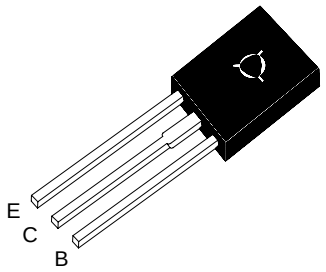
ST 13002T / ST 13003T

NPN Silicon Power Transistors

These devices are designed for high-voltage, high-speed power switching inductive circuits where fall time is critical.

They are particularly suited for 115 and 220V SWITCHMODE applications such as Switching Regulator's, Inverters, Motor Controls, Solenoid / Relay drivers and Deflection circuits.



TO-126 Plastic Package

Absolute Maximum Ratings (T_a = 25 °C)

Parameter	Symbol	Value		Unit
		ST13002T	ST13003T	
Collector Emitter Voltage	$V_{CEO(sus)}$	300	400	V
Collector Emitter Voltage	V_{CEV}	600	700	V
Emitter Base Voltage	V_{EBO}	9		V
Collector Current - Continuous - Peak [1]	I_C I_{CM}	1.5 3		A
Base Current - Continuous - Peak [1]	I_B I_{BM}	0.75 1.5		A
Emitter Current - Continuous - Peak [1]	I_E I_{EM}	2.25 4.5		A
Total Power Dissipation @ T_A = 25 °C Derate above 25°C	P_D	1.4 11.2		W mW/°C
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D	40 320		W mW/°C
Operating and Storage Junction Temperature Range	T_J, T_s	-65 to +150		°C
Thermal Resistance ,Junction to Ambient	$R_{\theta JA}$	89		°C/W
Thermal Resistance ,Junction to Case	$R_{\theta JC}$	3.12		°C/W

[1] Pulse Test: Pulse Width=5ms, Duty Cycle≤10%.

Characteristics at T_a = 25 °C

Parameter		Symbol	Min.	Typ.	Max.	Unit
DC Current Gain						
at V_{CE} = 2 V, I_C = 0.5 A		h_{FE}	8	-	40	-
at V_{CE} = 2 V, I_C = 1 A		h_{FE}	5	-	25	-
Collector Emitter Sustaining Voltage						
at I_C = 10 mA	ST13002T	$V_{CEO(sus)}$	300	-	-	V
	ST13003T	$V_{CEO(sus)}$	400	-	-	V
Collector Cutoff Current at V_{CEV} = Rated Value, $V_{BE(off)}$ = 1.5 V		I_{CEV}	-	-	1	mA
Emitter Cutoff Current at V_{EB} = 9 V		I_{EBO}	-	-	1	mA
Collector Emitter Saturation Voltage						
at I_C = 0.5 A, I_B = 0.1 A		$V_{CE(sat)}$	-	-	0.5	V
at I_C = 1 A, I_B = 0.25 A		$V_{CE(sat)}$	-	-	1	V
at I_C = 1.5 A, I_B = 0.5 A		$V_{CE(sat)}$	-	-	3	V
Base Emitter Saturation Voltage						
at I_C = 0.5 A, I_B = 0.1 A		$V_{BE(sat)}$	-	-	1	V
at I_C = 1 A, I_B = 0.25 A		$V_{BE(sat)}$	-	-	1.2	V
Current Gain Bandwidth Product at V_{CE} = 10 V, I_C = 100 mA, f = 1 MHz		f_T	4	10	-	MHz
Output Capacitance at V_{CB} = 10 V, f = 0.1 MHz		C_{ob}	-	21	-	pF
Delay Time	(V_{CC} = 125 V, I_C = 1 A, I_{B1} = I_{B2} = 0.2 A, t_p = 25 µs, Duty Cycle≤1%)	t_d	-	-	0.1	µs
Rise Time		t_r	-	-	1	µs
Storage Time		t_s	-	-	4	µs
Fall Time		t_f	-	-	0.7	µs
Storage Time	(I_C = 1 A, V_{clamp} = 300 V, I_{B1} = 0.2 A, $V_{BE(off)}$ = 5 V, T_C = 100 °C)	t_{sv}	-	-	4	µs
Crossover Time		t_c	-	-	0.75	µs
Fall Time		t_{fi}	-	0.15	-	µs

1) Pulse Test: Pulse Width=300µs, Duty Cycle≤2%.