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

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Features

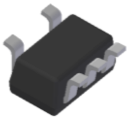
- Ultra-Small Surface Mount Package
- Epitaxial Planar Die Construction
- Surface Mount Package Suited for Automated Assembly
- Simplifies Circuit Design and Reduces Board Space

Mechanical Data

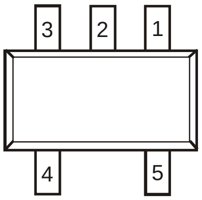
- Case: SOT353
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin Finish. Solderable per MIL-STD-202, Method 208 ⓔ3
- Weight: 0.006 grams (Approximate)

SOT353

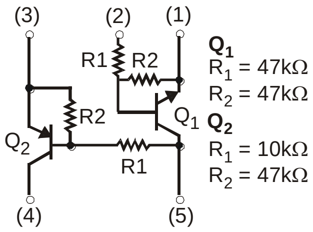
Top View



Bottom View



Package Pin Out Configuration



Q_1
$R_1 = 47k\Omega$
$R_2 = 47k\Omega$
Q_2
$R_1 = 10k\Omega$
$R_2 = 47k\Omega$

Device Schematic

Absolute Maximum Ratings, Pre-Biased NPN Transistor, Q_1 (@T_A = +25°C unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	50	V
Input Voltage	V_{IN}	-10 to +40	V
Output Current	I_O	30	mA
Collector Current	I_C	100	mA

Absolute Maximum Ratings, Pre-Biased PNP Transistor, Q_2 (@T_A = +25°C unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	-50	V
Input Voltage	V_{IN}	-40 to +6	V
Output Current	I_O	-100	mA
Collector Current	I_C	-100	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	150	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	833	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Note: 5. For the device mounted on minimum recommended pad layout FR-4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.

Electrical Characteristics, Pre-Biased NPN Transistor, Q_1 (@T_A = +25°C unless otherwise specified.)

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	(Note 6)	$V_{I(OFF)}$	0.5	—	—	V	V_{CC} = 5V, I_O = 100μA
	(Note 7)	$V_{I(ON)}$	—	—	3	V	V_O = 0.3V, I_O = 2mA
Output Voltage		$V_{O(ON)}$	—	0.1	0.3	V	I_O / I_I = 10mA/0.5 mA
Input Current		I_I	—	—	0.18	mA	V_I = 5V
Output Current		$I_{O(OFF)}$	—	—	0.5	μA	V_{CC} = 50V, V_I = 0V
DC Current Gain		G_I	68	—	—	—	V_O = 5V, I_O = 5mA
Gain-Bandwidth Product (Note 8)		f_T	—	250	—	MHz	V_{CE} = 10V, I_E = -5mA, f = 100MHz
Input Resistance		R_1	32.9	47	61.1	kΩ	—
Resistance Ratio		R_2/R_1	0.8	1	1.2	—	—

Notes: 6. The device is guaranteed to be in "OFF" state with $V_{I(OFF)}$ up to 0.5V.
7. The device is guaranteed to be in "ON" state with $V_{I(ON)}$ starting from 3V.
8. Characteristic of Transistor – for reference only.

Electrical Characteristics, Pre-Biased PNP Transistor, Q_2 (@T_A = +25°C unless otherwise specified.)

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	(Note 9)	$V_{I(OFF)}$	-0.3	—	—	V	V_{CC} = -5V, I_O = -100μA
	(Note 10)	$V_{I(ON)}$	—	—	-1.4	V	V_O = -0.3V, I_O = -1mA
Output Voltage		$V_{O(ON)}$	—	-0.1	-0.3	V	I_O/ I_I = -5mA/-0.25 mA
Input Current		I_I	—	—	-0.88	mA	V_I = -5V
Output Current		$I_{O(OFF)}$	—	—	-0.5	μA	V_{CC} = -50V, V_I = 0V
DC Current Gain		G_I	68	—	—	—	V_O = -5V, I_O = -5mA
Gain-Bandwidth Product (Note 11)		f_T	—	250	—	MHz	V_{CE} = -10V, I_E = 5mA, f = 100MHz
Input Resistance		R_1	7	10	13	kΩ	—
Resistance Ratio		R_2/R_1	3.7	4.7	5.7	—	—

Notes: 9. The device is guaranteed to be in "OFF" state with $V_{I(OFF)}$ up to -0.3V.
10. The device is guaranteed to be in "ON" state with $V_{I(ON)}$ starting from -1.4V.
11. Characteristic of Transistor – for reference only.

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

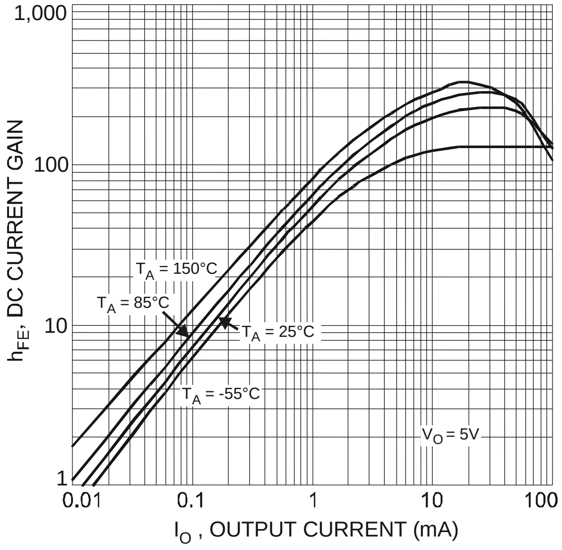


Fig. 1 Typical DC Current Gain vs. Output Current (Q1, NPN)

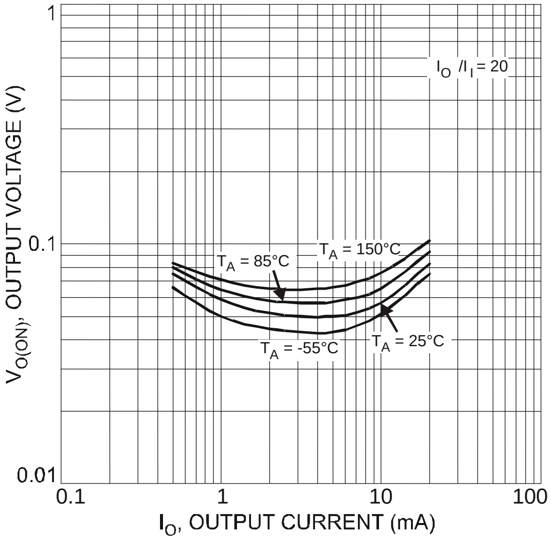


Fig. 2 Typical Output Voltage vs. Output Current (Q1, NPN)

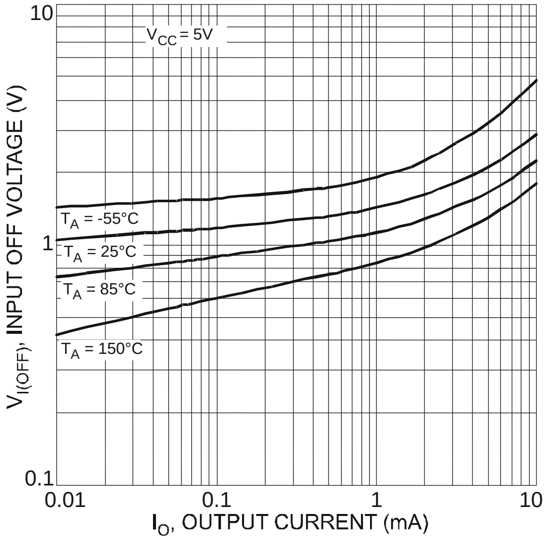


Fig. 3 Typical Input OFF Voltage
vs. Output Current (Q1, NPN)

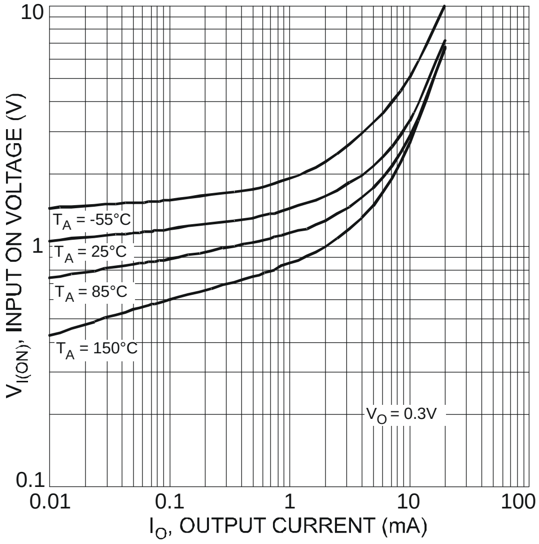


Fig. 4 Typical Input ON Voltage
vs. Output Current (Q1, NPN)

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

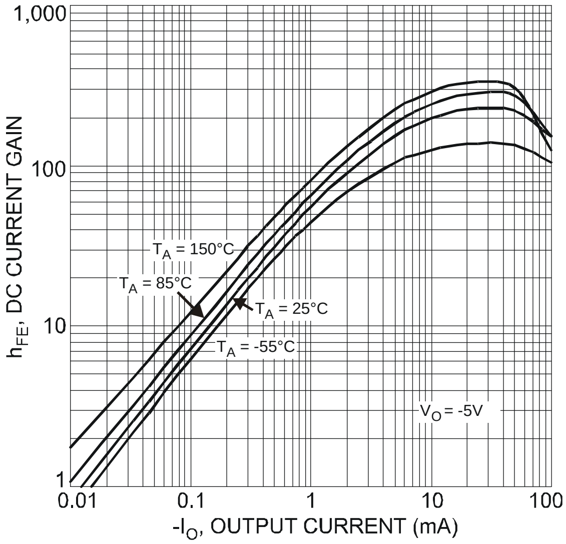


Fig. 5 Typical DC Current Gain
vs. Output Current (Q2, PNP)

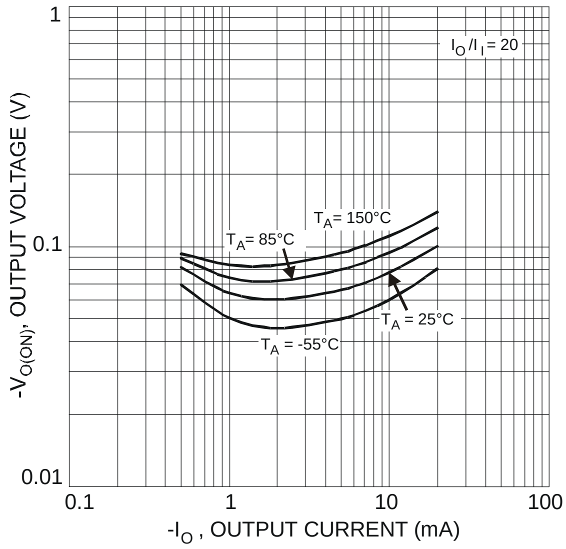


Fig. 6 Typical Output Voltage
vs. Output Current (Q2, PNP)

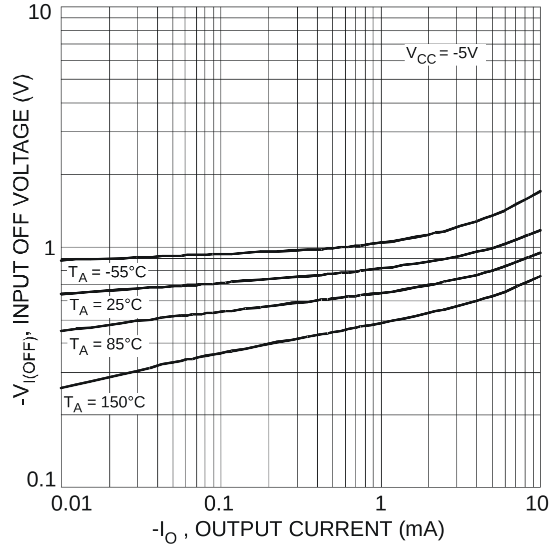


Fig. 7 Typical Input Off Voltage
vs. Output Current (Q2, PNP)

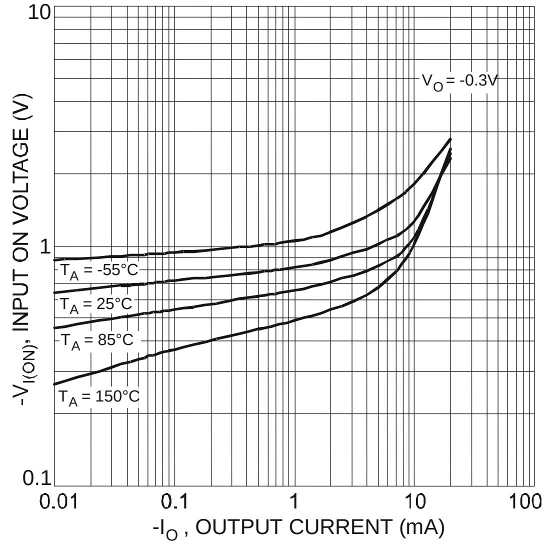
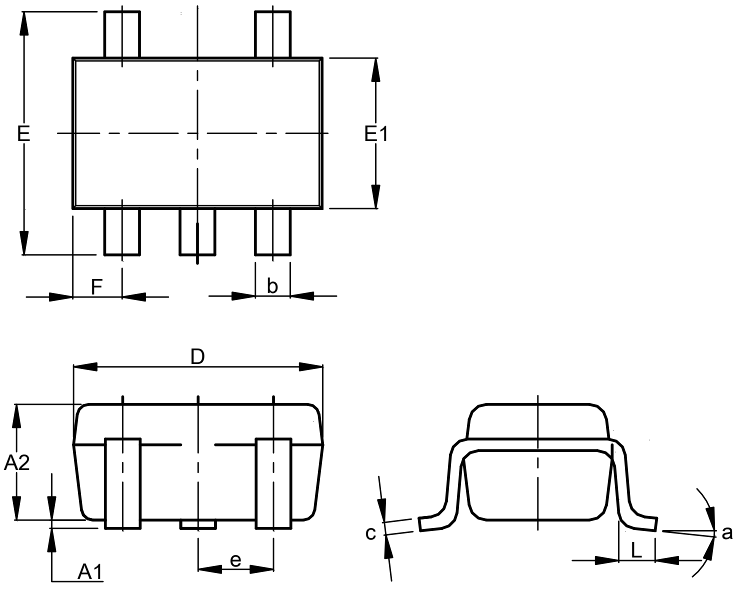


Fig. 8 Typical Input ON Voltage
vs. Output Current (Q2, PNP)

Package Outline Dimensions

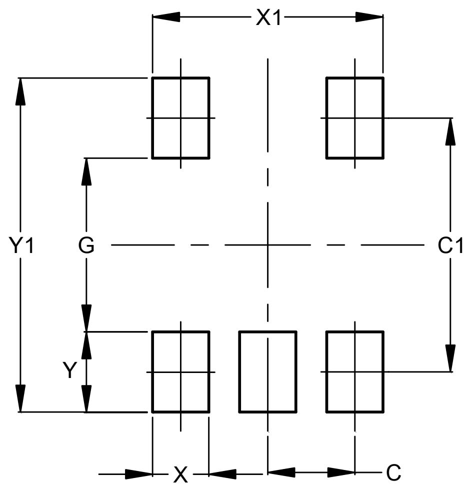
SOT353



SOT353			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.90	1.00	1.00
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

SOT353



Dimensions	Value (in mm)
C	0.650
C1	1.900
G	1.300
X	0.420
X1	1.720
Y	0.600
Y1	2.500