TIP41CN
TIP42CN

COMPLEMENTARY SILICON POWER TRANSISTORS

PRELIMINARY DATA

- COMPLEMENTARY PNP-NPN DEVICES
- NEW ENHANCED SERIES
- HIGH SWITCHING SPEED
- h_{FE} GROUPING
- h_{FE} IMPROVED LINEARITY

APPLICATION

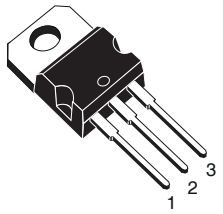
- GENERAL PURPOSE CIRCUITS
- AUDIO AMPLIFIER
- POWER LINEAR AND SWITCHING

DESCRIPTION

The TIP41CN is a silicon base island technology NPN power transistor Jedec TO-220 plastic package with improved performances than the industry standard TIP41C that make this device suitable for audio, power linear and switching applications.

The complementary PNP type is TIP42CN.

Figure 1: Package



TO-220

Figure 2: Internal Schematic Diagram

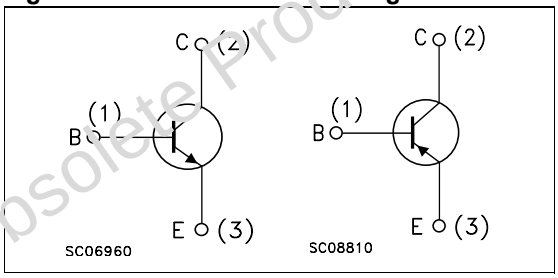


Table 1: Order Codes

Part Number	Marking	Package	Packaging
TIP41CN (#)	TIP41C NR TIP41C NO TIP41C NY	TO-220	Tube
TIP42CN (#)	TIP42C NR TIP42C NO TIP42C NY	TO-220	Tube

See note on page 2

Table 2: Absolute Maximum Ratings

Symbol	Parameter		Value	Unit
		NPN	TIP41CN	
		PNP	TIP42CN	
V_{CBO}	Collector-Base Voltage (I_E = 0)		100	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)		100	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)		5	V
I_C	Collector Current		6	A
I_{CM}	Collector Peak Current (t_p < 5ms)		10	A

Symbol	Parameter		Value	Unit
		NPN	TIP41CN	
		PNP	TIP42CN	
I_B	Base Current		3	A
P_{tot}	Total Dissipation at $T_C \leq 25\ ^oC$		65	W
T_{stg}	Storage Temperature		-65 to 150	°C
T_J	Max. Operating Junction Temperature		150	°C

For PNP types voltage and current values are negative.

Table 3: Electrical Characteristics (T_{case} = 25 ^oC unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CEO}	Collector Cut-off Current (I_B = 0)	V_{CE} = 60 V				0.7	mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 5 V				1	mA
I_{CES}	Collector Cut-off Current (V_{BE} = 0)	V_{CE} = 100 V				0.4	mA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 30 mA		100			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 6 A	I_B = 0.6 A			1.5	V
$V_{BE(on)}$*	Base-Emitter Voltage	I_C = 6 A	V_{CE} = 4 V			2	V
h_{FE}*	DC Current Gain	I_C = 0.3 A	V_{CE} = 4 V	30			
		I_C = 3 A	V_{CE} = 4 V				
		Group R		15		28	
		Group O		24		44	
		Group Y		42		75	

* Pulsed: Pulsed duration = 300 μs, duty cycle $\leq$ 2 %.
For PNP types voltage and current values are negative.
Note: Product is pre-selected in DC current gain (Group R, Group O and Group Y). STMicroelectronics reserves the right to ship either groups according to production availability. Please contact your nearest STMicrolectronics sales office for delivery details.

Figure 3: DC Current Gain (NPN)

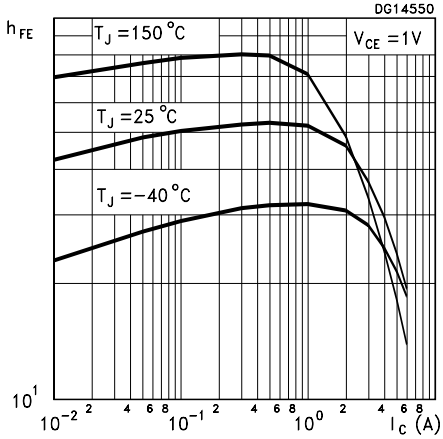


Figure 4: DC Current Gain (NPN)

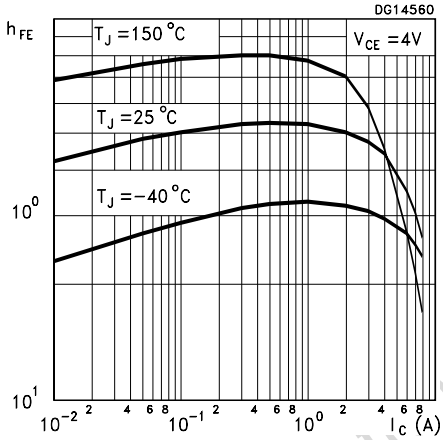


Figure 5: Collector-Emitter Saturation Voltage (NPN)

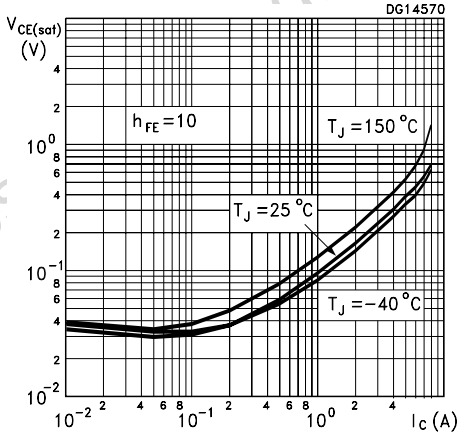


Figure 6: DC Current Gain (PNP)

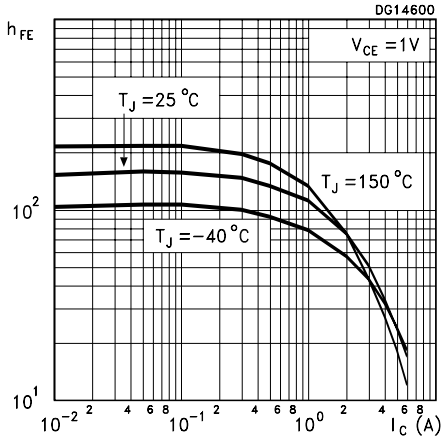


Figure 7: DC Current Gain (PNP)

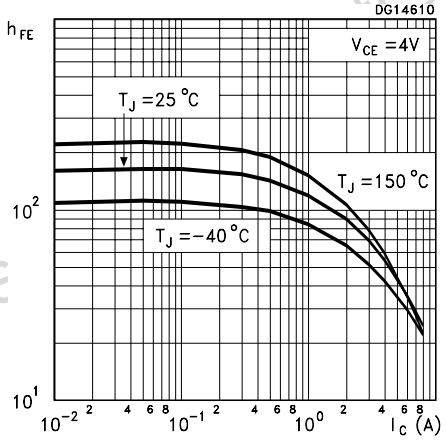


Figure 8: Collector-Emitter Saturation Voltage (PNP)

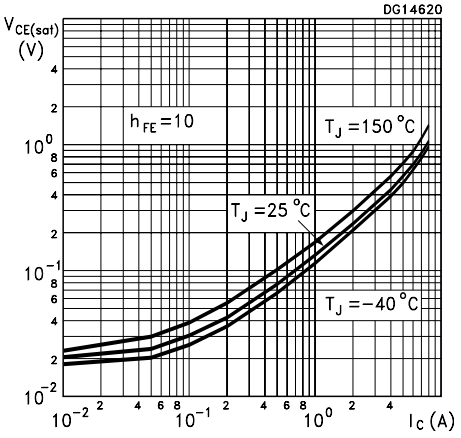


Figure 9: Base-Emitter Saturation Voltage (NPN)

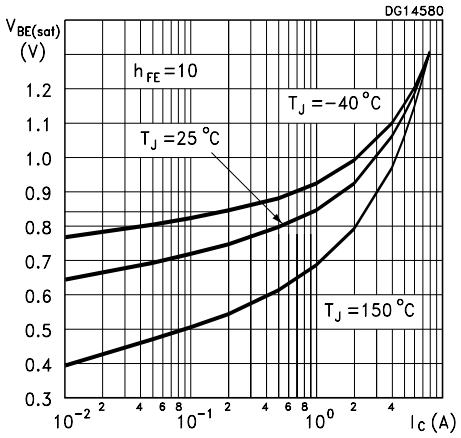


Figure 10: $BT_{(ON)}$ Time (NPN)

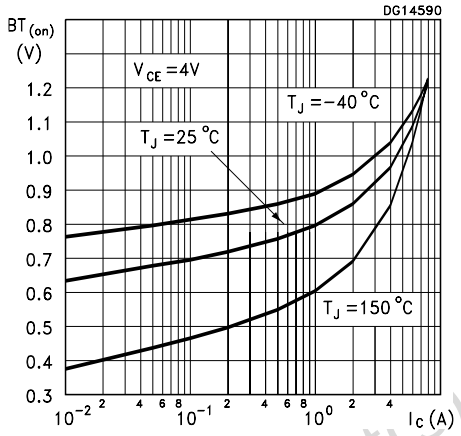


Figure 11: Resistive Load Switching Time (NPN

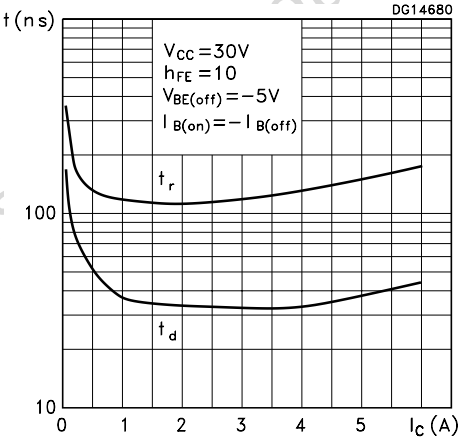


Figure 12: Base-Emitter Saturation Voltage (PNP

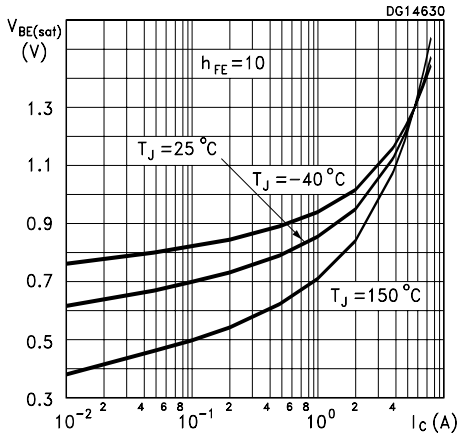


Figure 13: $BT_{(ON)}$ Time (PNP)

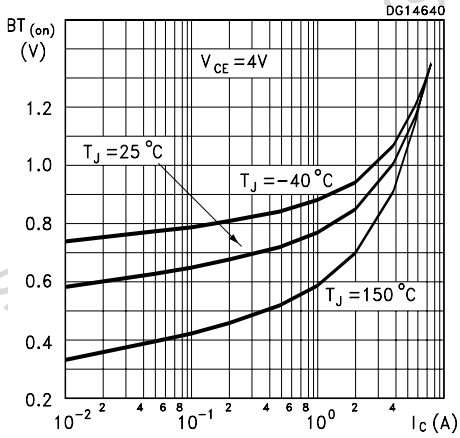


Figure 14: Resistive Load Switching Time (PNP)

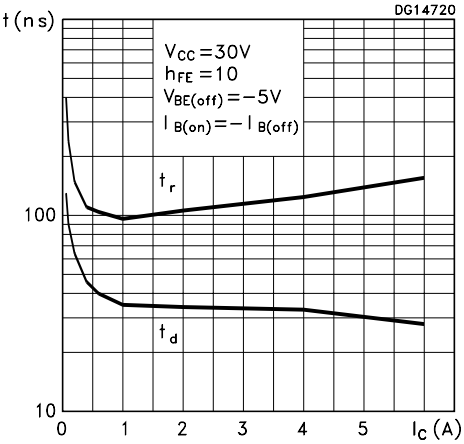


Figure 15: Resistive Load Switching Time (NPN)

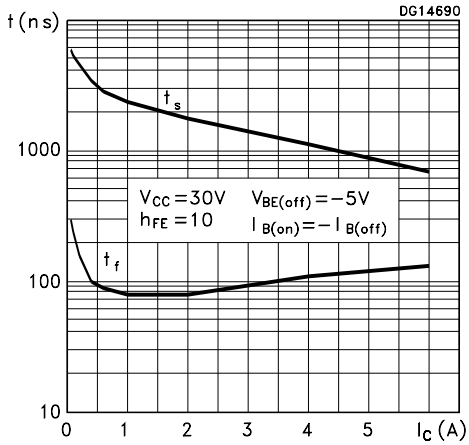


Figure 16: Collector-Base e Collector-Emitter Capacitance (NPN)

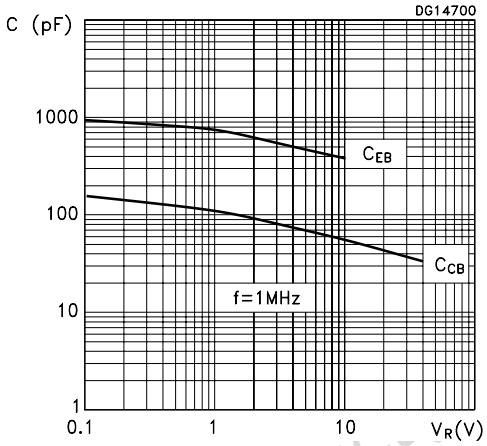


Figure 17: Resistive Load Switching Time (PNP)

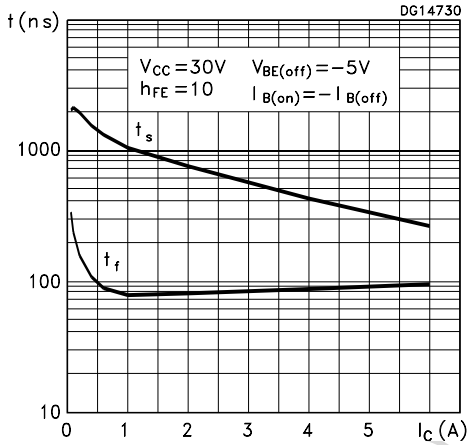
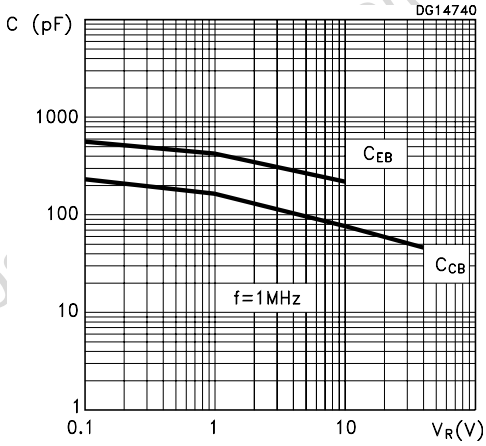


Figure 18: Collector-Base e Collector-Emitter Capacitance (PNP)



TO-220 MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
b	0.61		0.88	0.024		0.034
b1	1.15		1.70	0.045		0.066
c	0.49		0.70	0.019		0.027
D	15.25		15.75	0.60		0.620
E	10		10.40	0.393		0.409
e	2.40		2.70	0.094		0.106
e1	4.95		5.15	0.194		0.202
F	1.23		1.32	0.048		0.052
H1	6.20		6.60	0.244		0.256
J1	2.40		2.72	0.094		0.107
L	13		14	0.511		0.551
L1	3.50		3.93	0.137		0.154
L20		16.40			0.645	
L30		28.90			1.137	
øP	3.75		3.85	0.147		0.151
Q	2.65		2.95	0.104		0.116

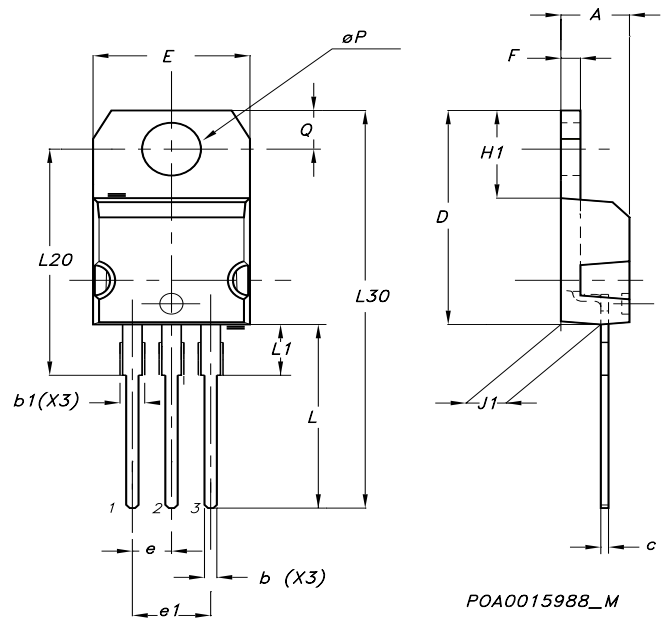


Table 4:

Version	Release Date	Change Designator
18-Mar-2005	1	First release.
06-Apr-2005	2	Further curves have been added.