

MUN5311DW1T1 Series

Preferred Devices

Dual Bias Resistor Transistors

NPN and PNP Silicon Surface Mount Transistors with Monolithic Bias Resistor Network

The BRT (Bias Resistor Transistor) contains a single transistor with a monolithic bias network consisting of two resistors; a series base resistor and a base-emitter resistor. These digital transistors are designed to replace a single device and its external resistor bias network. The BRT eliminates these individual components by integrating them into a single device. In the MUN5311DW1T1 series, two complementary BRT devices are housed in the SOT-363 package which is ideal for low power surface mount applications where board space is at a premium.

- Simplifies Circuit Design
- Reduces Board Space
- Reduces Component Count
- Available in 8 mm, 7 inch/3000 Unit Tape and Reel

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted, common for Q_1 and Q_2 , – minus sign for Q_1 (PNP) omitted)

Rating	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	50	Vdc
Collector-Emitter Voltage	V_{CEO}	50	Vdc
Collector Current	I_C	100	mAdc

THERMAL CHARACTERISTICS

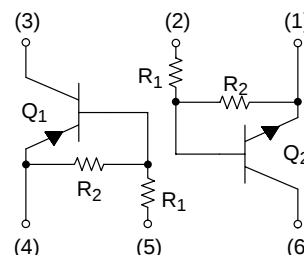
Characteristic (One Junction Heated)	Symbol	Max	Unit
Total Device Dissipation $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	187 (Note 1.) 256 (Note 2.) 1.5 (Note 1.) 2.0 (Note 2.)	mW mW/ $^\circ\text{C}$
Thermal Resistance – Junction-to-Ambient	$R_{\theta JA}$	670 (Note 1.) 490 (Note 2.)	$^\circ\text{C/W}$
Characteristic (Both Junctions Heated)	Symbol	Max	Unit
Total Device Dissipation $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	250 (Note 1.) 385 (Note 2.) 2.0 (Note 1.) 3.0 (Note 2.)	mW mW/ $^\circ\text{C}$
Thermal Resistance – Junction-to-Ambient	$R_{\theta JA}$	493 (Note 1.) 325 (Note 2.)	$^\circ\text{C/W}$
Thermal Resistance – Junction-to-Lead	$R_{\theta JL}$	188 (Note 1.) 208 (Note 2.)	$^\circ\text{C/W}$
Junction and Storage Temperature	T_J, T_{stg}	–55 to +150	$^\circ\text{C}$

1. FR-4 @ Minimum Pad
2. FR-4 @ 1.0 x 1.0 inch Pad



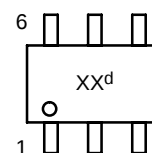
ON Semiconductor®

<http://onsemi.com>



SOT-363
CASE 419B
STYLE 1

MARKING DIAGRAM



XX = Specific Device Code
d = Date Code
(See Page 2)

DEVICE MARKING INFORMATION

See specific marking information in the device marking table on page 2 of this data sheet.

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

MUN5311DW1T1 Series

DEVICE MARKING AND RESISTOR VALUES

Device	Package	Marking	R1 (K)	R2 (K)	Shipping
MUN5311DW1T1	SOT-363	11	10	10	3000/Tape & Reel
MUN5312DW1T1	SOT-363	12	22	22	3000/Tape & Reel
MUN5313DW1T1	SOT-363	13	47	47	3000/Tape & Reel
MUN5314DW1T1	SOT-363	14	10	47	3000/Tape & Reel
MUN5315DW1T1	SOT-363	15	10	∞	3000/Tape & Reel
MUN5316DW1T1	SOT-363	16	4.7	∞	3000/Tape & Reel
MUN5330DW1T1	SOT-363	30	1.0	1.0	3000/Tape & Reel
MUN5331DW1T1	SOT-363	31	2.2	2.2	3000/Tape & Reel
MUN5332DW1T1	SOT-363	32	4.7	4.7	3000/Tape & Reel
MUN5333DW1T1	SOT-363	33	4.7	47	3000/Tape & Reel
MUN5334DW1T1	SOT-363	34	22	47	3000/Tape & Reel
MUN5335DW1T1	SOT-363	35	2.2	47	3000/Tape & Reel

ELECTRICAL CHARACTERISTICS

(T_A = 25°C unless otherwise noted, common for Q₁ and Q₂, – minus sign for Q₁ (PNP) omitted)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Base Cutoff Current (V _{CB} = 50 V, I _E = 0)		I _{CBO}	–	–	100	nAdc
Collector-Emitter Cutoff Current (V _{CE} = 50 V, I _B = 0)		I _{CEO}	–	–	500	nAdc
Emitter-Base Cutoff Current (V _{EB} = 6.0 V, I _C = 0)	MUN5311DW1T1	I _{EBO}	–	–	0.5	mAdc
	MUN5312DW1T1		–	–	0.2	
	MUN5313DW1T1		–	–	0.1	
	MUN5314DW1T1		–	–	0.2	
	MUN5315DW1T1		–	–	0.9	
	MUN5316DW1T1		–	–	1.9	
	MUN5330DW1T1		–	–	4.3	
	MUN5331DW1T1		–	–	2.3	
	MUN5332DW1T1		–	–	1.5	
	MUN5333DW1T1		–	–	0.18	
	MUN5334DW1T1		–	–	0.13	
	MUN5335DW1T1		–	–	0.2	
Collector-Base Breakdown Voltage (I _C = 10 μA, I _E = 0)		V _{(BR)CBO}	50	–	–	Vdc
Collector-Emitter Breakdown Voltage (Note 3.) (I _C = 2.0 mA, I _B = 0)		V _{(BR)CEO}	50	–	–	Vdc

3. Pulse Test: Pulse Width < 300 μs, Duty Cycle < 2.0%

MUN5311DW1T1 Series

ELECTRICAL CHARACTERISTICS

(T_A = 25°C unless otherwise noted, common for Q₁ and Q₂, – minus sign for Q₁ (PNP) omitted) (Continued)

Characteristic		Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS (Note 4.)						
DC Current Gain (V _{CE} = 10 V, I _C = 5.0 mA)	MUN5311DW1T1 MUN5312DW1T1 MUN5313DW1T1 MUN5314DW1T1 MUN5315DW1T1 MUN5316DW1T1 MUN5330DW1T1 MUN5331DW1T1 MUN5332DW1T1 MUN5333DW1T1 MUN5334DW1T1 MUN5335DW1T1	h _{FE}	35 60 80 80 160 160 3.0 8.0 15 80 80 80	60 100 140 140 350 350 5.0 15 30 200 150 140	– – – – – – – – – – – –	
Collector-Emitter Saturation Voltage (I _C = 10 mA, I _B = 0.3 mA) (I _C = 10 mA, I _B = 5 mA) MUN5330DW1T1/MUN5331DW1T1 (I _C = 10 mA, I _B = 1 mA) MUN5315DW1T1/MUN5316DW1T1 MUN5332DW1T1/MUN5333DW1T1/MUN5334DW1T1		V _{CE(sat)}	–	–	0.25	Vdc
Output Voltage (on) (V _{CC} = 5.0 V, V _B = 2.5 V, R _L = 1.0 kΩ)	MUN5311DW1T1 MUN5312DW1T1 MUN5314DW1T1 MUN5315DW1T1 MUN5316DW1T1 MUN5330DW1T1 MUN5331DW1T1 MUN5332DW1T1 MUN5333DW1T1 MUN5334DW1T1 MUN5335DW1T1 (V _{CC} = 5.0 V, V _B = 3.5 V, R _L = 1.0 kΩ) MUN5313DW1T1	V _{OL}	– – – – – – – – – – – –	– – – – – – – – – – – –	0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	Vdc
Output Voltage (off) (V _{CC} = 5.0 V, V _B = 0.5 V, R _L = 1.0 kΩ) (V _{CC} = 5.0 V, V _B = 0.050 V, R _L = 1.0 kΩ) MUN5330DW1T1 (V _{CC} = 5.0 V, V _B = 0.25 V, R _L = 1.0 kΩ) MUN5315DW1T1 MUN5316DW1T1 MUN5333DW1T1		V _{OH}	4.9	–	–	Vdc
Input Resistor	MUN5311DW1T1 MUN5312DW1T1 MUN5313DW1T1 MUN5314DW1T1 MUN5315DW1T1 MUN5316DW1T1 MUN5330DW1T1 MUN5331DW1T1 MUN5332DW1T1 MUN5333DW1T1 MUN5334DW1T1 MUN5335DW1T1	R1	7.0 15.4 32.9 7.0 7.0 3.3 0.7 1.5 3.3 3.3 15.4 1.54	10 22 47 10 10 4.7 1.0 2.2 4.7 4.7 22 2.2	13 28.6 61.1 13 13 6.1 1.3 2.9 6.1 6.1 28.6 2.86	k Ω
Resistor Ratio MUN5311DW1T1/MUN5312DW1T1/MUN5313DW1T1 MUN5314DW1T1 MUN5315DW1T1/MUN5316DW1T1 MUN5330DW1T1/MUN5331DW1T1/MUN5332DW1T1 MUN5333DW1T1 MUN5334DW1T1 MUN5335DW1T1		R1/R2	0.8 0.17 – 0.8 0.055 0.38 0.038	1.0 0.21 – 1.0 0.1 0.47 0.047	1.2 0.25 – 1.2 0.185 0.56 0.056	

4. Pulse Test: Pulse Width < 300 μs, Duty Cycle < 2.0%

MUN5311DW1T1 Series

ALL MUN5311DW1T1 SERIES DEVICES

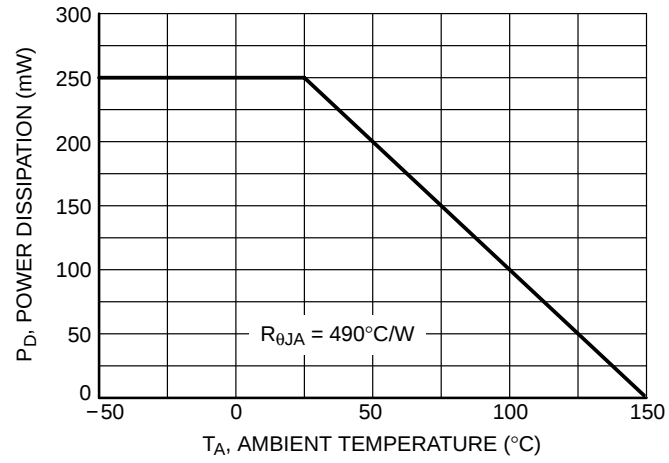


Figure 1. Derating Curve

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS – MUN5311DW1T1 NPN TRANSISTOR

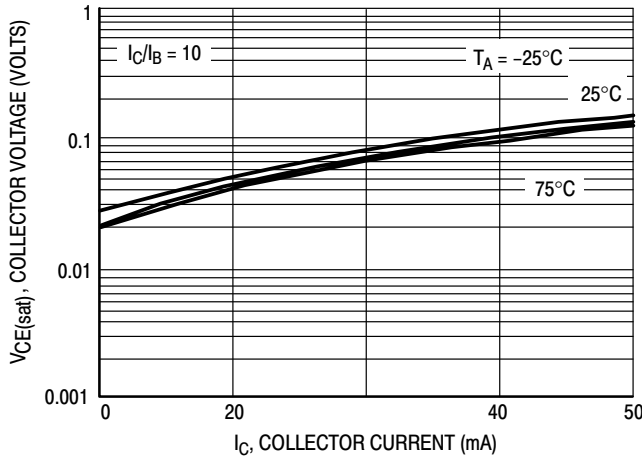


Figure 2. $V_{CE(sat)}$ versus I_C

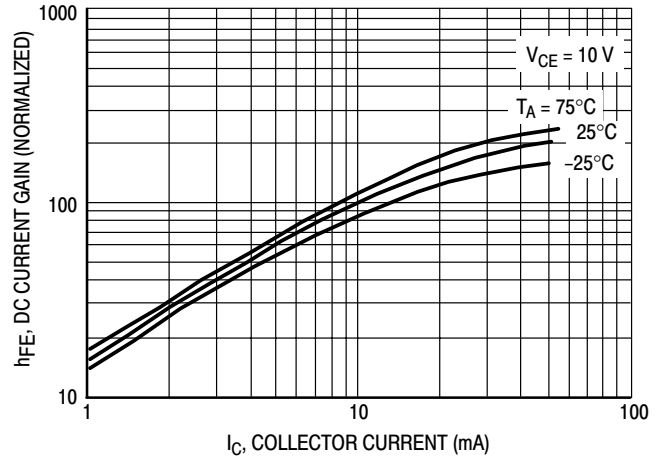


Figure 3. DC Current Gain

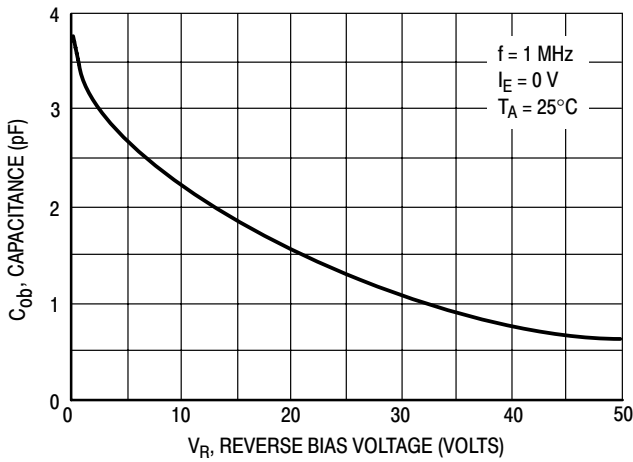


Figure 4. Output Capacitance

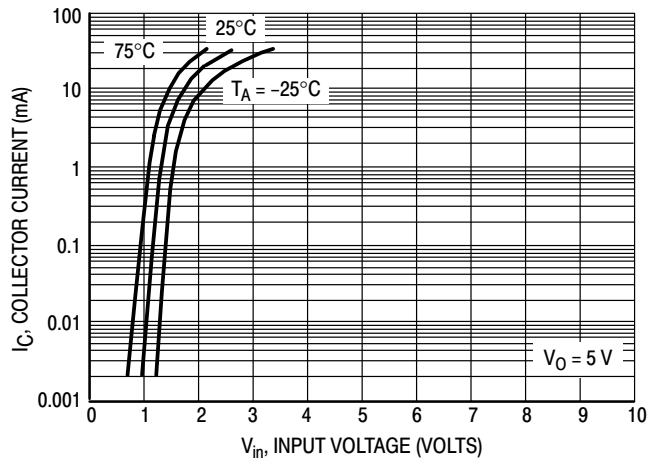


Figure 5. Output Current versus Input Voltage

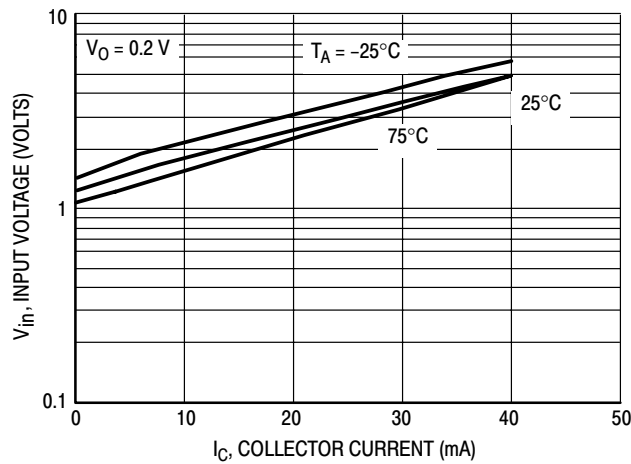


Figure 6. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS – MUN5311DW1T1 PNP TRANSISTOR

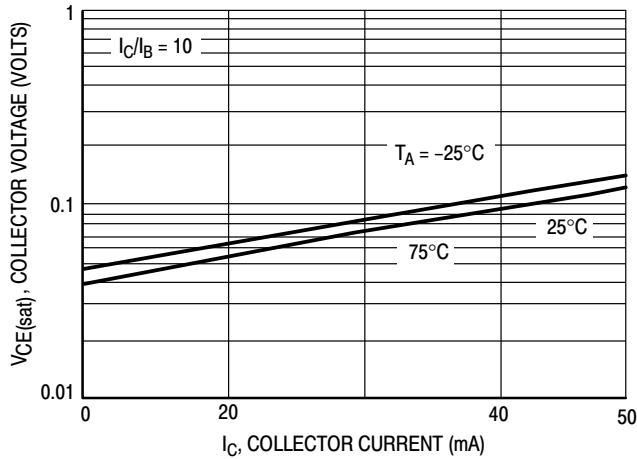


Figure 7. $V_{CE(sat)}$ versus I_C

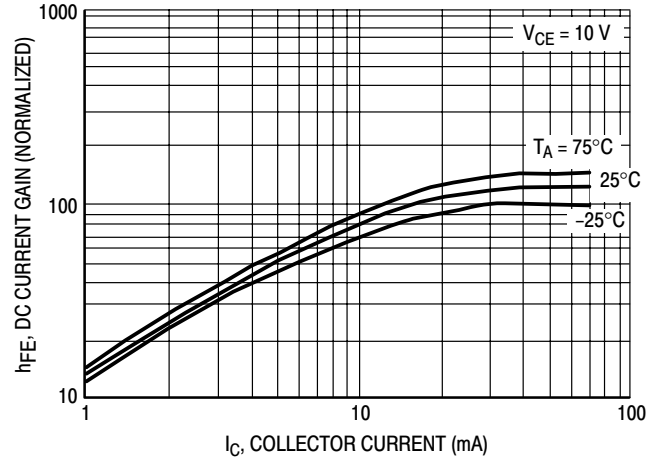


Figure 8. DC Current Gain

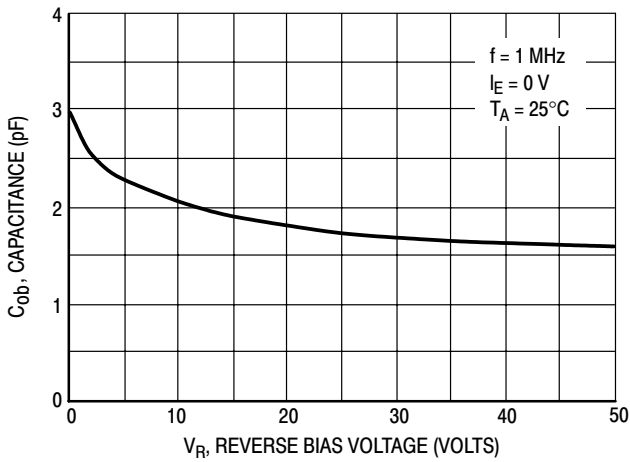


Figure 9. Output Capacitance

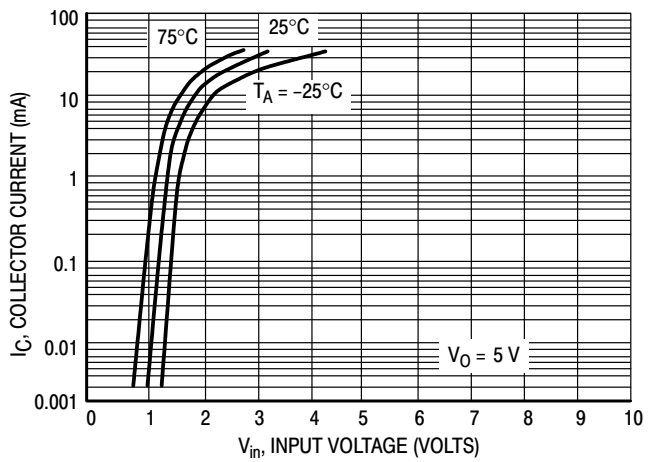


Figure 10. Output Current versus Input Voltage

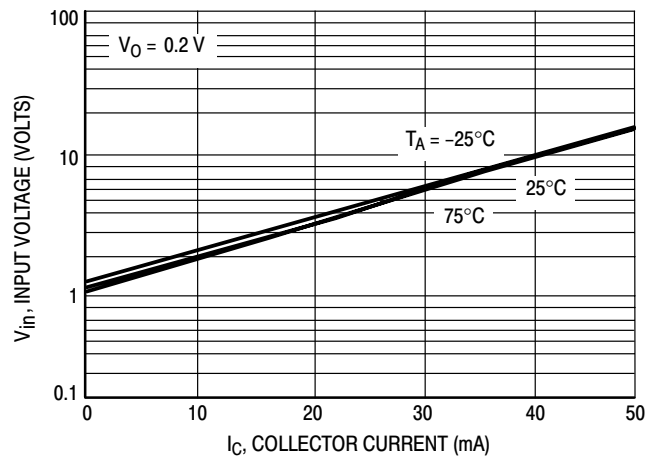


Figure 11. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS – MUN5312DW1T1 NPN TRANSISTOR

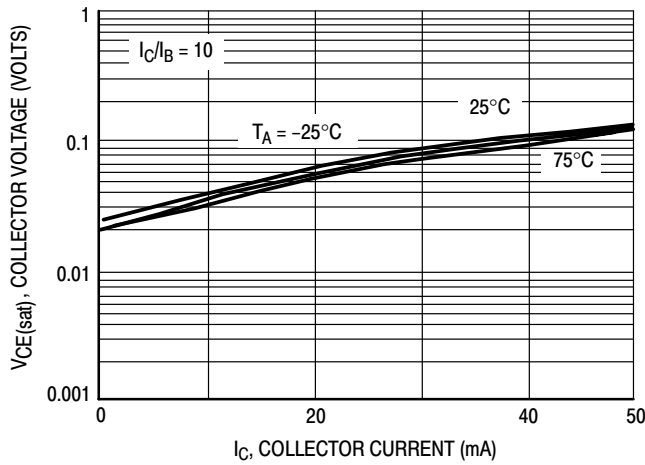


Figure 12. $V_{CE(sat)}$ versus I_C

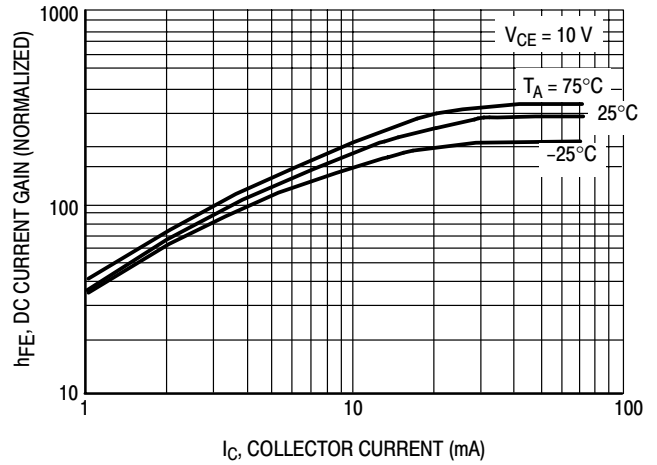


Figure 13. DC Current Gain

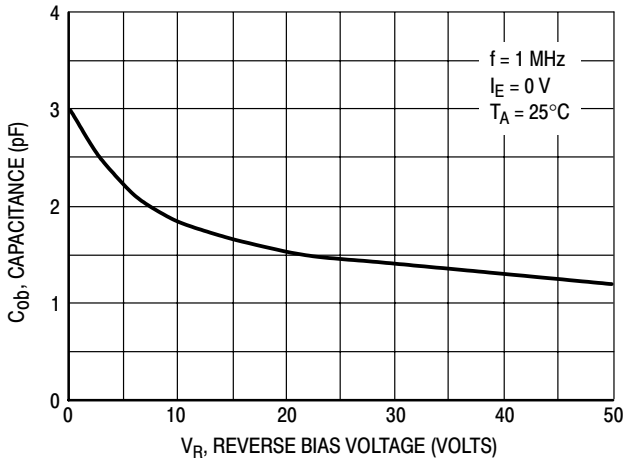


Figure 14. Output Capacitance

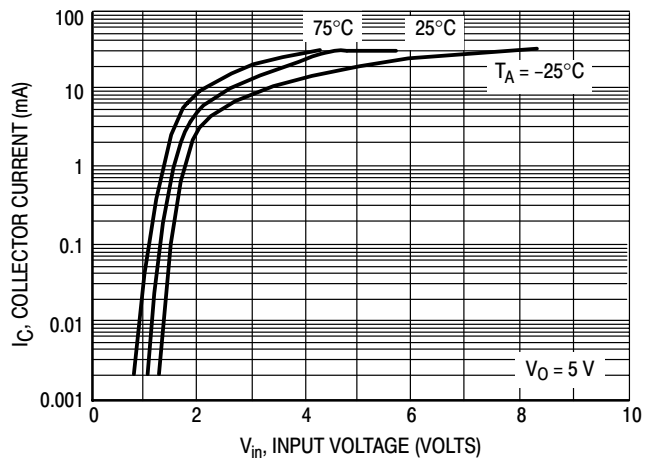


Figure 15. Output Current versus Input Voltage

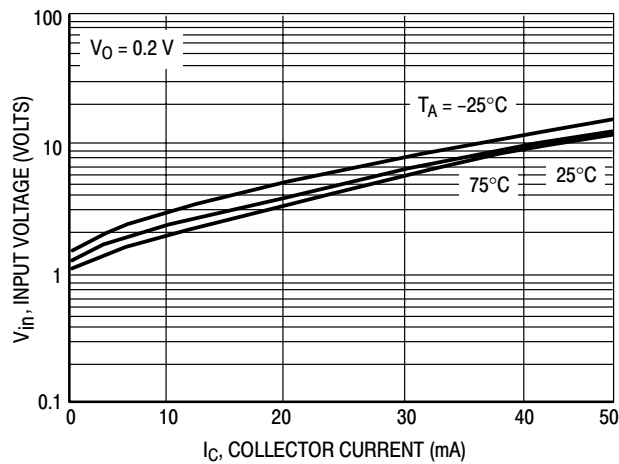


Figure 16. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS – MUN5312DW1T1 PNP TRANSISTOR

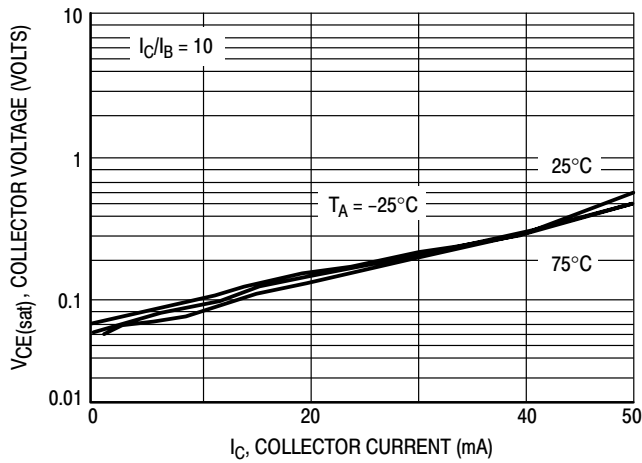


Figure 17. $V_{CE(sat)}$ versus I_C

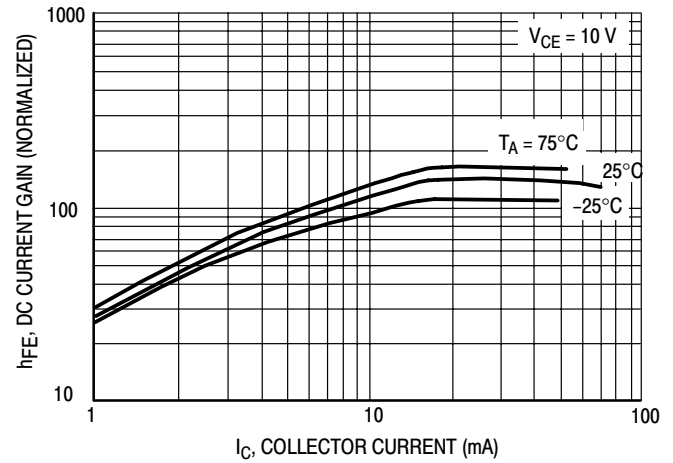


Figure 18. DC Current Gain

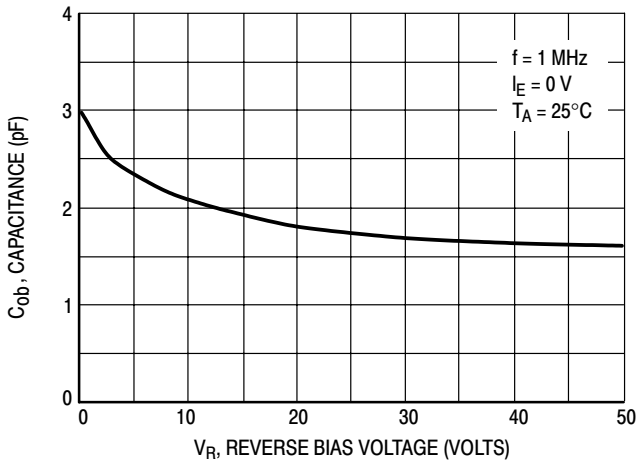


Figure 19. Output Capacitance

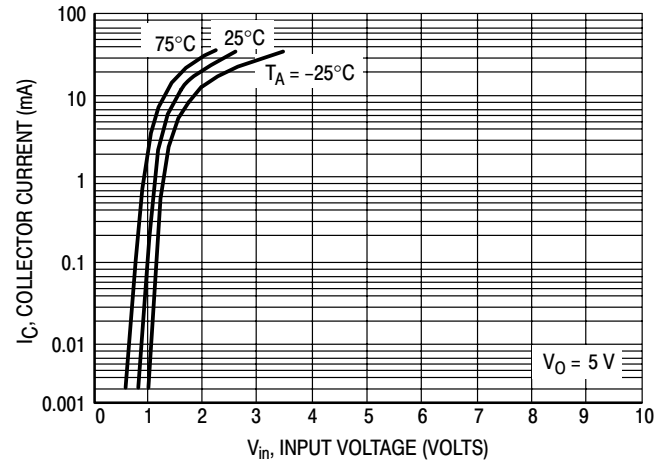


Figure 20. Output Current versus Input Voltage

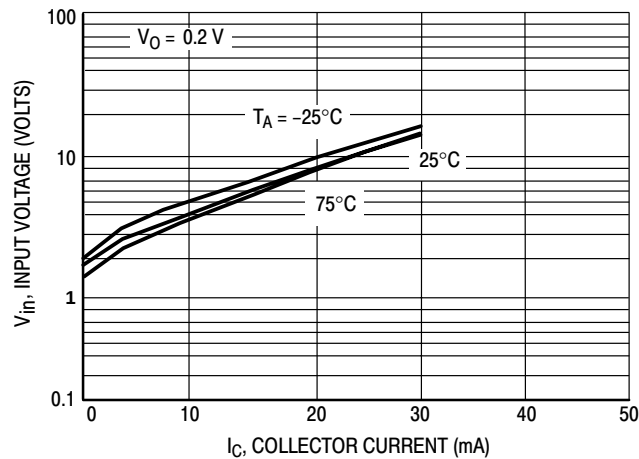


Figure 21. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS – MUN5313DW1T1 NPN TRANSISTOR

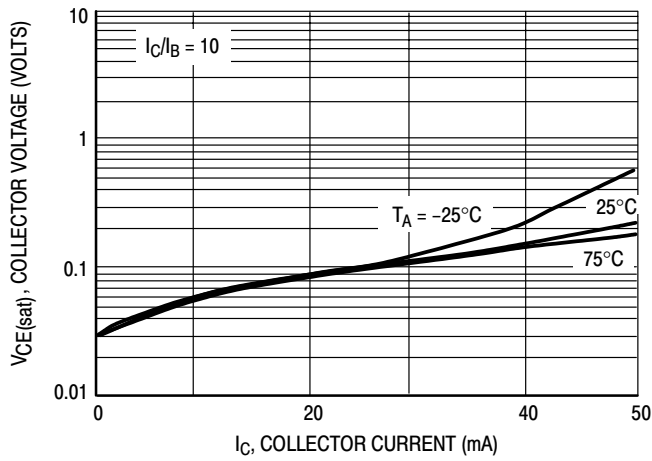


Figure 22. $V_{CE(sat)}$ versus I_C

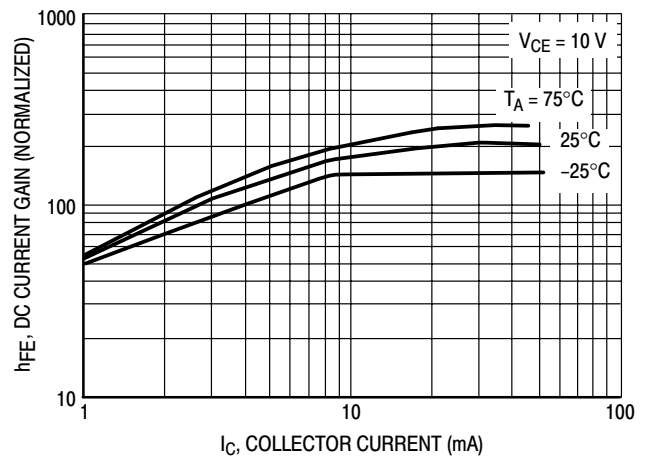


Figure 23. DC Current Gain

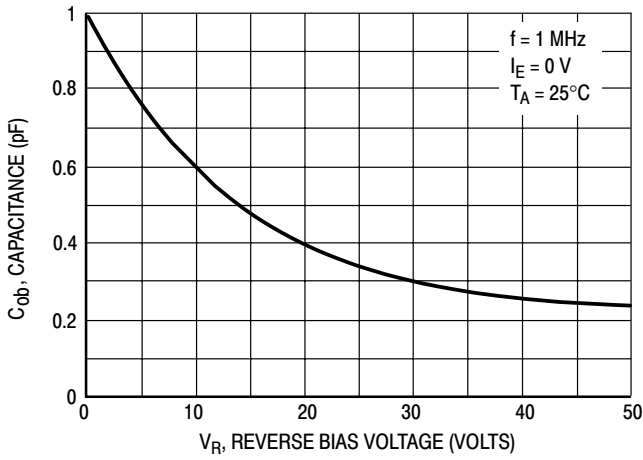


Figure 24. Output Capacitance

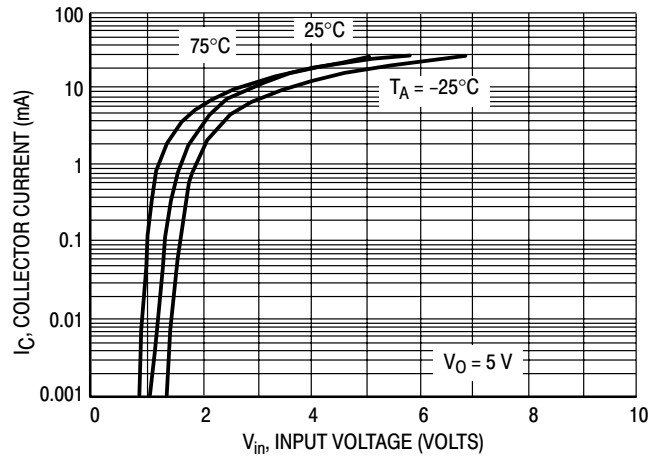


Figure 25. Output Current versus Input Voltage

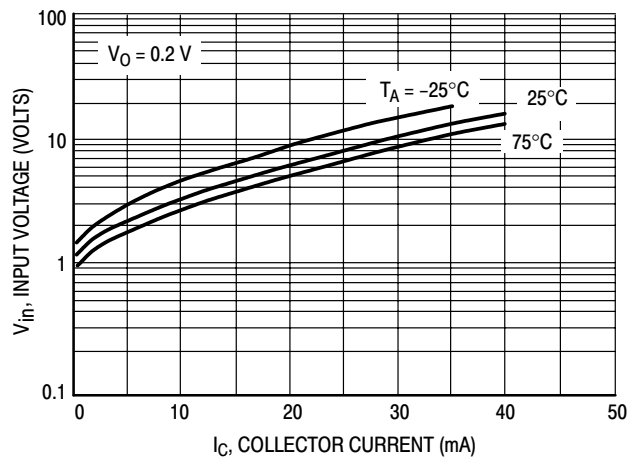


Figure 26. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS – MUN5313DW1T1 PNP TRANSISTOR

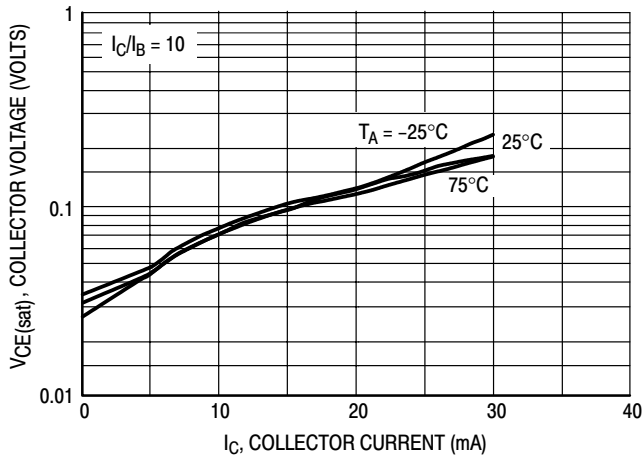


Figure 27. $V_{CE(sat)}$ versus I_C

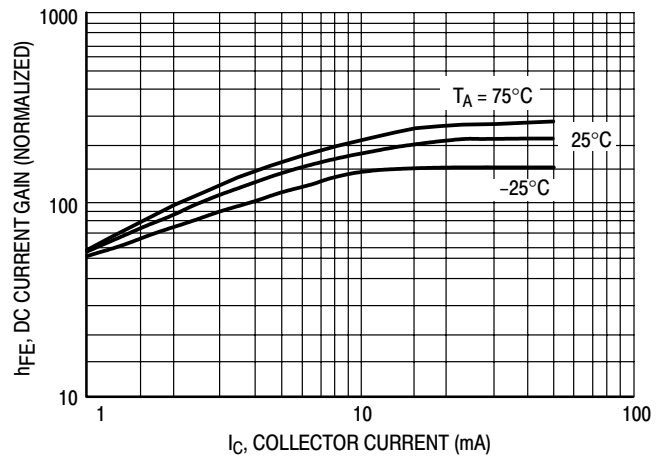


Figure 28. DC Current Gain

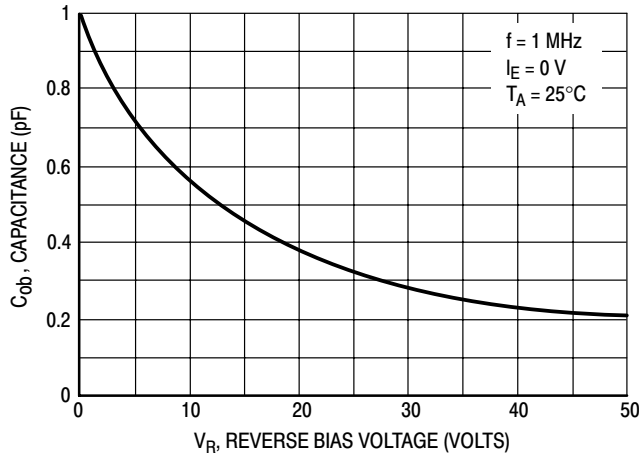


Figure 29. Output Capacitance

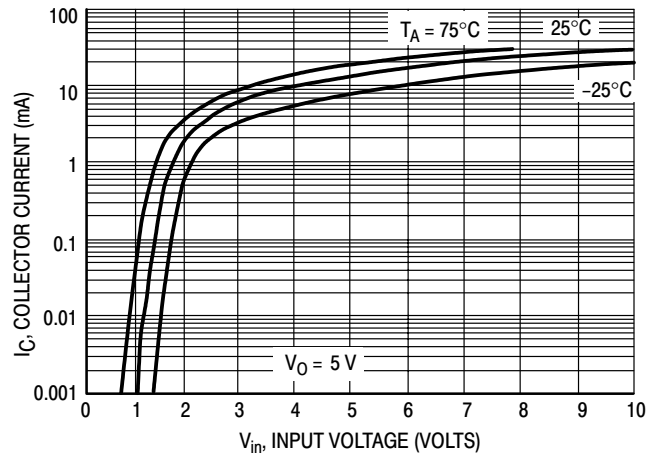


Figure 30. Output Current versus Input Voltage

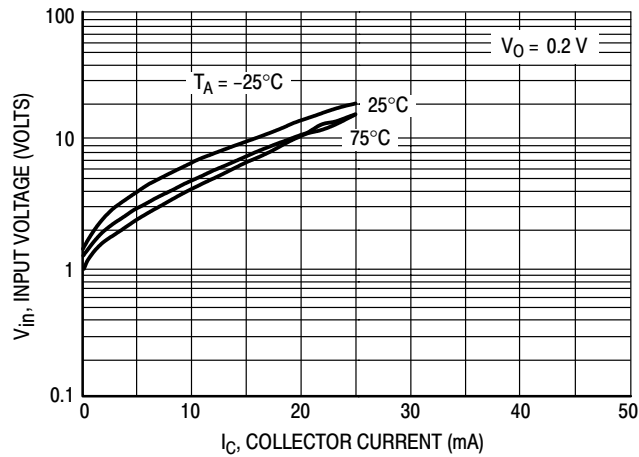


Figure 31. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS – MUN5314DW1T1 NPN TRANSISTOR

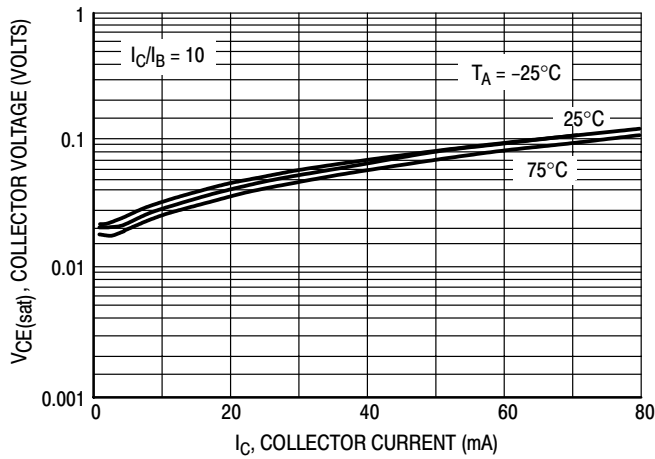


Figure 32. $V_{CE(sat)}$ versus I_C

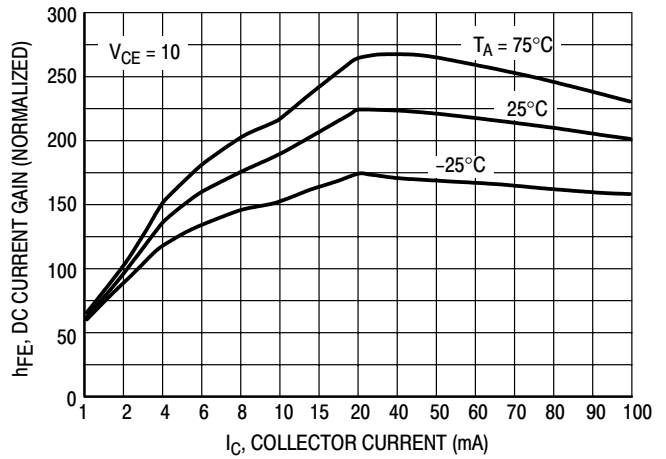


Figure 33. DC Current Gain

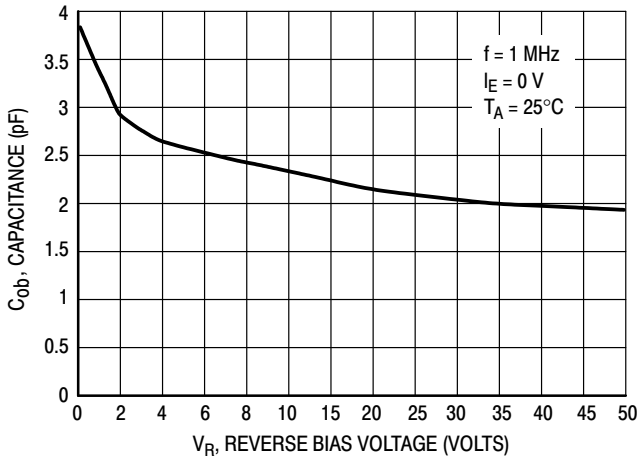


Figure 34. Output Capacitance

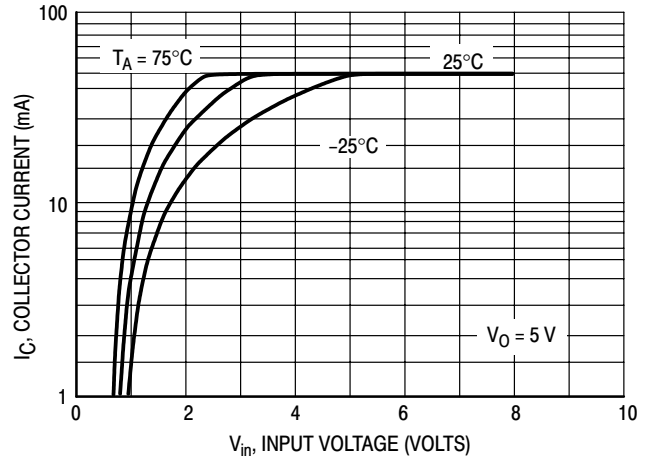


Figure 35. Output Current versus Input Voltage

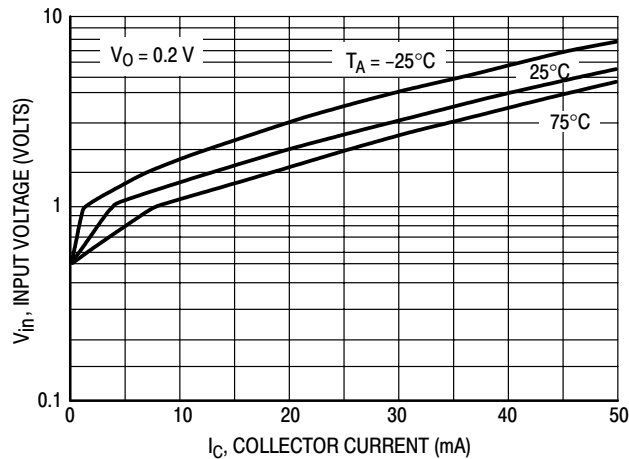


Figure 36. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS – MUN5314DW1T1 PNP TRANSISTOR

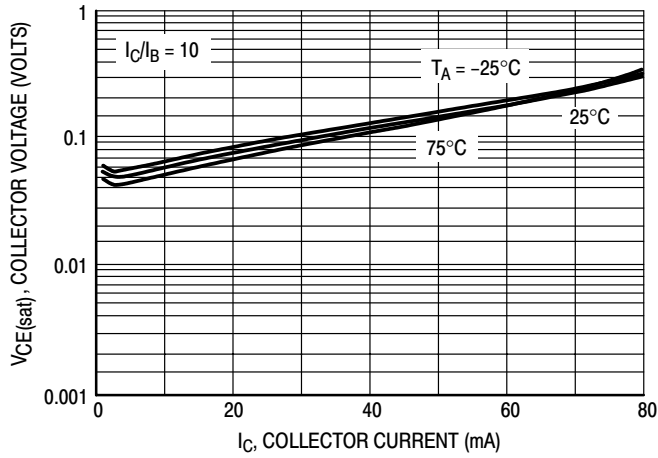


Figure 37. $V_{CE(sat)}$ versus I_C

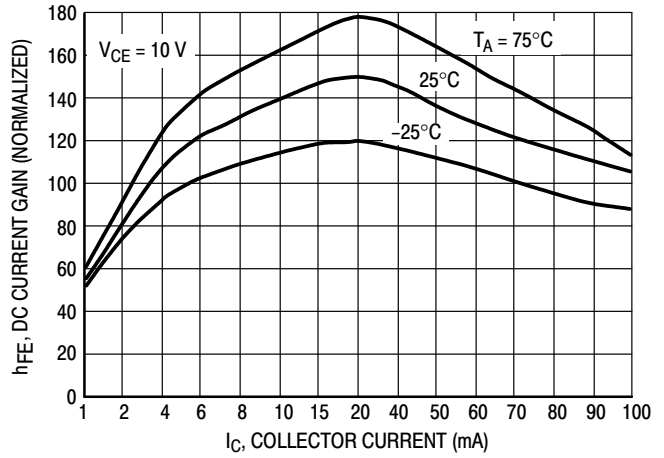


Figure 38. DC Current Gain

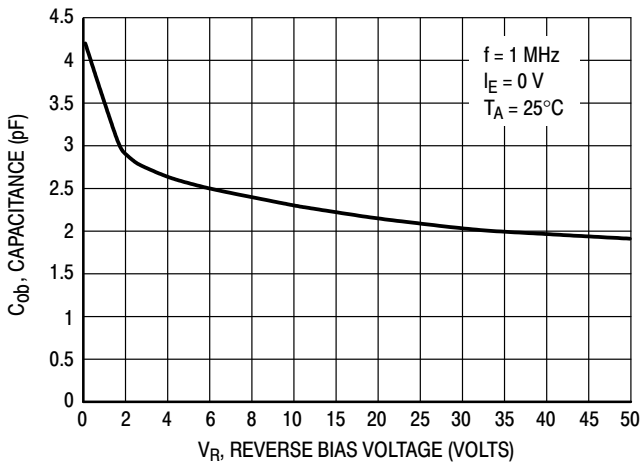


Figure 39. Output Capacitance

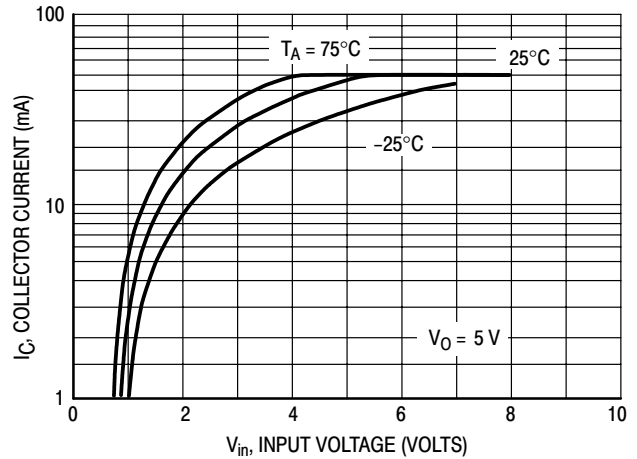


Figure 40. Output Current versus Input Voltage

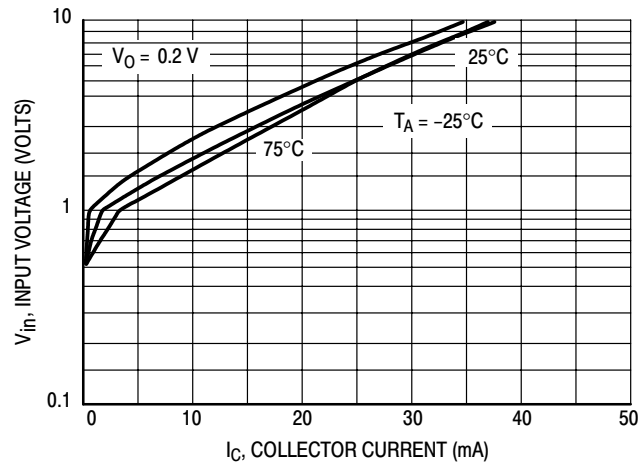


Figure 41. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5315DW1T1 NPN TRANSISTOR

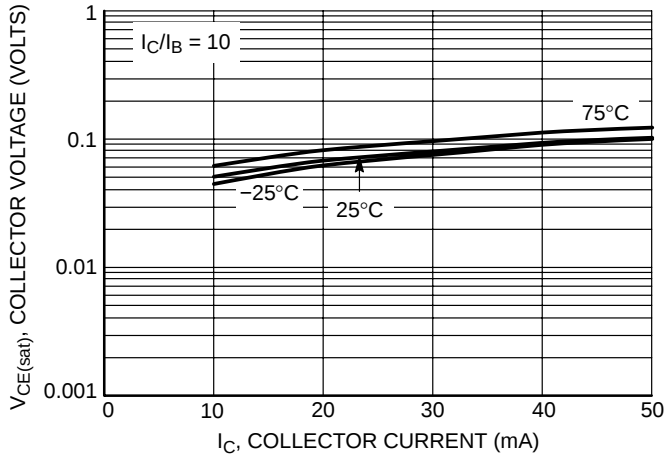


Figure 42. $V_{CE(sat)}$ versus I_C

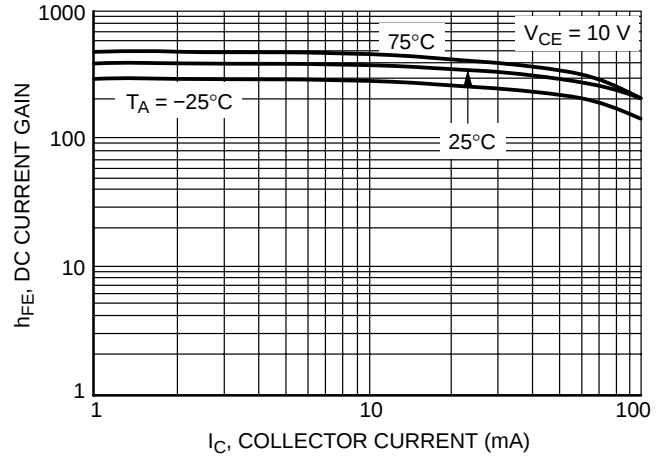


Figure 43. DC Current Gain

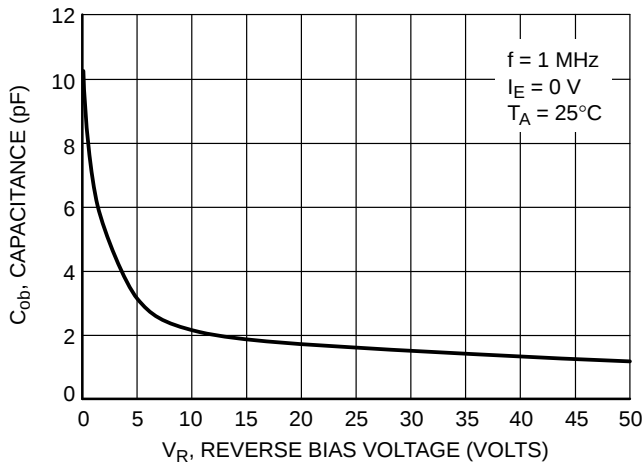


Figure 44. Output Capacitance

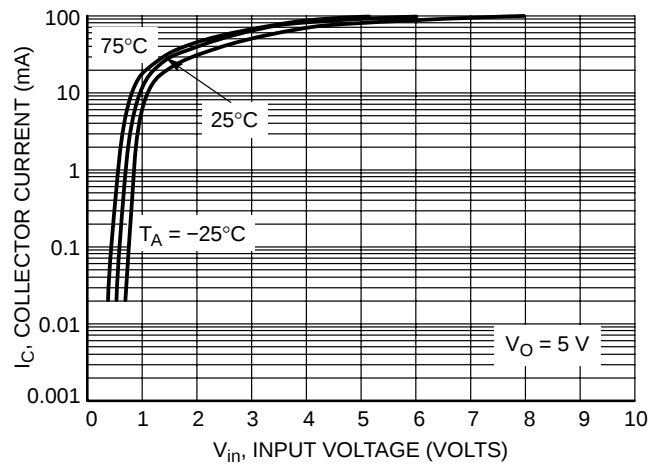


Figure 45. Output Current versus Input Voltage

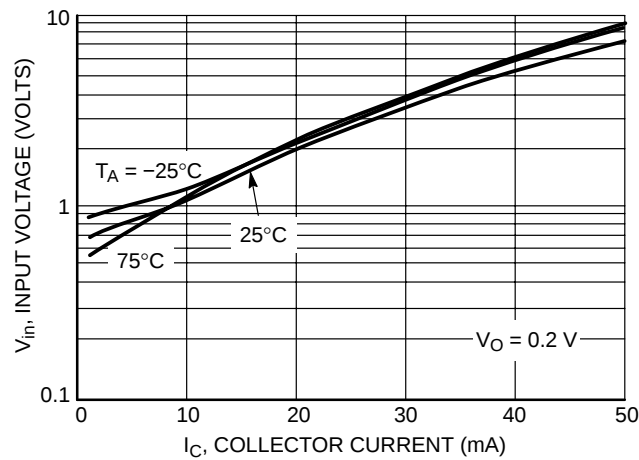


Figure 46. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5315DW1T1 PNP TRANSISTOR

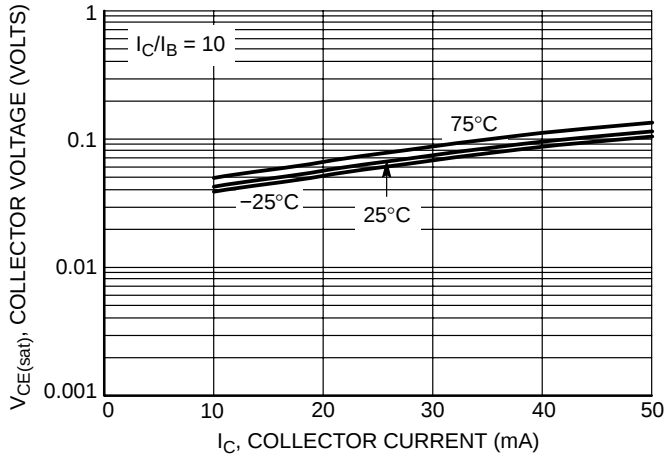


Figure 47. $V_{CE(sat)}$ versus I_C

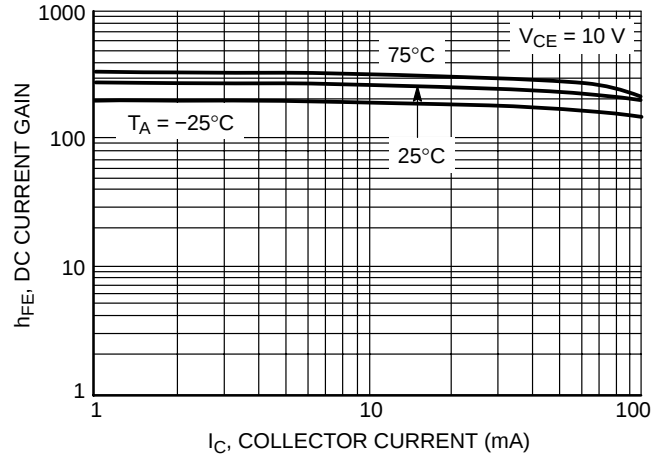


Figure 48. DC Current Gain

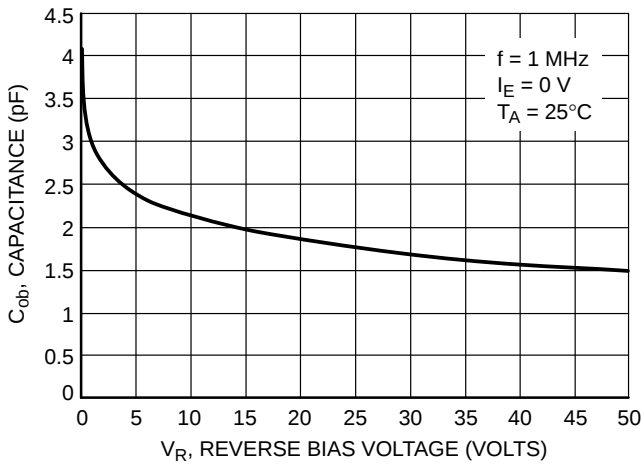


Figure 49. Output Capacitance

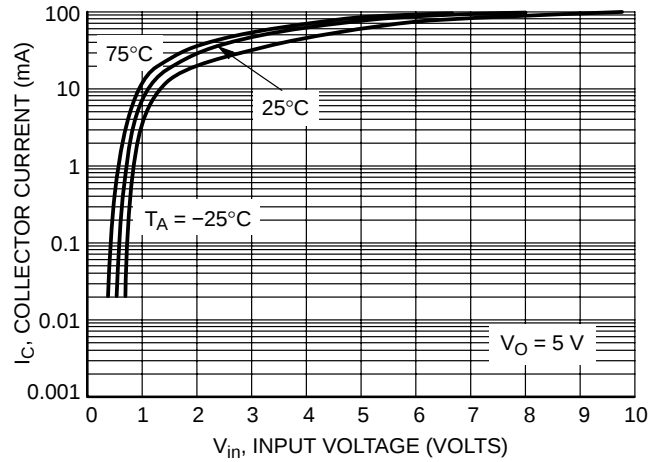


Figure 50. Output Current versus Input Voltage

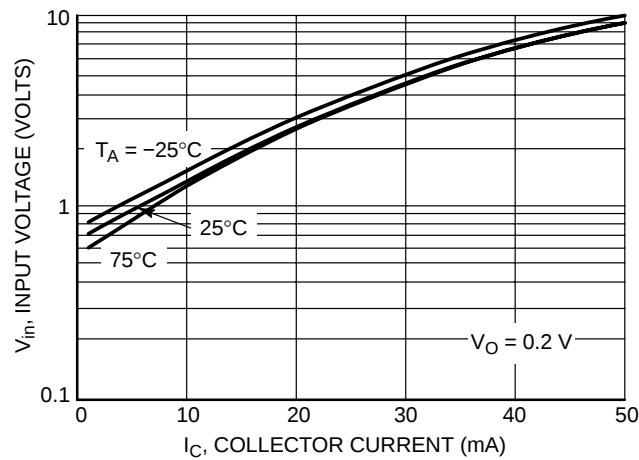


Figure 51. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5316DW1T1 NPN TRANSISTOR

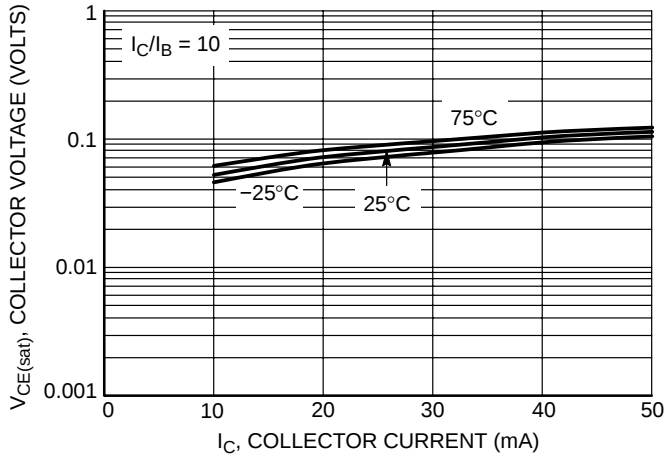


Figure 52. $V_{CE(sat)}$ versus I_C

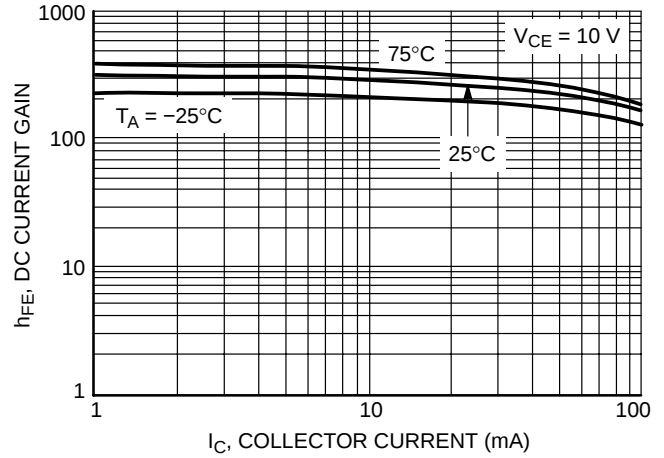


Figure 53. DC Current Gain

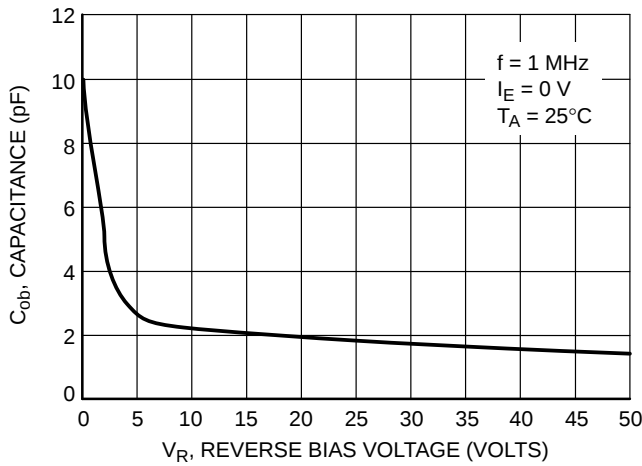


Figure 54. Output Capacitance

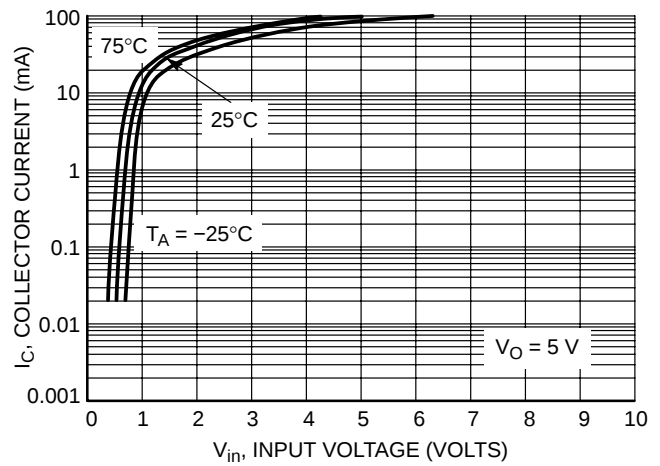


Figure 55. Output Current versus Input Voltage

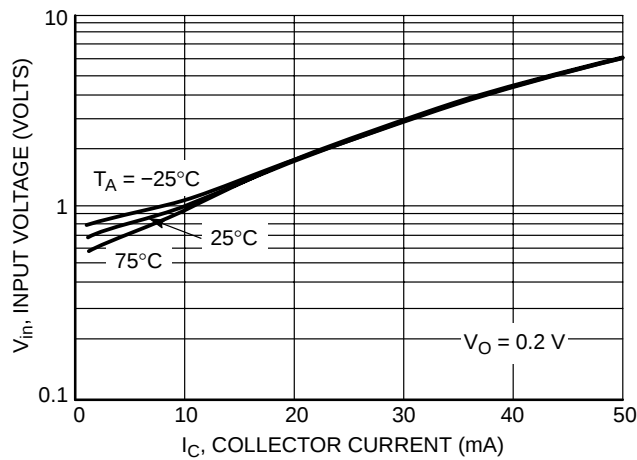


Figure 56. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5316DW1T1 PNP TRANSISTOR

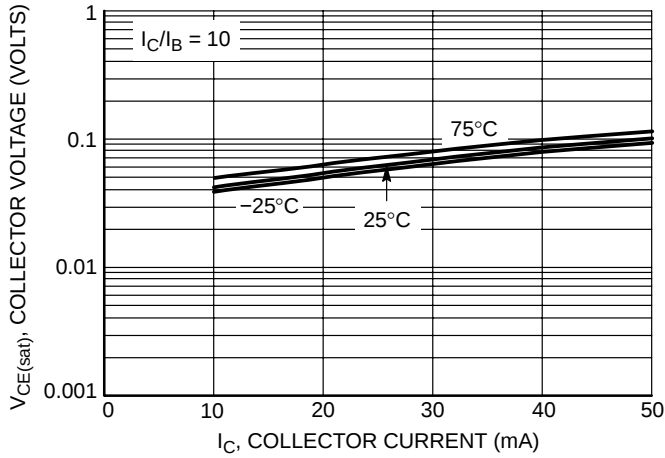


Figure 57. $V_{CE(sat)}$ versus I_C

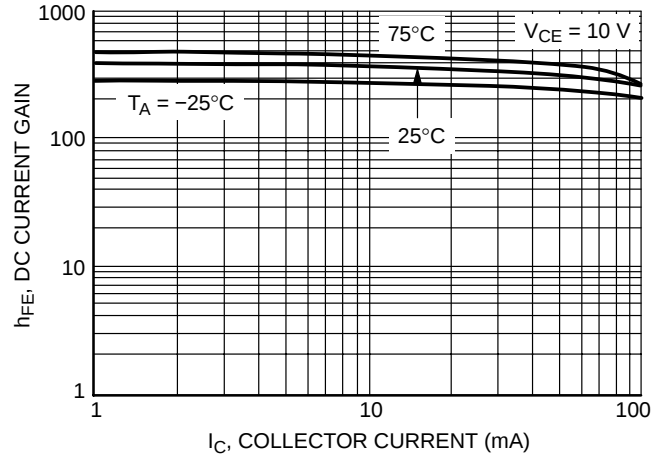


Figure 58. DC Current Gain

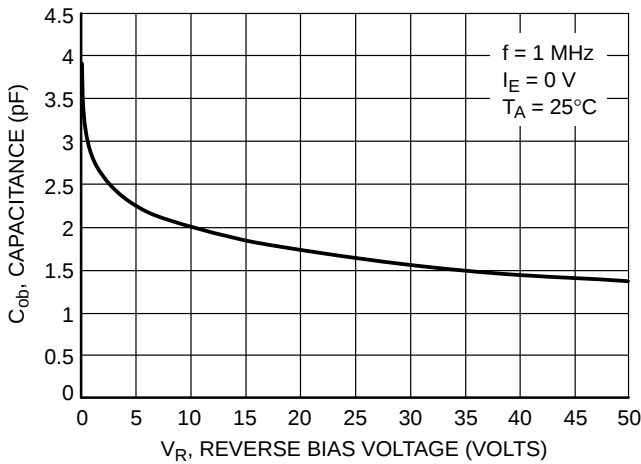


Figure 59. Output Capacitance

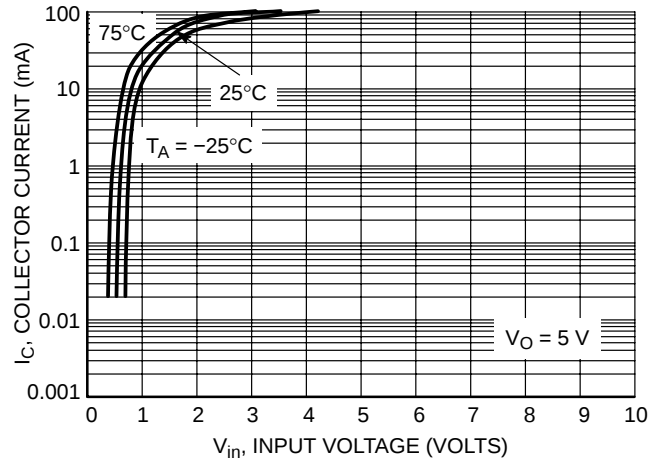


Figure 60. Output Current versus Input Voltage

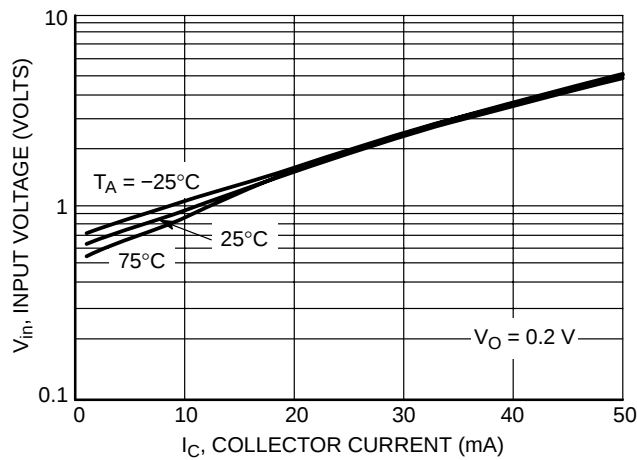


Figure 61. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5330DW1T1 NPN TRANSISTOR

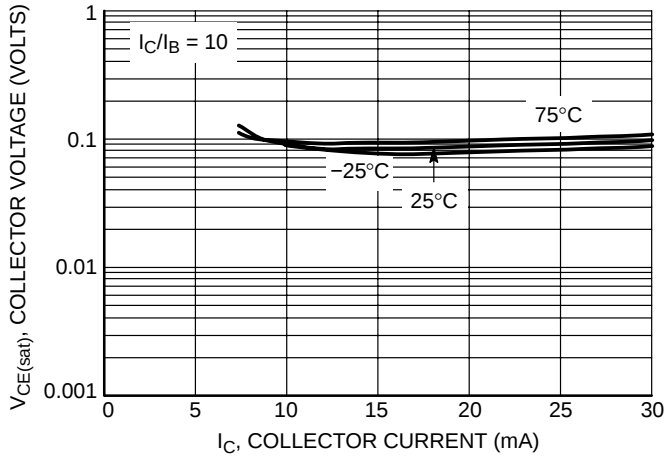


Figure 62. $V_{CE(sat)}$ versus I_C

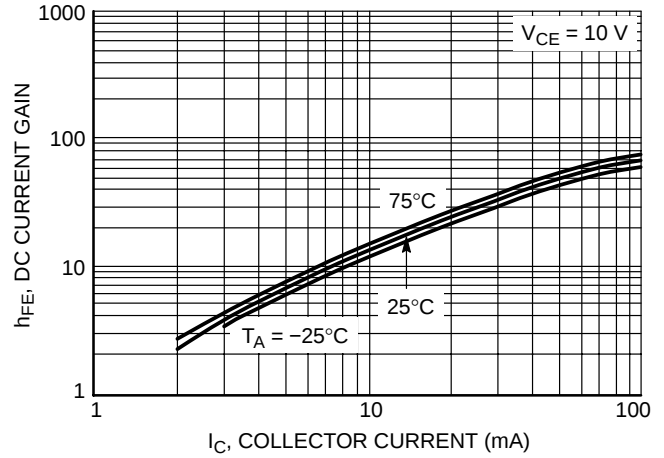


Figure 63. DC Current Gain

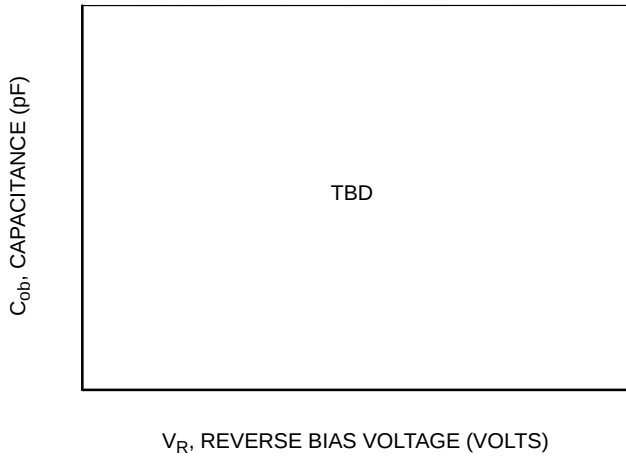


Figure 64. Output Capacitance

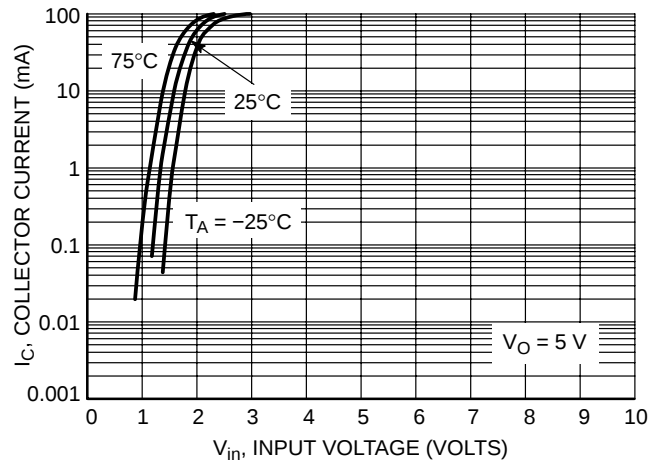


Figure 65. Output Current versus Input Voltage

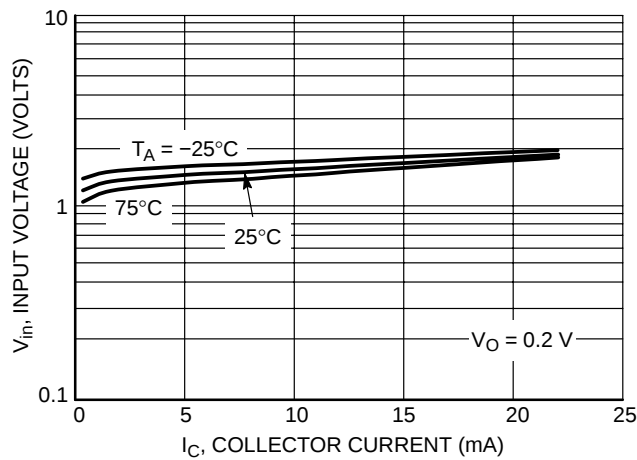


Figure 66. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5330DW1T1 PNP TRANSISTOR

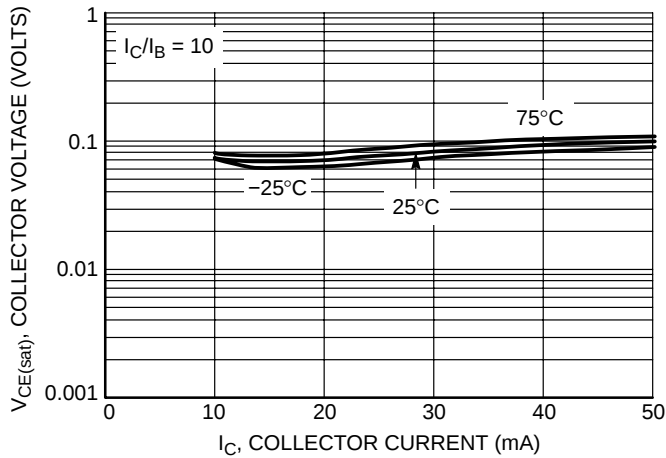


Figure 67. $V_{CE(sat)}$ versus I_C

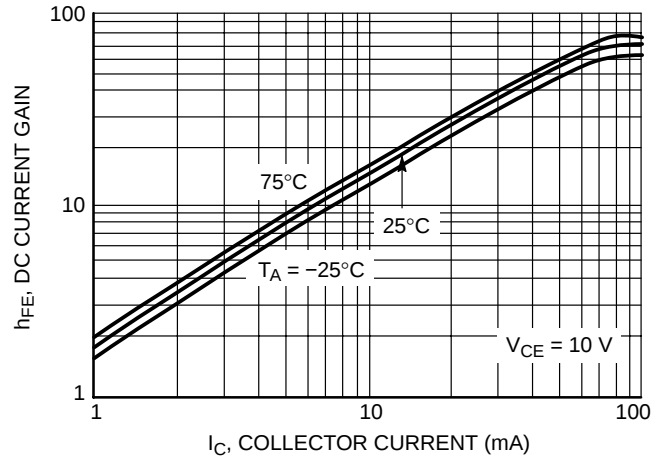


Figure 68. DC Current Gain

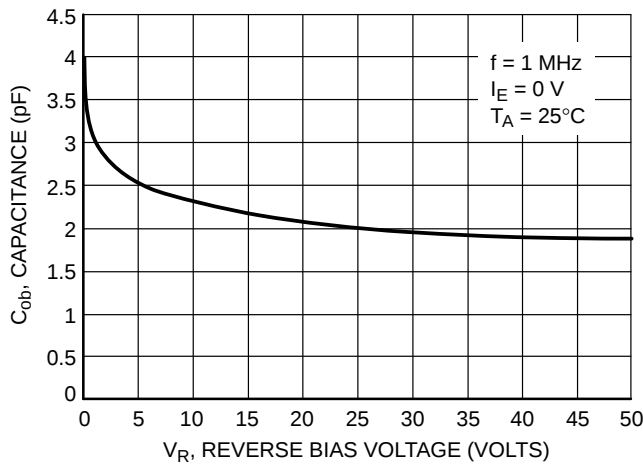


Figure 69. Output Capacitance

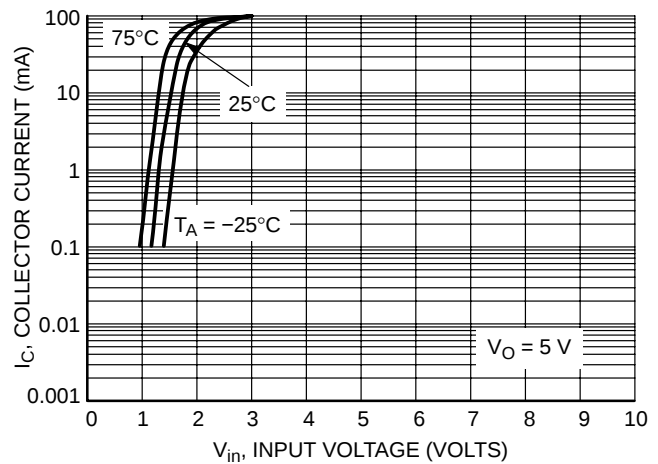


Figure 70. Output Current versus Input Voltage

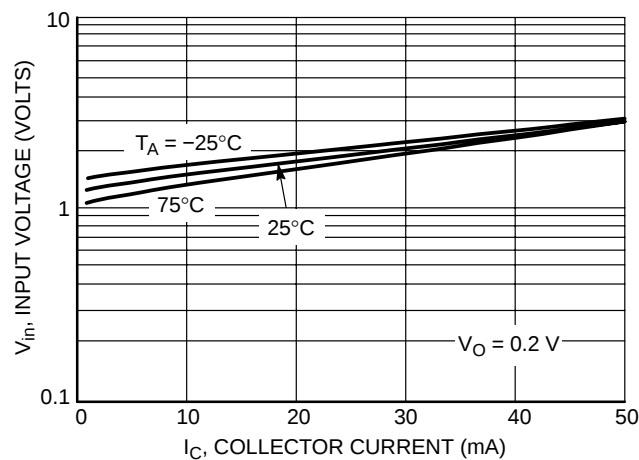


Figure 71. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5331DW1T1 NPN TRANSISTOR

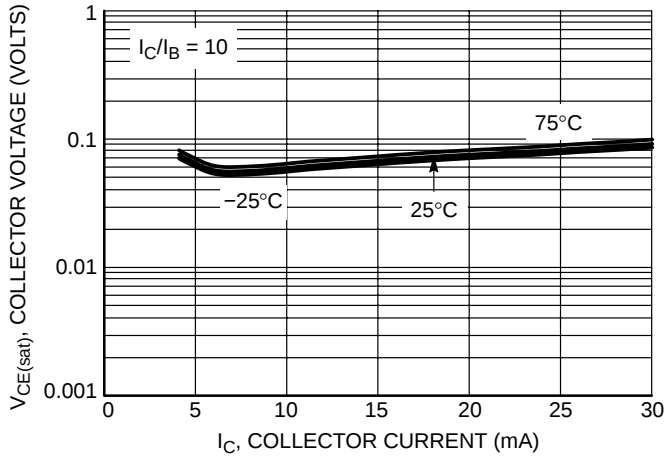


Figure 72. $V_{CE(sat)}$ versus I_C

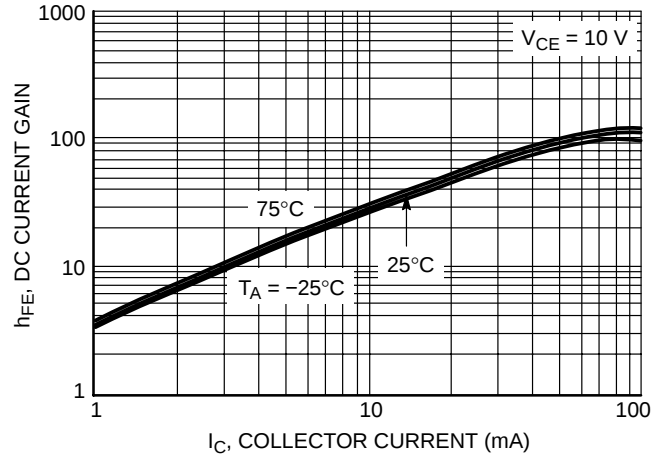


Figure 73. DC Current Gain

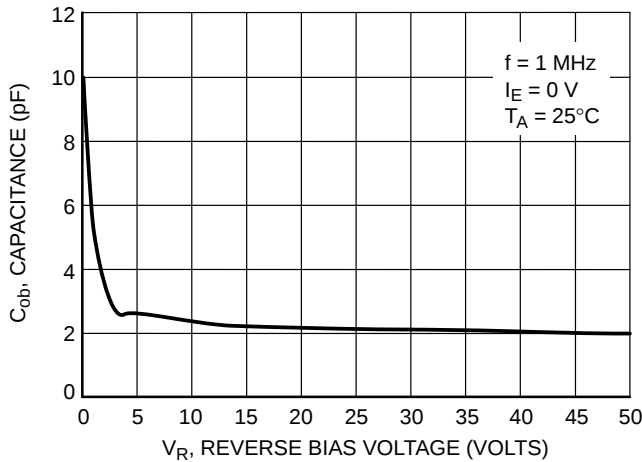


Figure 74. Output Capacitance

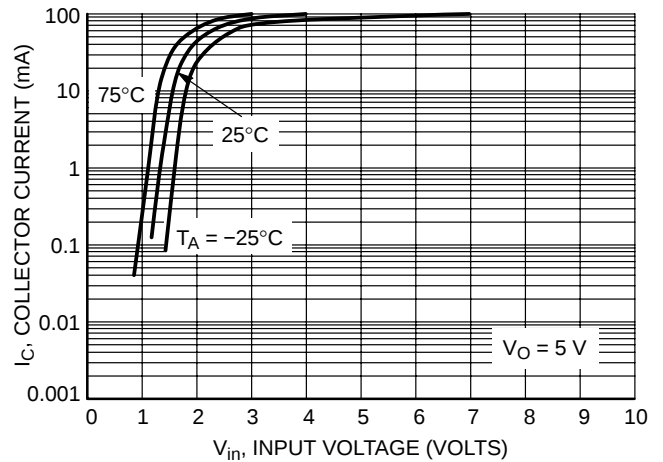


Figure 75. Output Current versus Input Voltage

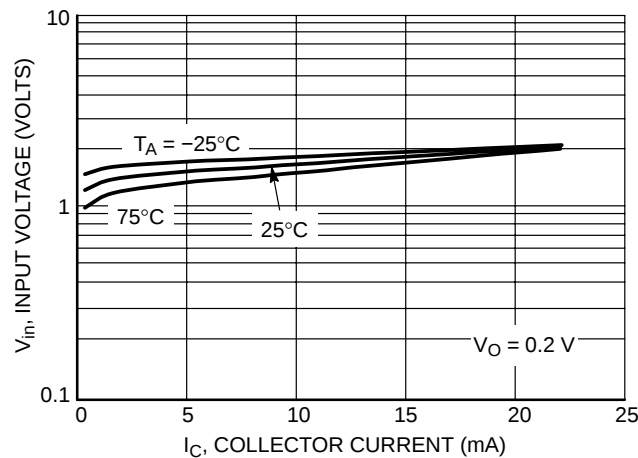


Figure 76. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5311DW1T1 PNP TRANSISTOR

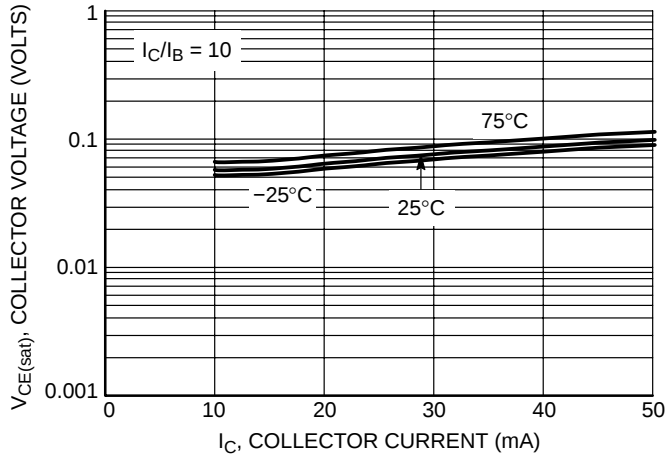


Figure 77. $V_{CE(sat)}$ versus I_C

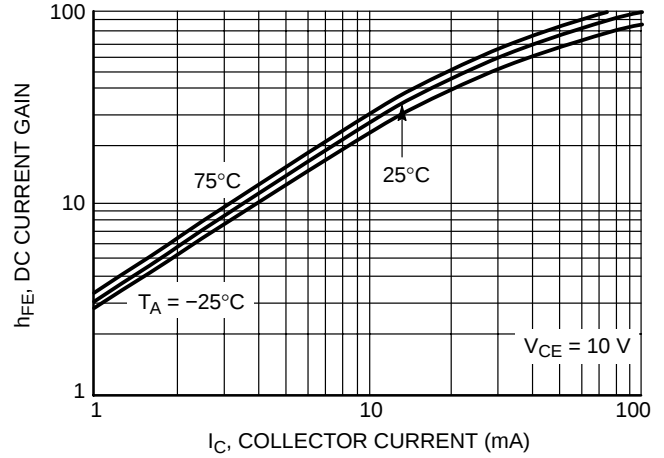


Figure 78. DC Current Gain

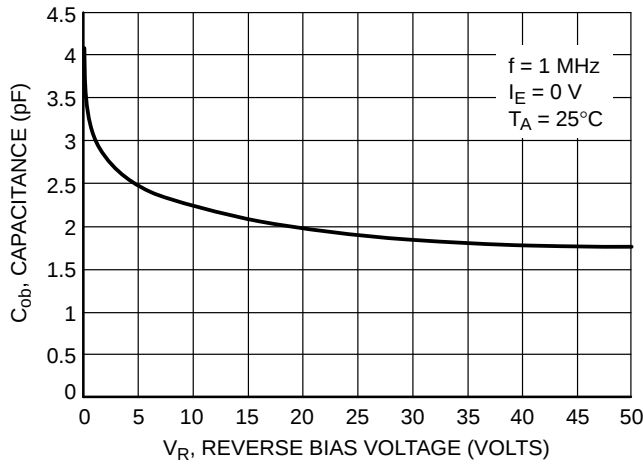


Figure 79. Output Capacitance

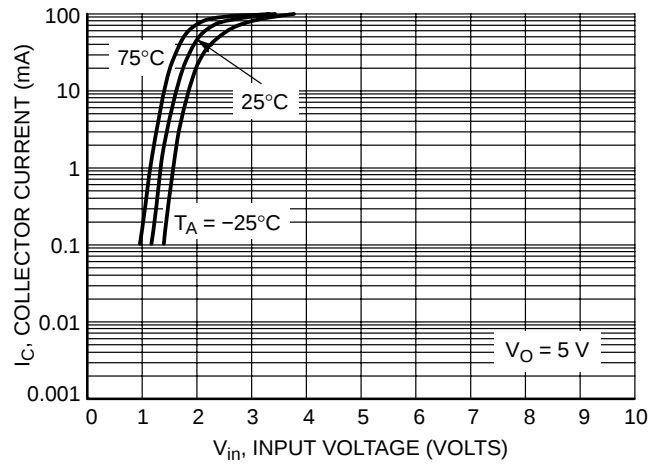


Figure 80. Output Current versus Input Voltage

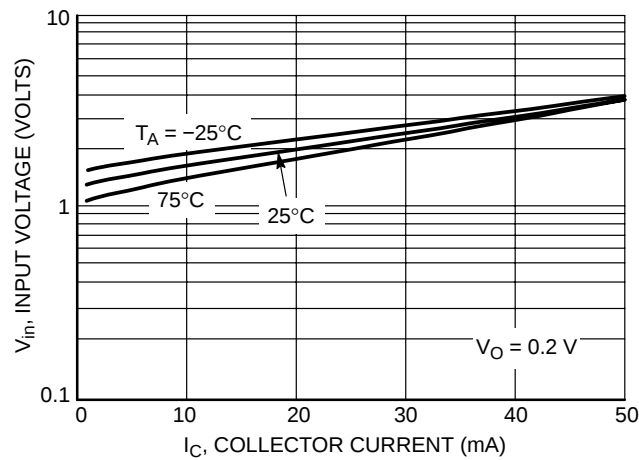


Figure 81. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5332DW1T1 NPN TRANSISTOR

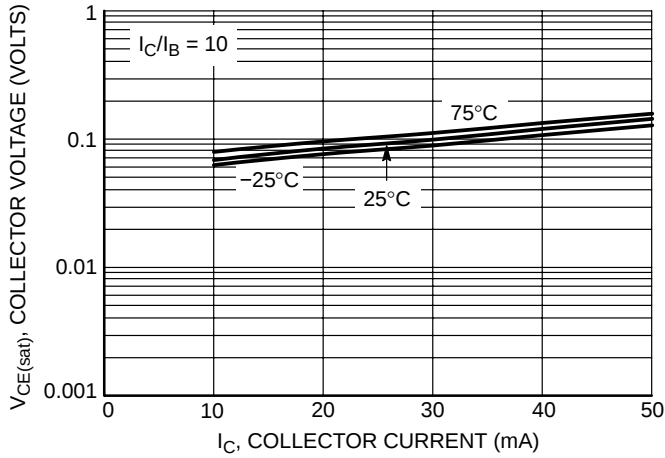


Figure 82. $V_{CE(sat)}$ versus I_C

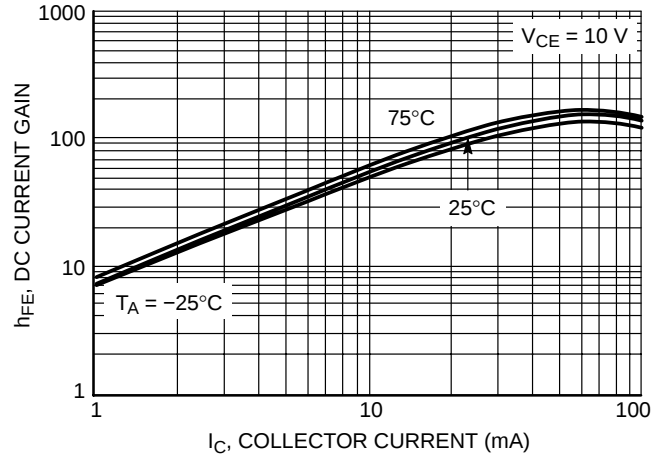


Figure 83. DC Current Gain

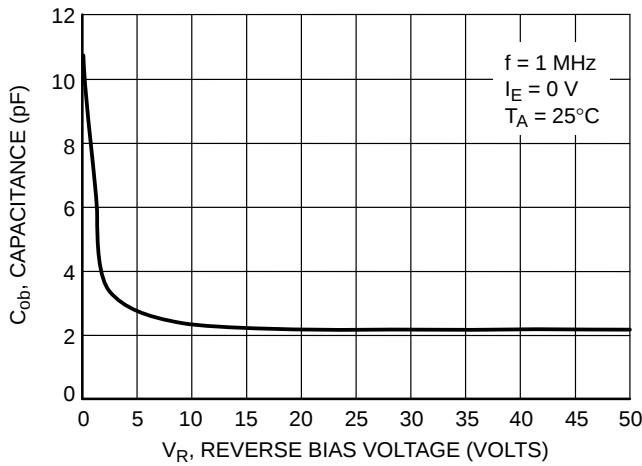


Figure 84. Output Capacitance

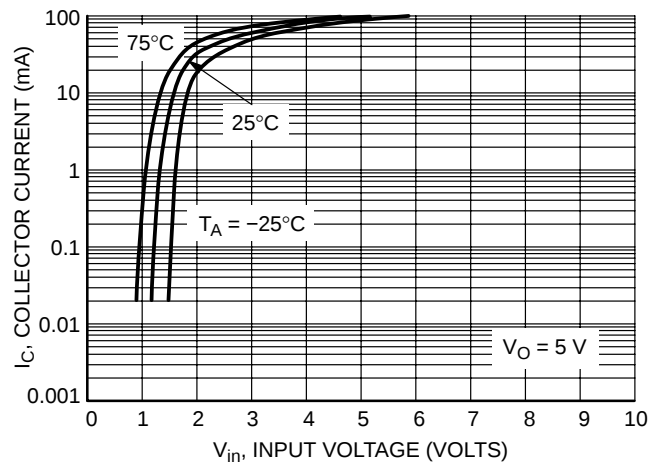


Figure 85. Output Current versus Input Voltage

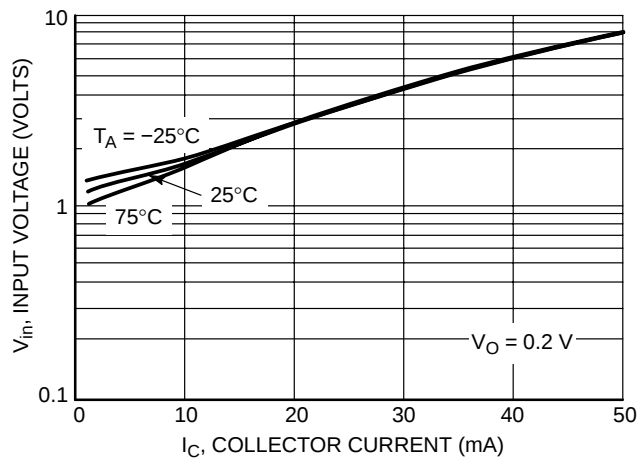


Figure 86. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5332DW1T1 PNP TRANSISTOR

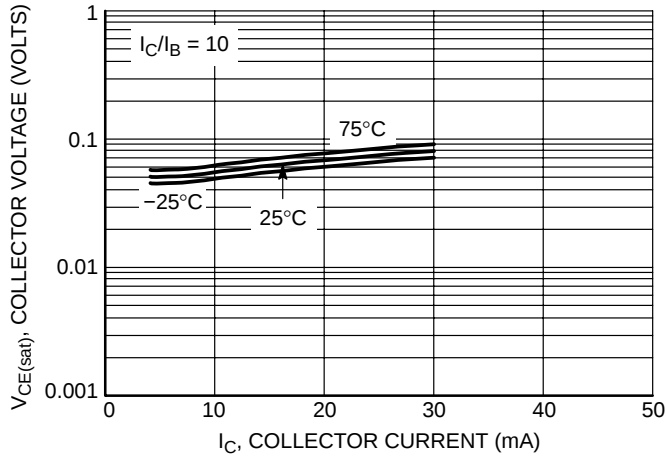


Figure 87. $V_{CE(sat)}$ versus I_C

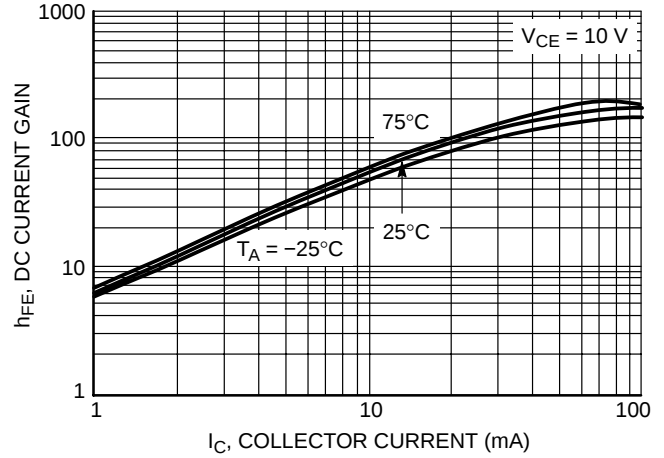


Figure 88. DC Current Gain

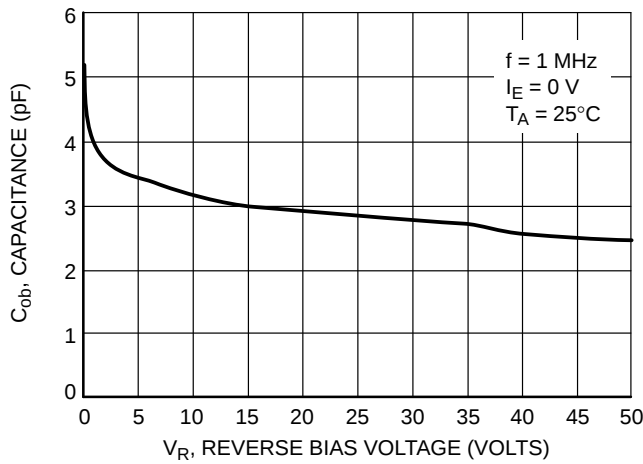


Figure 89. Output Capacitance

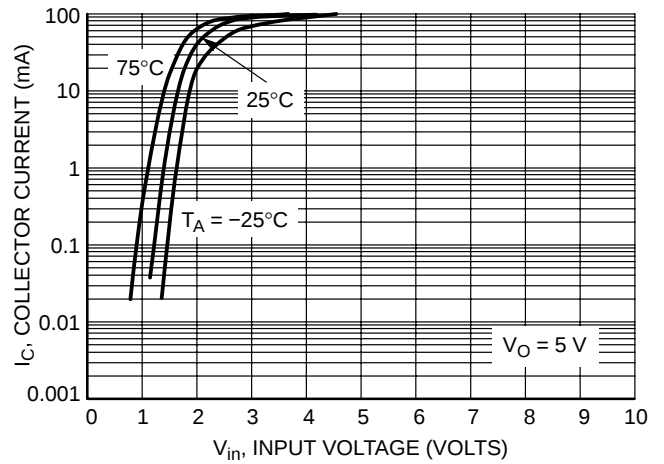


Figure 90. Output Current versus Input Voltage

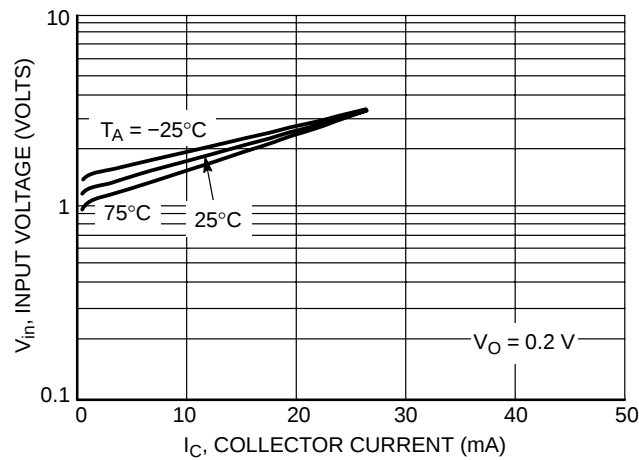


Figure 91. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5333DW1T1 NPN TRANSISTOR

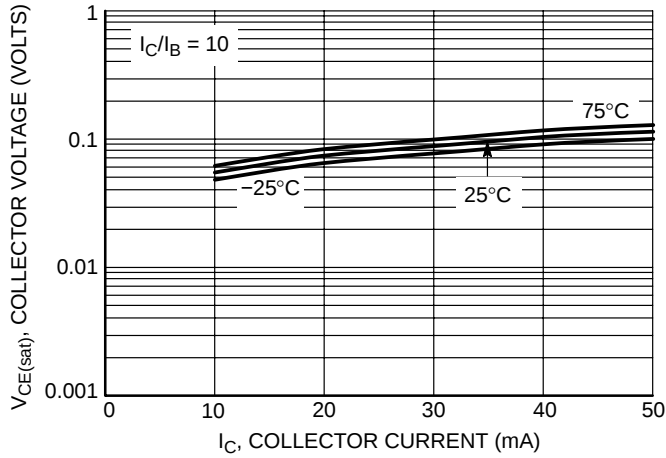


Figure 92. $V_{CE(sat)}$ versus I_C

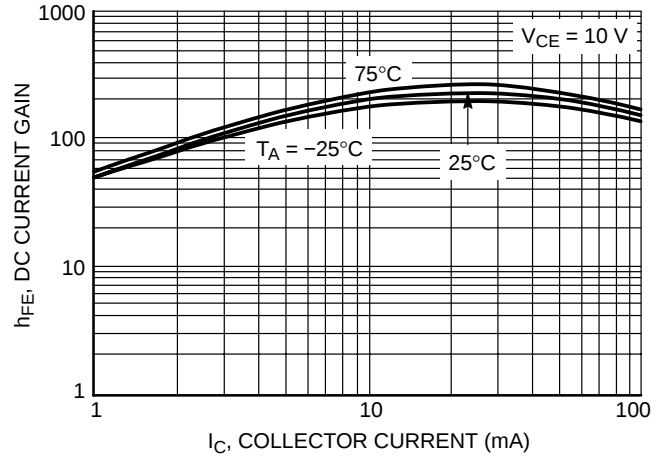


Figure 93. DC Current Gain

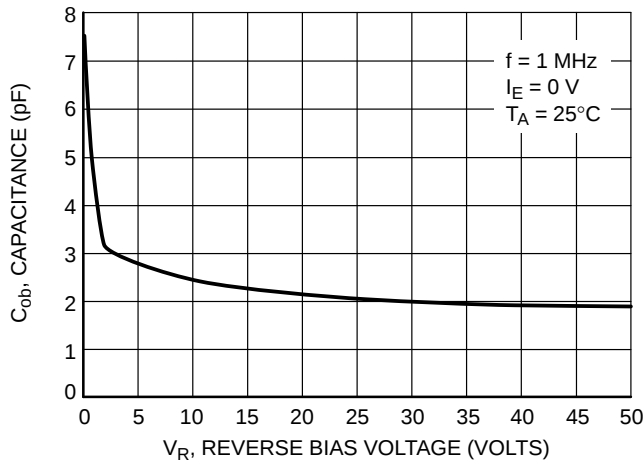


Figure 94. Output Capacitance

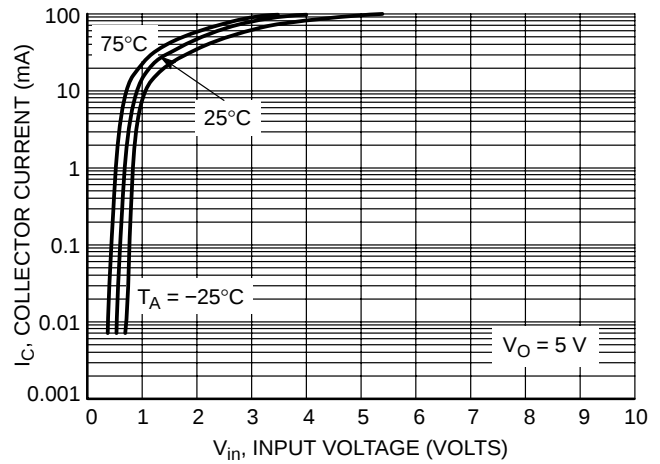


Figure 95. Output Current versus Input Voltage

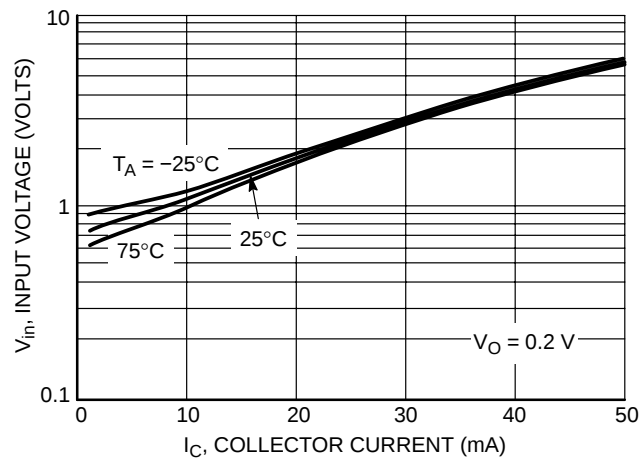


Figure 96. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5333DW1T1 PNP TRANSISTOR

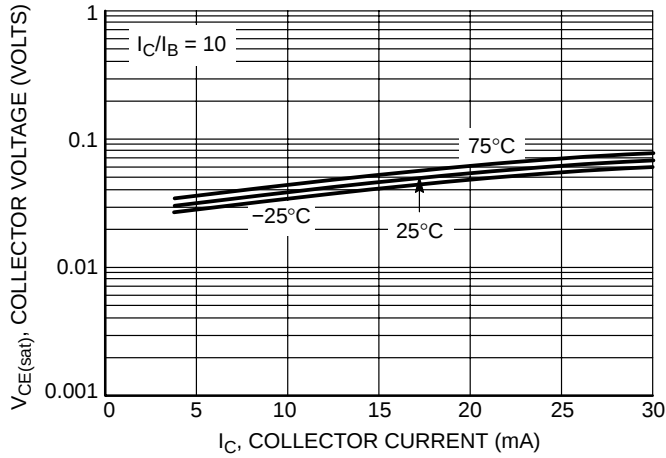


Figure 97. $V_{CE(sat)}$ versus I_C

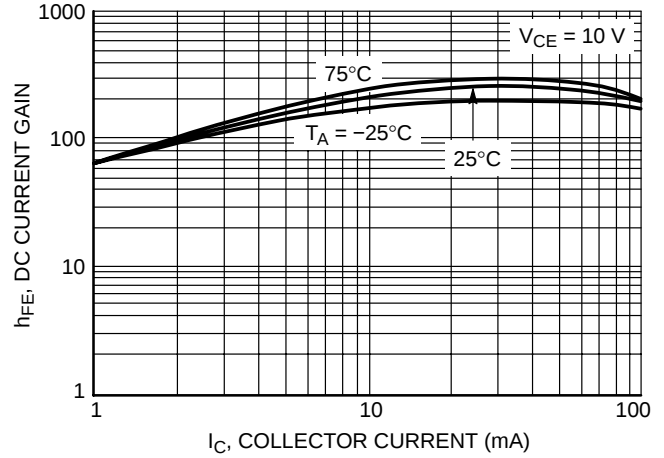


Figure 98. DC Current Gain

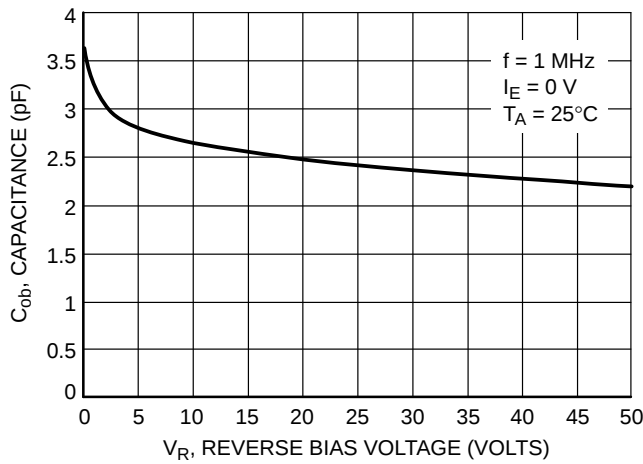


Figure 99. Output Capacitance

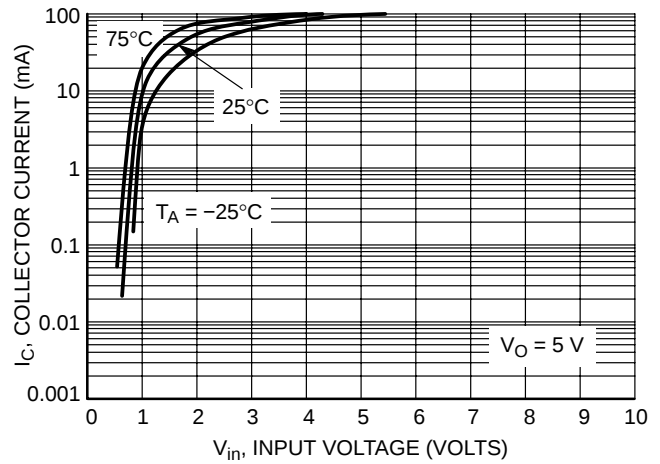


Figure 100. Output Current versus Input Voltage

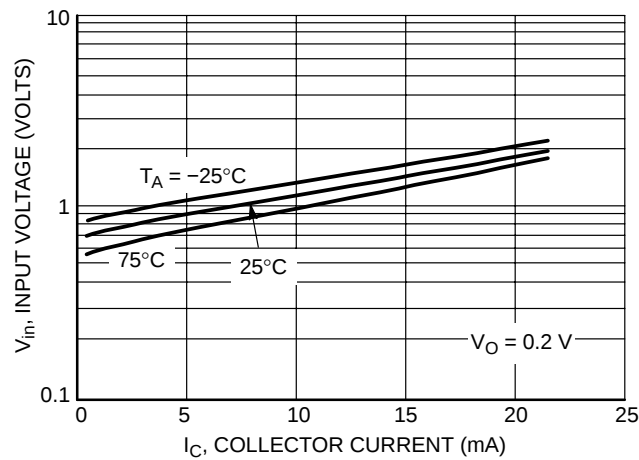


Figure 101. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5334DW1T1 NPN TRANSISTOR

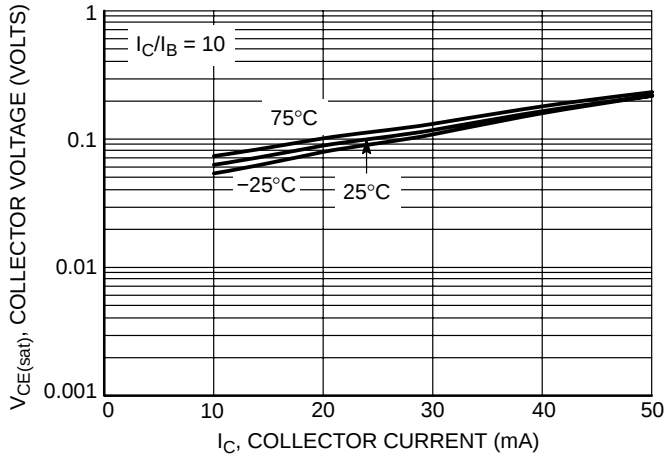


Figure 102. $V_{CE(sat)}$ versus I_C

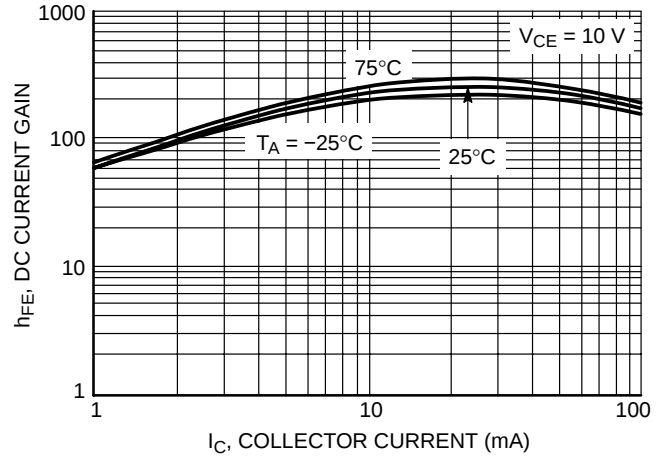


Figure 103. DC Current Gain

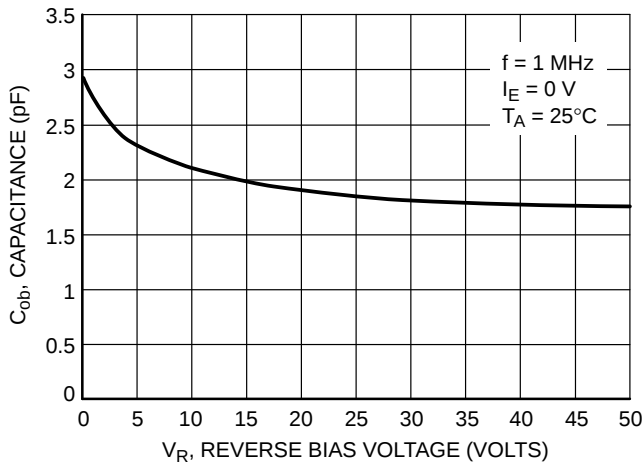


Figure 104. Output Capacitance

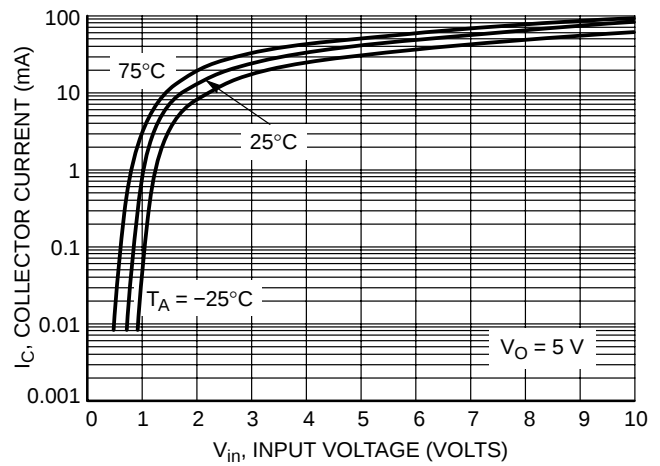


Figure 105. Output Current versus Input Voltage

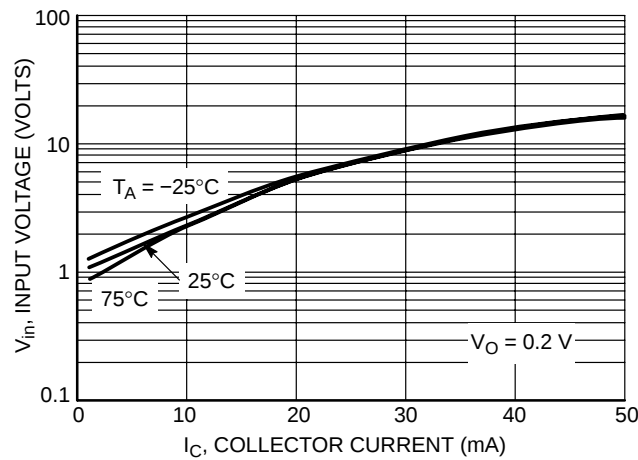


Figure 106. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5334DW1T1 PNP TRANSISTOR

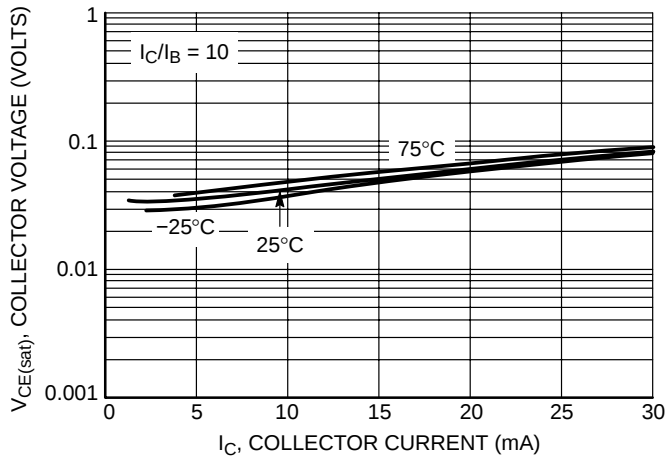


Figure 107. $V_{CE(sat)}$ versus I_C

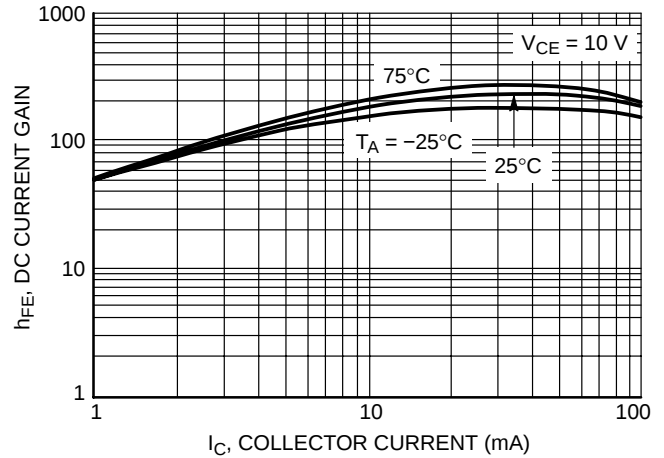


Figure 108. DC Current Gain



Figure 109. Output Capacitance

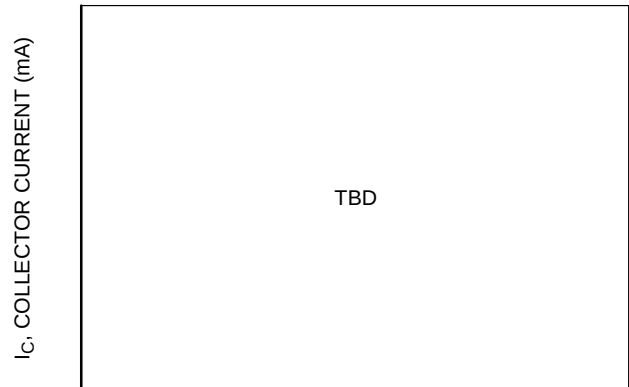


Figure 110. Output Current versus Input Voltage

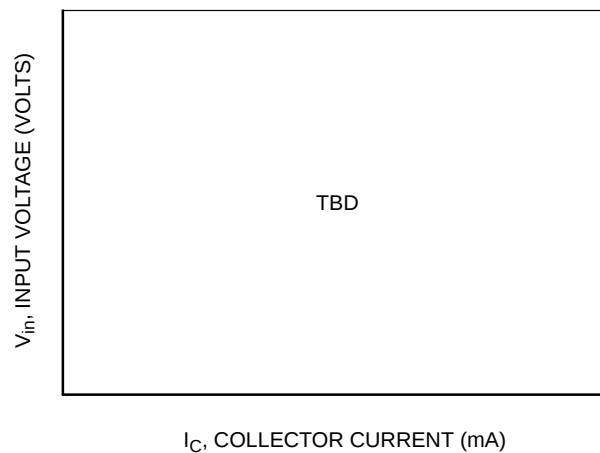


Figure 111. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5335DW1T1 NPN TRANSISTOR

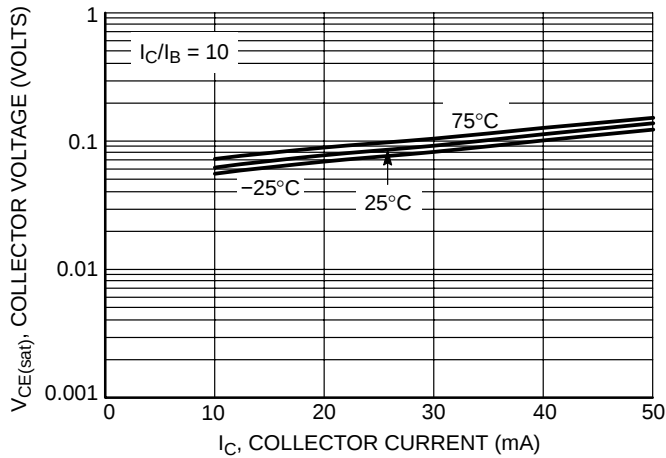


Figure 112. $V_{CE(sat)}$ versus I_C

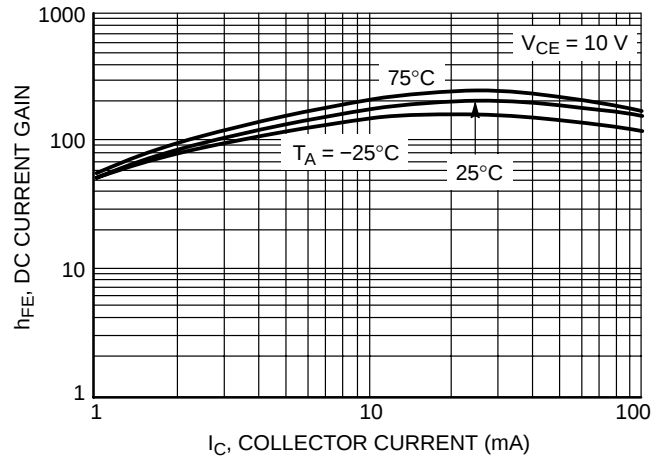


Figure 113. DC Current Gain

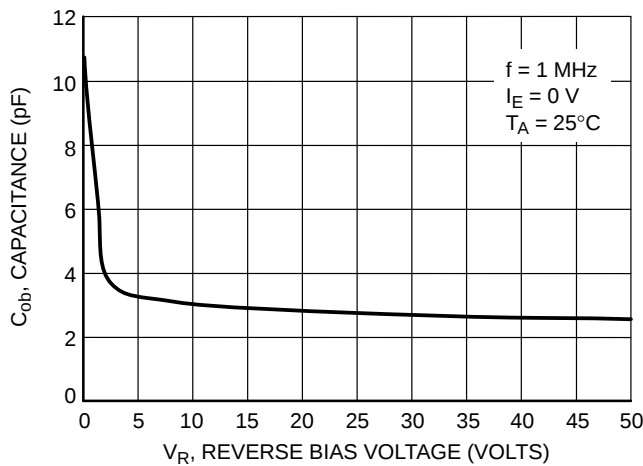


Figure 114. Output Capacitance

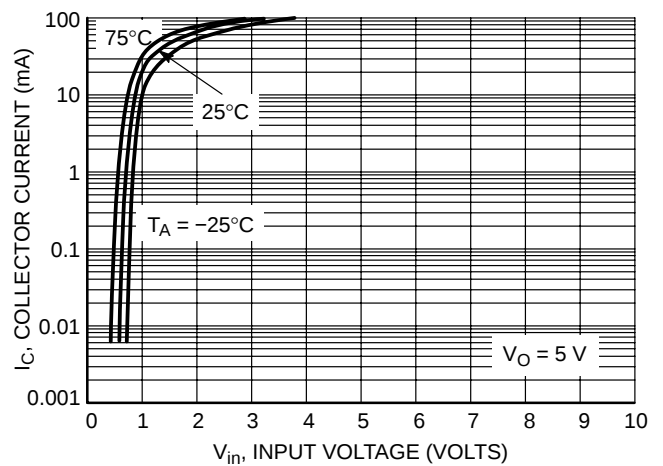


Figure 115. Output Current versus Input Voltage

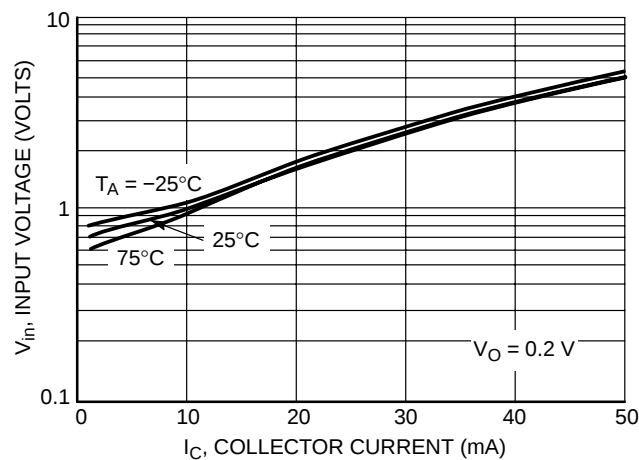


Figure 116. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5335DW1T1 PNP TRANSISTOR

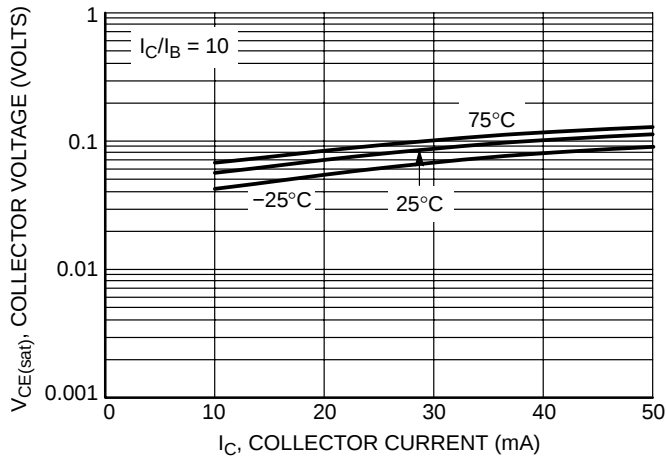


Figure 117. $V_{CE(sat)}$ versus I_C

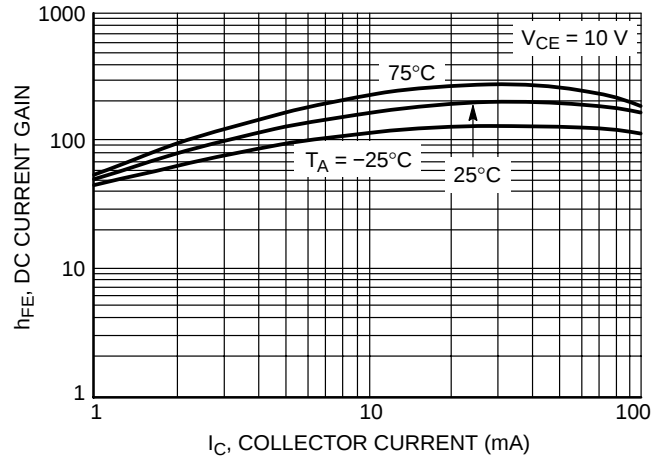


Figure 118. DC Current Gain

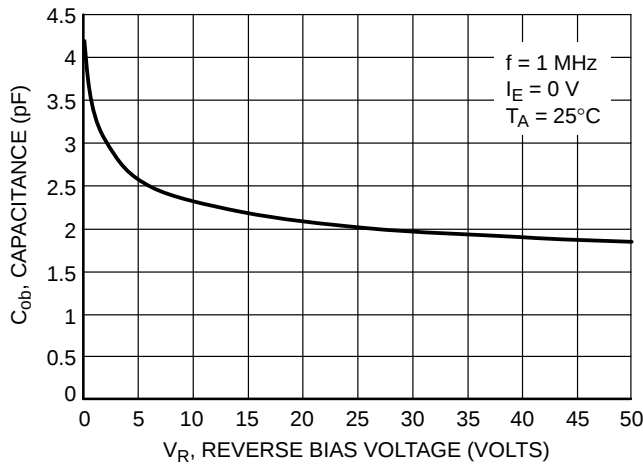


Figure 119. Output Capacitance

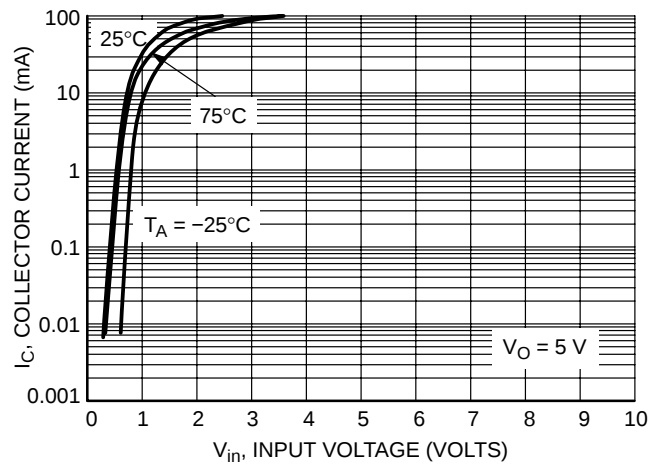


Figure 120. Output Current versus Input Voltage

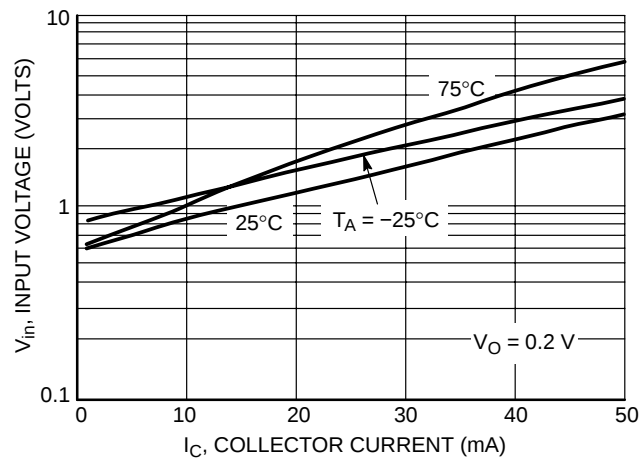


Figure 121. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5336DW1T1 NPN TRANSISTOR

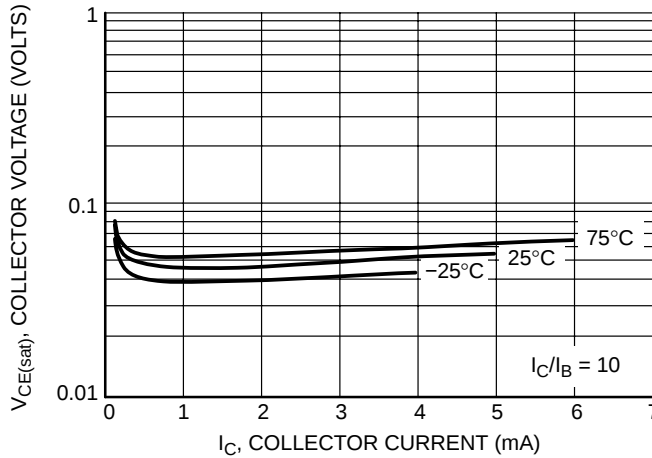


Figure 122. $V_{CE(sat)}$ versus I_C

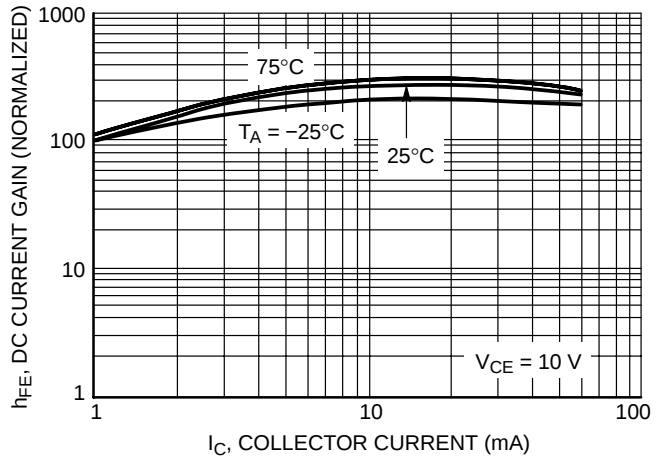


Figure 123. DC Current Gain

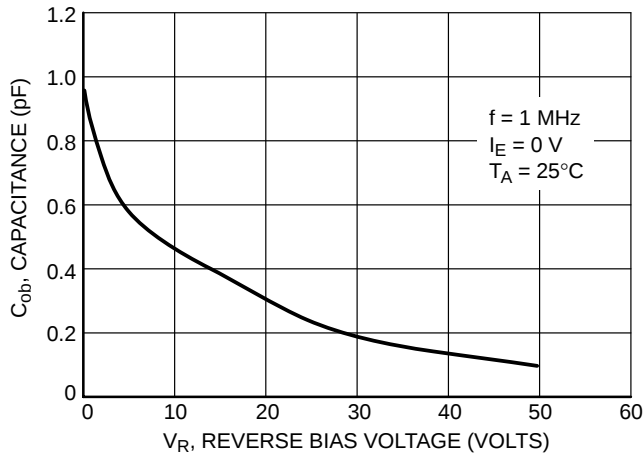


Figure 124. Output Capacitance

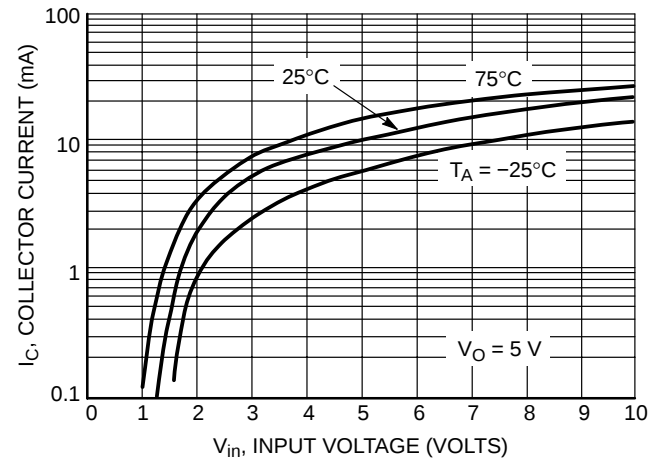


Figure 125. Output Current versus Input Voltage

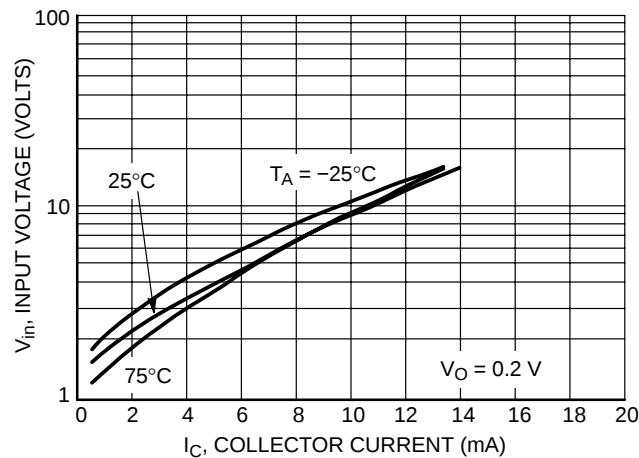


Figure 126. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5336DW1T1 PNP TRANSISTOR

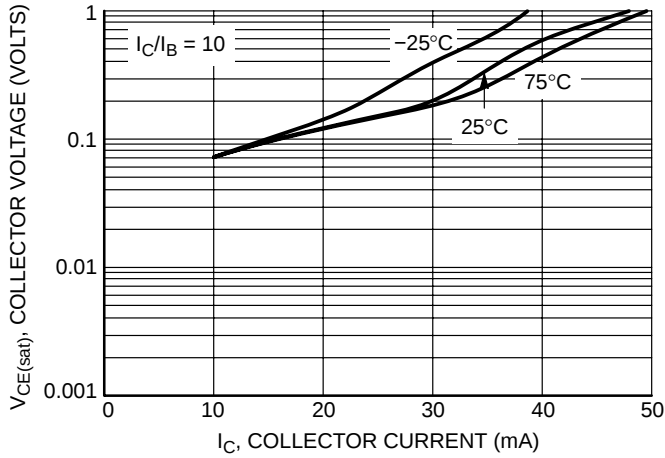


Figure 127. $V_{CE(sat)}$ versus I_C

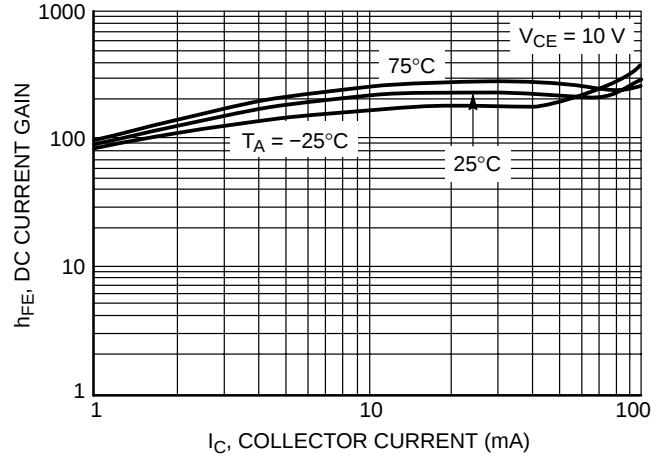


Figure 128. DC Current Gain

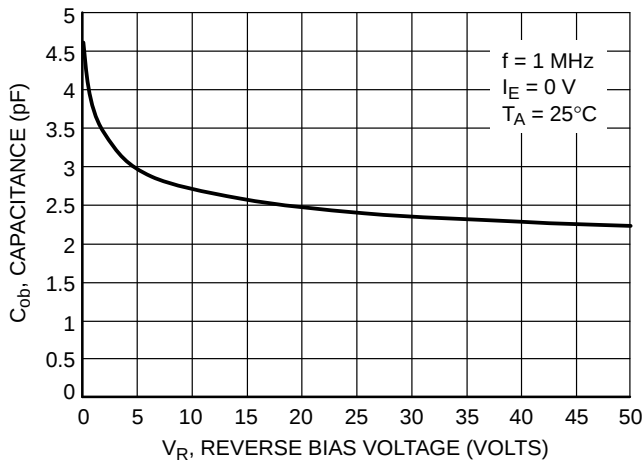


Figure 129. Output Capacitance

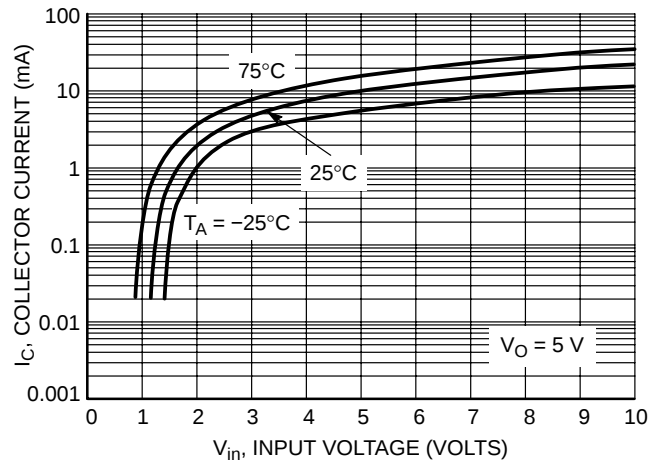


Figure 130. Output Current versus Input Voltage

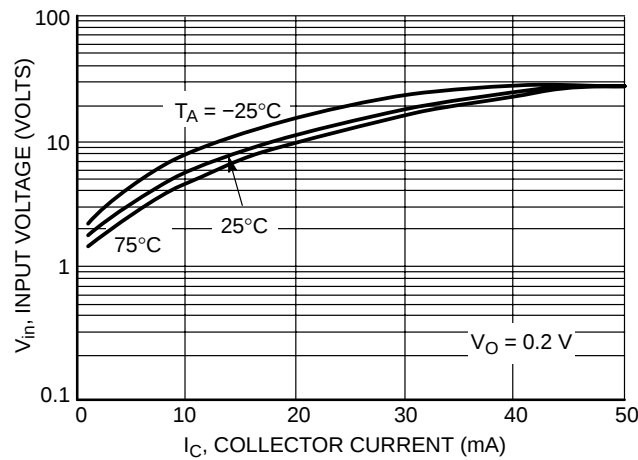


Figure 131. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5337DW1T1 NPN TRANSISTOR

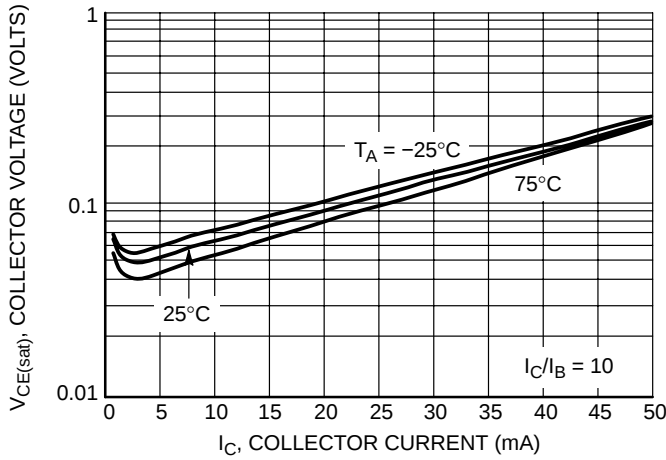


Figure 132. $V_{CE(sat)}$ versus I_C

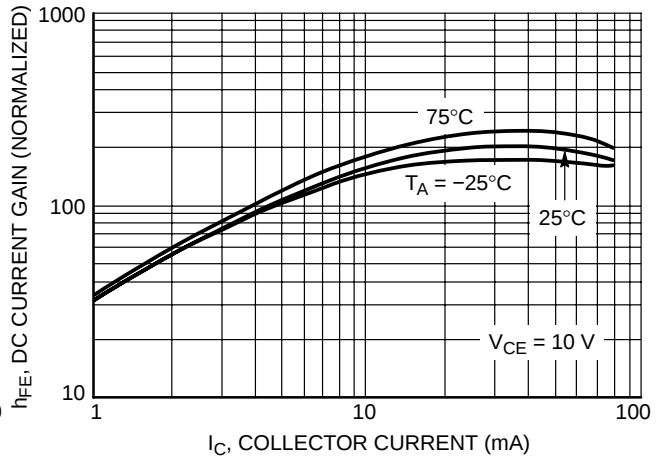


Figure 133. DC Current Gain

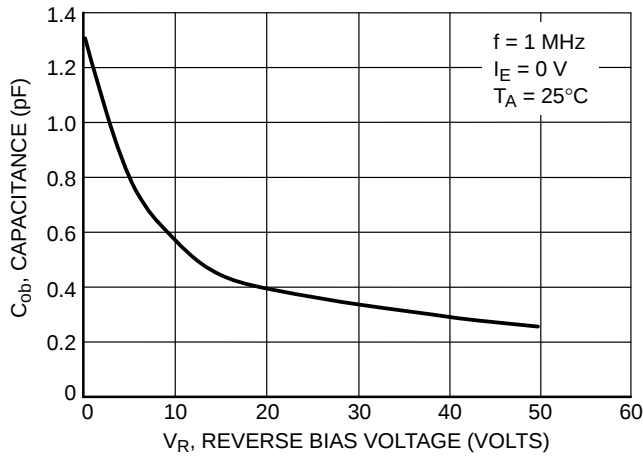


Figure 134. Output Capacitance

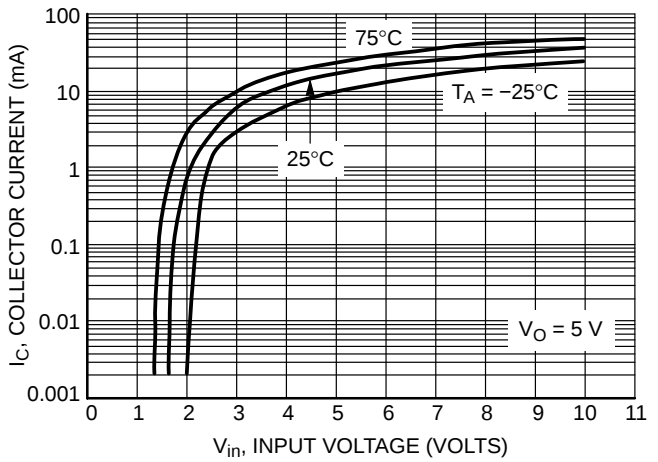


Figure 135. Output Current versus Input Voltage

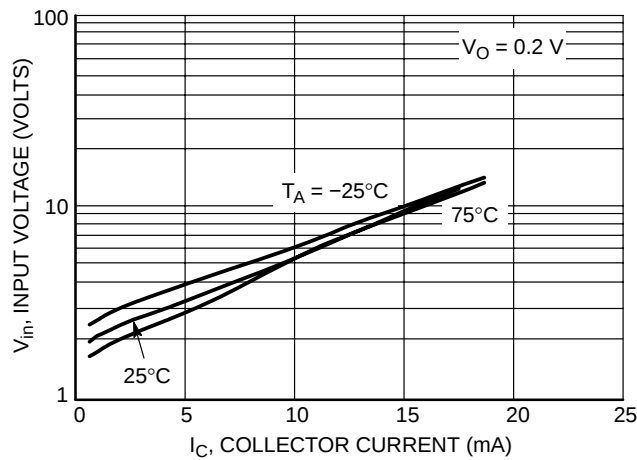


Figure 136. Input Voltage versus Output Current

MUN5311DW1T1 Series

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5337DW1T1 PNP TRANSISTOR

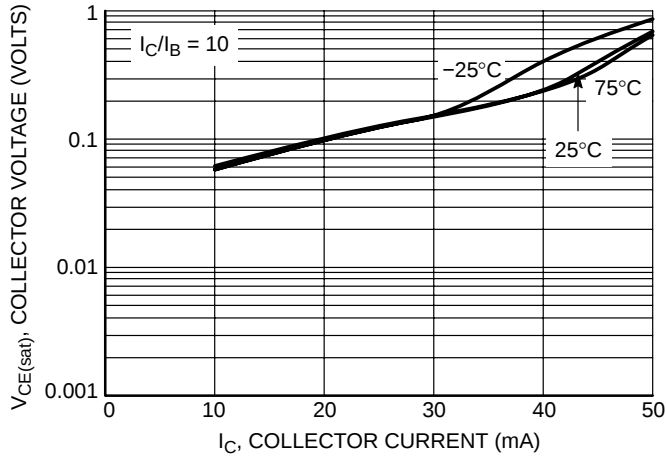


Figure 137. $V_{CE(sat)}$ versus I_C

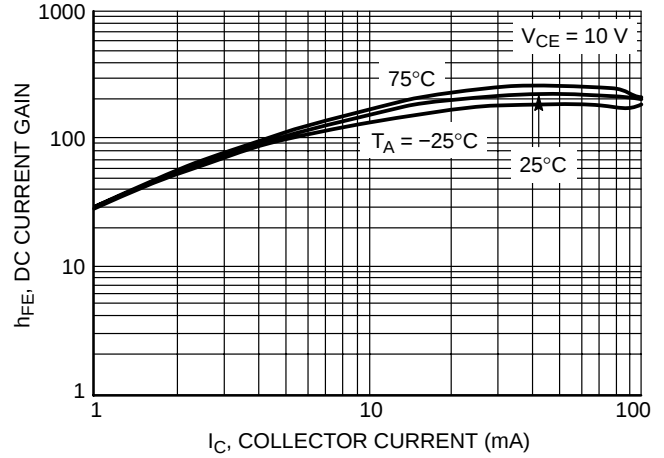


Figure 138. DC Current Gain

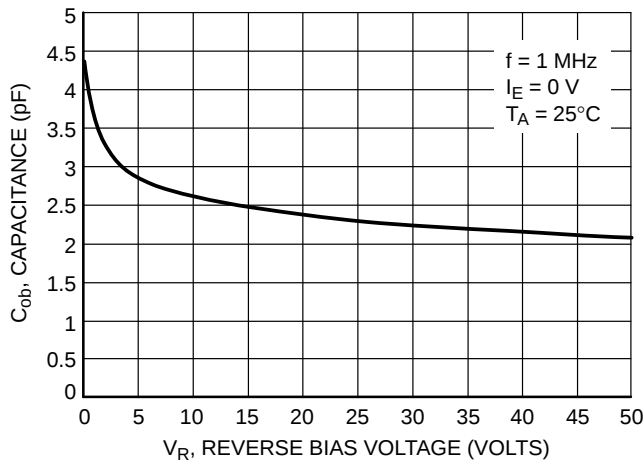


Figure 139. Output Capacitance

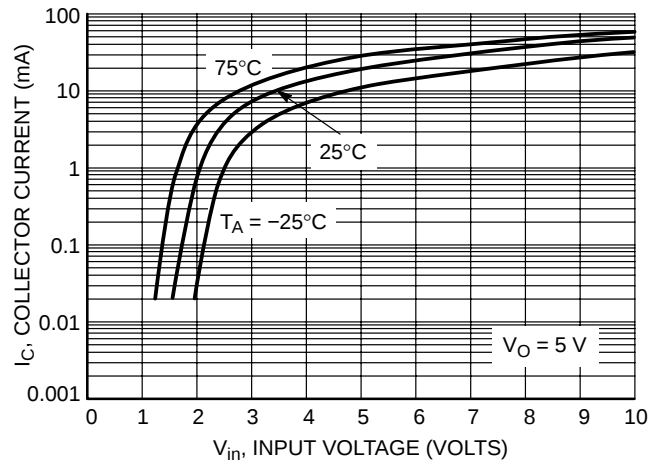


Figure 140. Output Current versus Input Voltage

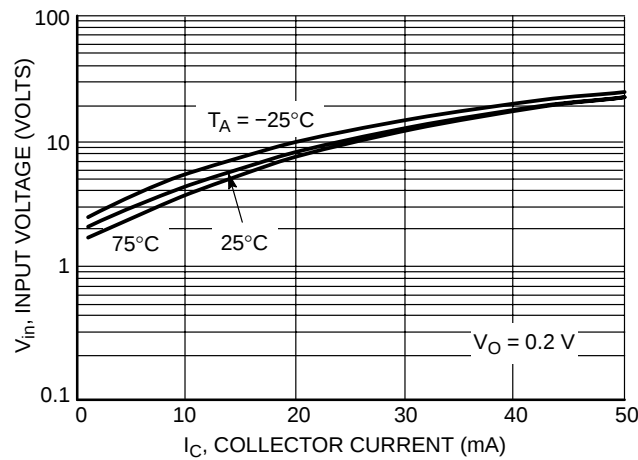
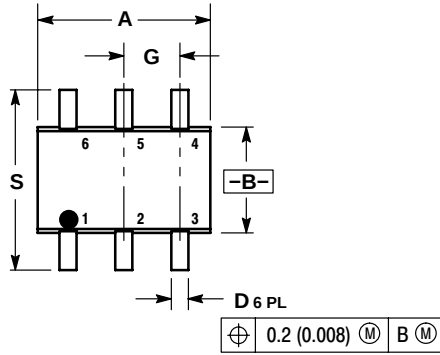


Figure 141. Input Voltage versus Output Current

MUN5311DW1T1 Series

PACKAGE DIMENSIONS

SC-88 (SOT-363)
CASE 419B-02
ISSUE T



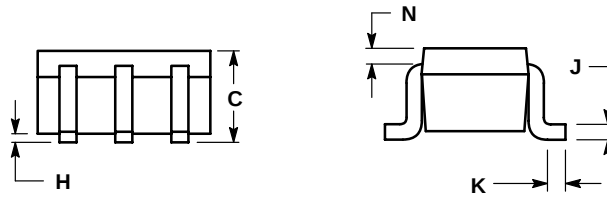
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 419B-01 OBSOLETE, NEW STANDARD 419B-02.

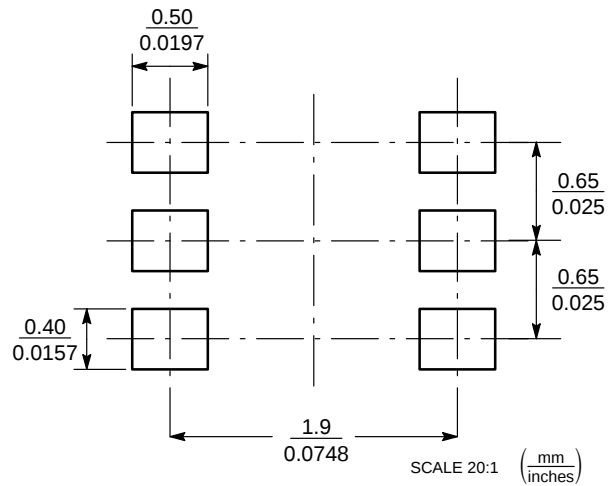
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.031	0.043	0.80	1.10
D	0.004	0.012	0.10	0.30
G	0.026	BSC	0.65	BSC
H	---	0.004	---	0.10
J	0.004	0.010	0.10	0.25
K	0.004	0.012	0.10	0.30
N	0.008	REF	0.20	REF
S	0.079	0.087	2.00	2.20

STYLE 1:

- PIN 1. EMITTER 2
- BASE 2
- COLLECTOR 1
- EMITTER 1
- BASE 1
- COLLECTOR 2



SOLDERING FOOTPRINT*



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

MUN5311DW1T1 Series

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