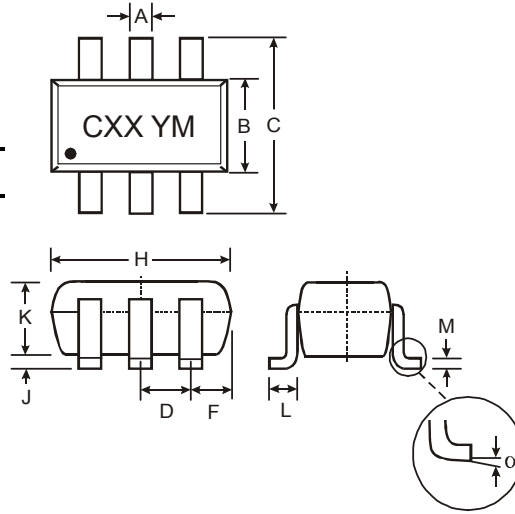


Features

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors
- **Lead Free/RoHS Compliant (Note 3)**
- **"Green" Device (Note 4 and 5)**

Mechanical Data

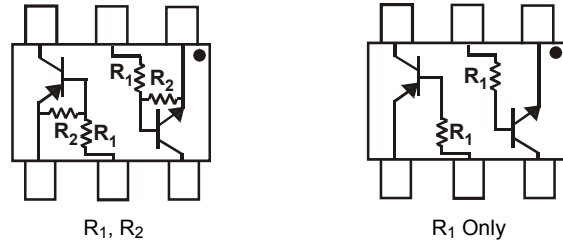
- Case: SOT-363
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish - Matte Tin Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Terminal Connections: See Diagram
- Marking Information: See Page 4
- Type Code: See Table Below
- Ordering Information: See Page 4
- Weight: 0.006 grams (approximate)



SOT-363		
Dim	Min	Max
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
F	0.30	0.40
H	1.80	2.20
J	—	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.25
α	0°	8°

All Dimensions in mm

P/N	R1 (NOM)	R2 (NOM)	Type Code
DCX122LU	0.22K	10K	C81
DCX142JU	0.47K	10K	C82
DCX122TU	0.22K	OPEN	C83
DCX142TU	0.47K	OPEN	C84



SCHEMATIC DIAGRAM

Maximum Ratings NPN Section

@T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage	V _{CC}	50	V
Input Voltage	DCX122LU DCX142JU V _{IN}	-5 to +6	V
Input Voltage	DCX122TU DCX142TU V _{EBO (MAX)}	5	V
Output Current	All I _C	100	mA
Power Dissipation	(Note 1, 2) P _d	200	mW
Thermal Resistance, Junction to Ambient Air	(Note 2) R _{θJA}	625	°C/W
Operating and Storage Temperature Range	T _j , T _{STG}	-55 to +150	°C

- Notes:
1. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.
 2. 150mW per element must not be exceeded.
 3. No purposefully added lead.
 4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 5. Product manufactured with Date Code UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

Maximum Ratings PNP Section @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	-50	V
Input Voltage	DCX122LU DCX142JU V_{IN}	+5 to -6 +5 to -6	V
Input Voltage	DCX122TU DCX142TU $V_{EBO (MAX)}$	-5	V
Output Current	All I_C	-100	mA
Power Dissipation	(Note 1,2) P_d	200	mW
Thermal Resistance, Junction to Ambient Air	(Note 1,2) $R_{\theta JA}$	625	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_j, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics NPN Section @ $T_A = 25^\circ\text{C}$ unless otherwise specified **R1, R2 Types**

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DCX122LU DCX142JU $V_{I(off)}$	0.3 0.3	—	—	V	$V_{CC} = 5V, I_O = 100\mu\text{A}$
	DCX122LU DCX142JU $V_{I(on)}$	—	—	2.0 2.0	V	$V_O = 0.3V, I_O = 20\text{mA}$ $V_O = 0.3V, I_O = 20\text{mA}$
Output Voltage	$V_{O(on)}$	—	—	0.3V	V	$I_O/I_I = 5\text{mA}/0.25\text{mA}$
Input Current	DCX122LU DCX142JU I_I	—	—	28 13	mA	$V_I = 5V$
Output Current	$I_{O(off)}$	—	—	0.5	μA	$V_{CC} = 50V, V_I = 0V$
DC Current Gain	DCX122LU DCX142JU G_I	56 56	—	—	—	$V_O = 5V, I_O = 10\text{mA}$
Gain-Bandwidth Product*	f_T	—	200	—	MHz	$V_{CE} = 10V, I_E = 5\text{mA}, f = 100\text{MHz}$

* Transistor - For Reference Only

Electrical Characteristics NPN Section @ $T_A = 25^\circ\text{C}$ unless otherwise specified **R1 Only**

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	50	—	—	V	$I_C = 50\mu\text{A}$
Collector-Emitter Breakdown Voltage	BV_{CEO}	40	—	—	V	$I_C = 1\text{mA}$
Emitter-Base Breakdown Voltage	DCX122TU DCX142TU BV_{EBO}	5	—	—	V	$I_E = 50\mu\text{A}$ $I_E = 50\mu\text{A}$
Collector Cutoff Current	I_{CBO}	—	—	0.5	μA	$V_{CB} = 50V$
Emitter Cutoff Current	DCX122TU DCX142TU I_{EBO}	—	—	0.5 0.5	μA	$V_{EB} = 4V$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	0.3	V	$I_C = 5\text{mA}, I_B = 0.25\text{mA}$
DC Current Transfer Ratio	DCX122TU DCX142TU h_{FE}	100 100	250 250	600 600	—	$I_C = 1\text{mA}, V_{CE} = 5V$
Gain-Bandwidth Product*	f_T	—	200	—	MHz	$V_{CE} = 10V, I_E = -5\text{mA}, f = 100\text{MHz}$

* Transistor - For Reference Only

Electrical Characteristics PNP Section @T_A = 25°C unless otherwise specified R1, R2 Types

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DCX122LU DCX142JU	V _{I(off)}	-0.3 -0.3	—	—	V	V _{CC} = -5V, I _O = -100μA
	DCX122LU DCX142JU	V _{I(on)}	—	—	-2.0 -2.0	V	V _O = -0.3V, I _O = -20mA V _O = -0.3V, I _O = -20mA
Output Voltage		V _{O(on)}	—	—	-0.3V	V	I _O /I _I = -5mA/-0.25mA
Input Current	DCX122LU DCX142JU	I _I	—	—	-28 -13	mA	V _I = -5V
Output Current		I _{O(off)}	—	—	-0.5	μA	V _{CC} = -50V, V _I = 0V
DC Current Gain	DCX122LU DCX142JU	G _I	56 56	—	—	—	V _O = -5V, I _O = -10mA
Gain-Bandwidth Product*		f _T	—	200	—	MHZ	V _{CE} = -10V, I _E = -5mA, f = 100MHz

* Transistor - For Reference Only

Electrical Characteristics PNP Section @T_A = 25°C unless otherwise specified R1 Only Types

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BV _{CB0}	-50	—	—	V	I _C = -50μA
Collector-Emitter Breakdown Voltage		BV _{CEO}	-40	—	—	V	I _C = -1mA
Emitter-Base Breakdown Voltage	DCX122TU DCX142TU	BV _{EBO}	-5	—	—	V	I _E = -50μA I _E = -50μA
Collector Cutoff Current		I _{CB0}	—	—	-0.5	μA	V _{CB} = -50V
Emitter Cutoff Current	DCX122TU DCX142TU	I _{EBO}	—	—	-0.5 -0.5	μA	V _{EB} = -4V
Collector-Emitter Saturation Voltage		V _{CE(sat)}	—	—	-0.3	V	I _C = -5mA, I _B = -0.25mA
DC Current Transfer Ratio	DCX122TU DCX142TU	h _{FE}	100 100	250 250	600 600	—	I _C = -1mA, V _{CE} = -5V
Gain-Bandwidth Product*		f _T	—	200	—	MHZ	V _{CE} = -10V, I _E = 5mA, f = 100MHz

* Transistor - For Reference Only

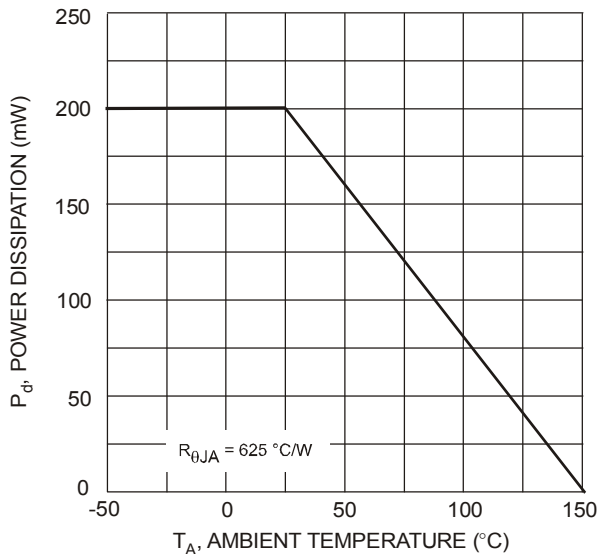


Fig. 1 Power Derating Curve

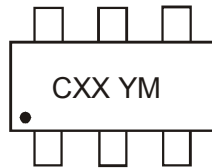
(150mW per element must not be exceeded).

Ordering Information (Note 6)

Device	Packaging	Shipping
DCX122LU-7-F	SOT-363	3000/Tape & Reel
DCX142JU-7-F	SOT-363	3000/Tape & Reel
DCX122TU-7-F	SOT-363	3000/Tape & Reel
DCX142TU-7-F	SOT-363	3000/Tape & Reel

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



CXX = Product Type Marking Code, See Table on Page 1
 YM = Date Code Marking
 Y = Year ex: N = 2002
 M = Month ex: 9 = September

Date Code Key

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	N	P	R	S	T	U	V	W	X	Y	Z

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

IMPORTANT NOTICE

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products 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 our website, harmless against all damages.

LIFE SUPPORT

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.