优尚

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

0755-83047638
ysbdt@szyoushang.cn
www.szyoushang.cn

企业微信二维码　　企业QQ二维码

Features

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

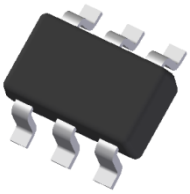
Mechanical Data

- Package: SOT363
- Package 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 e3
- Weight: 0.006 grams (Approximate)

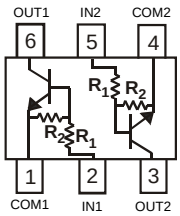
Part Number	R1 (NOM)	R2 (NOM)
NK-DDC124EU	22kΩ	22kΩ
NK-DDC144EU	47kΩ	47kΩ
NK-DDC114YU	10kΩ	47kΩ
NK-DDC123JU	2.2kΩ	47kΩ
NK-DDC114EU	10kΩ	10kΩ
NK-DDC143XU	4.7kΩ	10kΩ
NK-DDC143ZU	4.7kΩ	47kΩ
NK-DDC115EU	100kΩ	100kΩ

Part Number	R1 Only
NK-DDC113TU	1kΩ
NK-DDC143TU	4.7kΩ
NK-DDC114TU	10kΩ

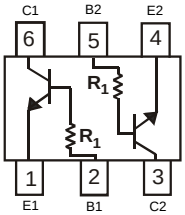
SOT363



Top View



R1, R2



R1 Only

Device Schematic

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

Characteristic		Symbol	Value	Unit
Supply Voltage		V_O	50	V
Input Voltage	NK-DDC124EU	V_I	-10 to +40	V
	NK-DDC144EU		-10 to +40	
	NK-DDC114YU		-6 to +40	
	NK-DDC123JU		-5 to +12	
	NK-DDC114EU		-10 to +40	
	NK-DDC113TU		-5V max	
	NK-DDC143TU		-5V max	
	NK-DDC114TU		-5V max	
	NK-DDC143XU		-7 to +20	
	NK-DDC143ZU		-5 to +30	
	NK-DDC115EU		-10 to +40	
Output Current	NK-DDC124EU	I_O	30	mA
	NK-DDC144EU		30	
	NK-DDC114YU		70	
	NK-DDC123JU		100	
	NK-DDC114EU		50	
	NK-DDC113TU		100	
	NK-DDC143TU		100	
	NK-DDC114TU		100	
	NK-DDC143XU		100	
	NK-DDC143ZU		100	
	NK-DDC115EU		20	
Peak Output Current		I_{CM}	100	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Notes 6 & 7)	P_D	200	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	625	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 6. Mounted on FR-4 PC Board with minimum recommended pad layout.
7. 150mW per element must not be exceeded.

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

For R1 Only Devices: NK-DDC113TU & NK-DDC143TU & NK-DDC114TU

Characteristic	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_C/I_B = 2.5mA / 0.25mA NK-DDC143TU I_C/I_B = 1mA / 0.1mA NK-DDC114TU I_C/I_B = 10mA / 1mA NK-DDC113TU
DC Current Transfer Ratio	h_{FE}	100	250	600	—	I_C = 1mA, V_{CE} = 5V
Input Resistor (R_1) Tolerance	ΔR_1	-30	—	+30	%	—
Transition frequency (Note 8)	f_T	—	250	—	MHz	V_{CE} = 10V, I_E = -5mA, f = 100MHz

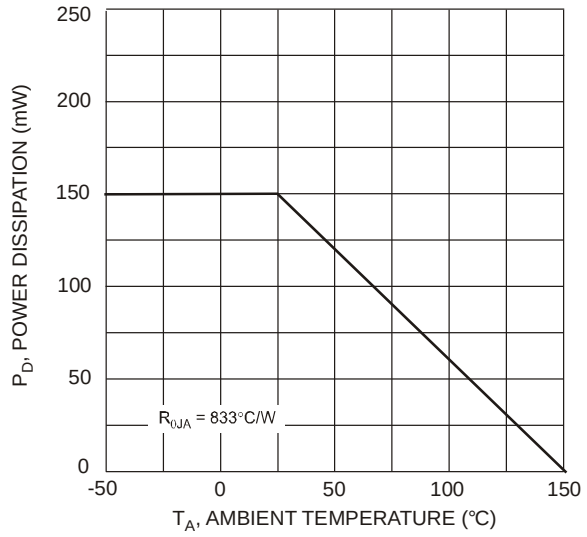
Electrical Characteristics (@ T_A = +25°C, unless otherwise specified.)

For R1, R2 Devices: NK-DDC124EU& NK-DDC144EU& NK-DDC114YU& NK-DDC123JU& NK-DDC114EU& NK-DDC143ZU& NK-DDC115EU

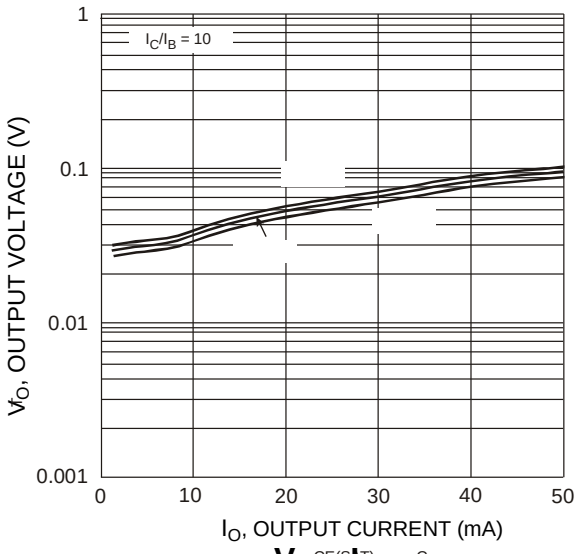
Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	NK-DDC124EU	$V_{I(off)}$	0.5	1.1	—	V	V_{CC} = 5V, I_O = 100μA
	NK-DDC144EU		0.5	1.1			
	NK-DDC114YU		0.3	—			
	NK-DDC123JU		0.5	—			
	NK-DDC114EU		0.5	1.1			
	NK-DDC143XU		0.3	—			
	NK-DDC143ZU		0.5	—			
	NK-DDC115EU		0.5	—			
	NK-DDC124EU	$V_{I(on)}$	—	1.9	3.0		V_O = 0.3V, I_O = 5mA
	NK-DDC144EU			1.9	3.0		V_O = 0.3V, I_O = 2mA
	NK-DDC114YU			—	1.4		V_O = 0.3V, I_O = 1mA
	NK-DDC123JU			—	1.1		V_O = 0.3V, I_O = 5mA
	NK-DDC114EU			1.9	3.0		V_O = 0.3V, I_O = 10mA
	NK-DDC143XU			—	2.5		V_O = 0.3V, I_O = 20mA
	NK-DDC143ZU			—	1.3		V_O = 0.3V, I_O = 5mA
	NK-DDC115EU			—	3		V_O = 0.3V, I_O = 1mA
Output Voltage	NK-DDC124EU	$V_{O(on)}$	—	0.1	0.3	V	I_O/I_I = 10mA / 0.5mA
	NK-DDC144EU						I_O/I_I = 10mA / 0.5mA
	NK-DDC114YU						I_O/I_I = 5mA / 0.25mA
	NK-DDC123JU						I_O/I_I = 5mA / 0.25mA
	NK-DDC114EU						I_O/I_I = 10mA / 0.5mA
	NK-DDC143XU						I_O/I_I = 10mA / 0.5mA
	NK-DDC143ZU						I_O/I_I = 5mA / 0.25mA
	NK-DDC115EU						I_O/I_I = 10mA / 0.5mA
Input Current	NK-DDC124EU	I_I	—	—	0.36	mA	V_I = 5V
	NK-DDC144EU				0.18		
	NK-DDC114YU				0.88		
	NK-DDC123JU				3.6		
	NK-DDC114EU				0.88		
	NK-DDC143XU				1.8		
	NK-DDC143ZU				1.8		
	NK-DDC115EU				0.15		
Output Current		$I_{O(off)}$	—	—	0.5	μA	V_{CC} = 50V, V_I = 0V
DC Current Gain	NK-DDC124EU	G_I	56	—	—	—	V_O = 5V, I_O = 5mA
	NK-DDC144EU		68				V_O = 5V, I_O = 5mA
	NK-DDC114YU		68				V_O = 5V, I_O = 10mA
	NK-DDC114YUQ		80				V_O = 5V, I_O = 5mA
	NK-DDC123JU		80				V_O = 5V, I_O = 10mA
	NK-DDC114EU		30				V_O = 5V, I_O = 5mA
	NK-DDC143XU		30				V_O = 5V, I_O = 10mA
	NK-DDC143ZU		80				V_O = 5V, I_O = 10mA
	NK-DDC115EU		82				V_O = 5V, I_O = 5mA
Input Resistor (R_1) Tolerance		ΔR_1	-30	—	+30	%	—
Resistance Ratio Tolerance		$\Delta(R_2/R_1)$	-20	—	+20	%	—
Transition frequency (Note 8)		f_T	—	250	—	MHz	V_{CE} = 10V, I_E = 5mA, f = 100MHz

Note: 8. Transistor - for reference only.

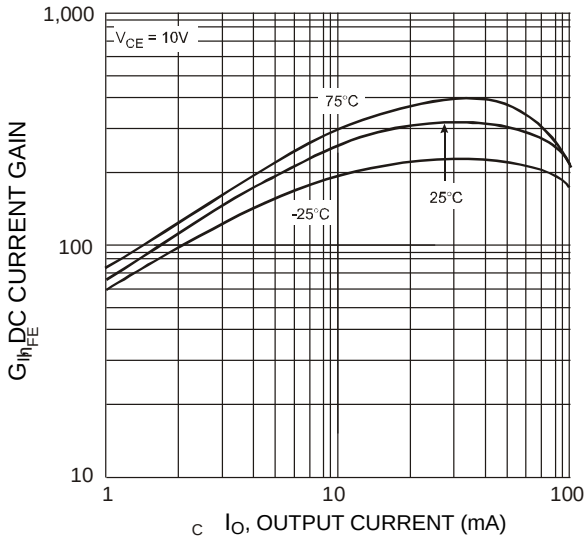
Typical Curves – NK-DDC123JU (@ T_A = +25°C, unless otherwise specified.)



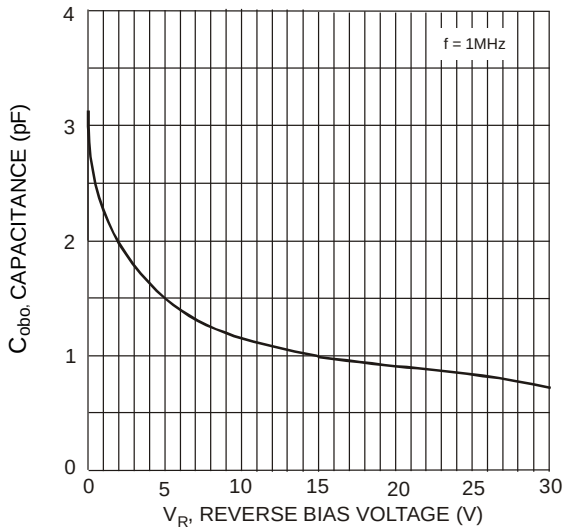
P_D v T_A



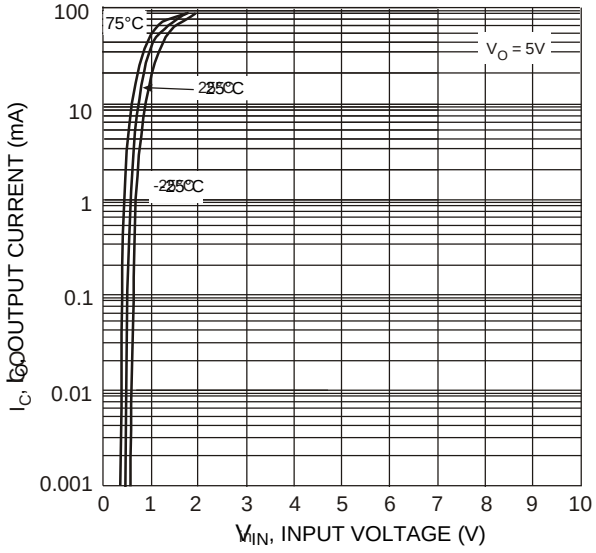
$V_{O(SAT)}$ v I_O



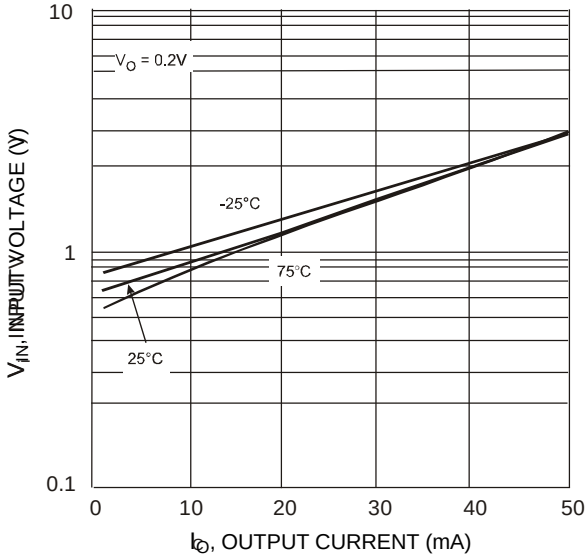
G_I v I_O



C_{obo} v V_R

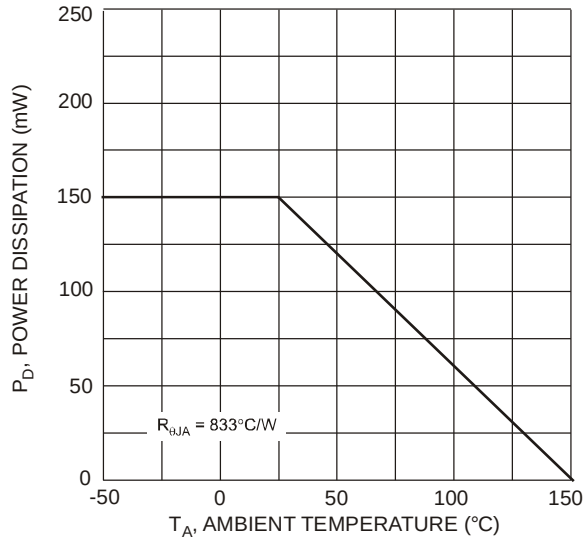


I_O v V_{IN}

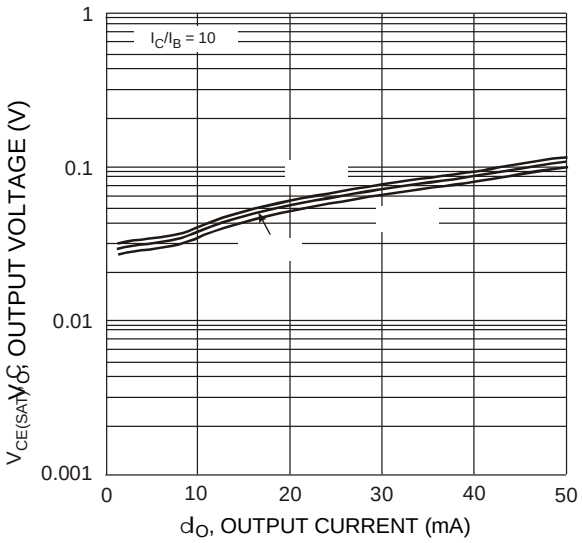


V_{IN} v I_O

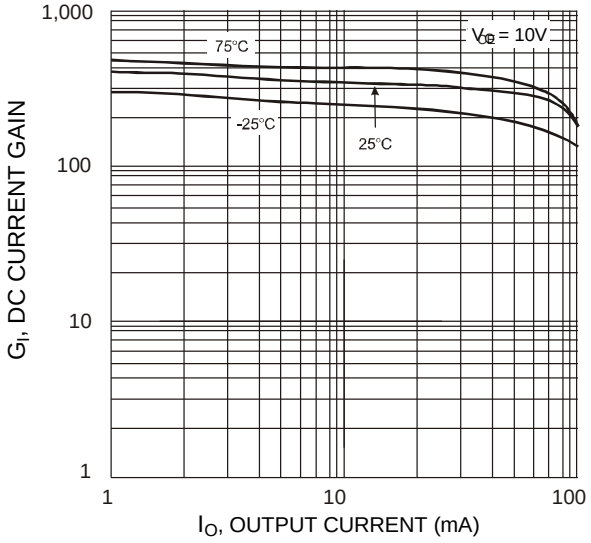
Typical Curves – NK-DDC114YU (@ T_A = +25°C, unless otherwise specified.)



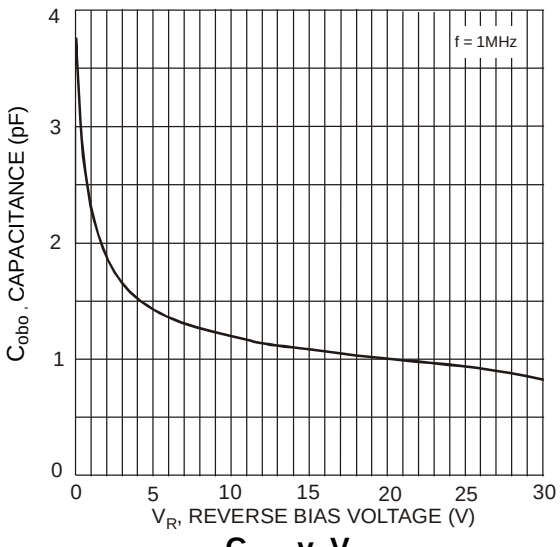
P_D v T_A



V_O v I_O



G_I v I_O



C_{obo} v V_R

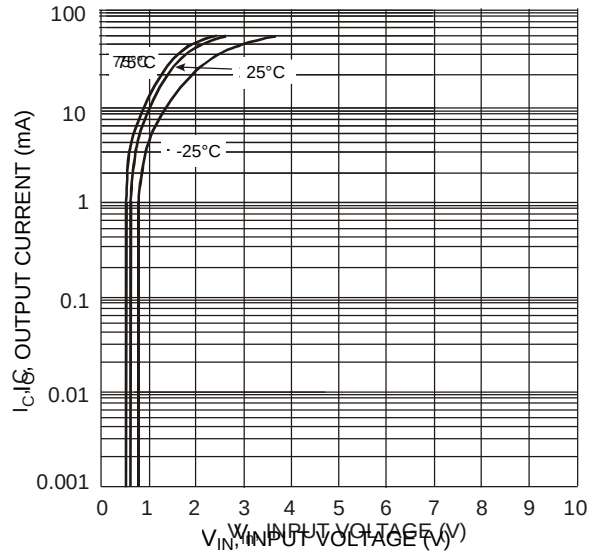


Fig. 5 Collector Current vs. Input Voltage

I v V

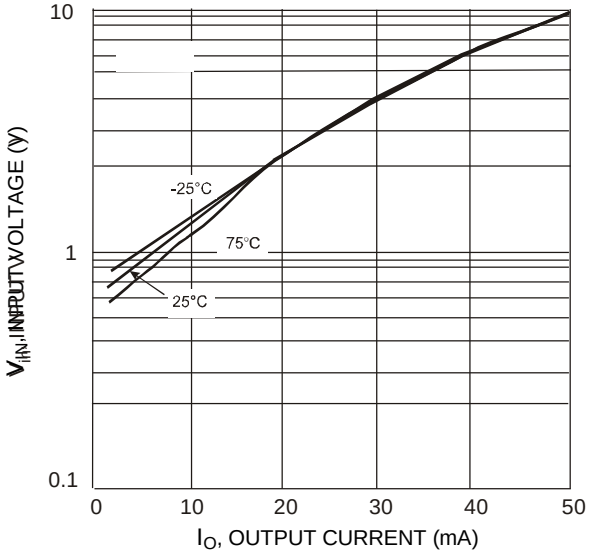
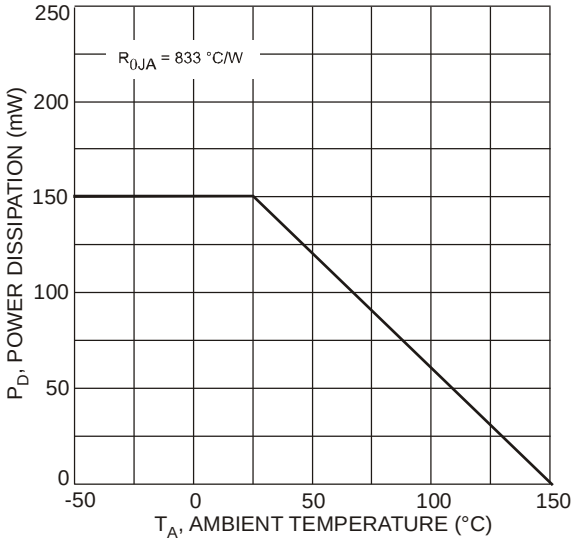
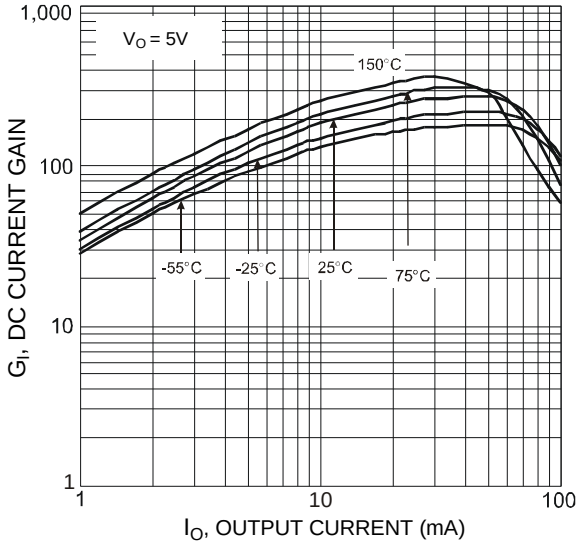


Fig. 6 Input Voltage vs. Collector Current

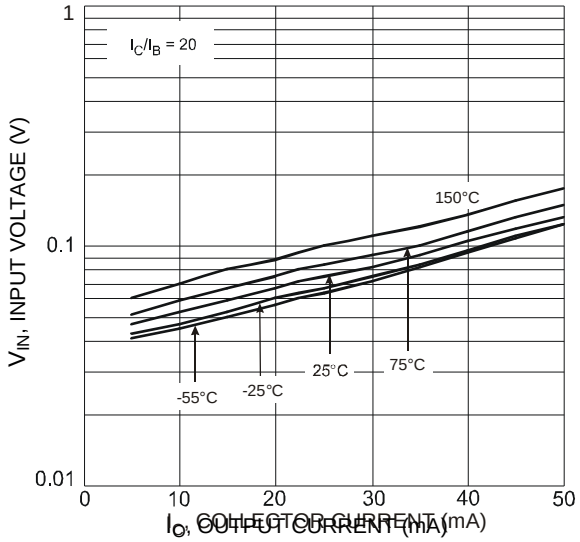
Typical Curves – NK-DDC124EU (@ T_A = +25°C, unless otherwise specified.)



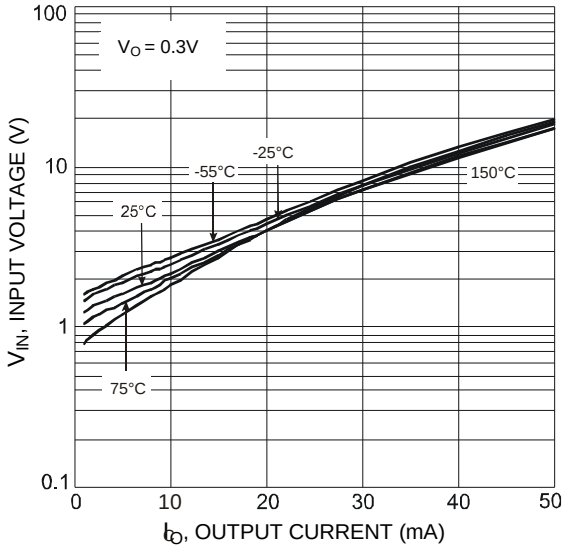
PD vs TA



GI v IO



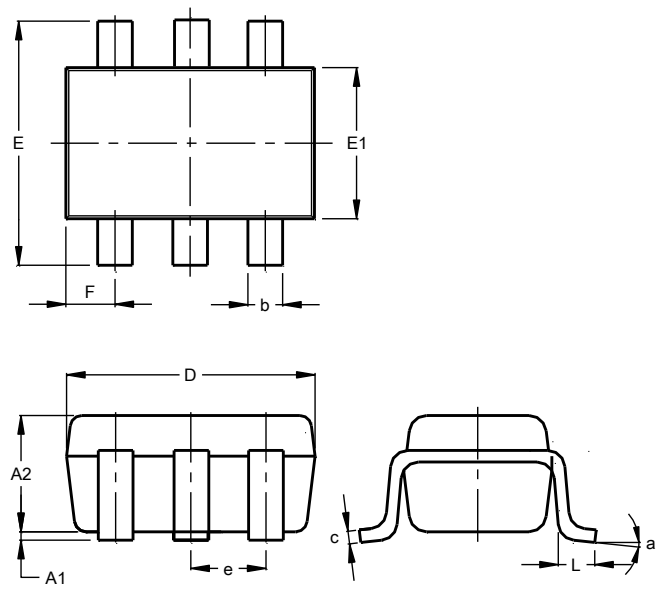
VIN(sat) v IC



VIN v IO

Package Outline Dimensions

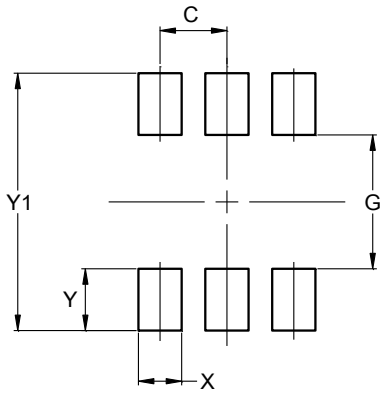
SOT363



SOT363			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.10	0.30	0.25
c	0.10	0.22	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		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

SOT363



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.420
Y	0.600
Y1	2.500