

COMPLEMENTARY NPN/PNP PRE-BIASED SMALL SIGNAL SC-74R DUAL SURFACE MOUNT TRANSISTOR

NEW PRODUCT

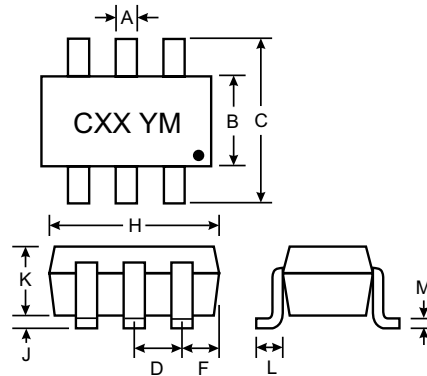
Features

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors

UNDER DEVELOPMENT

Mechanical Data

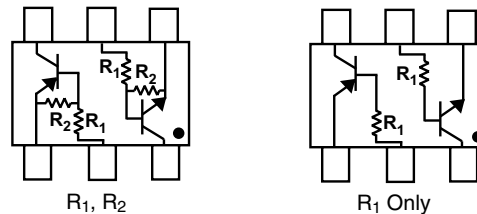
- Case: SC-74R, Molded Plastic
- Case material - UL Flammability Rating 94V-0
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.015 grams (approx.)



SC-74R			
Dim	Min	Max	Typ
A	0.35	0.30	0.38
B	1.50	1.70	1.60
C	2.70	3.00	2.80
D	—	—	0.95
F	—	—	0.55
H	2.90	3.10	3.00
J	0.013	0.10	0.05
K	1.00	1.30	1.10
L	0.35	0.55	0.40
M	0.10	0.20	0.15

All Dimensions in mm

P/N	R1	R2	MARKING
DCX124EK	22K	22K	C17
DCX144EK	47K	47K	C20
DCX114YK	10K	47K	C14
DCX123JK	2.2K	47K	C06
DCX114EK	10K	10K	C13
DCX143TK	4.7K	-	C07
DCX114TK	10K	-	C12



SCHEMATIC DIAGRAM

Maximum Ratings NPN Section @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage, (3) to (1)	V _{CC}	50	V
Input Voltage, (2) to (1)	V _{IN}	-10 to +40 -10 to +40 -6 to +40 -5 to +12 -10 to +40 -5 V _{max} -5 V _{max}	V
Output Current	I _O	30 30 70 100 50 100 100	mA
Output Current	I _C (Max)	100	mA
Power Dissipation	P _d	300	mW
Operating and Storage and Temperature Range	T _j , T _{STG}	-55 to +150	°C

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

Characteristic	Symbol	Value	Unit
Supply Voltage, (3) to (1)	V_{CC}	50	V
Input Voltage, (2) to (1) DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK DCX143TK DCX114TK	V_{IN}	+10 to -40 +10 to -40 +6 to -40 +5 to -12 +10 to -40 +5 V_{max} +5 V_{max}	V
Output Current DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK DCX143TK DCX114TK	I_O	-30 -30 -70 -100 -50 -100 -100	mA
Output Current All	I_C (Max)	-100	mA
Power Dissipation	P_d	200	mW
Operating and Storage and 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

Characteristic (DCX143TK & DCX114TK 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	$I_C/I_B = 2.5\text{mA} / 0.25\text{mA}$ DCX143TK $I_C/I_B = 1\text{mA} / 0.1\text{mA}$ DCX114TK
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 DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK	$V_{I(off)}$	0.5 0.5 0.3 0.5 0.5	1.1 1.1 — — 1.1	—	V	$V_{CC} = 5\text{V}, I_O = 100\mu\text{A}$
Input Voltage DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK	$V_{I(on)}$	—	1.9 1.9 — — 1.9	3.0 3.0 1.4 1.1 3.0	V	$V_O = 0.3, I_O = 5\text{mA}$ $V_O = 0.3, I_O = 2\text{mA}$ $V_O = 0.3, I_O = 1\text{mA}$ $V_O = 0.3, I_O = 5\text{mA}$ $V_O = 0.3, I_O = 10\text{mA}$
Output Voltage DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK	$V_{O(on)}$	—	0.1	0.3	V	$I_O/I_I = 10\text{mA} / 0.5\text{mA}$ $I_O/I_I = 10\text{mA} / 0.5\text{mA}$ $I_O/I_I = 5\text{mA} / 0.25\text{mA}$ $I_O/I_I = 5\text{mA} / 0.25\text{mA}$ $I_O/I_I = 10\text{mA} / 0.5\text{mA}$
Input Current DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK	I_I	—	—	0.36 0.18 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 DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK	G_I	56 68 68 80 30	—	—	—	$V_O = 5\text{V}, I_O = 5\text{mA}$ $V_O = 5\text{V}, I_O = 5\text{mA}$ $V_O = 5\text{V}, I_O = 10\text{mA}$ $V_O = 5\text{V}, I_O = 10\text{mA}$ $V_O = 5\text{V}, I_O = 5\text{mA}$
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

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

Characteristic (DCX143TK & DCX114TK 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	$I_C/I_B = 2.5\text{mA} / 0.25\text{mA}$ DCX143TK $I_C/I_B = 1\text{mA} / 0.1\text{mA}$ DCX114TK
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	DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK	$V_{I(off)}$	-0.5 -0.5 -0.3 -0.5 -0.5	-1.1 -1.1 — — -1.1	—	V	$V_{CC} = -5\text{V}, I_O = -100\mu\text{A}$
	DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK	$V_{I(on)}$	—	-1.9 -1.9 — — -1.9	-3.0 -3.0 -1.4 -1.1 -3.0		
Output Voltage	DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK	$V_{O(on)}$	—	-0.1	-0.3	V	$I_O/I_I = -10\text{mA} / -0.5\text{mA}$ $I_O/I_I = -10\text{mA} / -0.5\text{mA}$ $I_O/I_I = -5\text{mA} / -0.25\text{mA}$ $I_O/I_I = -5\text{mA} / -0.25\text{mA}$ $I_O/I_I = -10\text{mA} / -0.5\text{mA}$
Input Current	DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK	I_I	—	—	-0.36 -0.18 -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	DCX124EK DCX144EK DCX114YK DCX123JK DCX114EK	G_I	56 68 68 80 30	—	—	—	$V_O = -5\text{V}, I_O = -5\text{mA}$ $V_O = -5\text{V}, I_O = -5\text{mA}$ $V_O = -5\text{V}, I_O = -10\text{mA}$ $V_O = -5\text{V}, I_O = -10\text{mA}$ $V_O = -5\text{V}, I_O = -5\text{mA}$
Gain-Bandwidth Product*		f_T	—	250	—	MHz	$V_{CE} = -10\text{V}, I_E = -5\text{mA}, f = 100\text{MHz}$

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