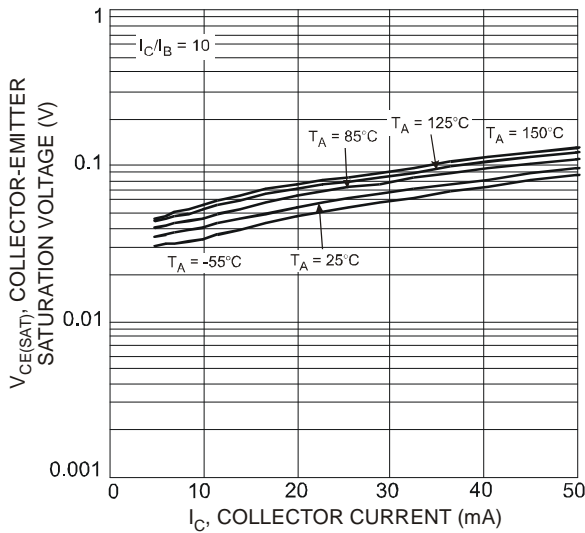


Fig. 20 Typical $V_{CE(SAT)}$ vs. I_C

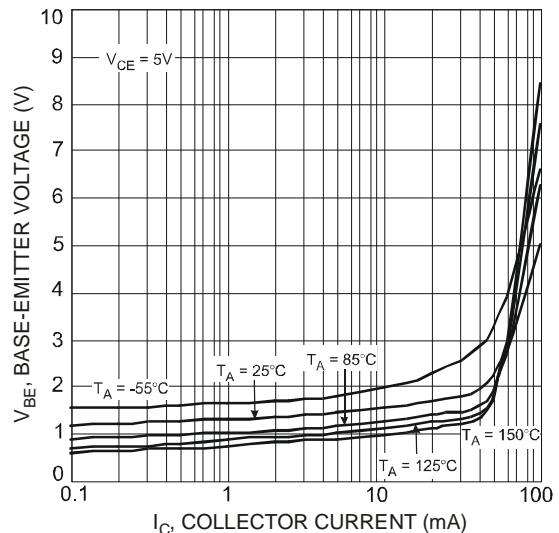


Fig. 21 Typical V_{BE} vs. I_C

Typical Curves – DCX143EU NPN Section (Cont.)

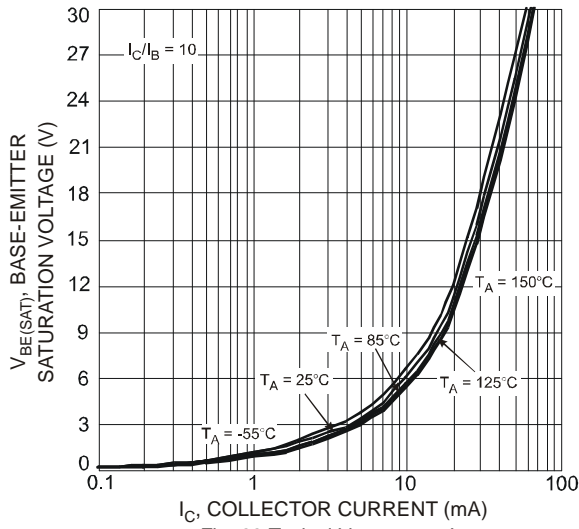


Fig. 22 Typical $V_{BE(SAT)}$ vs. I_C

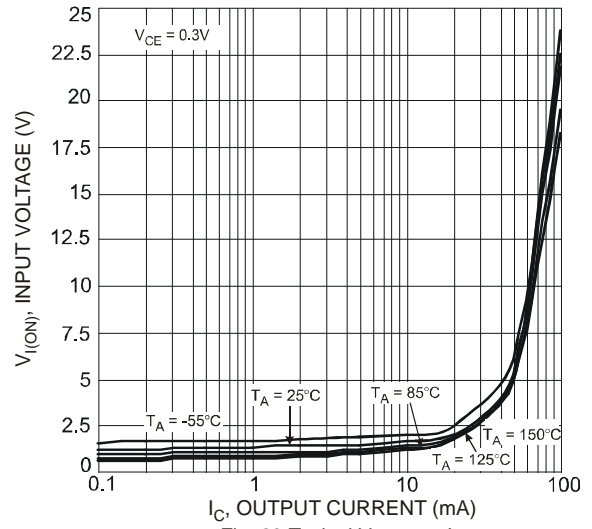


Fig. 23 Typical $V_{I(ON)}$ vs. I_C

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

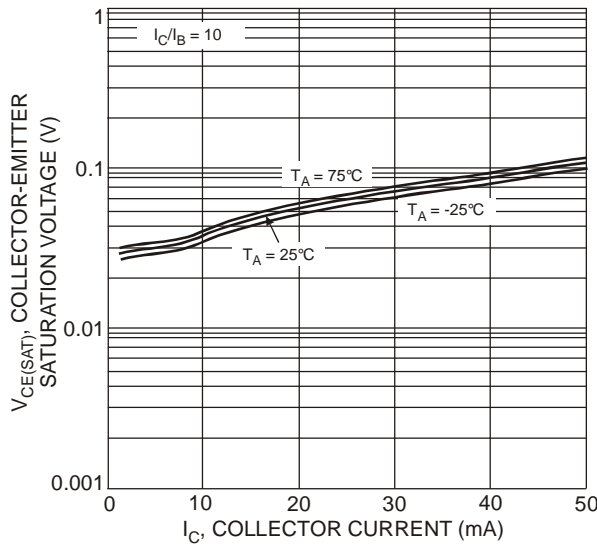


Fig. 24 Typical $V_{CE(SAT)}$ vs. I_C

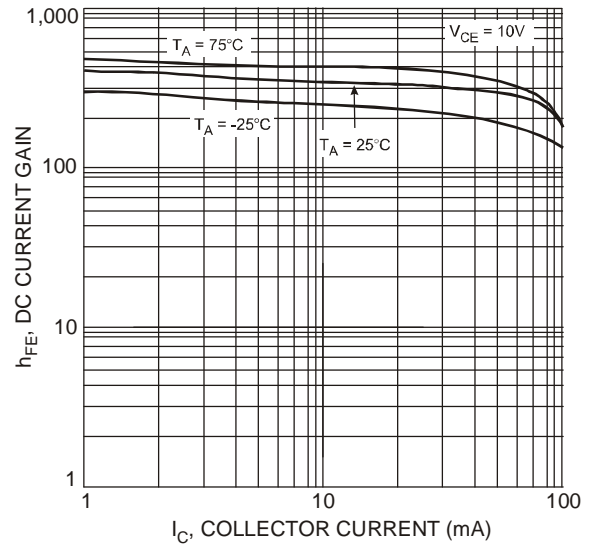


Fig. 25 Typical DC Current Gain

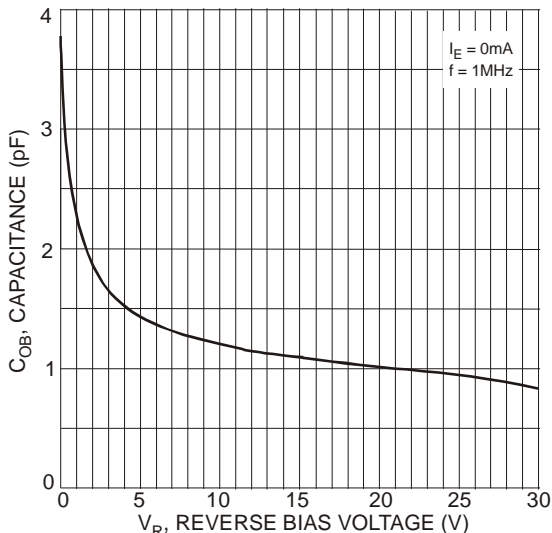


Fig. 26 Typical Output Capacitance

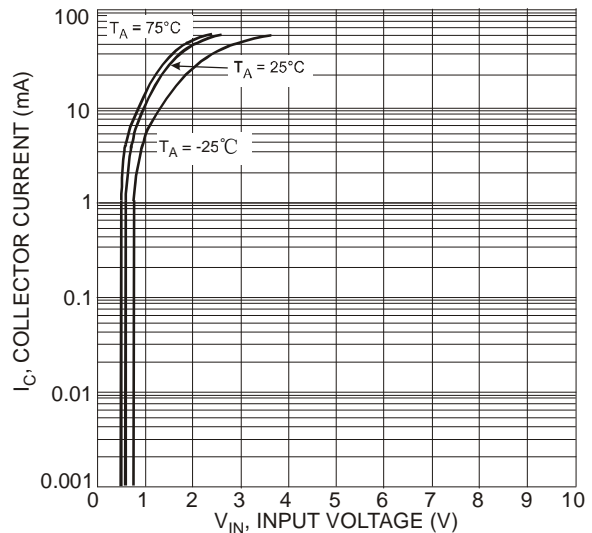


Fig. 27 Typical Collector Current vs. Input Voltage

Typical Curves – DCX114TU PNP Section (Cont.)

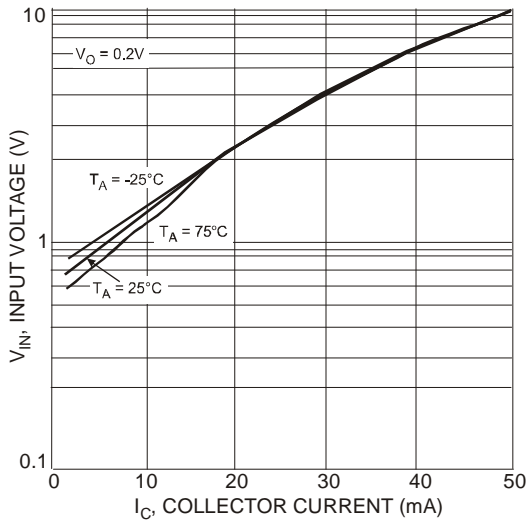


Fig. 28 Typical Input Voltage vs. Collector Current

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

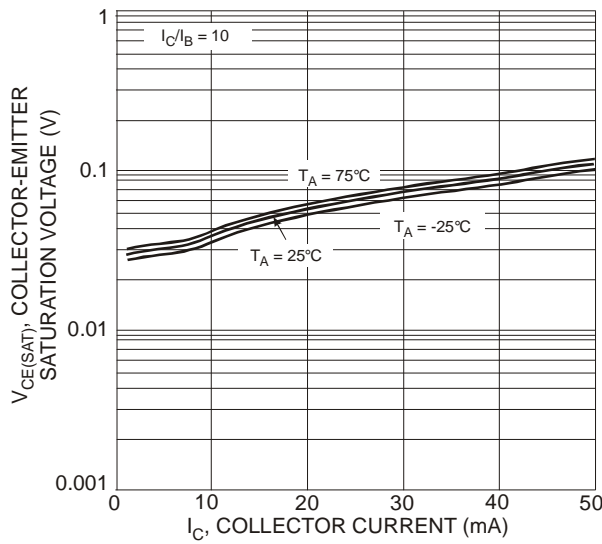


Fig. 29 Typical $V_{CE(SAT)}$ vs. I_C

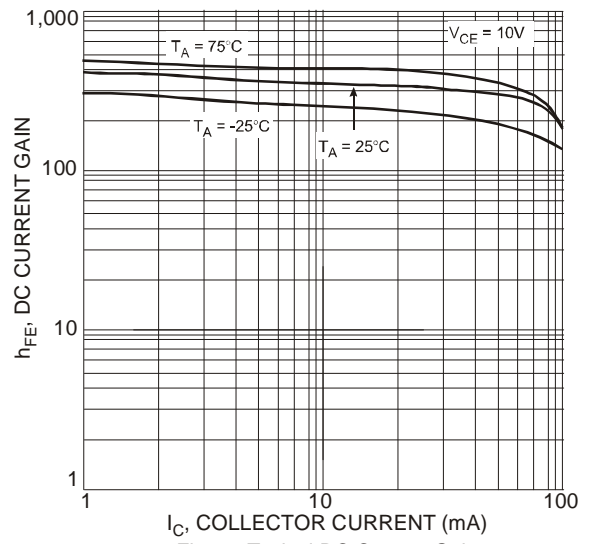


Fig. 30 Typical DC Current Gain

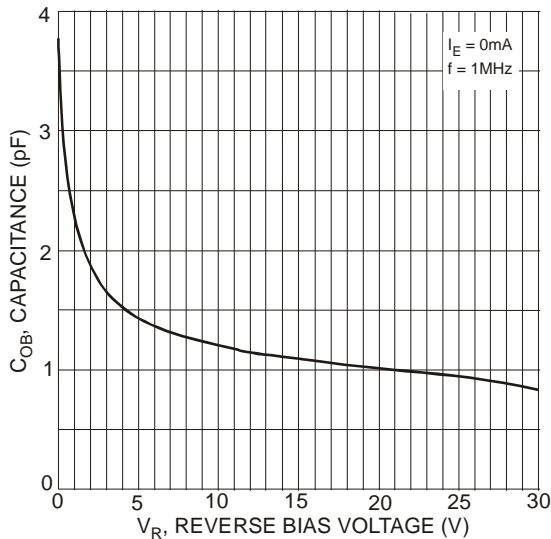


Fig. 31 Typical Output Capacitance

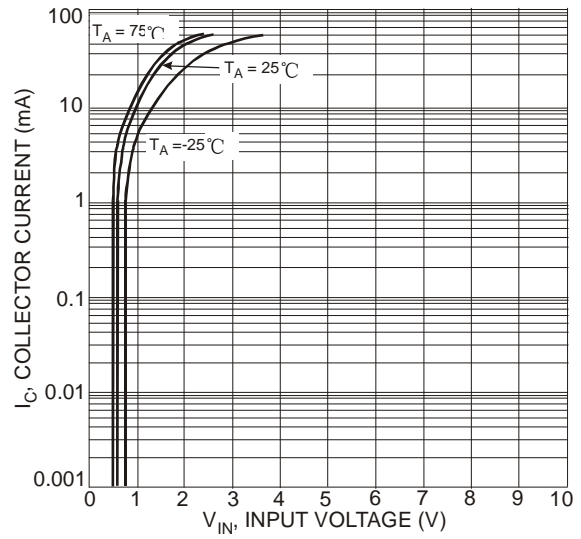


Fig. 32 Typical Collector Current vs. Input Voltage

Typical Curves – DCX114TU NPN Section (Cont.)

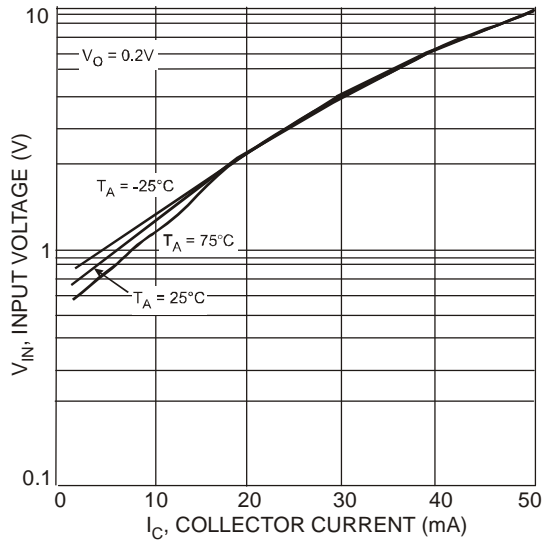
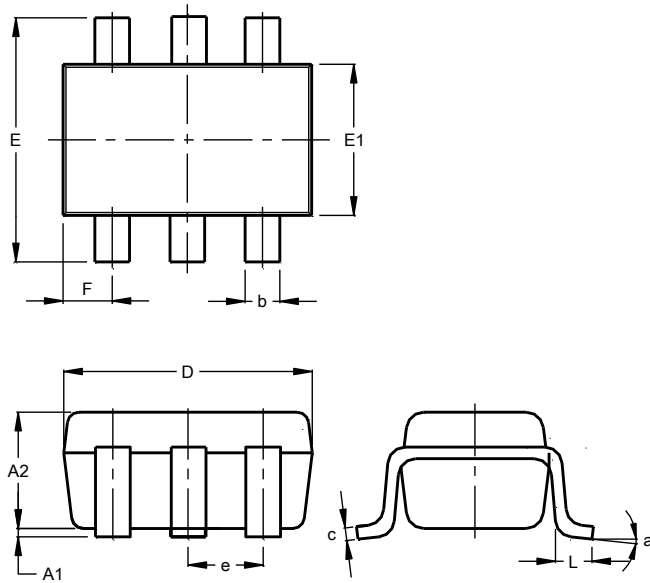


Fig. 33 Typical Input Voltage vs. Collector Current

Package Outline Dimensions

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

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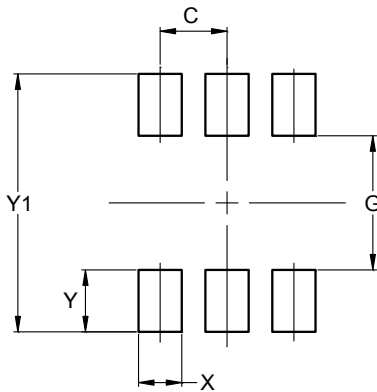


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Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

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Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.420
Y	0.600
Y1	2.500

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