TIP131, TIP132 (NPN), TIP137 (PNP)

Darlington Complementary Silicon Power Transistors

Designed for general−purpose amplifier and low−speed switching applications.

Features

- High DC Current Gain − h_{FE} = 2500 (Typ) @ I_C = 4.0 Adc
- Collector−Emitter Sustaining Voltage − @ 30 mAdc
  $V_{CEO(sus)}$ = 80 Vdc (Min) − TIP131
  = 100 Vdc (Min) − TIP132, TIP137
- Low Collector−Emitter Saturation Voltage −
  $V_{CE(sat)}$ = 2.0 Vdc (Max) @ I_C = 4.0 Adc
  = 3.0 Vdc (Max) @ I_C = 6.0 Adc
- Monolithic Construction with Built−In Base−Emitter Shunt Resistors
- Pb−Free Packages are Available*

MAXIMUM RATINGS

Rating	Symbol	TIP131	TIP132 TIP137	Unit
Collector−Emitter Voltage	V_{CEO}	80	100	Vdc
Collector−Base Voltage	V_{CB}	80	100	Vdc
Emitter−Base Voltage	V_{EB}	5.0		Vdc
Collector Current − Continuous Peak	I_C	8.0 12		Adc
Base Current	I_B	300		mAdc
Total Power Dissipation @ T_C = 25°C	P_D	70		W
Total Power Dissipation @ T_A = 25°C	P_D	2.0		W
Operating and Storage Junction, Temperature Range	T_J, T_{stg}	−65 to +150		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	1.78	°C/W
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	63.5	°C/W

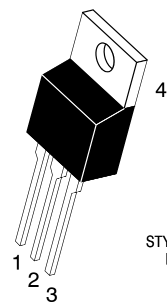
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor®

http://onsemi.com

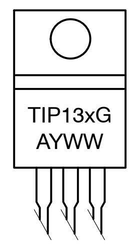
DARLINGTON 8 AMPERE COMPLEMENTARY SILICON POWER TRANSISTORS 80−100 VOLTS, 70 WATTS



TO−220AB
CASE 221A
STYLE 1

STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

MARKING DIAGRAM



TIP13x	=	Device Code
x	=	1, 2, or 7
A	=	Assembly Location
Y	=	Year
WW	=	Work Week
G	=	Pb−Free Package

ORDERING INFORMATION

Device	Package	Shipping
TIP131	TO−220	50 Units/Rail
TIP131G	TO−220 (Pb−Free)	50 Units/Rail
TIP132	TO−220	50 Units/Rail
TIP132G	TO−220 (Pb−Free)	50 Units/Rail
TIP137	TO−220	50 Units/Rail
TIP137G	TO−220 (Pb−Free)	50 Units/Rail

September, 2011 − Rev. 3

Publication Order Number:
TIP131/D

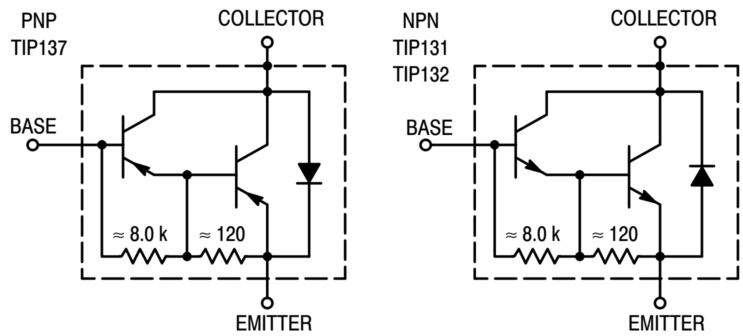


Figure 1. Darlington Circuit Schematic

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector−Emitter Sustaining Voltage (Note 1) (I_C = 30 mAdc, I_B = 0)	 TIP131 TIP132, TIP137	$V_{CEO(sus)}$	 80 100	 – –	Vdc
Collector Cutoff Current (V_{CE} = 40 Vdc, I_B = 0) (V_{CE} = 50 Vdc, I_B = 0)	 TIP131 TIP132, TIP137	I_{CEO}	 – –	 0.5 0.5	mAdc
Collector Cutoff Current (V_{CB} = 80 Vdc, I_E = 0) (V_{CB} = 100 Vdc, I_E = 0)	 TIP131 TIP132, TIP137	I_{CBO}	 – –	 0.2 0.2	mAdc
Emitter Cutoff Current (V_{BE} = 5.0 Vdc, I_C = 0)		I_{EBO}	–	5.0	mAdc
ON CHARACTERISTICS (Note 1)					
DC Current Gain (I_C = 1.0 Adc, V_{CE} = 4.0 Vdc) (I_C = 4.0 Adc, V_{CE} = 4.0 Vdc)		h_{FE}	 500 1000	 – 15000	–
Collector−Emitter Saturation Voltage (I_C = 4.0 Adc, I_B = 16 mAdc) (I_C = 6.0 Adc, I_B = 30 mAdc)		$V_{CE(sat)}$	 – –	 2.0 3.0	Vdc
Base−Emitter On Voltage (I_C = 4.0 Adc, V_{CE} = 4.0 Vdc)		$V_{BE(on)}$	–	2.5	Vdc

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

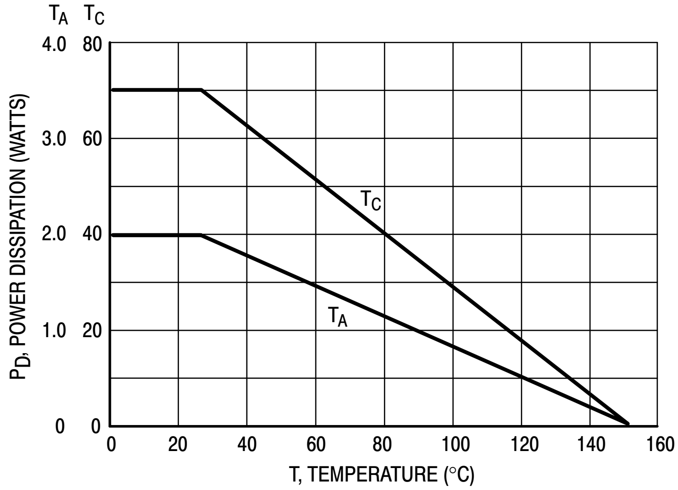


Figure 2. Power Derating

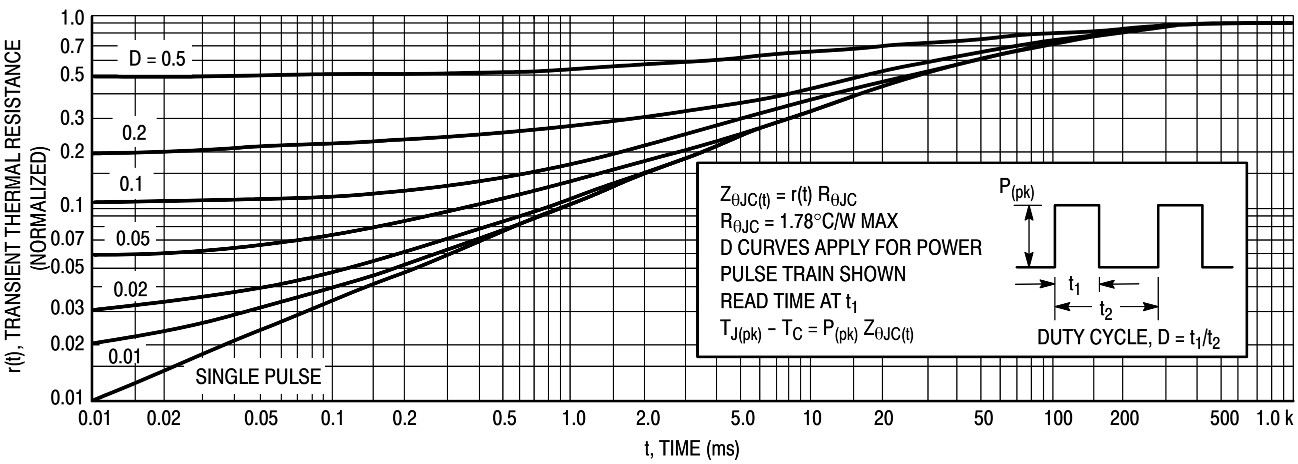


Figure 3. Thermal Response

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:
Technical Library: www.onsemi.com/design/resources/technical−documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support
For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales