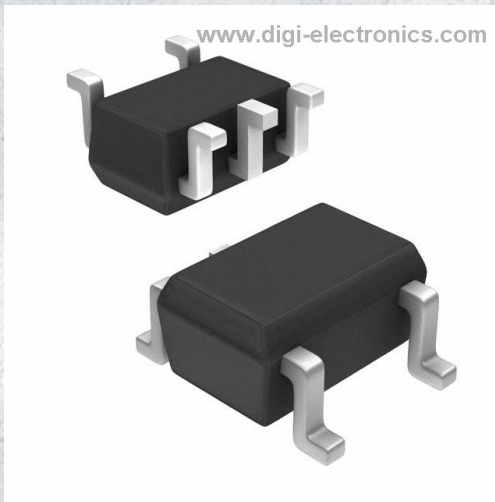


UMC5NQ-7 Datasheet



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	UMC5NQ-7-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	UMC5NQ-7
Description	PREBIAS TRANSISTOR SOT353
Detailed Description	Pre-Biased Bipolar Transistor (BJT) 1 NPN, 1 PNP - Pre-Biased (Dual) 100mA 250MHz 290mW Surface Mount SOT-353



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:

UMC5NQ-7

Series:

-

Transistor Type:

1 NPN, 1 PNP - Pre-Biased (Dual)

Voltage - Collector Emitter Breakdown (Max):

-

Resistor - Emitter Base (R2):

47kOhms

Vce Saturation (Max) @ Ib, Ic:

300mV @ 500μA, 10mA

Frequency - Transition:

250MHz

Grade:

Automotive

Mounting Type:

Surface Mount

Supplier Device Package:

SOT-353

Manufacturer:

Diodes Incorporated

Product Status:

Active

Current - Collector (Ic) (Max):

100mA

Resistor - Base (R1):

47kOhms

DC Current Gain (hFE) (Min) @ Ic, Vce:

68 @ 5mA, 5V

Current - Collector Cutoff (Max):

-

Power - Max:

290mW

Qualification:

AEC-Q101

Package / Case:

5-TSSOP, SC-70-5, SOT-353

Base Product Number:

UMC5

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.21.0075

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99



UMC5NQ

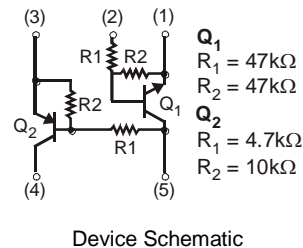
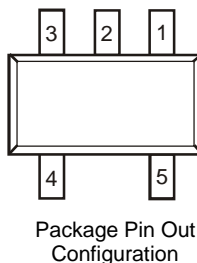
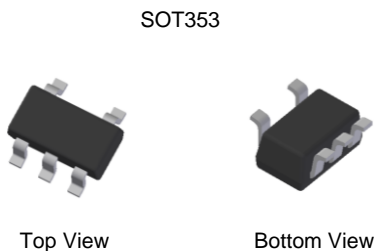
DUAL COMPLEMENTARY PRE-BIASED TRANSISTORS

Features

- Ultra-Small Surface Mount Package
- Surface Mount Package Suited for Automated Assembly
- Simplifies Circuit Design and Reduces Board Space
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. “Green” Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

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 Plated Leads, Solderable per MIL-STD-202, Method 208
- Weight: 0.006 grams (Approximate)

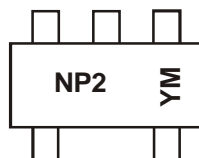


Ordering Information (Notes 4 & 5)

Part Number	Compliance	Marking	Reel Size (inch)	Tape Width (mm)	Quantity per Reel
UMC5NQ-7	Automotive	NP2	7	8	3,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated’s definitions of Halogen- and Antimony-free, “Green” and Lead-free.
 3. Halogen- and Antimony-free “Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/product_compliance_definitions.html.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



NP2 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: E = 2017)
 M = Month (ex: 9 = September)

Date Code Key

Year	2017	2018	2019	2020	2021	2022	2023	2024	2025
Code	E	F	G	H	I	J	K	L	M

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D



UMC5NQ

Absolute Maximum Ratings, Pre-Biased NPN Transistor, Q₁ (@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(MAX)}	100	mA

Absolute Maximum Ratings, Pre-Biased PNP Transistor, Q₂ (@T_A = +25°C unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Supply Voltage	V _{CC}	-50	V
Input Voltage	V _{IN}	-20 to +7	V
Output Current	I _O	-100	mA
Collector Current	I _{C(MAX)}	-100	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P _D	290	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	R _{θJA}	430	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Note: 6. Device mounted on FR-4 PCB; pad layout as shown on Diodes Incorporated suggested pad layout document, which can be found on our website at <http://www.diodes.com/package-outlines.html>.

Electrical Characteristics, Pre-Biased NPN Transistor, Q₁ (@T_A = +25°C unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	(Note 7) V _{I(OFF)}	0.5	—	—	V	V _{CC} = 5V, I _O = 100μA
	(Note 8) 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 9)	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: 7. The device is guaranteed to be in "OFF" state with V_{I(OFF)} up to 0.5V.
 8. The device is guaranteed to be in "ON" state with V_{I(ON)} starting from 3V.
 9. Characteristic of Transistor – for reference only.

Electrical Characteristics, Pre-Biased PNP Transistor, Q₂ (@T_A = +25°C unless otherwise specified.)

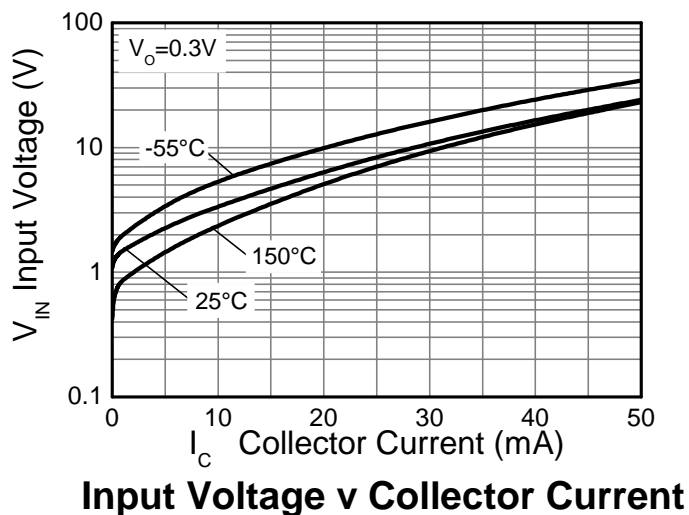
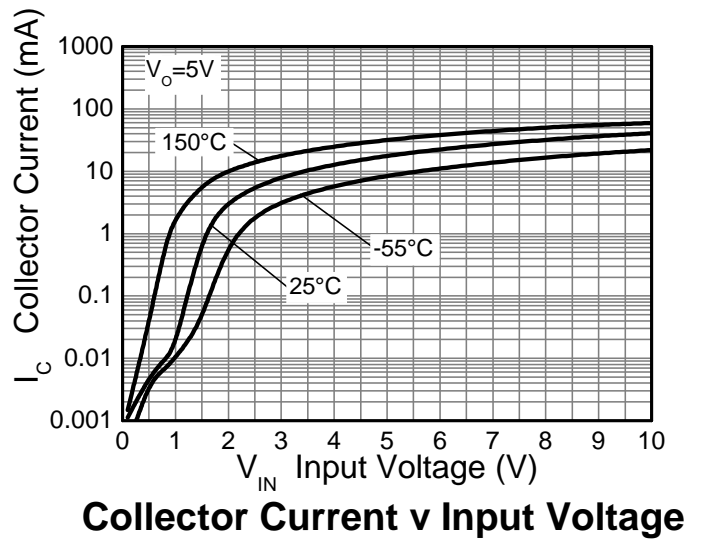
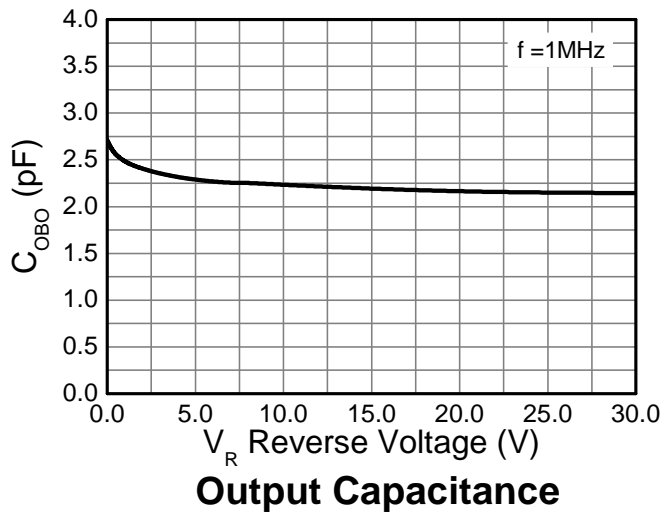
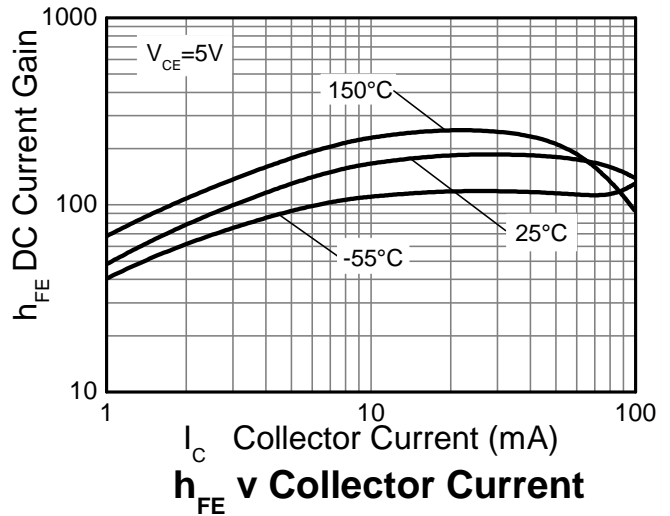
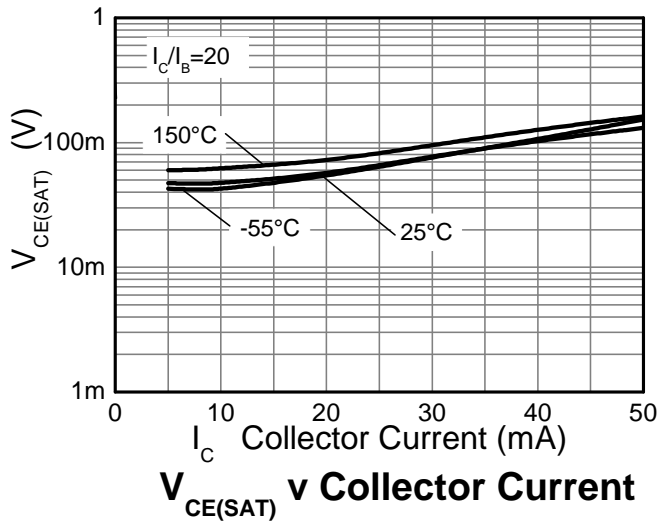
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	(Note 10) V _{I(OFF)}	-0.3	—	—	V	V _{CC} = -5V, I _O = -100μA
	(Note 11) V _{I(ON)}	—	—	-2.5	V	V _O = -0.3V, I _O = -20mA
Output Voltage	V _{O(ON)}	—	-0.1	-0.3	V	I _O /I _I = -10mA/-0.5 mA
Input Current	I _I	—	—	-1.8	mA	V _I = -5V
Output Current	I _{O(OFF)}	—	—	-0.5	μA	V _{CC} = -50V, V _I = 0V
DC Current Gain	G _I	30	—	—	—	V _O = -5V, I _O = -10mA
Gain-Bandwidth Product (Note 9)	f _T	—	250	—	MHz	V _{CE} = -10V, I _E = 5mA, f = 100MHz
Input Resistance	R ₁	3.29	4.7	6.11	kΩ	—
Resistance Ratio	R ₂ /R ₁	1.7	2.1	2.6	—	—

Notes: 10. The device is guaranteed to be in "OFF" state with V_{I(OFF)} up to -0.3V.
 11. The device is guaranteed to be in "ON" state with V_{I(ON)} starting from -2.5V.



UMC5NQ

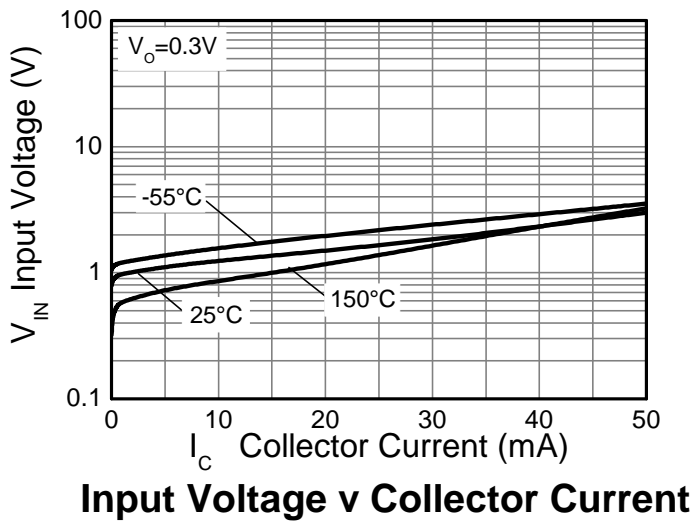
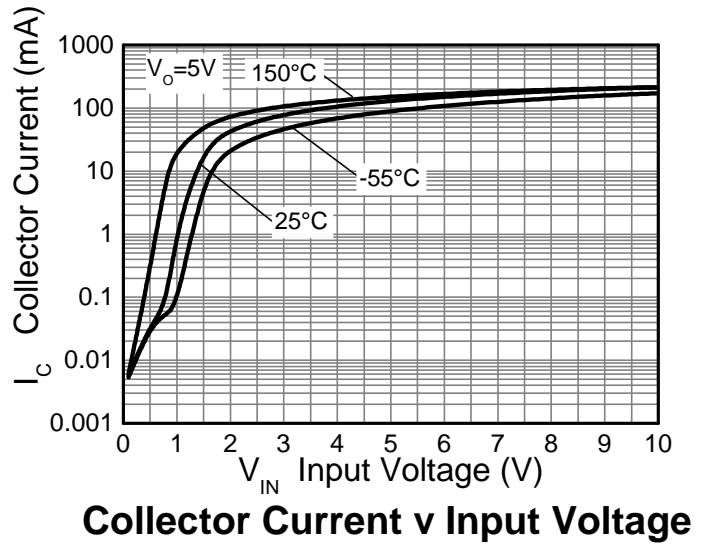
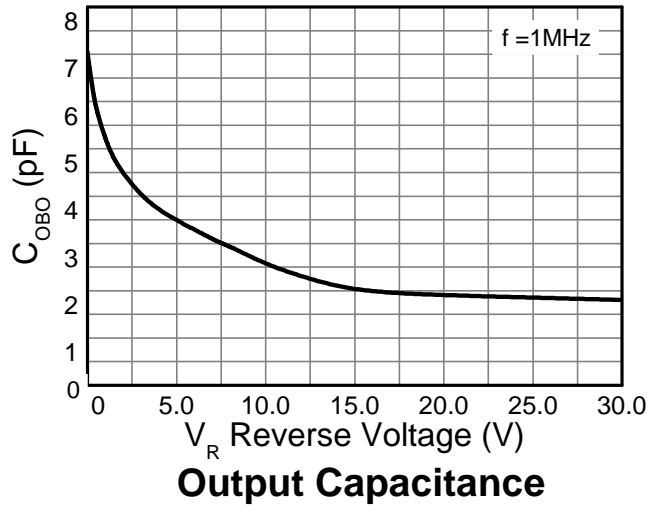
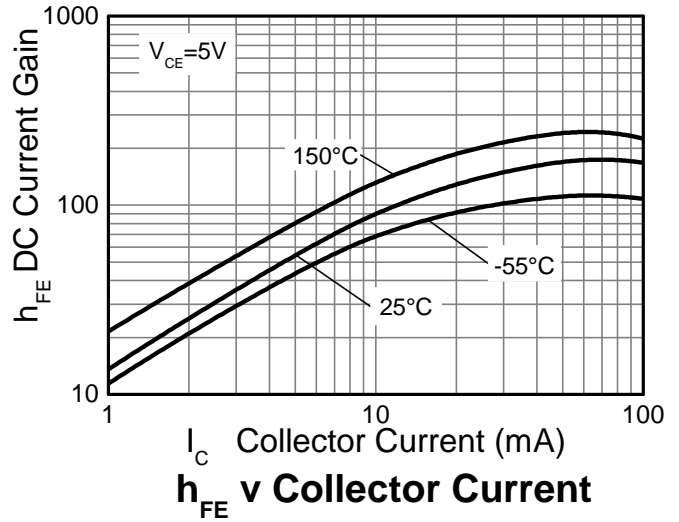
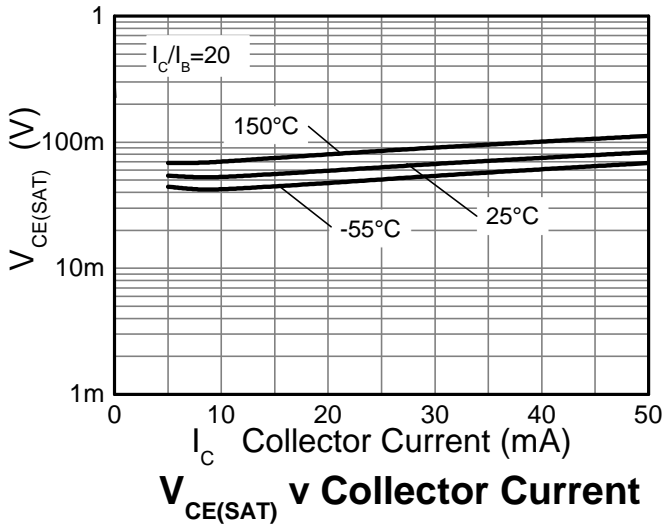
Typical Electrical Characteristics – NPN Section (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)





UMC5NQ

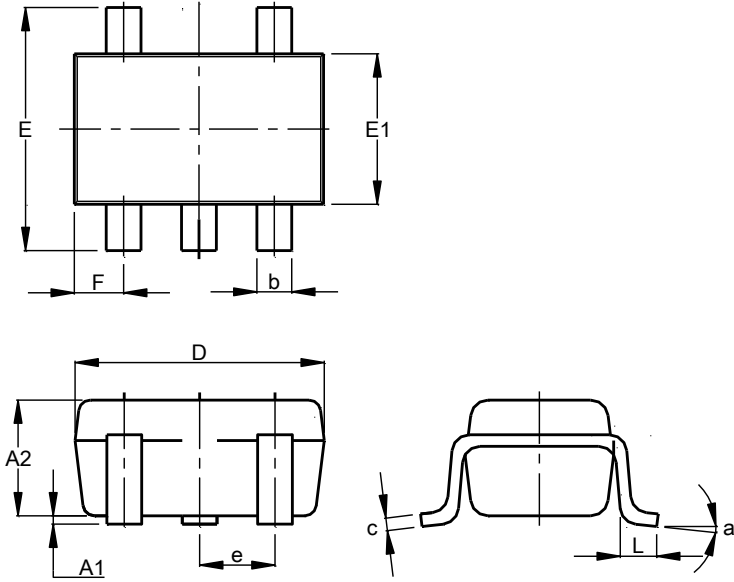
Typical Electrical Characteristics – PNP Section (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT353

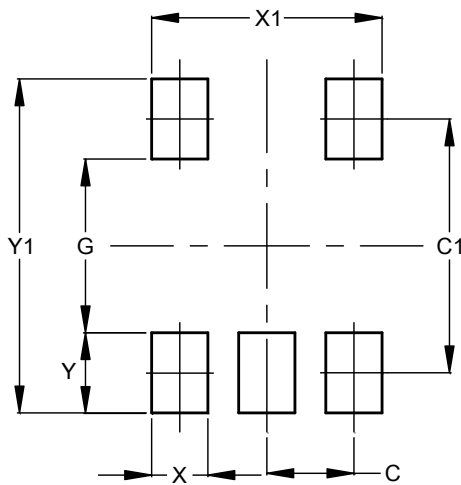


SOT353			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	1.00
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

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



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