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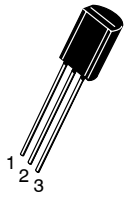
One Watt Darlington Transistors

PNP Silicon

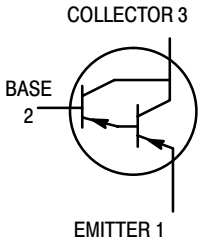
MPSW63
MPSW64*

*ON Semiconductor Preferred Device

- **These devices are available in Pb−free package(s). Specifications herein apply to both standard and Pb−free devices. Please see our website at www.onsemi.com for specific Pb−free orderable part numbers, or contact your local ON Semiconductor sales office or representative.**



CASE 29−10, STYLE 1
TO−92 (TO−226AE)



MAXIMUM RATINGS

Rating	Symbol	MPSW63 MPSW64	Unit
Collector − Emitter Voltage	V_{CES}	−30	Vdc
Collector − Base Voltage	V_{CBO}	−30	Vdc
Emitter − Base Voltage	V_{EBO}	−10	Vdc
Collector Current — Continuous	I_C	−500	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	1.0 8.0	Watt mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	2.5 20	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	50	°C/W

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector − Emitter Breakdown Voltage (I_C = −100 μAdc, V_{BE} = 0)	$V_{(BR)CES}$	−30	—	Vdc
Collector Cutoff Current (V_{CB} = −30 Vdc, I_E = 0)	I_{CBO}	—	−100	nAdc
Emitter Cutoff Current (V_{EB} = −10 Vdc, I_C = 0)	I_{EBO}	—	−100	nAdc

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

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted) (Continued)

Characteristic		Symbol	Min	Max	Unit
ON CHARACTERISTICS[1]					
DC Current Gain		h_{FE}			—
(I_C = −10 mAdc, V_{CE} = −5.0 Vdc)	MPSW63		5,000	—	
	MPSW64		10,000	—	
(I_C = −100 mAdc, V_{CE} = −5.0 Vdc)	MPSW63		10,000	—	
	MPSW64		20,000	—	
Collector−Emitter Saturation Voltage (I_C = −100 mAdc, I_B = −0.1 mAdc)		$V_{CE(sat)}$	—	−1.5	Vdc
Base−Emitter On Voltage (I_C = −100 mAdc, V_{CE} = −5.0 Vdc)		$V_{BE(on)}$	—	−2.0	Vdc
SMALL−SIGNAL CHARACTERISTICS					
Current−Gain — Bandwidth Product[2] (I_C = −10 mAdc, V_{CE} = −5.0 Vdc, f = 100 MHz)		f_T	125	—	MHz

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
2. $f_T = |h_{fe}| \cdot f_{test}$.

TYPICAL ELECTRICAL CHARACTERISTICS

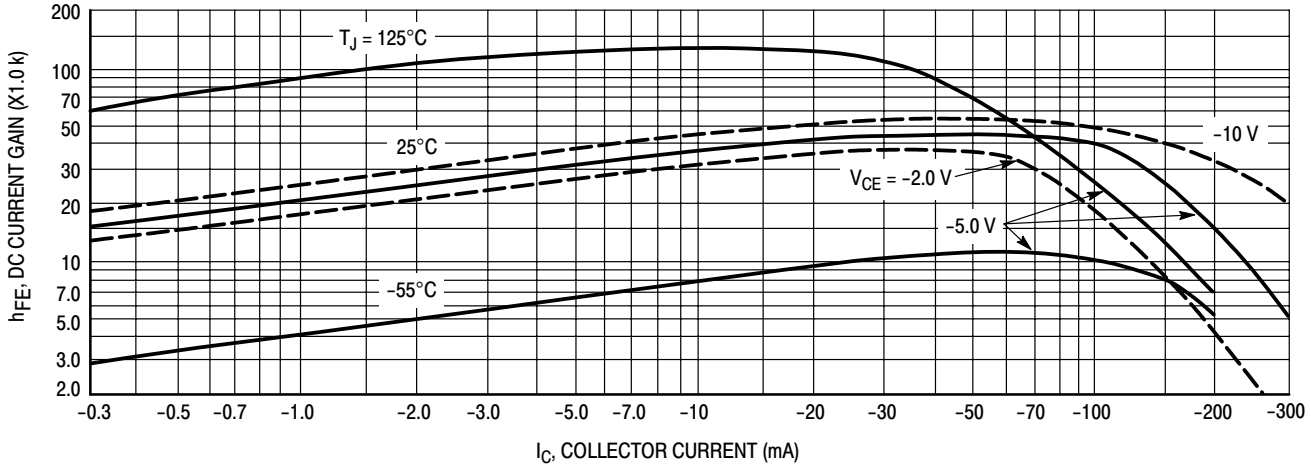


Figure 1. DC Current Gain

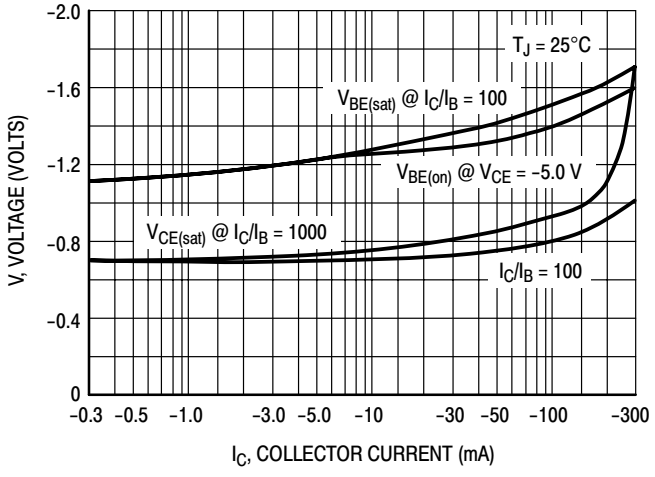


Figure 2. "ON" Voltage

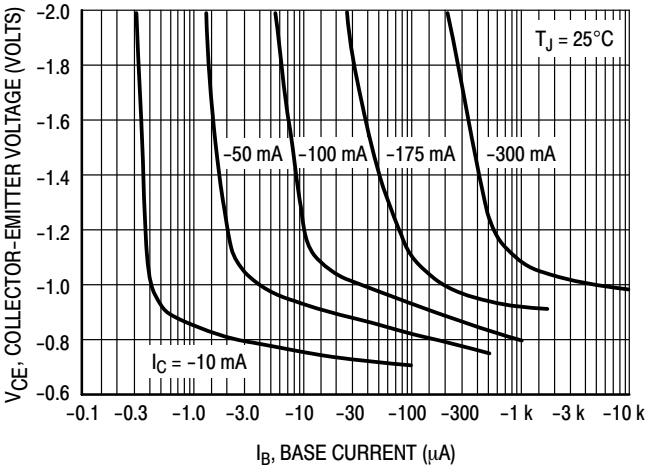


Figure 3. Collector Saturation Region

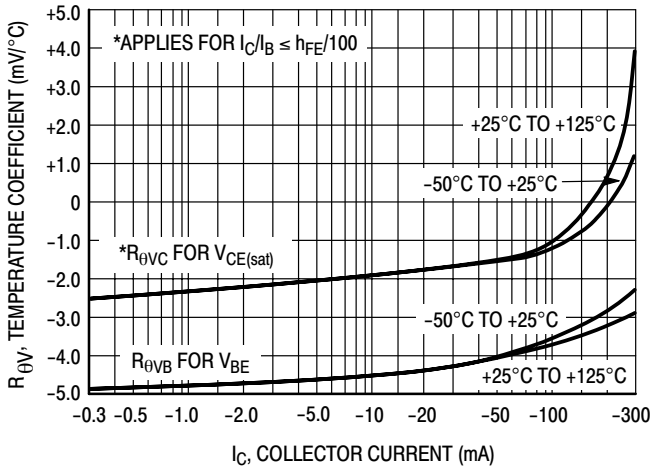


Figure 4. Temperature Coefficients

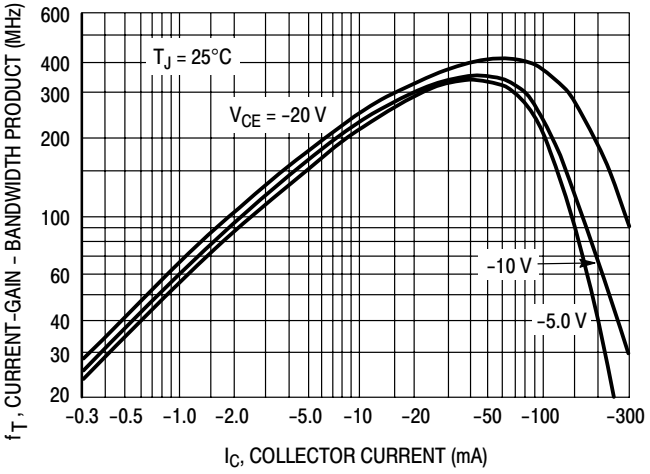


Figure 5. Current−Gain — Bandwidth Product

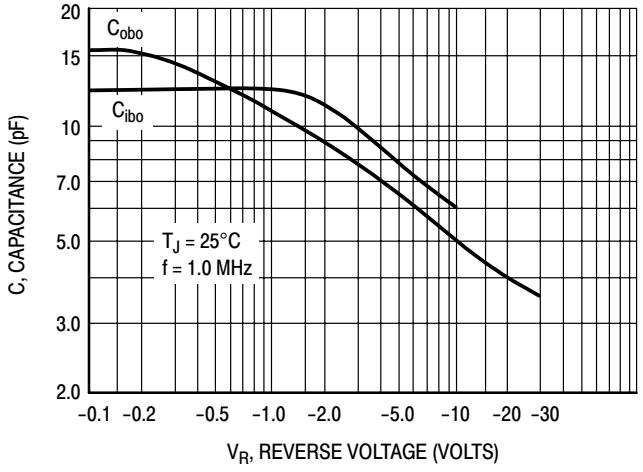


Figure 6. Capacitance

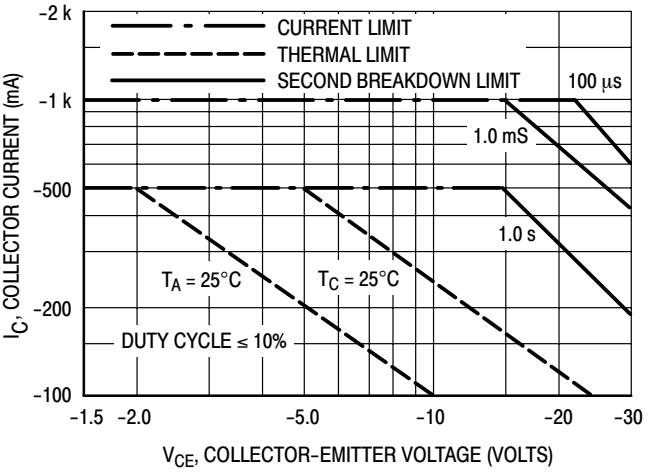
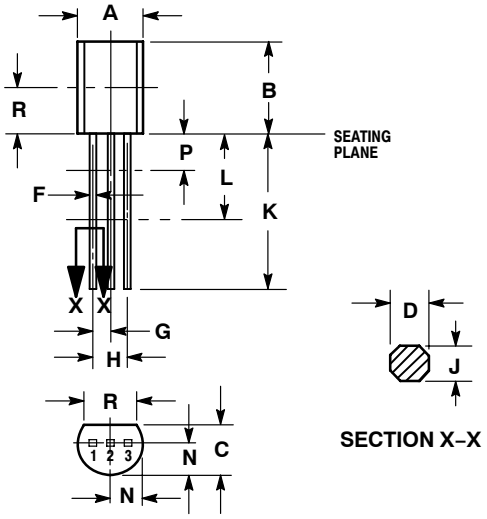


Figure 7. Active Region, Safe Operating Area

PACKAGE DIMENSIONS

TO−92 (TO−226)
CASE 29−10
ISSUE AL



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSIONS D AND J APPLY BETWEEN L AND K MIMIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.175	0.205	4.44	5.21
B	0.290	0.310	7.37	7.87
C	0.125	0.165	3.18	4.19
D	0.018	0.021	0.457	0.533
F	0.016	0.019	0.407	0.482
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.018	0.024	0.46	0.61
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.135	---	3.43	---

YLE 1:
PIN 1. EMITTER
2. BASE
3. COLLECTOR

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