TIP131, TIP132 (NPN), TIP137 (PNP)

Preferred Devices

Darlington Complementary Silicon Power Transistors

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

- 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
- TO−220AB Compact Package

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		Watts
Total Power Dissipation @ T_A = 25°C	P_D	2.0		Watts
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

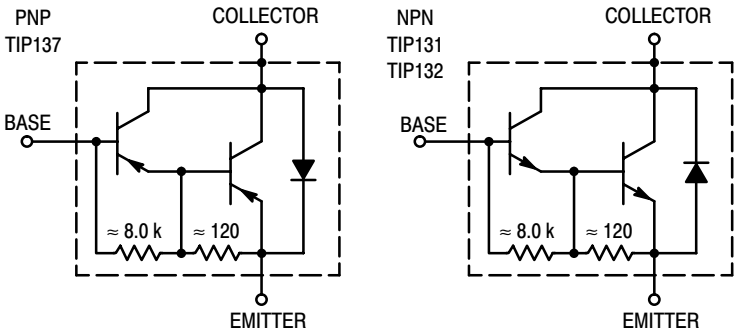

Figure 1. Darlington Circuit Schematic

ON Semiconductor®

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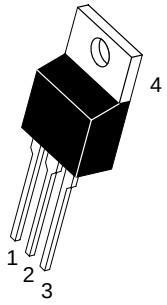
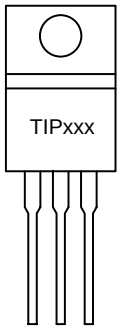
DARLINGTON 8 AMPERE COMPLEMENTARY SILICON POWER TRANSISTORS 80−100 VOLTS 70 WATTS



CASE 221A
TO−220AB

MARKING DIAGRAM



TIPxxx = Specific Device Code

ORDERING INFORMATION

Device	Package	Shipping
TIP131	TO−220	50 Units/Rail
TIP132	TO−220	50 Units/Rail
TIP137	TO−220	50 Units/Rail

Preferred devices are recommended choices for future use and best overall value.

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%.

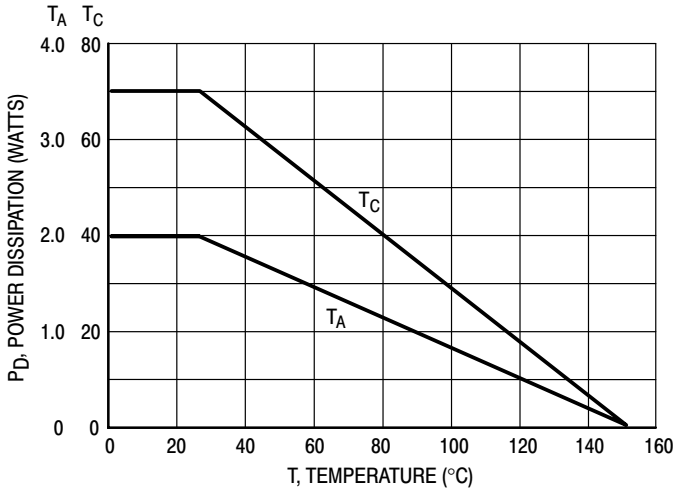


Figure 2. Power Derating

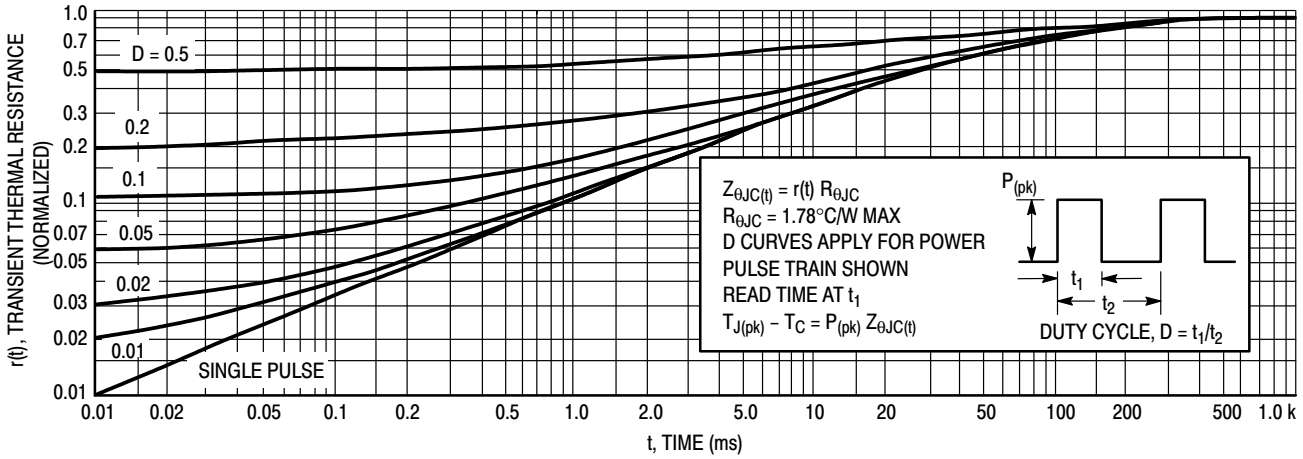
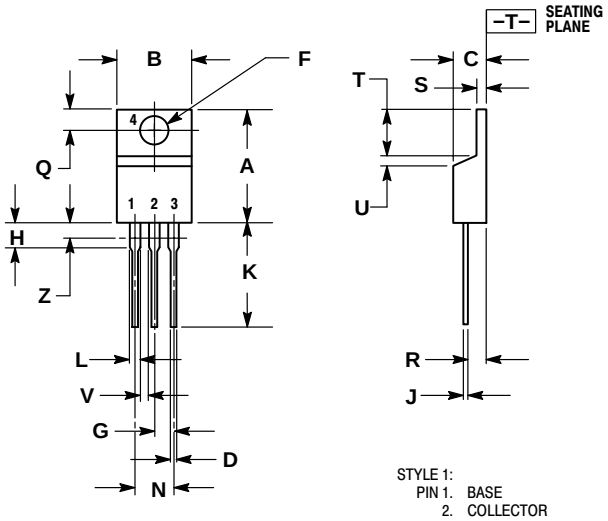


Figure 3. Thermal Response

PACKAGE DIMENSIONS

TO−220AB
CASE 221A−09
ISSUE AA



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

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.018	0.025	0.46	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

PUBLICATION ORDERING INFORMATION

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