2N6298 & 2N6299

PNP Darlington Power Silicon Transistor

Rev. V5

Features

- Available in JAN, JANTX, JANTXV per MIL-PRF-19500/540
- TO-66 (TO-213AA) Package
- Ideal for High Gain Amplifier and Medium Speed Switching Applications

Electrical Characteristics (T_A = +25°C unless otherwise noted)

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Collector - Emitter Breakdown Voltage	I_C = -100 mA dc, 2N6298 I_C = -100 mA dc, 2N6299	$V_{(BR)CEO}$	V dc	-60 -80	—
Collector - Emitter Cutoff Current	V_{CE} = -30 V dc, 2N6298 V_{CE} = -40 V dc, 2N6299	I_{CEO}	mA dc	—	-0.5 -0.5
Collector - Emitter Cutoff Current	V_{CE} = -60 V dc, V_{BE} = +1.5 V dc, 2N6298 V_{CE} = -80 V dc, V_{BE} = +1.5 V dc, 2N6299	I_{CEX1}	µA dc	—	-10 -10
Emitter - Base Cutoff Current	V_{EB} = -5 V dc	I_{EBO}	mA dc	—	-2.0
Forward - Current Transfer Ratio	V_{CE} = -3 V dc, I_C = -1 A dc V_{CE} = -3 V dc, I_C = -4 A dc V_{CE} = -3 V dc, I_C = -8 A dc	h_{FE}	-	500 750 100	18,000
Collector - Emitter Saturation Voltage	I_C = -4 A dc, I_B = -16 mA dc I_C = -8 A dc, I_B = -80 mA dc	$V_{CE(sat)1}$ $V_{CE(sat)2}$	V dc	—	-2.0 -2.0
Base - Emitter Saturation Voltage	I_C = -8 A dc, I_B = -80 A dc	$V_{BE(sat)}$	V dc	—	-4.0
Base - Emitter Voltage	V_{CE} = -3 V dc, I_C = -4 A dc	$V_{BE(on)}$	V dc	—	-2.8
Collector - Emitter Cutoff Current	T_A = +150°C V_{CE} = -60 V dc, V_{BE} = +1.5 V dc, 2N6298 V_{CE} = -80 V dc, V_{BE} = +1.5 V dc, 2N6299	I_{CEX2}	mA dc	—	-5.0 -5.0
Forward - Current Transfer Ratio	T_A = -55°C V_{CE} = -3 V dc, I_C = -4 A dc	h_{FE4}	-	200	
Dynamic Characteristics					
Magnitude of Small-Signal Short-Circuit Forward Current Transfer Ratio	V_{CE} = -3 V dc, I_C = -3 A dc, f = 1.0 MHz	$\lvert h_{fe} \rvert$	-	25	350
Small-Signal Short-Circuit Forward - Current Transfer Ratio	V_{CE} = -3 V dc, I_C = -3 A dc, f = 1.0 kHz	h_{fe}	-	300	—
Open Circuit Output Capacitance	V_{CB} = -10 V dc, I_E = 0, 100 kHz ≤ f ≤ 1 MHz	C_{obo}	pF	—	200
Switching Characteristics					
Turn-On Time	V_{CC} = -30 V dc; I_C = -4 A dc; I_{B1} = -16 mA dc	t_{on}	µs	—	2.0
Turn-Off Time	V_{CC} = -30 Vdc; I_C = -4 A dc; I_{B1} = -16 mA dc	t_{off}	µs	—	8.0

Absolute Maximum Ratings (T_A = +25°C unless otherwise noted)

Ratings	Symbol	Value
Collector - Emitter Voltage 2N6298 2N6299	V_{CEO}	 -60 V dc -80 V dc
Collector - Base Voltage 2N6298 2N6299	V_{CBO}	 -60 V dc -80 V dc
Emitter - Base Voltage	V_{EBO}	-5 V dc
Base Current	I_B	-120 mA dc
Collector Current	I_C	-8 A dc
Total Power Dissipation (1) @ T_C = +25°C @ T_C = +100°C	P_T	 64 W 32 W
Operating & Storage Temperature Range	T_J, T_{STG}	-65°C to +175°C

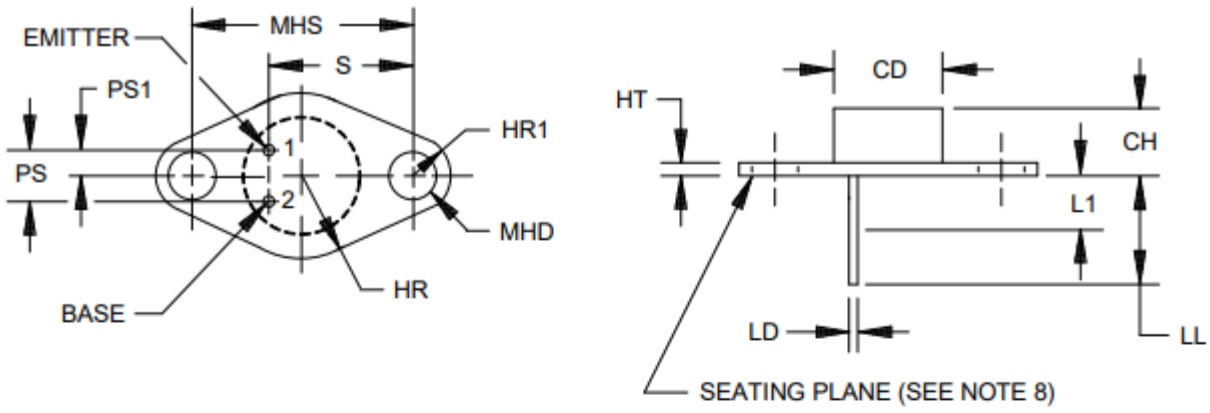
(1) Derate linearly at 0.428 W/°C above T_C > +25°C.

Thermal Characteristics

Characteristics	Symbol	Max. Value
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.33°C/W

Safe Operating Area	
DC Tests:	T_C = +25 °C + 10°C, 1 Cycle, t = 1.0 s
Test 1:	V_{CE} = -8.0 V dc, I_C = -8.0 A dc
Test 2:	V_{CE} = -20 V dc, I_C = -2.0 A dc
Test 3:	V_{CE} = -60 V dc, I_C = -100 mA dc, 2N6298
	V_{CE} = -80 V dc, I_C = -100 mA dc, 2N6299

Outline Drawing (TO-66)



Symbol	Dimensions				Notes	Symbol	Dimensions				Notes
	Inches		Millimeters				Inches		Millimeters		
	Min	Max	Min	Max			Min	Max	Min	Max	
CD		.620		15.75	3	LL	.360	.500	9.14	12.70	6
CH	.250	.340	6.35	8.64		L1		.050		1.27	6
HR		.350		8.89		MHD	.142	.152	3.61	3.86	4
HR1	.115	.145	2.92	3.68	4	MHS	.958	.962	24.33	24.43	
HT	.050	.075	1.27	1.91	5	PS	.190	.210	4.83	5.33	7
LD	.028	.034	0.71	0.86	4, 6	PS1	.093	.107	2.36	2.72	7
						S	.570	.590	14.48	14.99	

NOTES:

1. Dimensions are in inches. Millimeters are given for general information only.
2. Pin 1 is the emitter, pin 2 is the base. The collector shall be electrically connected to the case.
3. Body contour is optional within zone defined by dimension CD.
4. Two places.
5. Dimension HT does not include sealing flanges.
6. Dimension LD applies between dimensions L1 and LL. Lead diameter shall not exceed twice dimension LD within dimension L1.
7. These dimensions should be measured at points .050 inch (1.27 mm) +.005 inch (0.13 mm) to .000 inch (0.00 mm) below seating plane. When gauge is not used, measurement will be made at the seating plane.
8. The seating plane of the header shall be flat within .001 inch (0.03 mm) concave to .004 inch (0.10 mm) convex inside a .930 inch (23.62 mm) diameter circle on the center of the header and flat within .001 inch (0.03 mm) concave to .006 inch (0.15 mm) convex overall.
9. In accordance with ASME Y14.5M, diameters are equivalent to Øx symbology.

FIGURE 1. Physical dimensions for diamond base flange mount TO-213AA (similar to TO-66) package.