



YOUSHANG SEMICONDUCTOR

设计研发新型功率器件

各类小信号开关

中低压及高压大电流等场效应管

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Features

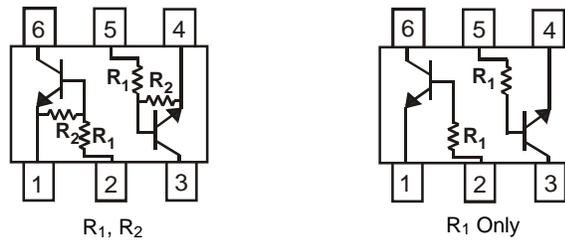
- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDA)
- Built-In Biasing Resistors

P/N	R1	R2	MARKING
NK-DDC124EH	22KΩ	22KΩ	N17
NK-DDC144EH	47KΩ	47KΩ	N20
NK-DDC143EH	4.7KΩ	4.7KΩ	N08
NK-DDC114YH	10KΩ	47KΩ	N14
NK-DDC123JH	2.2KΩ	47KΩ	N06
NK-DDC114EH	10KΩ	10KΩ	N13
NK-DDC143TH	4.7KΩ	—	N07
NK-DDC114TH	10KΩ	—	N12

Mechanical Data

- Case: SOT-563
- Case Material: Molded Plastic; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 ^{e3}
- Terminal Connections: See Diagram
- Weight: 0.005 grams (Approximate)

SCHEMATIC DIAGRAM, TOP VIEW



Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Supply Voltage		V _{CC}	50	V
Input Voltage	NK-DDC124EH NK-DDC144EH NK-DDC143EH NK-DDC114YH NK-DDC123JH NK-DDC114EH NK-DDC143TH NK-DDC114TH	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	NK-DDC124EH NK-DDC144EH NK-DDC143EH NK-DDC114YH NK-DDC123JH NK-DDC114EH NK-DDC143TH NK-DDC114TH	I _O	30 30 100 70 100 50 100 100	mA
Output Current	All	I _C (Max)	100	mA
Power Dissipation		P _d	150	mW
Thermal Resistance, Junction to Ambient Air	(Note 5)	R _{θJA}	833	°C/W
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics (@ $T_A = +25^{\circ}\text{C}$, unless otherwise specified.)

Characteristic (DDC143TH & DDC114TH only)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	50	—	—	V	$I_C = 50\mu\text{A}$
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 Cut-Off Current	I_{CBO}	—	—	0.5	μA	$V_{CB} = 50\text{V}$
Emitter Cut-Off Current	I_{EBO}	—	—	0.5	μA	$V_{EB} = 4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	0.3	V	$I_C/I_B = 2.5\text{mA} / 0.25\text{mA}$ DDC143TH $I_C/I_B = 1\text{mA} / 0.1\text{mA}$ DDC114TH
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	$V_{I(off)}$	NK-DDC124EH	0.5	1.1	—	V	$V_{CC} = 5\text{V}, I_O = 100\mu\text{A}$
		NK-DDC144EH	0.5	1.1			
NK-DDC143EH		0.5	1.1				
NK-DDC114YH		0.3	—				
NK-DDC123JH		0.5	—				
NK-DDC114EH		0.5	1.1				
Input Voltage	$V_{I(on)}$	NK-DDC124EH	—	1.9	3.0	V	$V_O = 0.3\text{V}, I_O = 5\text{mA}$ $V_O = 0.3\text{V}, I_O = 2\text{mA}$ $V_O = 0.3\text{V}, I_O = 20\text{mA}$ $V_O = 0.3\text{V}, I_O = 1\text{mA}$ $V_O = 0.3\text{V}, I_O = 5\text{mA}$ $V_O = 0.3\text{V}, I_O = 10\text{mA}$
		NK-DDC144EH	—	1.9	3.0		
		NK-DDC143EH	—	1.9	3.0		
		NK-DDC114YH	—	—	1.4		
		NK-DDC123JH	—	—	1.1		
		NK-DDC114EH	—	1.9	3.0		
Output Voltage	$V_{O(on)}$	—	0.1	0.3	V	$I_O/I_I = 10\text{mA} / 0.5\text{mA}$ $I_O/I_I = 10\text{mA} / 0.5\text{mA}$ $I_O/I_I = 10\text{mA} / 0.5\text{mA}$ $I_O/I_I = 5\text{mA} / 0.25\text{mA}$ $I_O/I_I = 5\text{mA} / 0.25\text{mA}$ $I_O/I_I = 10\text{mA} / 0.5\text{mA}$	
Input Current	I_I	—	—	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	G_I	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 – DDC143EH

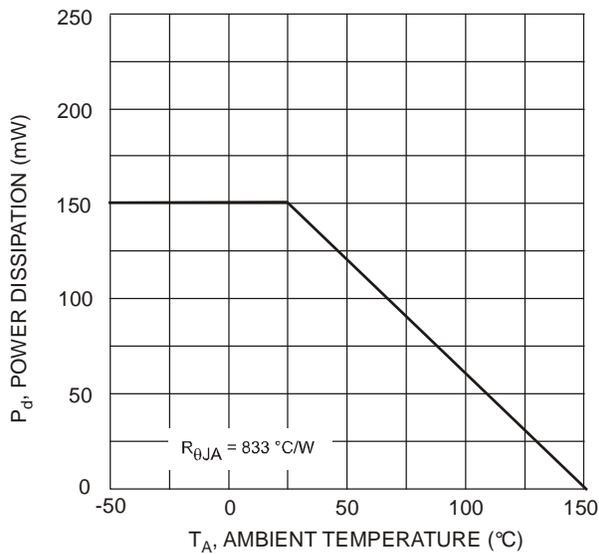


Fig. 1 Derating Curve

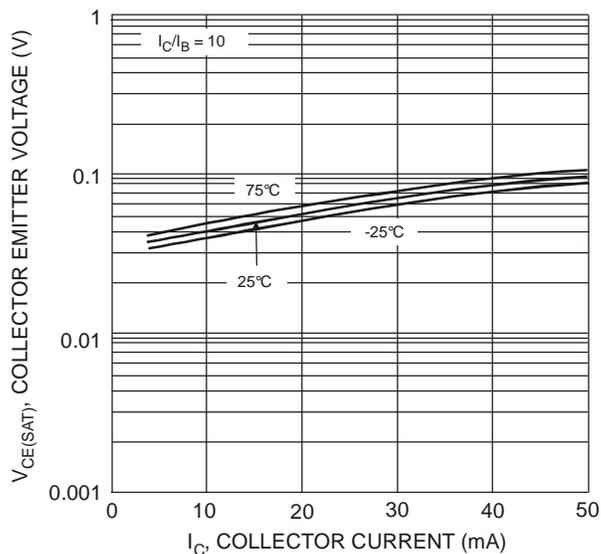


Fig. 2 $V_{CE(SAT)}$ vs. I_C

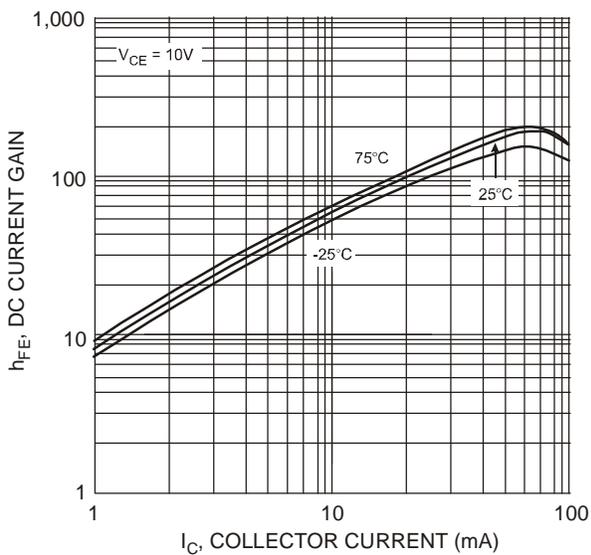


Fig. 3 DC Current Gain

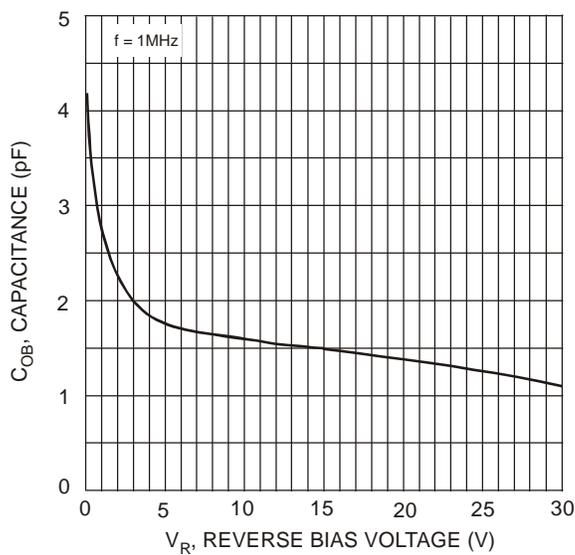


Fig. 4 Output Capacitance

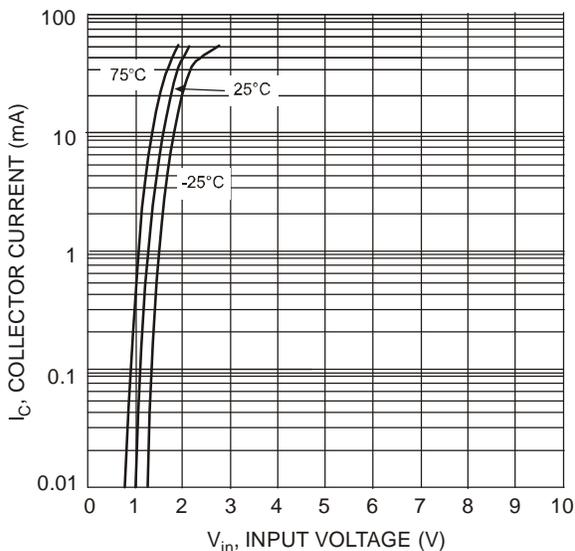


Fig. 5 Collector Current vs. Input Voltage

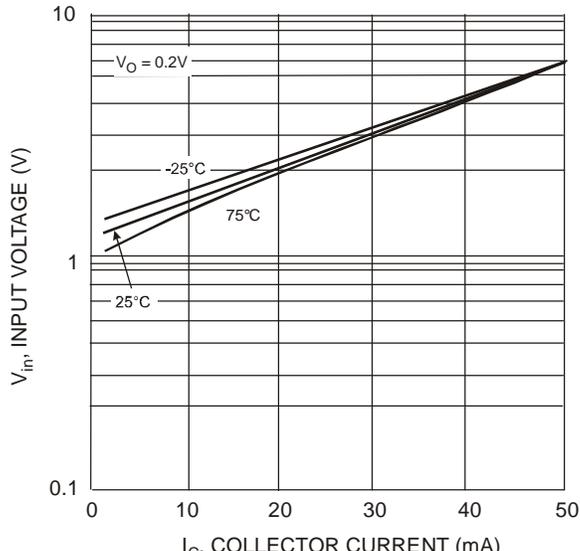
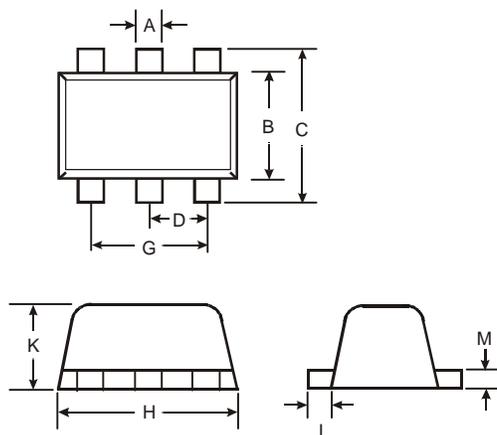


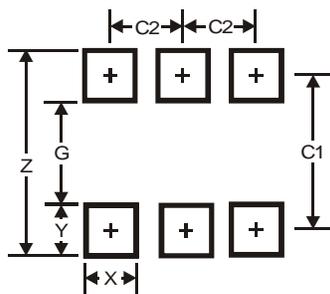
Fig. 6 Input Voltage vs. Collector Current

Package Outline Dimensions



SOT563			
Dim	Min	Max	Typ
A	0.15	0.30	0.20
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	0.55	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.2
G	1.2
X	0.375
Y	0.5
C1	1.7
C2	0.5