



## TIP140 – TIP141 – TIP142

### NPN SILICON DARLINGTONS, SILICON POWER TRANSISTORS

They are silicon epitaxial-base NPN transistors in monolithic Darlington configuration and are mounted in TO-3PN 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		5.0	V
$I_C$	Collector Current	$I_C$	10	A
		$I_{CM}$	15	
$I_B$	Base Current		0.5	A
$P_T$	Power Dissipation	@ $T_{mb} = 25^\circ C$	125	Watts
$T_J$	Junction Temperature		150	°C
$T_S$	Storage Temperature		-65 to +150	

#### THERMAL CHARACTERISTICS

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

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### ELECTRICAL CHARACTERISTICS

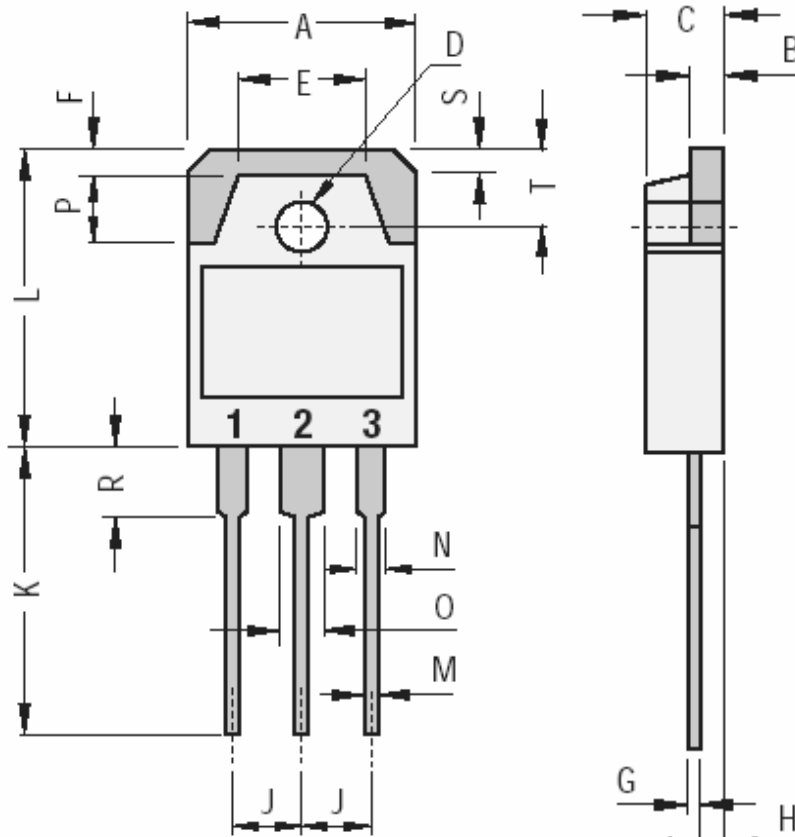
TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)		Min	Typ	Max	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	-	-	
$h_{FE}$	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	
			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	-	$\mu\text{s}$
$t_{off}$	Turn-on Time	$I_{B(on)} = 40\text{ mA}$ $I_{B(off)} = -40\text{ mA}$		-	11	-	

(\*) Pulse Width = 200  $\mu\text{s}$ , Duty Cycle  $\leq 1.5\%$

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### MECHANICAL DATA CASE TO3PN Non Isolated Plastic Package



DIMENSIONS (mm)		
	Min.	Max.
A	15.20	1600
B	1.90	2.10
C	4.60	5.00
D	3.10	3.30
E		9.60
F		2.00
G	0.35	0.55
H		1.40
J	5.35	5.55
K	20.00	
L	19.60	20.20
M	0.95	1.25
N		2.00
O		3.00
P		4.00
R		4.00
S		1.80
T	4.80	5.20

Pin 1 :	Base
Pin 2 :	Collector
Pin 3 :	Emitter
Case :	Collector

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