

TIP140, TIP141, TIP142

NPN SILICON DARLINGTONS, SILICON POWER TRANSISTORS

They are silicon epitaxial-base NPN transistors in monolithic Darlington configuration and are mounted in SOT93 plastic package.
They are intended for use in power linear and switching application.
The complementary are TIP145, TIP146, TIP147.

Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit	
V_{CEO}	Collector-Emitter Voltage	TIP140	60	V	
		TIP141	80		
		TIP142	100		
V_{CBO}	Collector-Base Voltage	TIP140	60	V	
		TIP141	80		
		TIP142	100		
V_{EBO}	Emitter-Base Voltage	TIP140	5.0	V	
		TIP141			
		TIP142			
I_C	Collector Current	I_C	TIP140	10	A
			TIP141		
			TIP142		
		I_{CM}	TIP140	15	
			TIP141		
			TIP142		
I_B	Base Current	TIP140	0.5	A	
		TIP141			
		TIP142			
P_T	Power Dissipation	@ $T_{mb} = 25^\circ C$	TIP140	125	Watts
			TIP141		
			TIP142		
T_J	Junction Temperature	TIP140	150	°C	
		TIP141			
		TIP142			
T_s	Storage Temperature	TIP140	-65 to +150	°C	
		TIP141			
		TIP142			

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THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R_{thJ-mb}	Thermal Resistance Junction - Case	TIP140 TIP141 TIP142	1 °C / W

ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

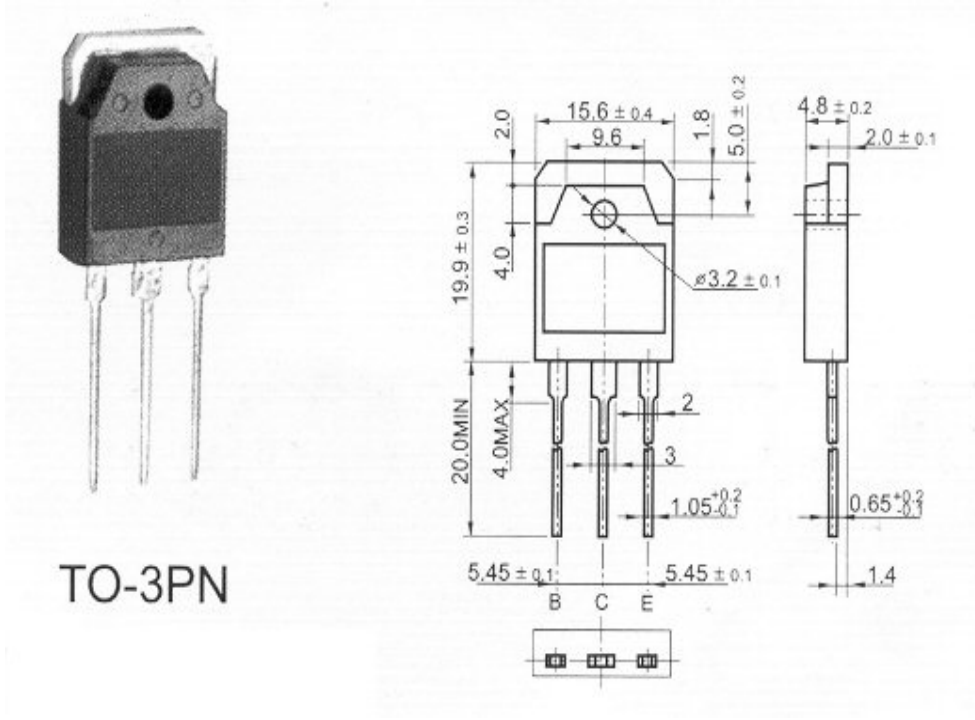
Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit
I_{CEO}	Collector Cutoff Current $I_B = 0$	$V_{CE} = 30\text{ V}$	TIP140	-	-	2 mA
		$V_{CE} = 40\text{ V}$	TIP141	-	-	
		$V_{CE} = 50\text{ V}$	TIP142	-	-	
I_{EBO}	Emitter Cutoff Current $I_C = 0$	$V_{BE} = 5\text{ V}$	TIP140	-	-	2 mA
			TIP141	-	-	
			TIP142	-	-	
I_{CBO}	Collector Cutoff Current $I_E = 0$	$V_{CB} = 60\text{ V}$	TIP140	-	-	1 mA
		$V_{CB} = 80\text{ V}$	TIP141	-	-	
		$V_{CB} = 100\text{ V}$	TIP142	-	-	
$V_{CE0(SUS)}$	Collector-Emitter Sustaining $I_B = 0$	$I_C = 30\text{ mA}$	TIP140	60	-	V
			TIP141	80	-	
			TIP142	100	-	

Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit
h_{FE}	DC Current Gain (*)	$V_{CE} = 4\text{ V}, I_C = 5\text{ A}$	1000	-	-	-
		$V_{CE} = 4\text{ V}, I_C = 10\text{ A}$	500	-	-	
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	$I_C = 5\text{ A}, I_B = 10\text{ mA}$	TIP140	-	-	2 V
			TIP141	-	-	
			TIP142	-	-	
		$I_C = 10\text{ A}, I_B = 40\text{ mA}$	TIP140	-	-	3 V
TIP141 TIP142	-		-			
V_{BE}	Base-Emitter Voltage (*)	$V_{CE} = 4\text{ V}, I_C = 10\text{ A}$	TIP140	-	-	3 V
			TIP141	-	-	
			TIP142	-	-	
V_F	Parallel Diode forward voltage	$I_F = 10\text{ A}$	-	-	3.5	V
t_{on}	Turn-on Time	$V_{BE(off)} = -4.2\text{ V}, I_C = 10\text{ A}, R_L = 3\ \Omega$	-	0.9	-	μS
t_{off}	Turn-off Time	$I_{B(on)} = 40\text{ mA}, I_{B(off)} = -40\text{ mA}$	-	11	-	

(*) Pulse Width = 200 μs , Duty Cycle $\angle 1.5\%$

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MECHANICAL DATA CASE TO-3PN (SOT93)



TO-3PN

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