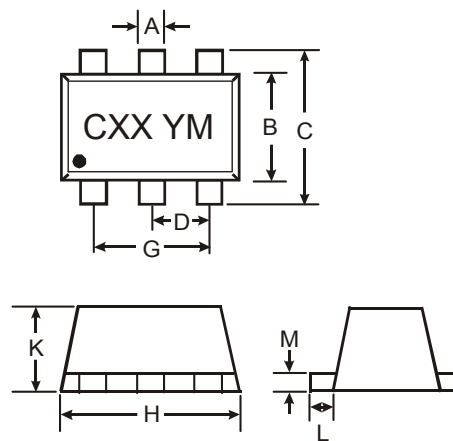


Features

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors
- Lead Free By Design/RoHS Compliant (Note 2)
- "Green" Device (Note 3 and 4)

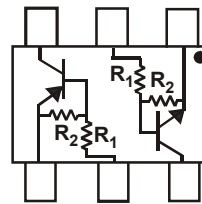
Mechanical Data

- Case: SOT-563
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish - Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.005 grams (approximate)

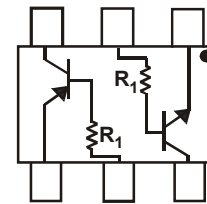


SOT-563			
Dim	Min	Max	Typ
A	0.15	0.30	0.25
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	0.50		
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.56	0.60	0.60
L	0.15	0.25	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

P/N	R1	R2	MARKING
DCX124EH	22KΩ	22KΩ	C17
DCX144EH	47KΩ	47KΩ	C20
DCX143EH	4.7KΩ	4.7KΩ	C08
DCX114YH	10KΩ	47KΩ	C14
DCX123JH	2.2KΩ	47KΩ	C06
DCX114EH	10KΩ	10KΩ	C13
DCX143TH	4.7KΩ	—	C07
DCX114TH	10KΩ	—	C12



R₁, R₂



R₁ Only

SCHEMATIC DIAGRAM, TOP VIEW

Maximum Ratings NPN Section

@T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage	V _{CC}	50	V
Input Voltage	V _{IN}	DCX124EH: -10 to +40 DCX144EH: -10 to +40 DCX143EH: -10 to +30 DCX114YH: -6 to +40 DCX123JH: -5 to +12 DCX114EH: -10 to +40 DCX143TH: -5V max DCX114TH: -5V max	V
Output Current	I _O	DCX124EH: 30 DCX144EH: 30 DCX143EH: 100 DCX114YH: 70 DCX123JH: 100 DCX114EH: 50 DCX143TH: 100 DCX114TH: 100	mA
Output Current	I _C (Max)	100	mA
Power Dissipation	P _d	150	mW
Thermal Resistance, Junction to Ambient Air	R _{θJA}	833	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

- Notes:
1. Mounted on FR4 Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.
 2. No purposefully added lead.
 3. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 4. 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°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage	V _{CC}	50	V
Input Voltage	V _{IN}	+10 to -40 +10 to -40 +10 to -30 +6 to -40 +5 to -12 +10 to -40 +5V max +5V max	V
Output Current	I _O	-30 -30 -100 -70 -100 -50 -100 -100	mA
Output Current	I _C (Max)	-100	mA
Power Dissipation (Total)	P _d	150	mW
Operating and Storage Temperature Range	T _j , T _{STG}	-55 to +150	°C

Electrical Characteristics NPN Section @T_A = 25°C unless otherwise specified

Characteristic (DDC143TH & DDC114TH 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 _O /I _B = 2.5mA / 0.25mA DCX143TH I _O /I _B = 1mA / 0.1mA DCX114TH	
DC Current Transfer Ratio	h _{FE}	100	250	600	—	I _C = 1mA, V _{CE} = 5V	
Gain-Bandwidth Product*	f _T	—	250	—	MHz	V _{CE} = 10V, I _E = -5mA, f = 100MHz	
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
Input Voltage	V _{I(off)}	DCX124EH	0.5	1.1	—	V	V _{CC} = 5V, I _O = 100μA
		DCX144EH	0.5	1.1	—		
DCX143EH		0.5	1.1	—			
DCX114YH		0.3	—	—			
DCX123JH		0.5	—	—			
DCX114EH		0.5	1.1	—			
Input Voltage	V _{I(on)}	DCX124EH	—	1.9	3.0	V	V _O = 0.3V, I _O = 5mA
		DCX144EH	—	1.9	3.0		
		DCX143EH	—	1.9	3.0		
		DCX114YH	—	—	1.4		
		DCX123JH	—	—	1.1		
		DCX114EH	—	1.9	3.0		
Output Voltage	V _{O(on)}	DCX124EH	—	0.1	0.3	V	I _O /I _I = 10mA / 0.5mA
		DCX144EH	—	0.1	0.3		
		DCX143EH	—	0.1	0.3		
		DCX114YH	—	0.1	0.3		
		DCX123JH	—	0.1	0.3		
		DCX114EH	—	0.1	0.3		
Input Current	I _I	DCX124EH	—	—	0.36	mA	V _I = 5V
		DCX144EH	—	—	0.18		
		DCX143EH	—	—	1.8		
		DCX114YH	—	—	0.88		
		DCX123JH	—	—	3.6		
		DCX114EH	—	—	0.88		
Output Current	I _{O(off)}	—	—	0.5	μA	V _{CC} = 50V, V _I = 0V	
DC Current Gain	G _I	DCX124EH	56	—	—	—	V _O = 5V, I _O = 5mA
		DCX144EH	68	—	—		
		DCX143EH	20	—	—		
		DCX114YH	68	—	—		
		DCX123JH	80	—	—		
		DCX114EH	30	—	—		

* Transistor - For Reference Only

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

Characteristic (DCX143TH & DCX114TH only)	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}	-50	—	—	V	$I_C = -1\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	$I_E = -50\mu\text{A}$
Collector Cutoff Current	I_{CBO}	—	—	-0.5	μA	$V_{CB} = -50\text{V}$
Emitter Cutoff Current	I_{EBO}	—	—	-0.5	μA	$V_{EB} = -4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-0.3	V	$I_C/I_B = 2.5\text{mA} / 0.25\text{mA}$ DCX143TH $I_C/I_B = 1\text{mA} / 0.1\text{mA}$ DCX114TH
DC Current Transfer Ratio	h_{FE}	100	250	600	—	$I_C = -1\text{mA}$, $V_{CE} = -5\text{V}$
Gain-Bandwidth Product*	f_T	—	250	—	MHz	$V_{CE} = -10\text{V}$, $I_E = 5\text{mA}$, $f = 100\text{MHz}$

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
Input Voltage	DCX124EH DCX144EH DCX143EH DCX114YH DCX123JH DCX114EH	-0.5 -0.5 -0.5 -0.3 -0.5 -0.5	-1.1 -1.1 -1.1 — — -1.1	—	—	V	$V_{CC} = -5\text{V}$, $I_O = -100\mu\text{A}$
	DCX124EH DCX144EH DCX143EH DCX114YH DCX123JH DCX114EH	—	-1.9 -1.9 -1.9 — — -1.9	-3.0 -3.0 -3.0 -1.4 -1.1 -3.0	—	V	$V_O = -0.3\text{V}$, $I_O = -5\text{mA}$ $V_O = -0.3\text{V}$, $I_O = -2\text{mA}$ $V_O = -0.3\text{V}$, $I_O = -20\text{mA}$ $V_O = -0.3\text{V}$, $I_O = -1\text{mA}$ $V_O = -0.3\text{V}$, $I_O = -5\text{mA}$ $V_O = -0.3\text{V}$, $I_O = -10\text{mA}$
Output Voltage	DCX124EH DCX144EH DCX143EH DCX114YH DCX123JH DCX114EH	—	-0.1	-0.3	V	$I_O/I_I = -10\text{mA} / -0.5\text{mA}$ $I_O/I_I = -10\text{mA} / -0.5\text{mA}$ $I_O/I_I = -10\text{mA} / -0.5\text{mA}$ $I_O/I_I = -5\text{mA} / -0.25\text{mA}$ $I_O/I_I = -5\text{mA} / -0.25\text{mA}$ $I_O/I_I = -10\text{mA} / -0.5\text{mA}$	
Input Current	DCX124EH DCX144EH DCX143EH DCX114YH DCX123JH DCX114EH	—	—	-0.36 -0.18 -1.8 -0.88 -3.6 -0.88	mA	$V_I = -5\text{V}$	
Output Current	$I_{O(off)}$	—	—	-0.5	μA	$V_{CC} = 50\text{V}$, $V_I = 0\text{V}$	
DC Current Gain	DCX124EH DCX144EH DCX143EH DCX114YH DCX123JH DCX114EH	56 68 20 68 80 30	—	—	—	$V_O = -5\text{V}$, $I_O = -5\text{mA}$ $V_O = -5\text{V}$, $I_O = -5\text{mA}$ $V_O = -5\text{V}$, $I_O = -10\text{mA}$ $V_O = -5\text{V}$, $I_O = -10\text{mA}$ $V_O = -5\text{V}$, $I_O = -10\text{mA}$ $V_O = -5\text{V}$, $I_O = -5\text{mA}$	
Gain-Bandwidth Product*	f_T	—	250	—	MHz	$V_{CE} = -10\text{V}$, $I_E = -5\text{mA}$, $f = 100\text{MHz}$	

* Transistor - For Reference Only

Typical Curves – DCX143EH NPN Section

NEW PRODUCT

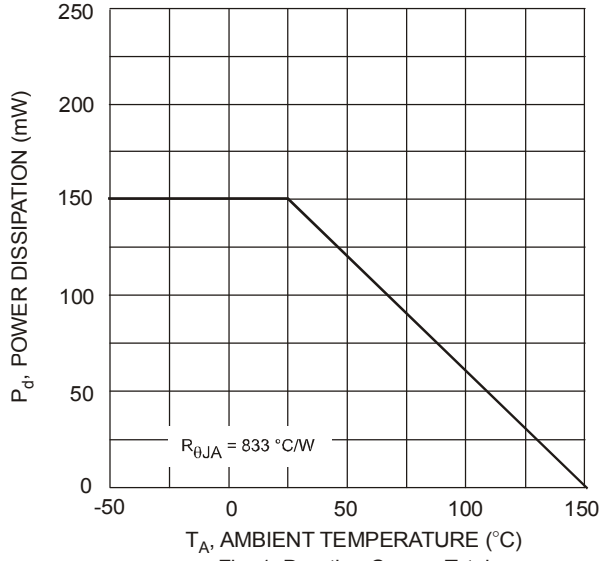


Fig. 1 Derating Curve - Total

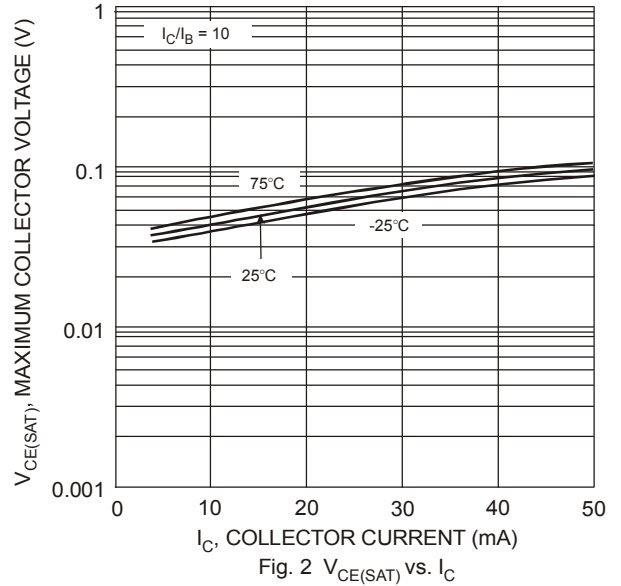


Fig. 2 $V_{CE(SAT)}$ vs. I_C

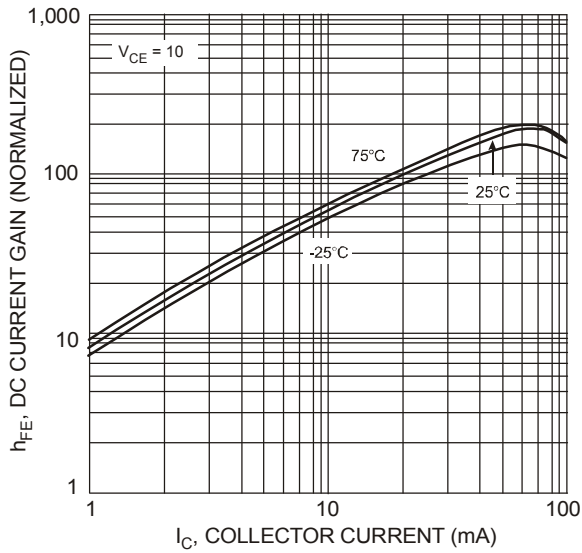


Fig. 3 DC Current Gain

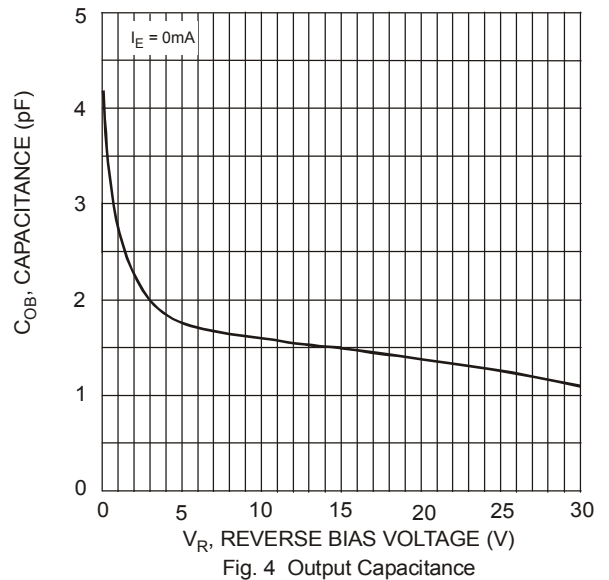


Fig. 4 Output Capacitance

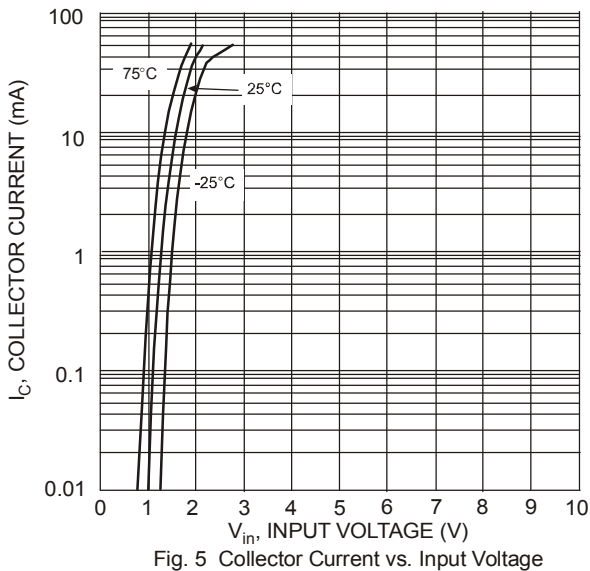


Fig. 5 Collector Current vs. Input Voltage

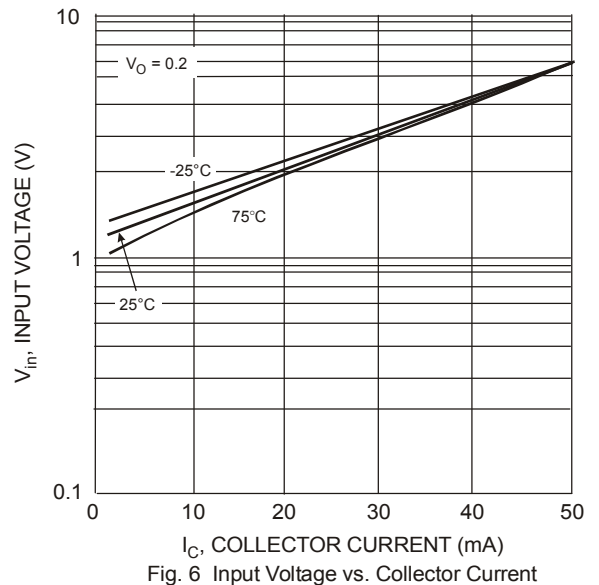
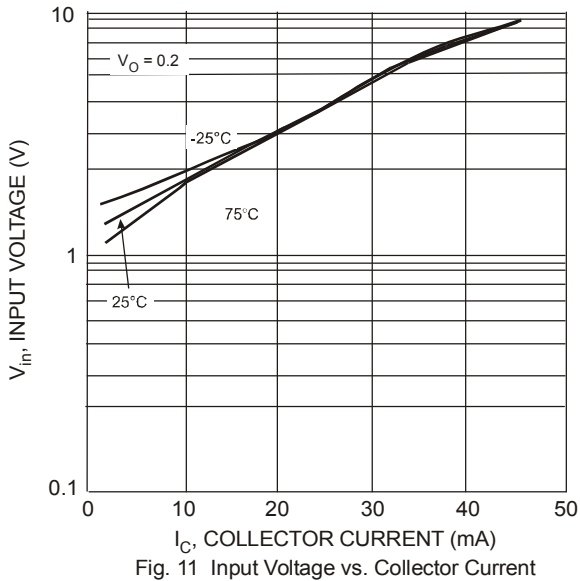
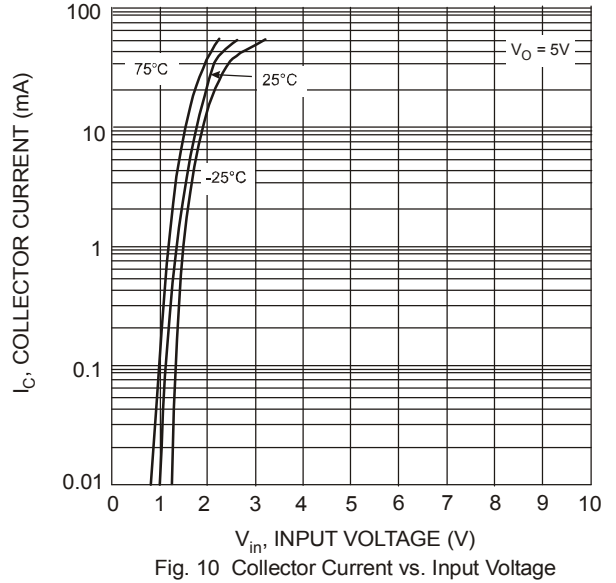
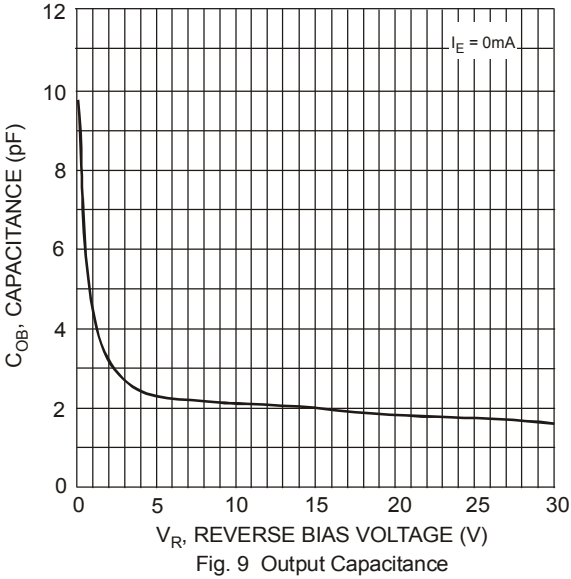
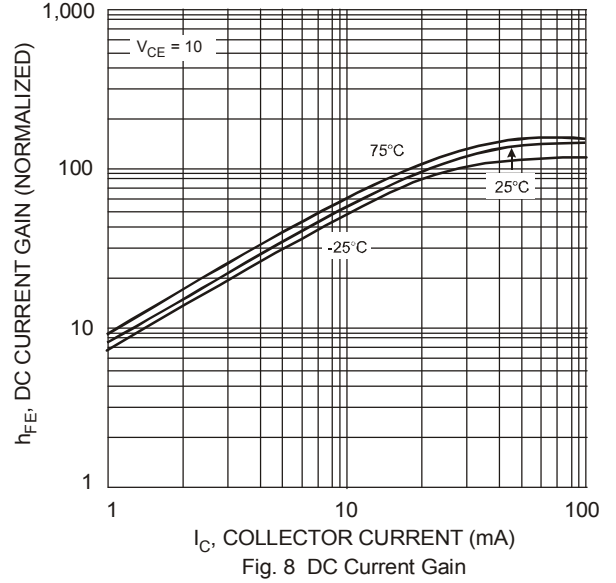
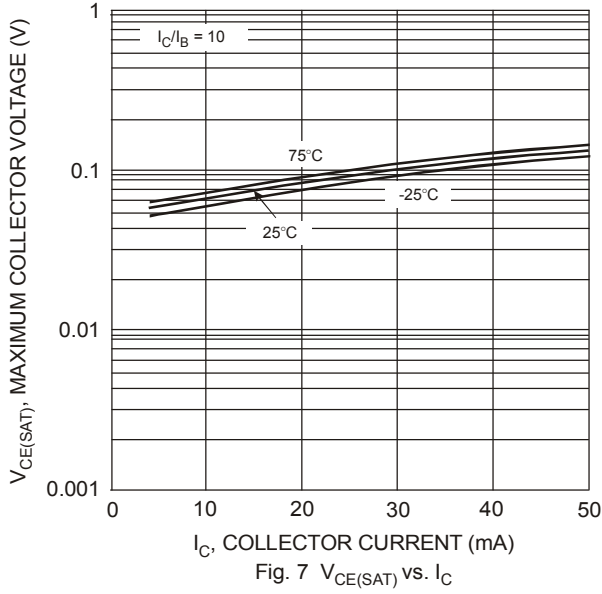


Fig. 6 Input Voltage vs. Collector Current

Typical Curves – DCX143EH PNP Section

NEW PRODUCT

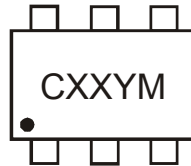


Ordering Information (Note 5)

Device	Packaging	Shipping
DCX124EH-7	SOT-563	3000/Tape & Reel
DCX144EH-7	SOT-563	3000/Tape & Reel
DCX143EH-7	SOT-563	3000/Tape & Reel
DCX114YH-7	SOT-563	3000/Tape & Reel
DCX123JH-7	SOT-563	3000/Tape & Reel
DCX114EH-7	SOT-563	3000/Tape & Reel
DCX143TH-7	SOT-563	3000/Tape & Reel
DCX114TH-7	SOT-563	3000/Tape & Reel

Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



CXX = Product Type Marking Code (See Page 1)
 YM = Date Code Marking
 Y = Year ex: P = 2003
 M = Month ex: 9 = September

Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012
Code	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.