



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
- Built-In Biasing Resistors
- Surface Mount Package Suited for Automated Assembly

Mechanical Data

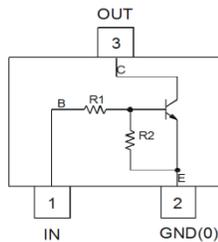
- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 Ⓔ3
- Weight: 0.006 grams (Approximate)

Part Number	R1(NOM)	R2(NOM)
NK-DDTC113ZUA	1kΩ	10kΩ
NK-DDTC123YUA	2.2kΩ	10kΩ
NK-DDTC123JUA	2.2kΩ	47kΩ
NK-DDTC143XUA	4.7kΩ	10kΩ
NK-DDTC143FUA	4.7kΩ	22kΩ
NK-DDTC143ZUA	4.7kΩ	47kΩ
NK-DDTC114YUA	10kΩ	47kΩ
NK-DDTC114WUA	10kΩ	4.7kΩ
NK-DDTC124XUA	22kΩ	47kΩ
NK-DDTC144VUA	47kΩ	10kΩ
NK-DDTC144WUA	47kΩ	22kΩ

SOT323



Top View



Device Schematic

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

Characteristic		Symbol	Value	Unit
Supply Voltage <Pin: (3) to (2)>		V _{CC}	50	V
Input Voltage <Pin: (1) to (2)>	NK-DDTC113ZUA	V _{IN}	-5 to +10	V
	NK-DDTC123YUA		-5 to +12	
	NK-DDTC123JUA		-5 to +12	
	NK-DDTC143XUA		-7 to +20	
	NK-DDTC143FUA		-6 to +30	
	NK-DDTC143ZUA		-5 to +30	
	NK-DDTC114YUA		-6 to +40	
	NK-DDTC114WUA		-10 to +30	
	NK-DDTC124XUA		-10 to +40	
	NK-DDTC144VUA		-15 to +40	
NK-DDTC144WUA	-10 to +40			
Output Current	NK-DDTC113ZUA	I _O	100	mA
	NK-DDTC123YUA		100	
	NK-DDTC123JUA		100	
	NK-DDTC143XUA		100	
	NK-DDTC143FUA		100	
	NK-DDTC143ZUA		100	
	NK-DDTC114YUA		70	
	NK-DDTC114WUA		100	
	NK-DDTC124XUA		50	
	NK-DDTC144VUA		30	
NK-DDTC144WUA	30			
Output Current		I _C (Max)	100	mA

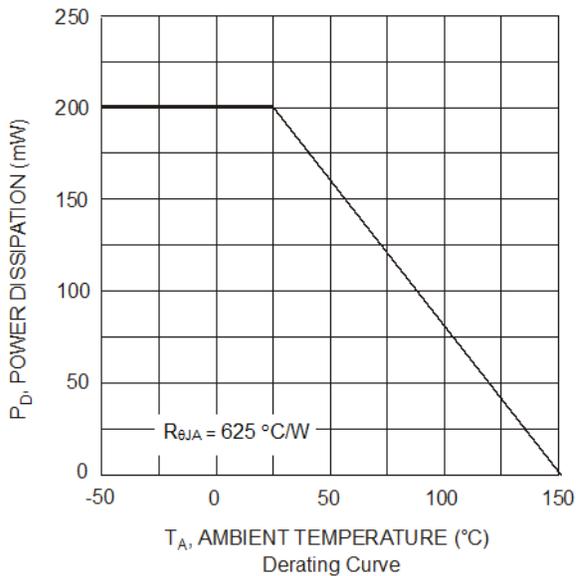
Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Notes 5 & 6)	P _D	200	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	R _{θJA}	625	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

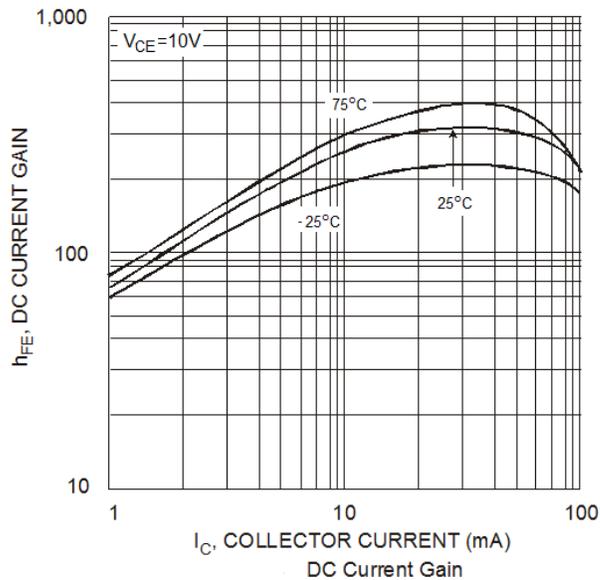
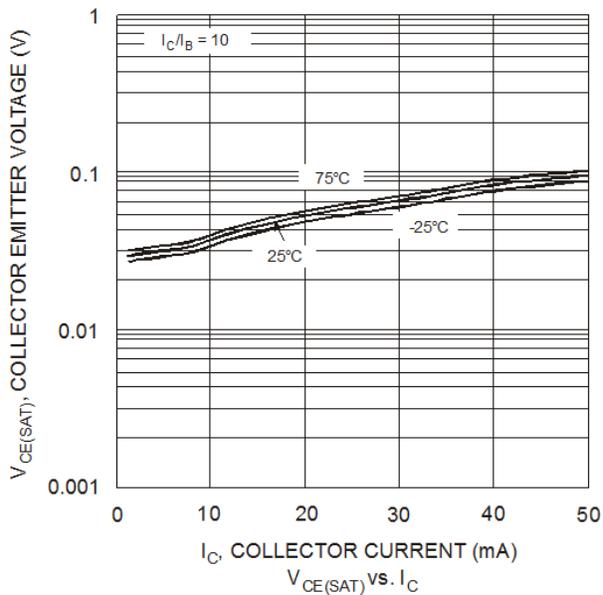
Notes: 5. Mounted on FR4 PC Board with minimum recommended pad layout.
 6. 150mW per element must not be exceeded.

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition	
Input Voltage	NK-DDTC113ZUA	$V_{I(OFF)}$	0.3	—	—	V	$V_{CC} = 5V, I_O = 100\mu A$	
	NK-DDTC123YUA		0.3					
	NK-DDTC123JUA		0.5					
	NK-DDTC143XUA		0.3					
	NK-DDTC143FUA		0.3					
	NK-DDTC143ZUA		0.5					
	NK-DDTC114YUA		0.3					
	NK-DDTC114WUA		0.8					
	NK-DDTC124XUA		0.4					
	NK-DDTC144VUA		1.0					
	NK-DDTC144WUA	0.8						
	NK-DDTC113ZUA	$V_{I(ON)}$	—	—	3.0	V	VO= 0.3V, IO= 20mA	
	NK-DDTC123YUA				3.0		VO= 0.3V, IO= 20mA	
	NK-DDTC123JUA				1.1		VO= 0.3V, IO= 5mA	
	NK-DDTC143XUA				2.5		VO= 0.3V, IO= 20mA	
	NK-DDTC143FUA				1.3		VO= 0.3V, IO= 3mA	
	NK-DDTC143ZUA				1.3		VO= 0.3V, IO= 5mA	
	NK-DDTC114YUA				1.4		VO= 0.3V, IO= 1mA	
	NK-DDTC114WUA				3.0		VO= 0.3V, IO= 2mA	
	NK-DDTC124XUA				2.5		VO= 0.3V, IO= 2mA	
NK-DDTC144VUA	5.0				VO= 0.3V, IO= 2mA			
NK-DDTC144WUA	4.0	VO= 0.3V, IO= 2mA						
Output Voltage		$V_{O(ON)}$	—	0.1	0.3	V	IO/II= 5mA / 0.25mA NK-DDTC123JUA IO/II= 5mA / 0.25mA NK-DDTC143ZUA IO/II= 5mA / 0.25mA NK-DDTC114YUA IO/II= 10mA / 0.5mA All Others	
Input Current	NK-DDTC113ZUA	I_i	—	—	7.2	mA	$V_i = 5V$	
	NK-DDTC123YUA				3.8			
	NK-DDTC123JUA				3.6			
	NK-DDTC143XUA				1.8			
	NK-DDTC143FUA				1.8			
	NK-DDTC143ZUA				1.8			
	NK-DDTC114YUA				0.88			
	NK-DDTC114WUA				0.88			
	NK-DDTC124XUA				0.36			
	NK-DDTC144VUA				0.16			
NK-DDTC144WUA	0.16							
Output Current		$I_{O(OFF)}$	—	—	0.5	μA	$V_{CC} = 50V, V_i = 0V$	
DC Current Gain	NK-DDTC113ZUA	G_i	—	—	—	—	VO = 5V, IO = 5mA	
	NK-DDTC123YUA						33	VO = 5V, IO = 10mA
	NK-DDTC123JUA						80	VO = 5V, IO = 10mA
	NK-DDTC143XUA						30	VO = 5V, IO = 10mA
	NK-DDTC143FUA						68	VO = 5V, IO = 10mA
	NK-DDTC143ZUA						80	VO = 5V, IO = 10mA
	NK-DDTC114YUA						68	VO = 5V, IO = 5mA
	NK-DDTC114WUA						24	VO = 5V, IO = 10mA
	NK-DDTC124XUA						68	VO = 5V, IO = 5mA
	NK-DDTC144VUA						33	VO = 5V, IO = 5mA
NK-DDTC144WUA	56	VO = 5V, IO = 5mA						
Input Resistor (R1) Tolerance		ΔR_1	-30	—	+30	%	—	
Resistance Ratio Tolerance		$\Delta R_2/R_1$	-20	—	+20	%	—	
Gain-Bandwidth Product		f_T	—	250	—	MHz	$V_{CE} = 10V, I_E = 5mA, f = 100MHz$	

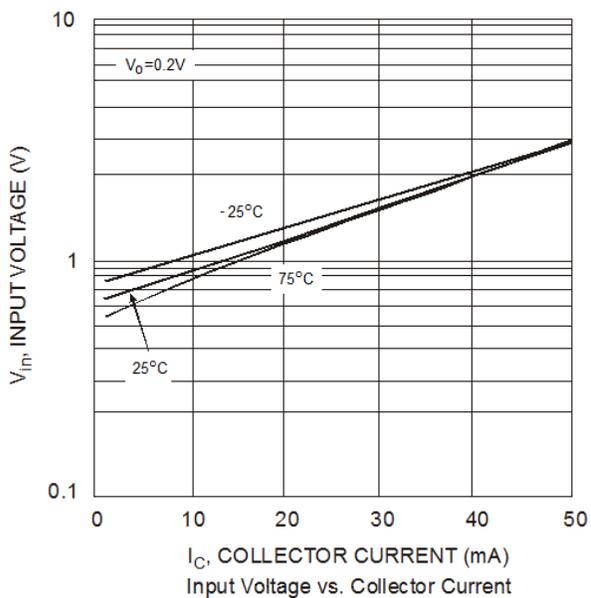
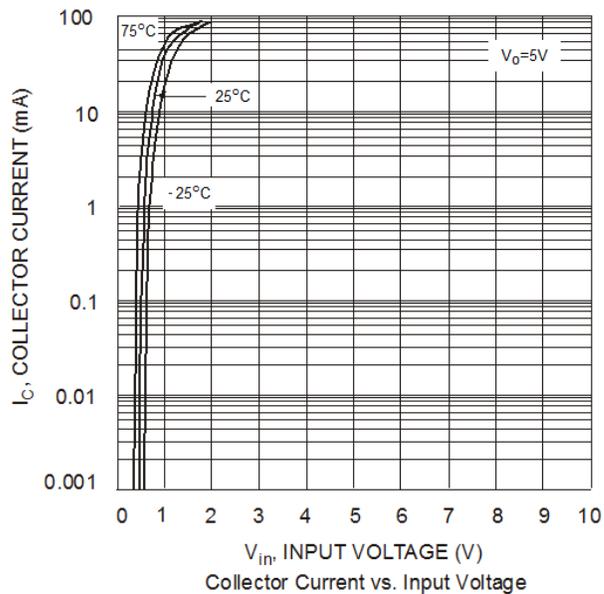
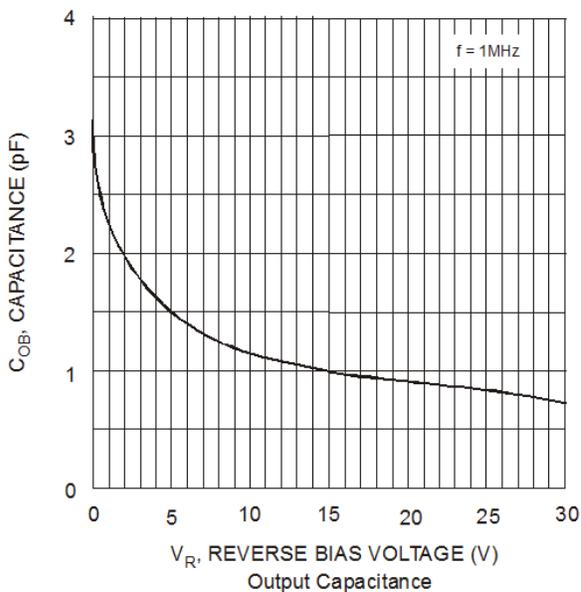
Typical Curves – Total Device



Typical Curves – NK-DDTC123JUA (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

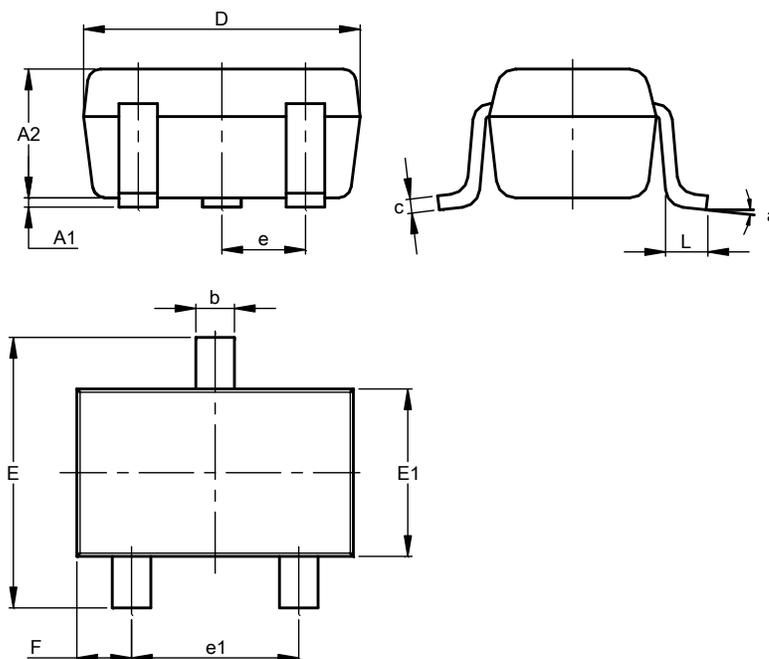


Typical Curves – NK-DDTC123JUA (continued)



Package Outline Dimensions

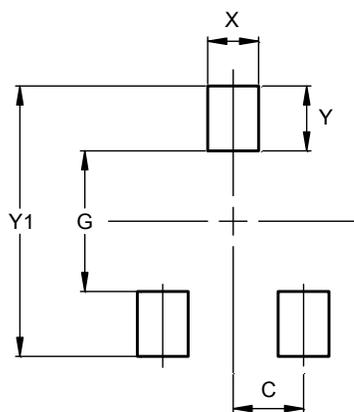
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Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

SOT323



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.470
Y	0.600
Y1	2.500