

SILICON PLANAR DARLINGTON POWER TRANSISTORS

**TIP140, 141, 142 NPN
TIP145, 146, 147 PNP**



**TO- 3PN Non Isolated
Plastic Package**

Designed for General Purpose Amplifier and Low Frequency Switching Applications

ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	TIP140 TIP145	TIP141 TIP146	TIP142 TIP147	UNIT
Collector Base Voltage	V_{CBO}	60	80	100	V
Collector Emitter Voltage	V_{CEO}	60	80	100	V
Emitter Base Voltage	V_{EBO}	5.0			V
Collector Current Continuous	I_C	10			A
Collector Current Peak	$*I_{CM}$	15			A
Base Current Continuous	I_B	0.5			A
Total Power Dissipation at $T_c = 25^\circ\text{C}$	P_D	125			W
Operating and Storage Junction Temperature Range	T_j, T_{stg}	- 65 to +150			$^\circ\text{C}$

*5ms ≤ 10% Duty Cycle

THERMAL RESISTANCE

From Junction to case	$R_{th(j-c)}$	1.0	$^\circ\text{C/W}$
From Junction to Ambient in free air	$R_{th(j-a)}$	35.7	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_c=25^\circ\text{C}$ unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector Emitter Sustaining Voltage	** $V_{CEO(sus)}$	$I_C = 30\text{mA}, I_B = 0$ TIP140/145 TIP141/146 TIP142/147	60 80 100			V V V
Collector Cutoff Current	I_{CEO}	$V_{CE} = 1/2 \text{ rated } V_{CEO}, I_B = 0$			2.0	mA
Collector Cutoff Current	I_{CBO}	$V_{CB} = \text{Rated } V_{CBO}, I_E = 0$			1.0	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 5.0 \text{ V}, I_C = 0$			2.0	mA
DC Current Gain	** h_{FE}	$I_C = 5\text{A}, V_{CE} = 4\text{V}$ $I_C = 10\text{A}, V_{CE} = 4 \text{ V}$	1000 500			
Collector Emitter Saturation Voltage	** $V_{CE(sat)}$	$I_C = 5\text{A}, I_B = 10\text{mA}$ $I_C = 10\text{A}, I_B = 40\text{mA}$			2.0 3.0	V V
Base Emitter Saturation Voltage	** $V_{BE(sat)}$	$I_C = 10\text{A}, I_B = 40\text{mA}$			3.5	V
Base Emitter On Voltage	** $V_{BE(on)}$	$I_C = 10\text{A}, V_{CE} = 4 \text{ V}$			3.0	V

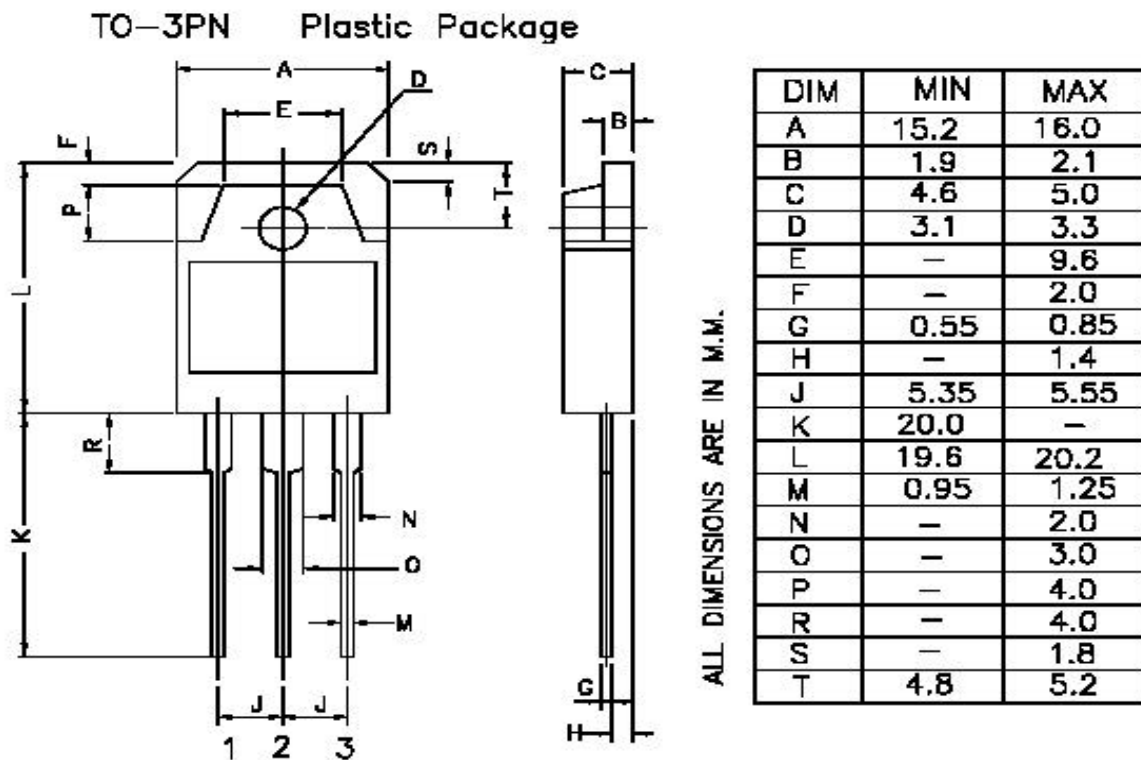
SWITCHING TIME

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Delay Time	t_d	$V_{CC} = 30\text{V}, I_C = 5\text{A}, I_B = 20\text{mA},$ Duty Cycle ≤ 2%, $I_{B1} = I_{B2}, R_C$ & R_B varied $T_j = 25^\circ\text{C}$		0.15		μs
Rise Time	t_r			0.55		μs
Storage Time	t_s				2.5	μs
Fall Time	t_f				2.5	μs

**Pulsed test : Pulse width = 300ms, duty cycle ≤ 2%

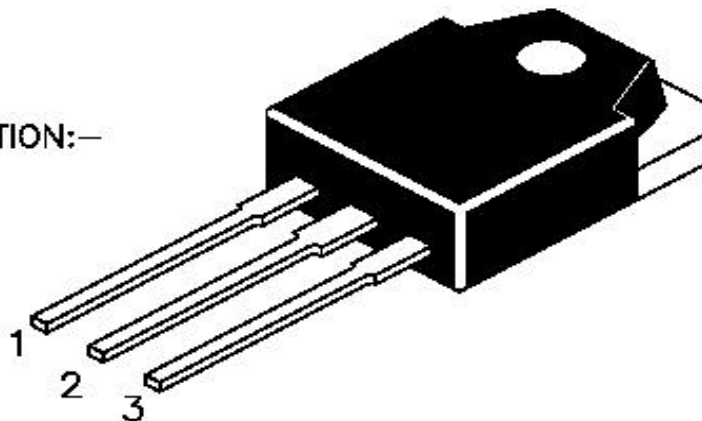
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PIN CONFIGURATION:—

1. BASE
2. COLLECTOR
3. EMITTER



Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Detail	Net Weight/Qty.	Size	Qty.	Size	Qty.	Gr. Wt.
TO-3PN	100pcs/polybag	639gm/100pcs	3"X7.5"X7.5"	0.3K	18"X15"X9"	3K	21kgs

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

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