DEVICE MARKING AND RESISTOR VALUES

Device	Package	Marking	R1 (K)	R2 (K)	Shipping†
MUN5211DW1T1	SOT−363	7A	10	10	3000/Tape & Reel
MUN5211DW1T1G	SOT−363 (Pb−Free)	7A	10	10	3000/Tape & Reel
MUN5212DW1T1	SOT−363	7B	22	22	3000/Tape & Reel
MUN5212DW1T1G	SOT−363 (Pb−Free)	7B	22	22	3000/Tape & Reel
MUN5213DW1T1	SOT−363	7C	47	47	3000/Tape & Reel
MUN5213DW1T1G	SOT−363 (Pb−Free)	7C	47	47	3000/Tape & Reel
MUN5214DW1T1	SOT−363	7D	10	47	3000/Tape & Reel
MUN5214DW1T1G	SOT−363 (Pb−Free)	7D	10	47	3000/Tape & Reel
MUN5215DW1T1	SOT−363	7E	10	∞	3000/Tape & Reel
MUN5215DW1T1G	SOT−363 (Pb−Free)	7E	10	∞	3000/Tape & Reel
MUN5216DW1T1	SOT−363	7F	4.7	∞	3000/Tape & Reel
MUN5216DW1T1G	SOT−363 (Pb−Free)	7F	4.7	∞	3000/Tape & Reel
MUN5230DW1T1	SOT−363	7G	1.0	1.0	3000/Tape & Reel
MUN5230DW1T1G	SOT−363 (Pb−Free)	7G	1.0	1.0	3000/Tape & Reel
MUN5231DW1T1	SOT−363	7H	2.2	2.2	3000/Tape & Reel
MUN5231DW1T1G	SOT−363 (Pb−Free)	7H	2.2	2.2	3000/Tape & Reel
MUN5232DW1T1	SOT−363	7J	4.7	4.7	3000/Tape & Reel
MUN5232DW1T1G	SOT−363 (Pb−Free)	7J	4.7	4.7	3000/Tape & Reel
MUN5233DW1T1	SOT−363	7K	4.7	47	3000/Tape & Reel
MUN5233DW1T1G	SOT−363 (Pb−Free)	7K	4.7	47	3000/Tape & Reel
MUN5234DW1T1	SOT−363	7L	22	47	3000/Tape & Reel
MUN5234DW1T1G	SOT−363 (Pb−Free)	7L	22	47	3000/Tape & Reel
MUN5235DW1T1	SOT−363	7M	2.2	47	3000/Tape & Reel
MUN5235DW1T1G	SOT−363 (Pb−Free)	7M	2.2	47	3000/Tape & Reel
MUN5236DW1T1	SOT−363	7N	100	100	3000/Tape & Reel
MUN5236DW1T1G	SOT−363 (Pb−Free)	7N	100	100	3000/Tape & Reel
MUN5237DW1T1	SOT−363	7P	47	22	3000/Tape & Reel
MUN5237DW1T1G	SOT−363 (Pb−Free)	7P	47	22	3000/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted, common for Q_1 and Q_2)

Characteristic		Symbol	Min	Typ	Max	Unit
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	MUN5211DW1T1, G	I_{EBO}	–	–	0.5	mAdc
(V_{EB} = 6.0 V, I_C = 0)	MUN5212DW1T1, G		–	–	0.2	
	MUN5213DW1T1, G		–	–	0.1	
	MUN5214DW1T1, G		–	–	0.2	
	MUN5215DW1T1, G		–	–	0.9	
	MUN5216DW1T1, G		–	–	1.9	
	MUN5230DW1T1, G		–	–	4.3	
	MUN5231DW1T1, G		–	–	2.3	
	MUN5232DW1T1, G		–	–	1.5	
	MUN5233DW1T1, G		–	–	0.18	
	MUN5234DW1T1, G		–	–	0.13	
	MUN5235DW1T1, G		–	–	0.2	
	MUN5236DW1T1, G		–	–	0.05	
	MUN5237DW1T1, G		–	–	0.13	
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%

ON CHARACTERISTICS (Note 4)

DC Current Gain	MUN5211DW1T1, G	h_{FE}	35	60	–	
(V_{CE} = 10 V, I_C = 5.0 mA)	MUN5212DW1T1, G		60	100	–	
	MUN5213DW1T1, G		80	140	–	
	MUN5214DW1T1, G		80	140	–	
	MUN5215DW1T1, G		160	350	–	
	MUN5216DW1T1, G		160	350	–	
	MUN5230DW1T1, G		3.0	5.0	–	
	MUN5231DW1T1, G		8.0	15	–	
	MUN5232DW1T1, G		15	30	–	
	MUN5233DW1T1, G		80	200	–	
	MUN5234DW1T1, G		80	150	–	
	MUN5235DW1T1, G		80	140	–	
	MUN5236DW1T1, G		80	150	–	
	MUN5237DW1T1, G		80	140	–	

Collector-Emitter Saturation Voltage		$V_{CE(sat)}$				Vdc
(I_C = 10 mA, I_B = 0.3 mA)	MUN5211DW1T1, G		–	–	0.25	
	MUN5212DW1T1, G		–	–	0.25	
	MUN5213DW1T1, G		–	–	0.25	
	MUN5214DW1T1, G		–	–	0.25	
	MUN5235DW1T1, G		–	–	0.25	
	MUN5236DW1T1, G		–	–	0.25	
(I_C = 10 mA, I_B = 5 mA)	MUN5230DW1T1, G		–	–	0.25	
	MUN5231DW1T1, G		–	–	0.25	
	MUN5237DW1T1, G		–	–	0.25	
(I_C = 10 mA, I_B = 1 mA)	MUN5215DW1T1, G		–	–	0.25	
	MUN5216DW1T1, G		–	–	0.25	
	MUN5232DW1T1, G		–	–	0.25	
	MUN5233DW1T1, G		–	–	0.25	
	MUN5234DW1T1, G		–	–	0.25	
Output Voltage (on)		V_{OL}				Vdc
(V_{CC} = 5.0 V, V_B = 2.5 V, R_L = 1.0 kΩ)	MUN5211DW1T1, G		–	–	0.2	
	MUN5212DW1T1, G		–	–	0.2	
	MUN5214DW1T1, G		–	–	0.2	
	MUN5215DW1T1, G		–	–	0.2	
	MUN5216DW1T1, G		–	–	0.2	
	MUN5230DW1T1, G		–	–	0.2	
	MUN5231DW1T1, G		–	–	0.2	
	MUN5232DW1T1, G		–	–	0.2	
	MUN5233DW1T1, G		–	–	0.2	
	MUN5234DW1T1, G		–	–	0.2	
	MUN5235DW1T1, G		–	–	0.2	
(V_{CC} = 5.0 V, V_B = 3.5 V, R_L = 1.0 kΩ)	MUN5213DW1T1, G		–	–	0.2	
(V_{CC} = 5.0 V, V_B = 5.5 V, R_L = 1.0 kΩ)	MUN5236DW1T1, G		–	–	0.2	
(V_{CC} = 5.0 V, V_B = 4.0 V, R_L = 1.0 kΩ)	MUN5237DW1T1, G		–	–	0.2	

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

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted, common for Q_1 and Q_2) (Continued)

Characteristic		Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS (Note 5) (Continued)						
Output Voltage (off)		V_{OH}				Vdc
(V_{CC} = 5.0 V, V_B = 0.5 V, R_L = 1.0 kΩ)	MUN5211DW1T1, G		4.9	–	–	
	MUN5212DW1T1, G		4.9	–	–	
	MUN5213DW1T1, G		4.9	–	–	
	MUN5214DW1T1, G		4.9	–	–	
	MUN5233DW1T1, G		4.9	–	–	
	MUN5234DW1T1, G		4.9	–	–	
	MUN5235DW1T1, G		4.9	–	–	
(V_{CC} = 5.0 V, V_B = 0.050 V, R_L = 1.0 kΩ)	MUN5230DW1T1, G		4.9	–	–	
(V_{CC} = 5.0 V, V_B = 0.25 V, R_L = 1.0 kΩ)	MUN5215DW1T1, G		4.9	–	–	
	MUN5216DW1T1, G		4.9	–	–	
	MUN5231DW1T1, G		4.9	–	–	
	MUN5232DW1T1, G		4.9	–	–	
	MUN5236DW1T1, G		4.9	–	–	
	MUN5237DW1T1, G		4.9	–	–	
Input Resistor	MUN5211DW1T1, G	R1	7.0	10	13	k Ω
	MUN5212DW1T1, G		15.4	22	28.6	
	MUN5213DW1T1, G		32.9	47	61.1	
	MUN5214DW1T1, G		7.0	10	13	
	MUN5215DW1T1, G		7.0	10	13	
	MUN5216DW1T1, G		3.3	4.7	6.1	
	MUN5230DW1T1, G		0.7	1.0	1.3	
	MUN5231DW1T1, G		1.5	2.2	2.9	
	MUN5232DW1T1, G		3.3	4.7	6.1	
	MUN5233DW1T1, G		3.3	4.7	6.1	
	MUN5234DW1T1, G		15.4	22	28.6	
	MUN5235DW1T1, G		1.54	2.2	2.86	
	MUN5236DW1T1, G		70	100	130	
	MUN5237DW1T1, G		32.9	47	61.1	
Resistor Ratio	MUN5211DW1T1, G/MUN5212DW1T1, G/	R1/R2				
	MUN5213DW1T1, G/MUN5236DW1T1, G		0.8	1.0	1.2	
	MUN5214DW1T1, G		0.17	0.21	0.25	
	MUN5215DW1T1, G/MUN5216DW1T1, G		–	–	–	
	MUN5230DW1T1, G/MUN5231DW1T1, G/MUN5232DW1T1, G		0.8	1.0	1.2	
	MUN5233DW1T1, G		0.055	0.1	0.185	
	MUN5234DW1T1, G		0.38	0.47	0.56	
	MUN5235DW1T1, G		0.038	0.047	0.056	
	MUN5237DW1T1, G		1.7	2.1	2.6	

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

ALL MUN5211DW1T1 SERIES DEVICES

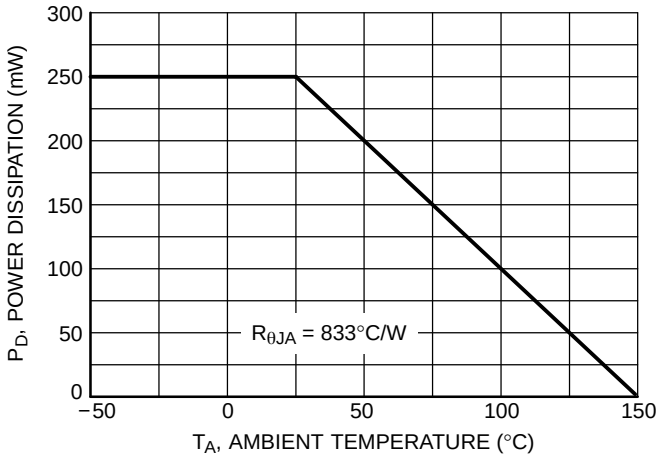


Figure 1. Derating Curve

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5211DW1T1

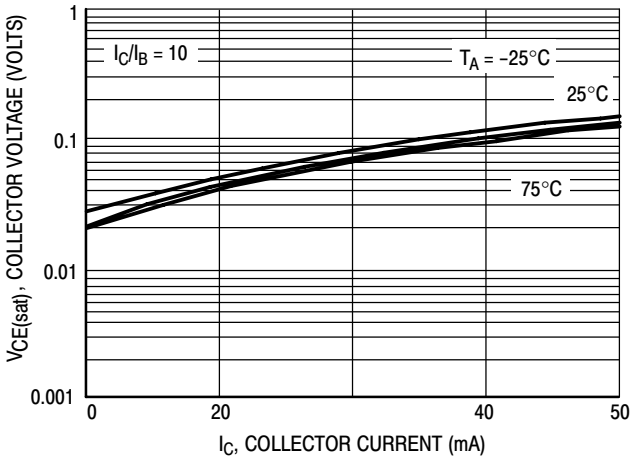


Figure 2. $V_{CE(sat)}$ versus I_C

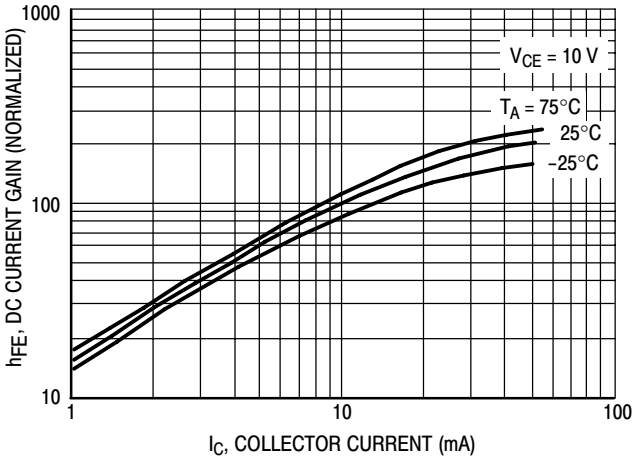


Figure 3. DC Current Gain

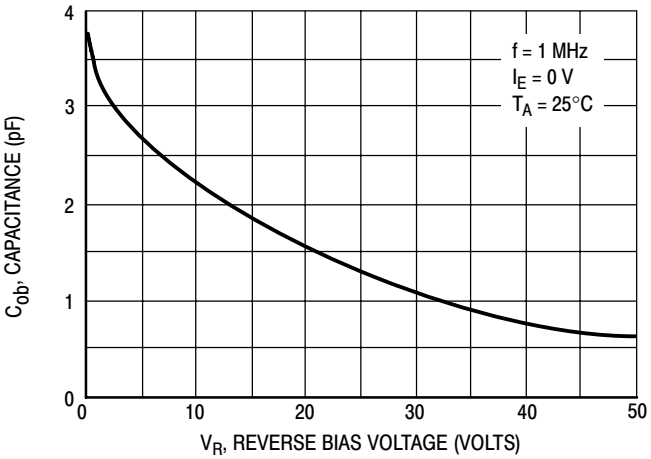


Figure 4. Output Capacitance

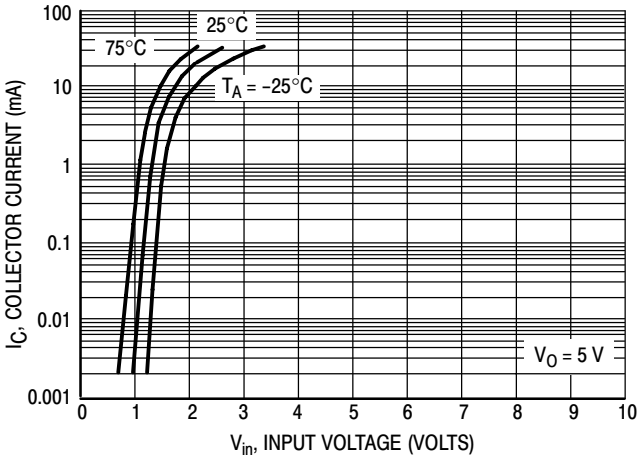


Figure 5. Output Current versus Input Voltage

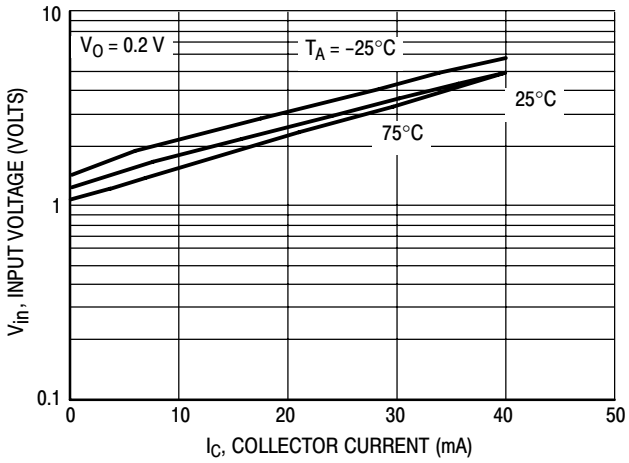


Figure 6. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5212DW1T1

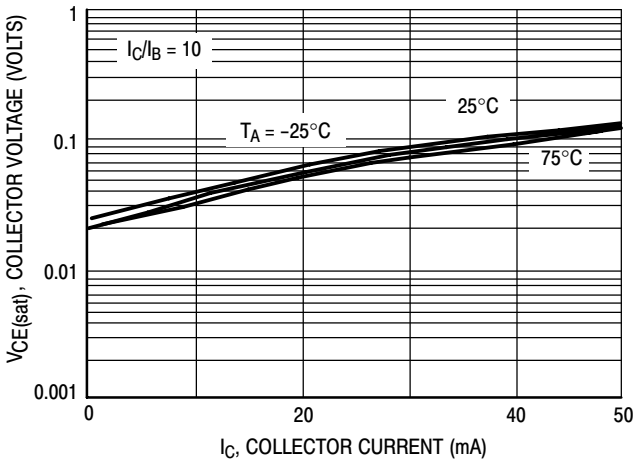


Figure 7. $V_{CE(sat)}$ versus I_C

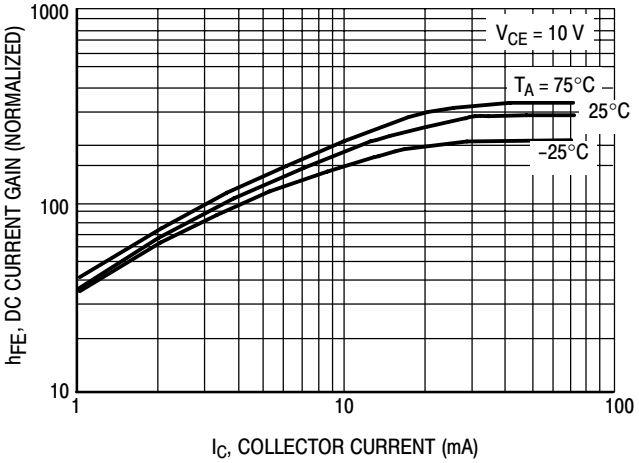


Figure 8. DC Current Gain

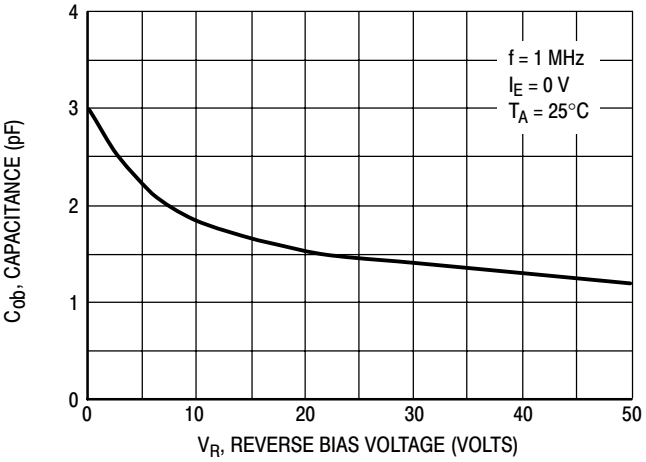


Figure 9. Output Capacitance

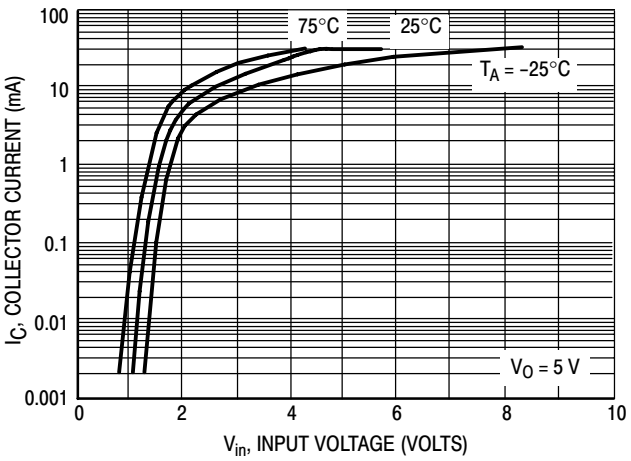


Figure 10. Output Current versus Input Voltage

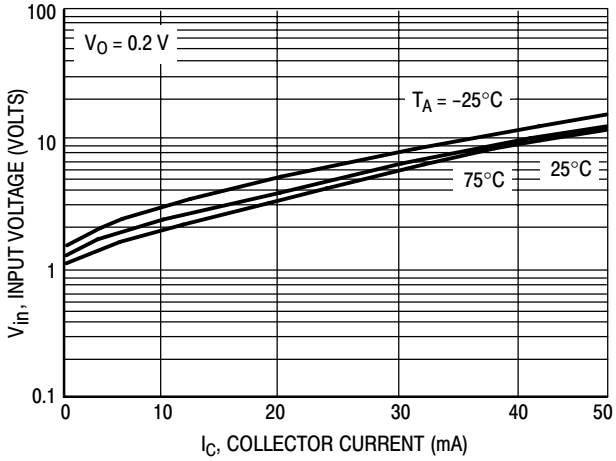


Figure 11. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5213DW1T1

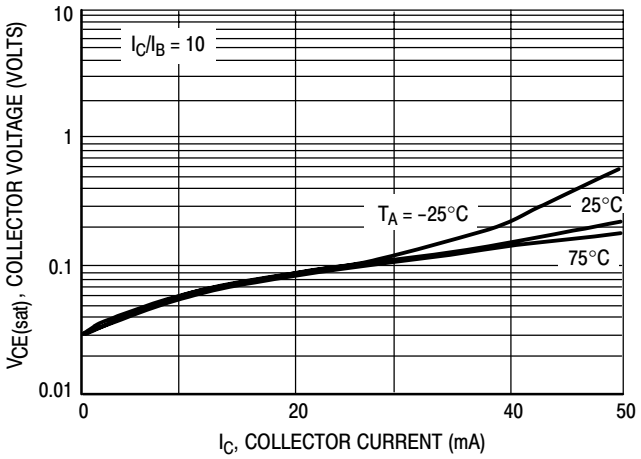


Figure 12. $V_{CE(sat)}$ versus I_C

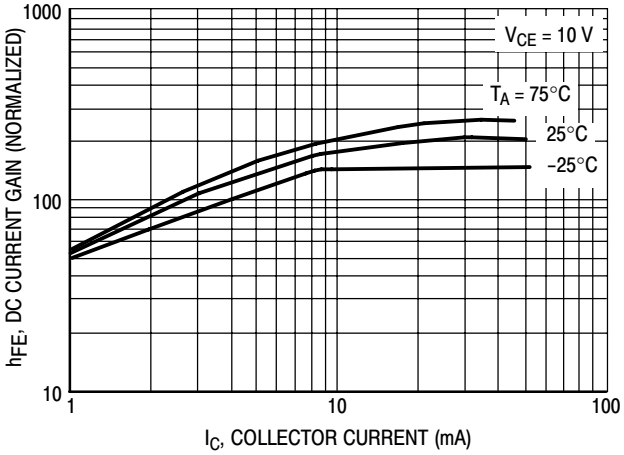


Figure 13. DC Current Gain

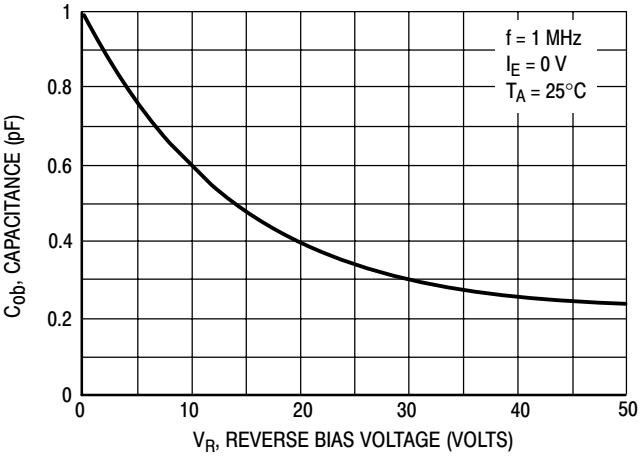


Figure 14. Output Capacitance

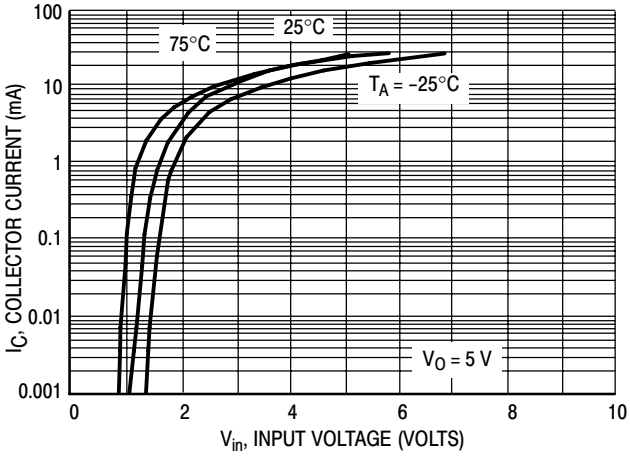


Figure 15. Output Current versus Input Voltage

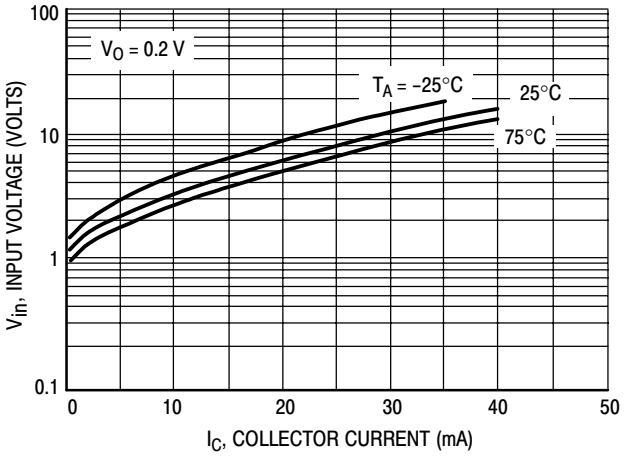


Figure 16. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5214DW1T1

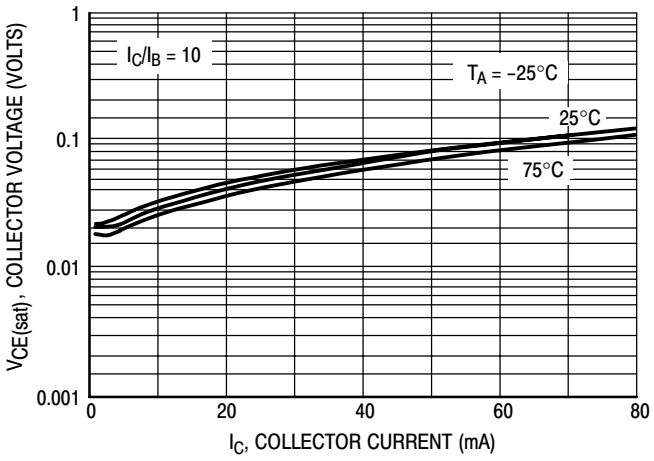


Figure 17. $V_{CE(sat)}$ versus I_C

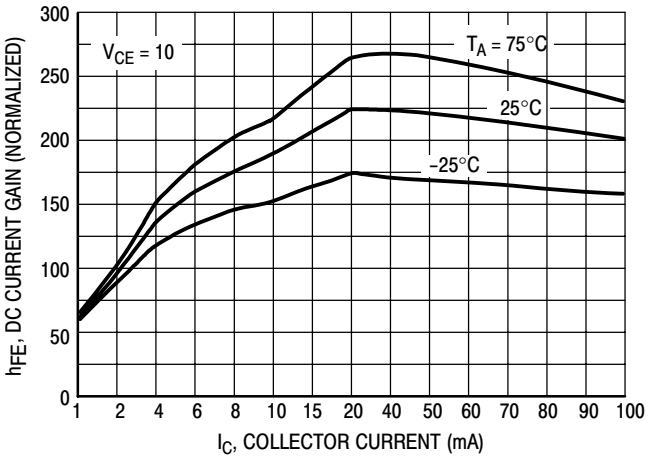


Figure 18. DC Current Gain

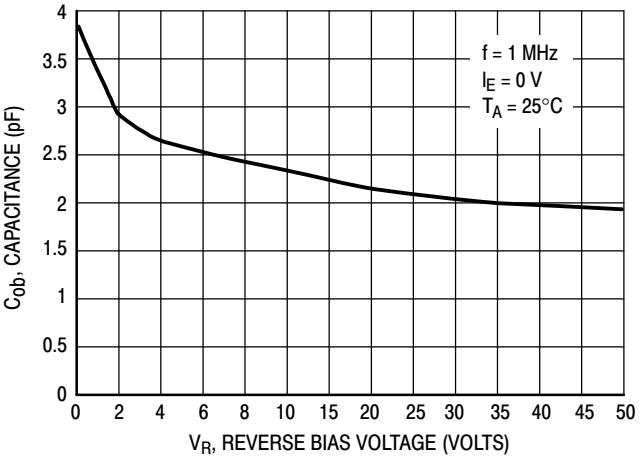


Figure 19. Output Capacitance

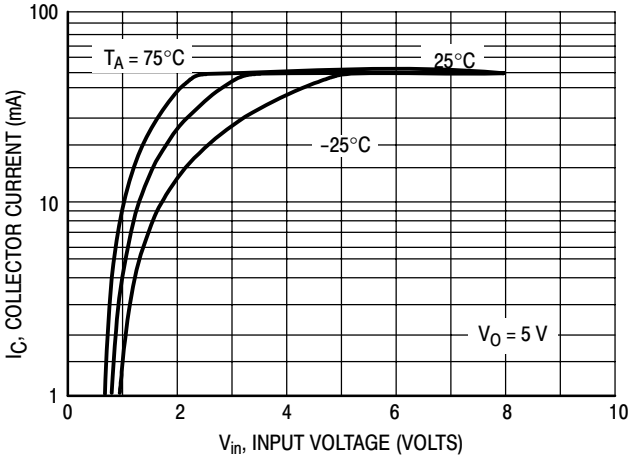


Figure 20. Output Current versus Input Voltage

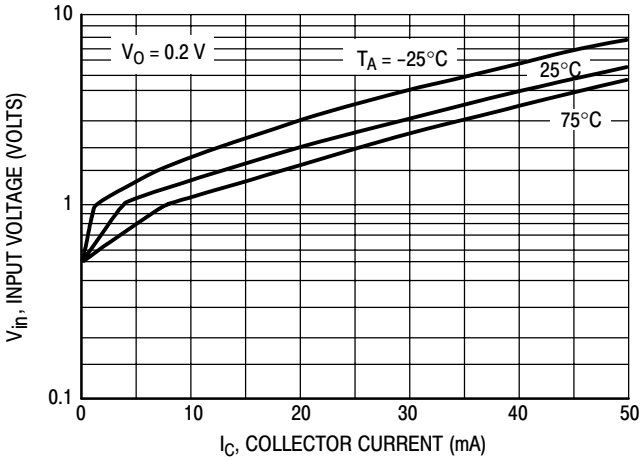


Figure 21. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5215DW1T1

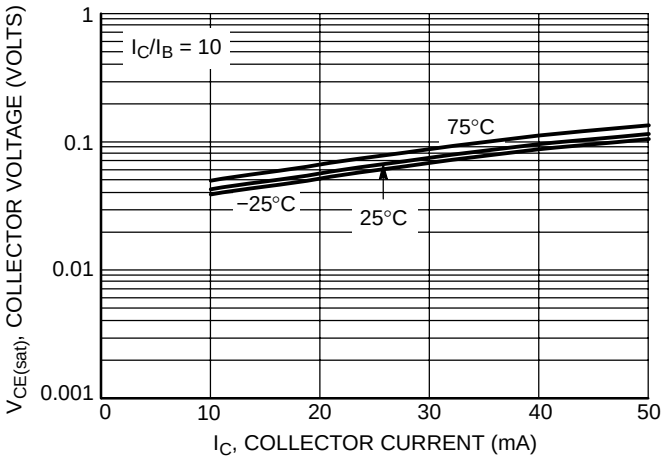


Figure 22. $V_{CE(sat)}$ versus I_C

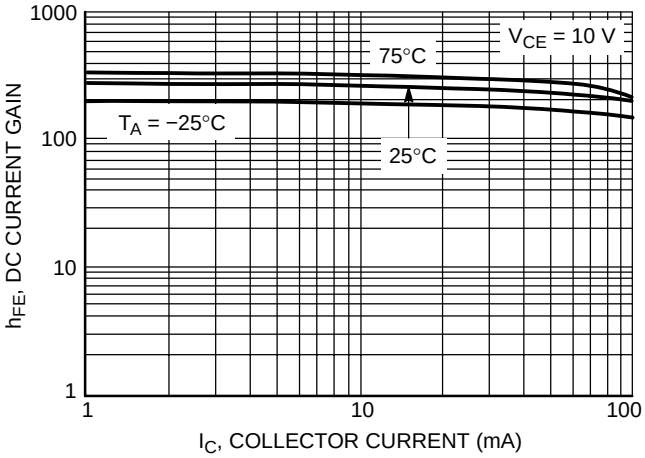


Figure 23. DC Current Gain

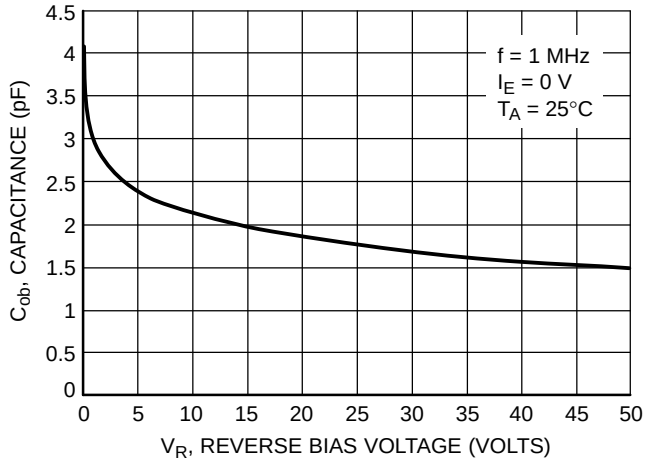


Figure 24. Output Capacitance

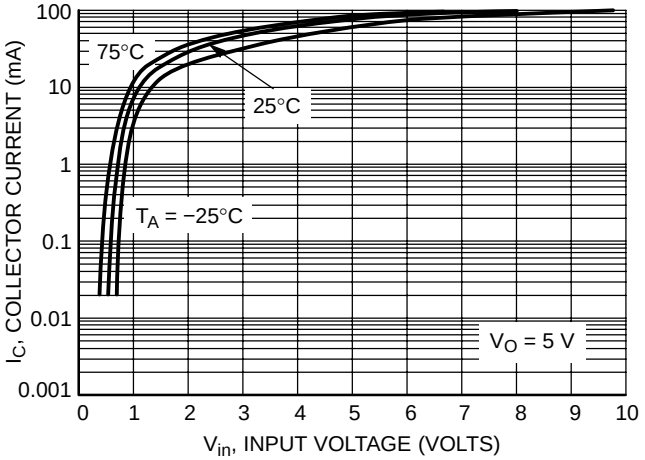


Figure 25. Output Current versus Input Voltage

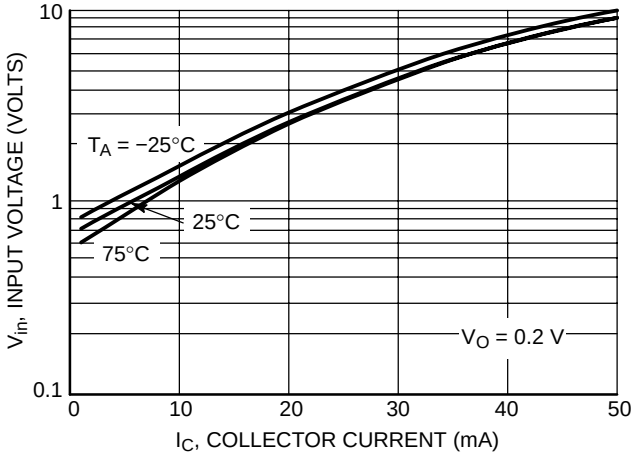


Figure 26. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5216DW1T1

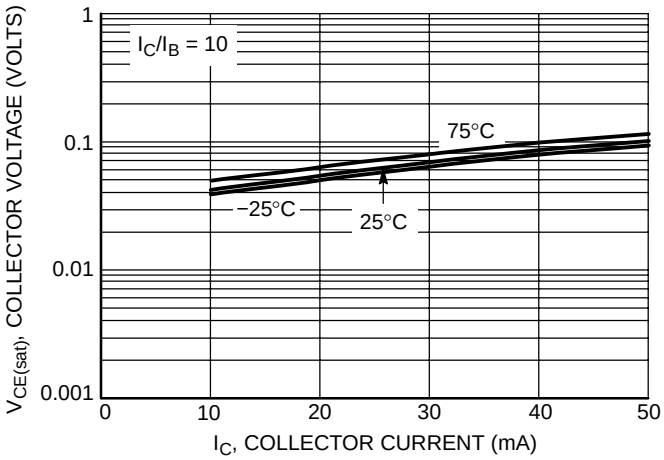


Figure 27. $V_{CE(sat)}$ versus I_C

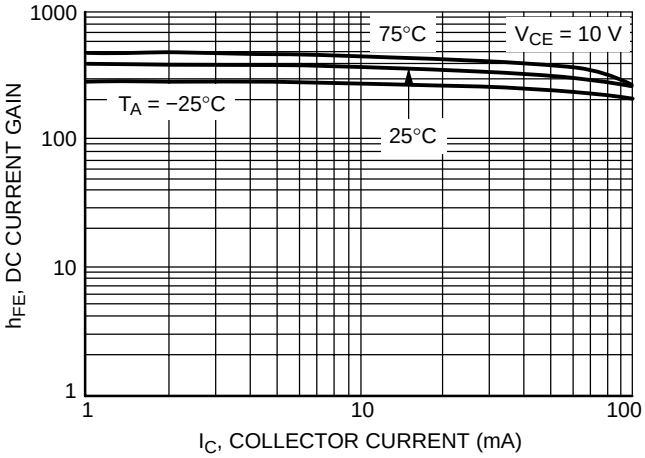


Figure 28. DC Current Gain

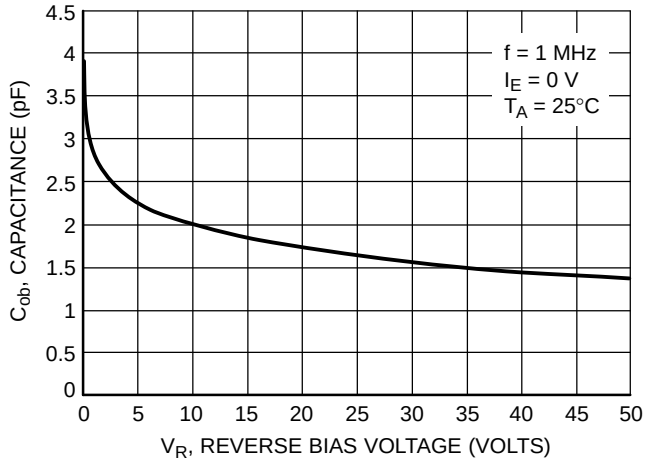


Figure 29. Output Capacitance

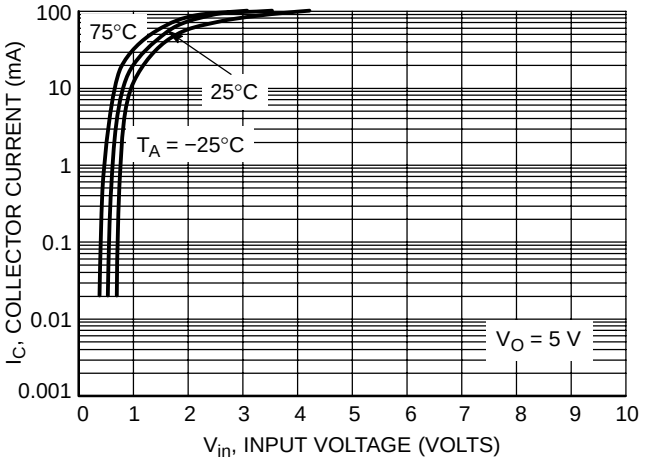


Figure 30. Output Current versus Input Voltage

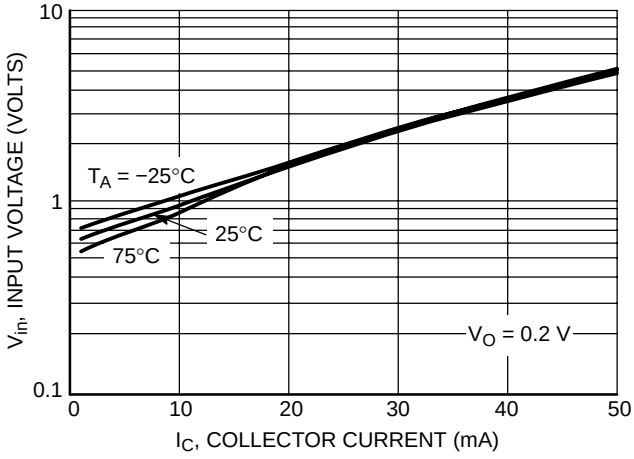


Figure 31. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5230DW1T1

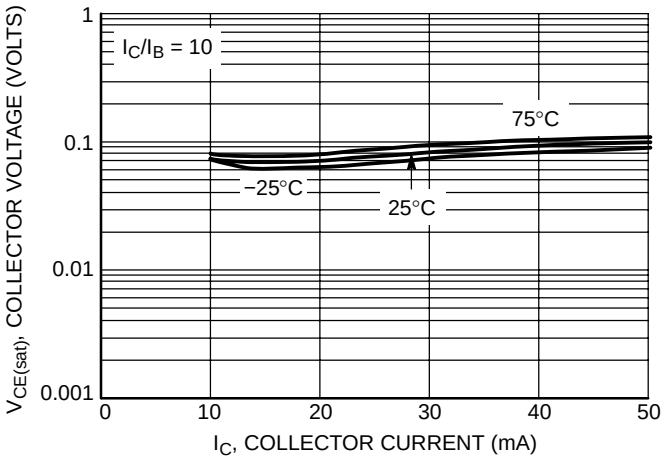


Figure 32. $V_{CE(sat)}$ versus I_C

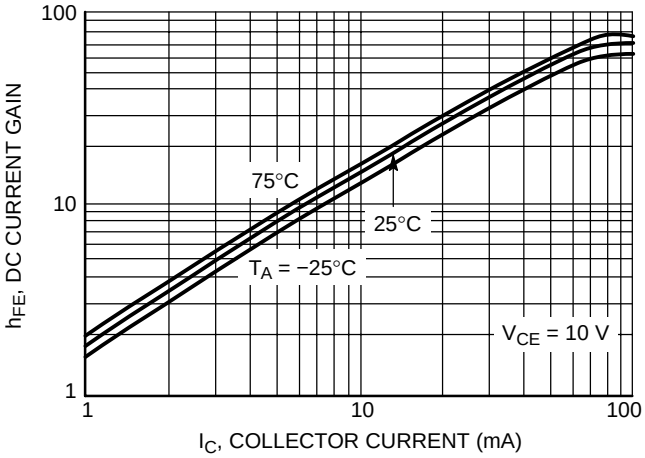


Figure 33. DC Current Gain

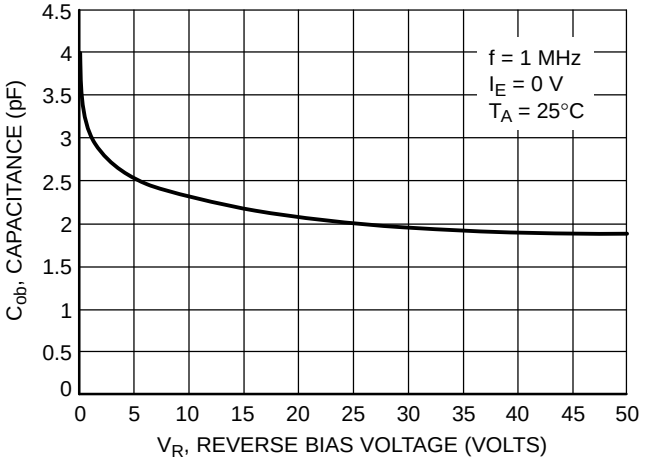


Figure 34. Output Capacitance

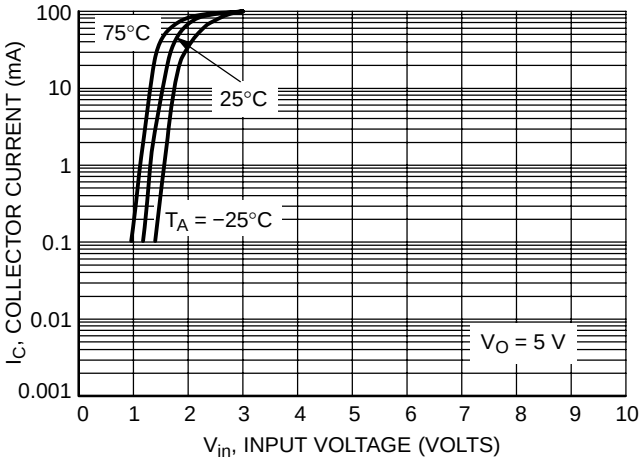


Figure 35. Output Current versus Input Voltage

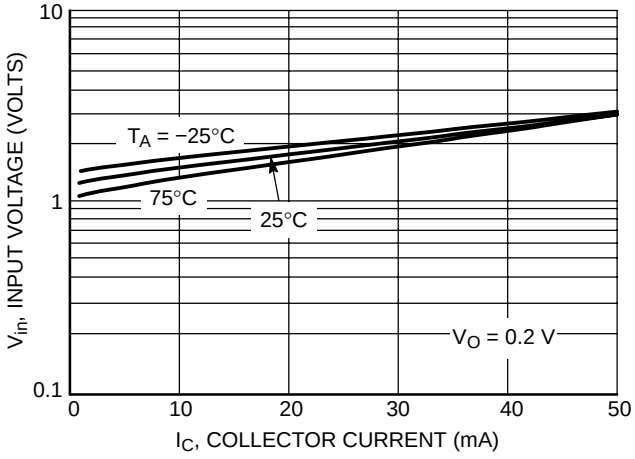


Figure 36. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5231DW1T1

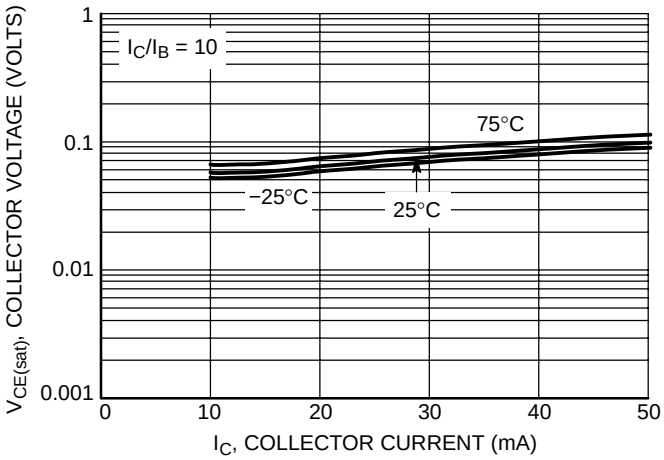


Figure 37. $V_{CE(sat)}$ versus I_C

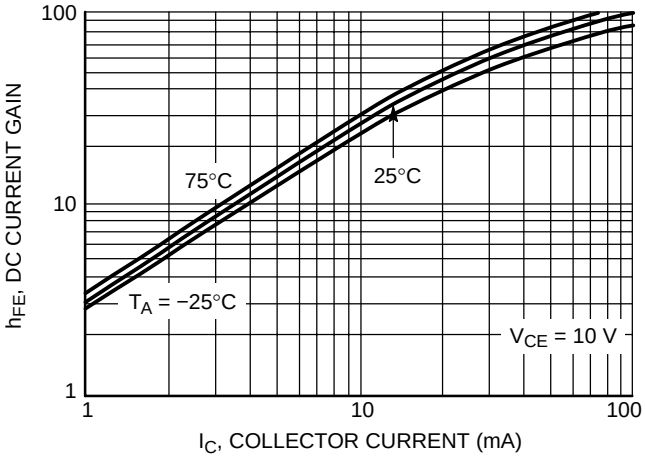


Figure 38. DC Current Gain

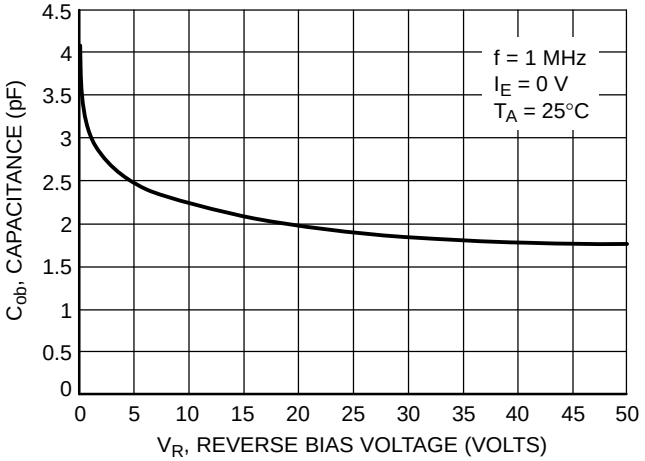


Figure 39. Output Capacitance

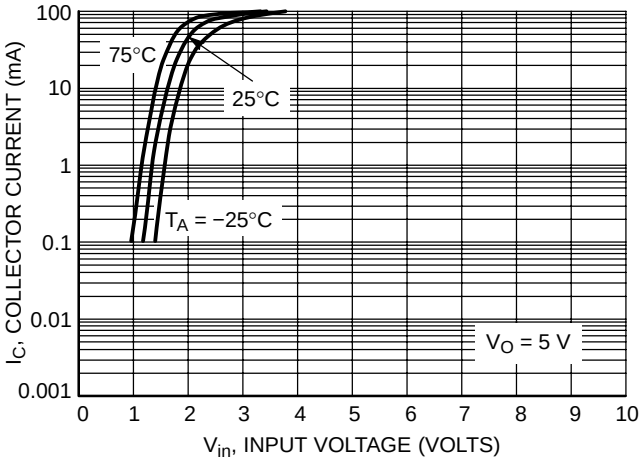


Figure 40. Output Current versus Input Voltage

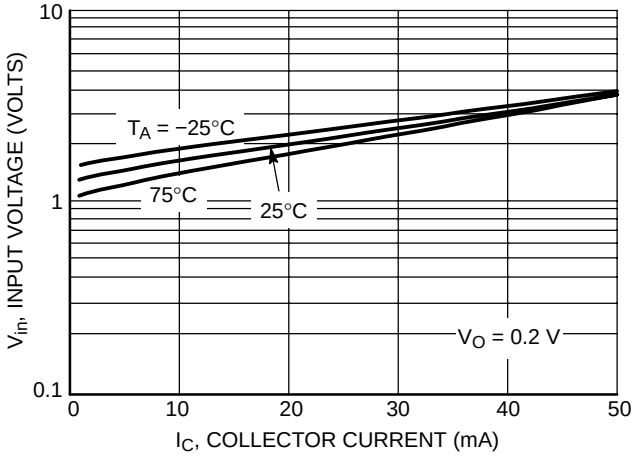


Figure 41. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5232DW1T1

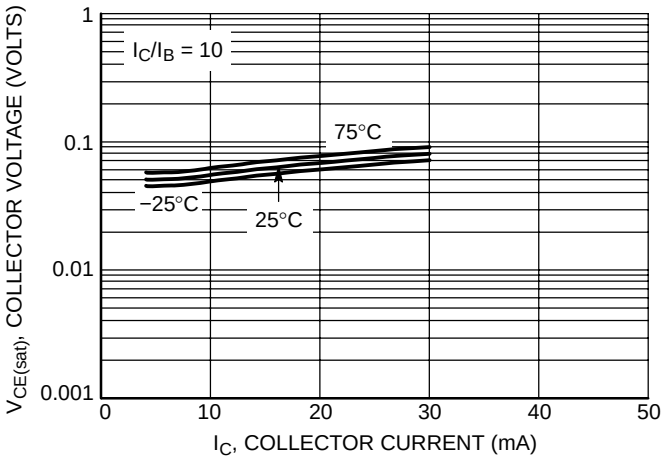


Figure 42. $V_{CE(sat)}$ versus I_C

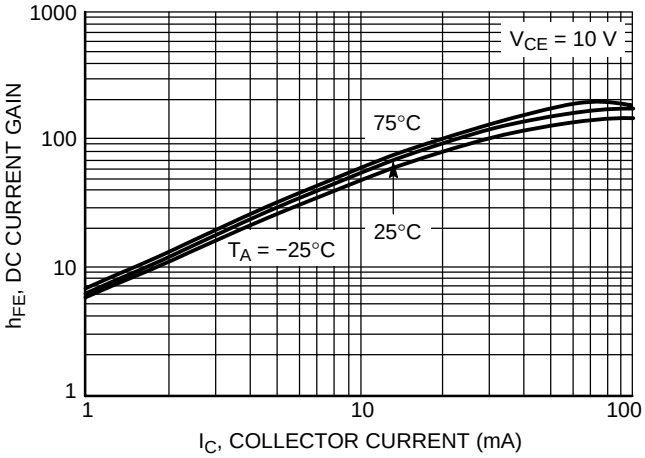


Figure 43. DC Current Gain

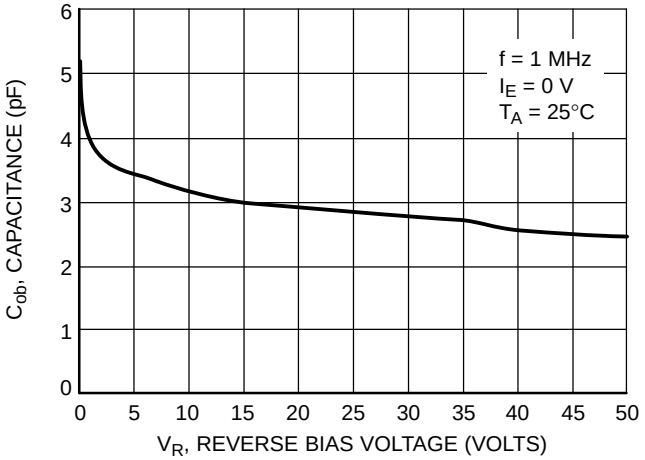


Figure 44. Output Capacitance

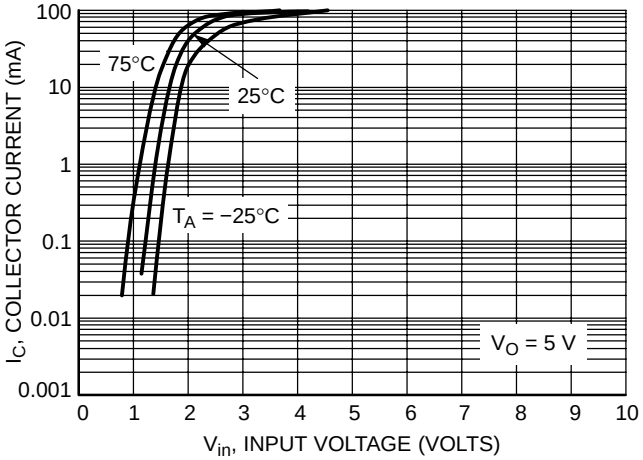


Figure 45. Output Current versus Input Voltage

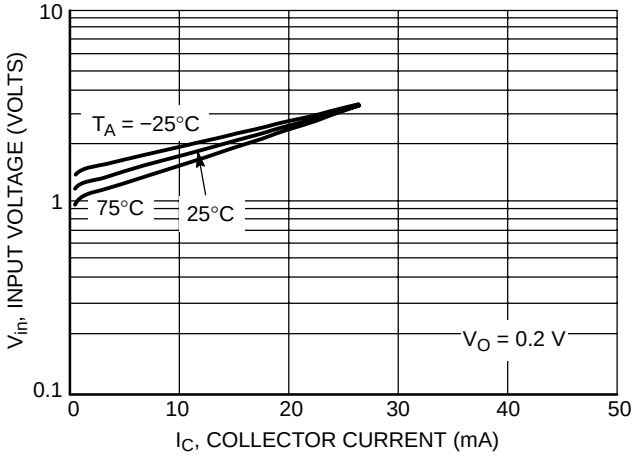


Figure 46. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5233DW1T1

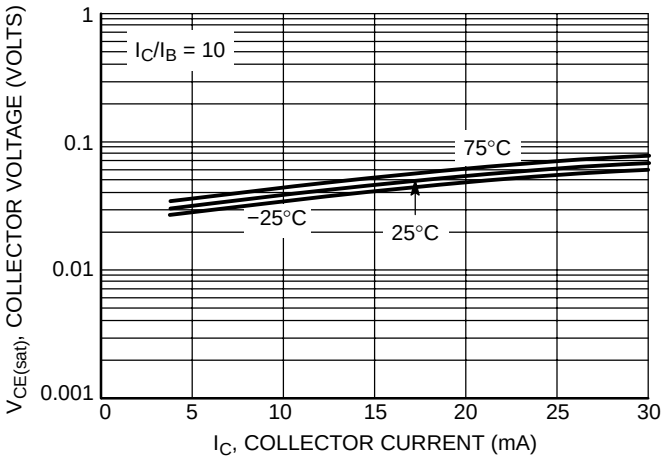


Figure 47. $V_{CE(sat)}$ versus I_C

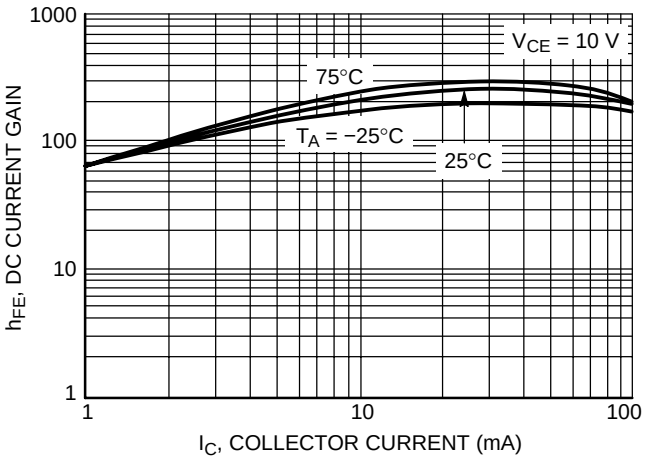


Figure 48. DC Current Gain

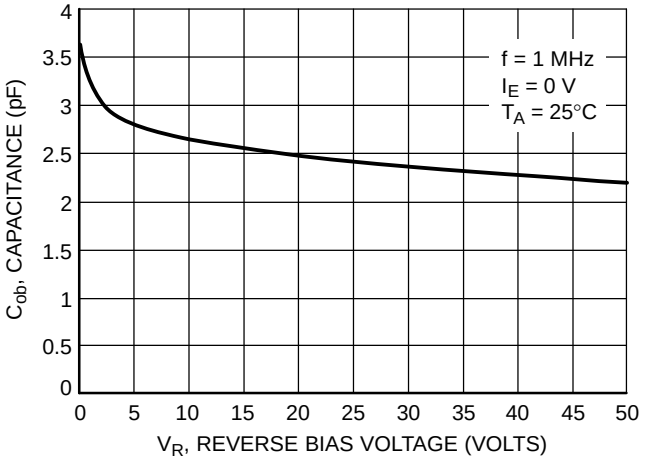


Figure 49. Output Capacitance

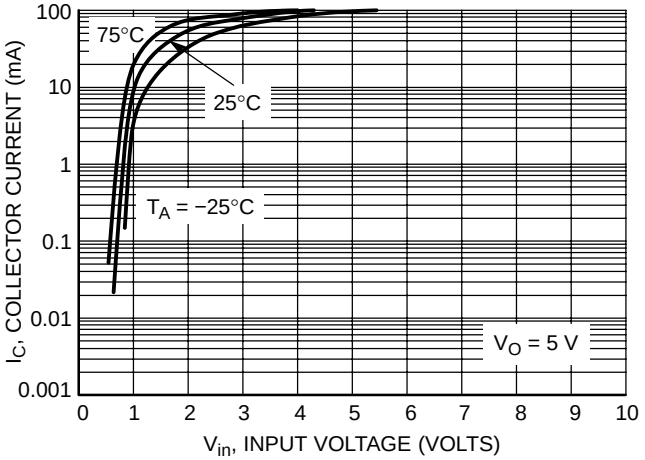


Figure 50. Output Current versus Input Voltage

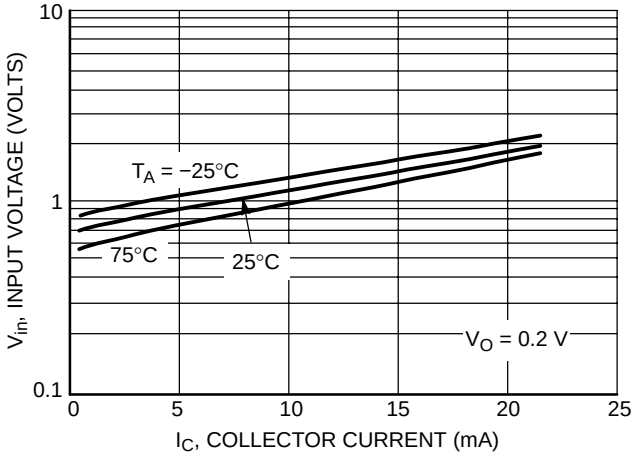


Figure 51. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5234DW1T1

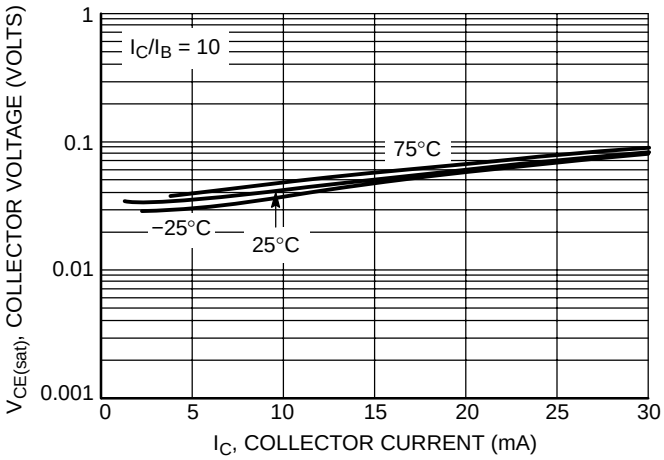


Figure 52. $V_{CE(sat)}$ versus I_C

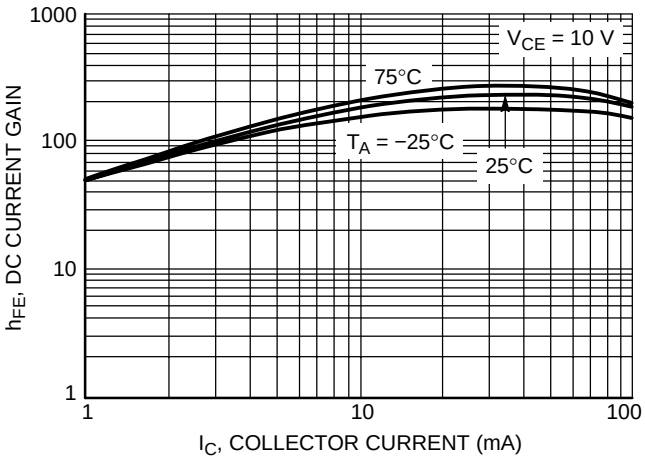


Figure 53. DC Current Gain

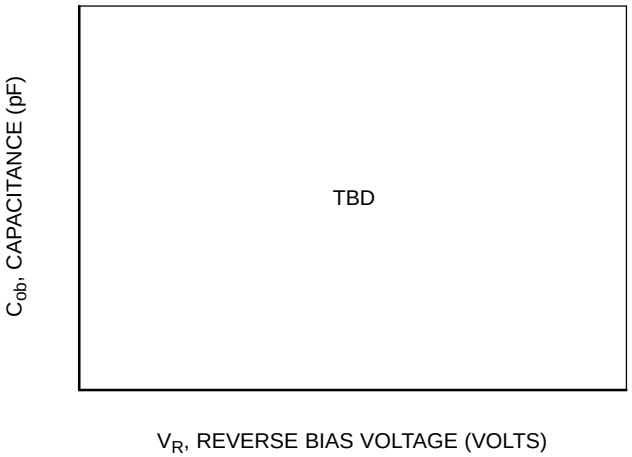


Figure 54. Output Capacitance

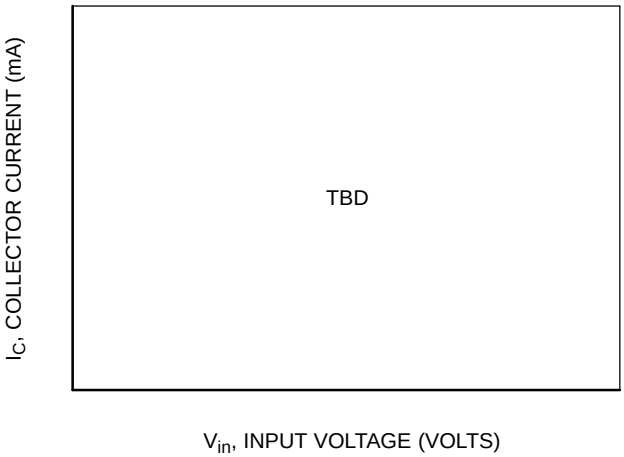


Figure 55. Output Current versus Input Voltage

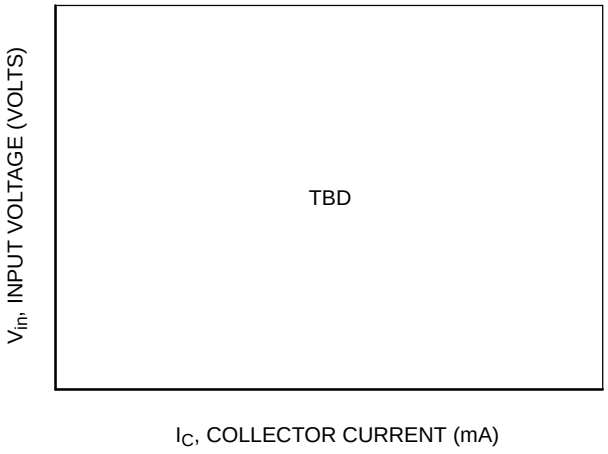


Figure 56. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5235DW1T1

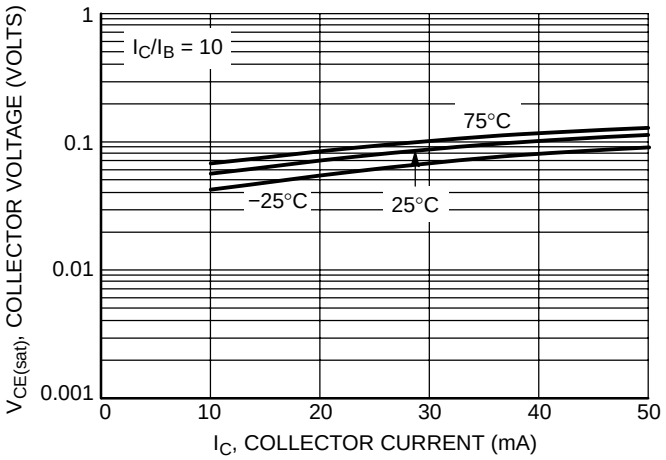


Figure 57. $V_{CE(sat)}$ versus I_C

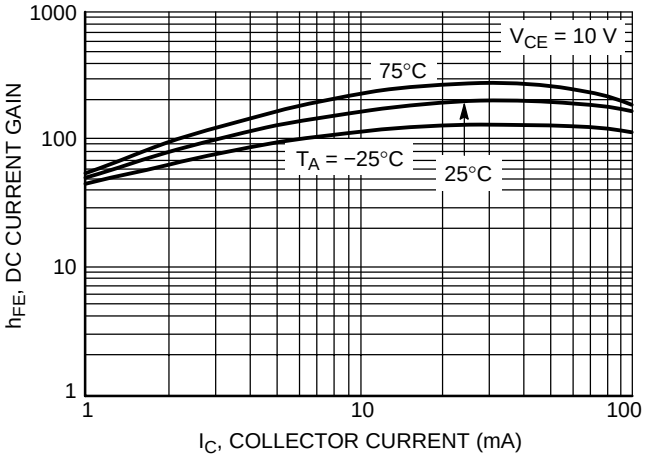


Figure 58. DC Current Gain

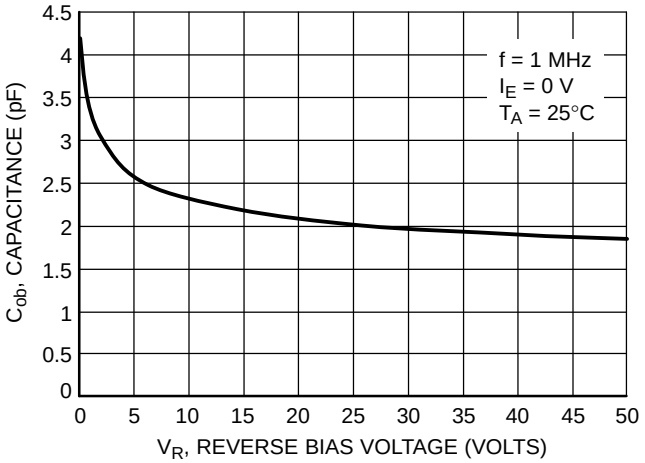


Figure 59. Output Capacitance

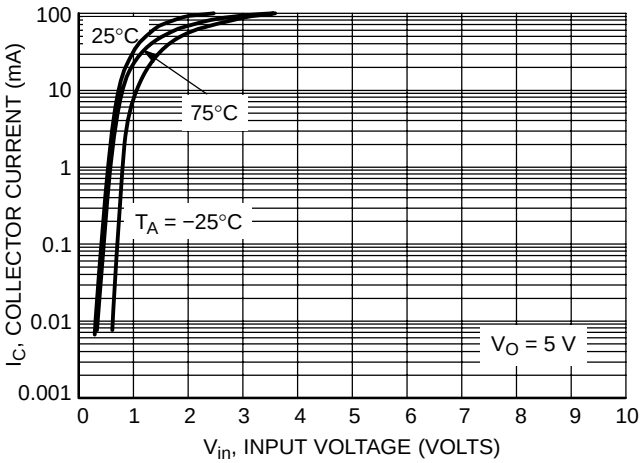


Figure 60. Output Current versus Input Voltage

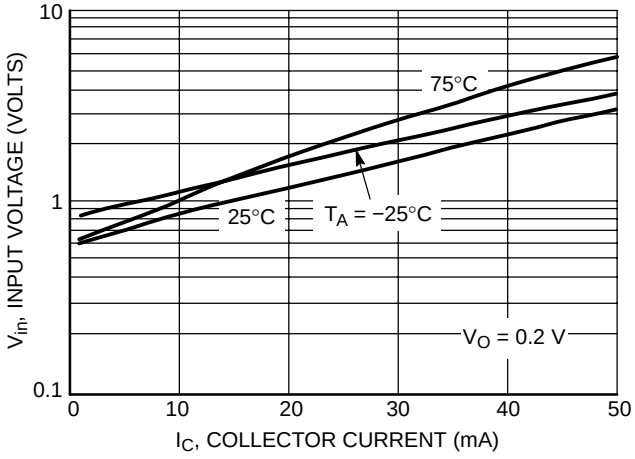


Figure 61. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5236DW1T1

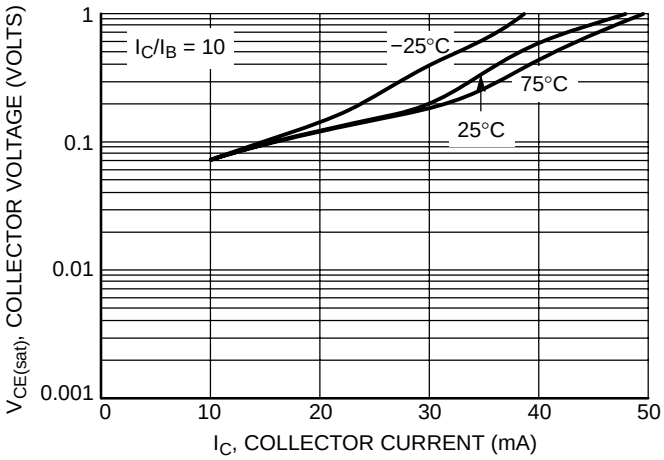


Figure 62. $V_{CE(sat)}$ versus I_C

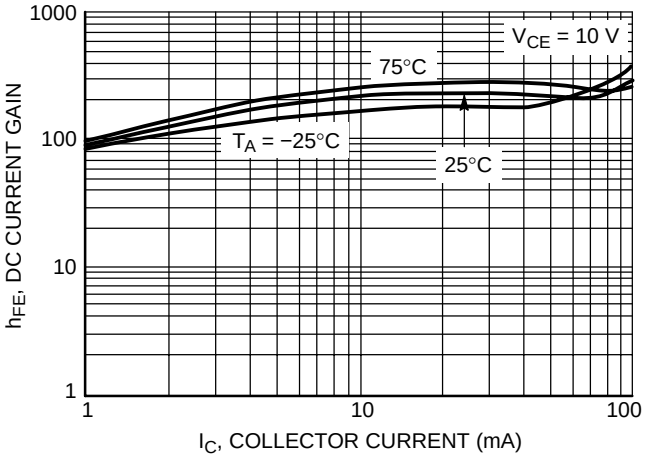


Figure 63. DC Current Gain

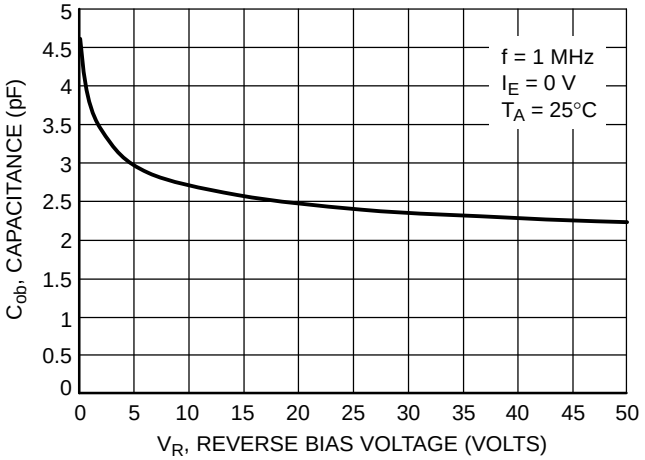


Figure 64. Output Capacitance

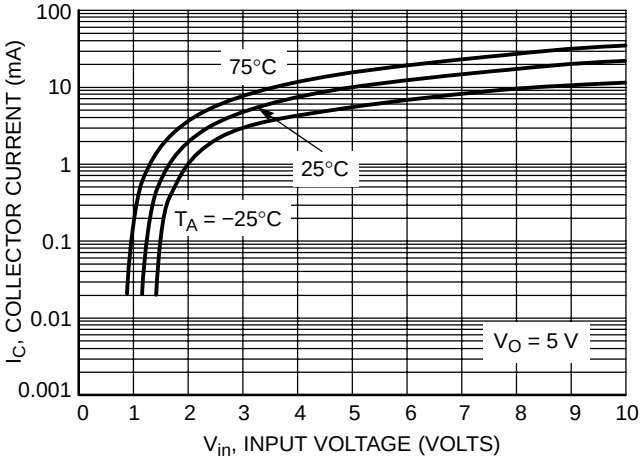


Figure 65. Output Current versus Input Voltage

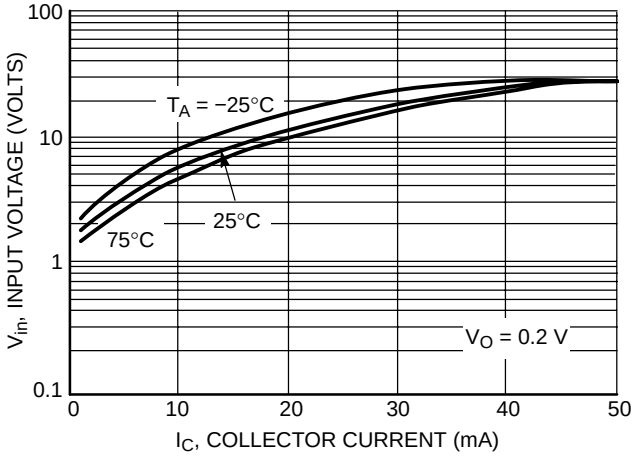


Figure 66. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS — MUN5237DW1T1

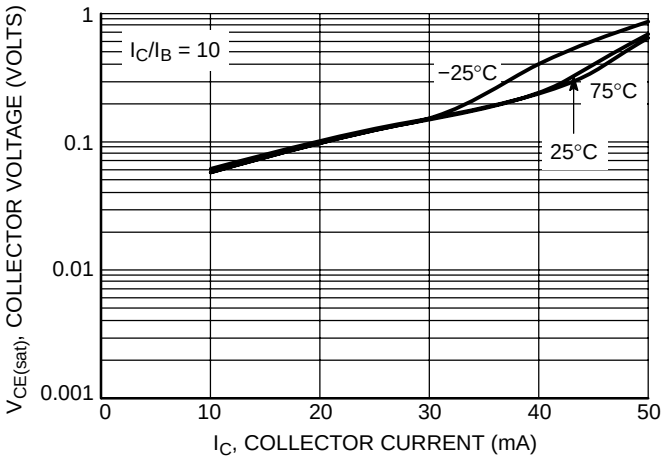


Figure 67. $V_{CE(sat)}$ versus I_C

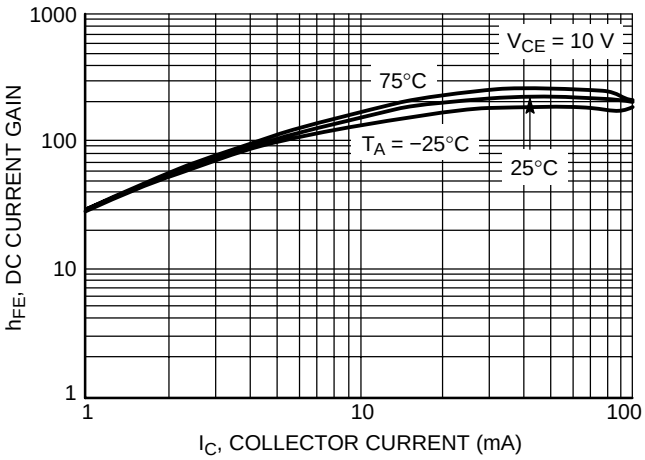


Figure 68. DC Current Gain

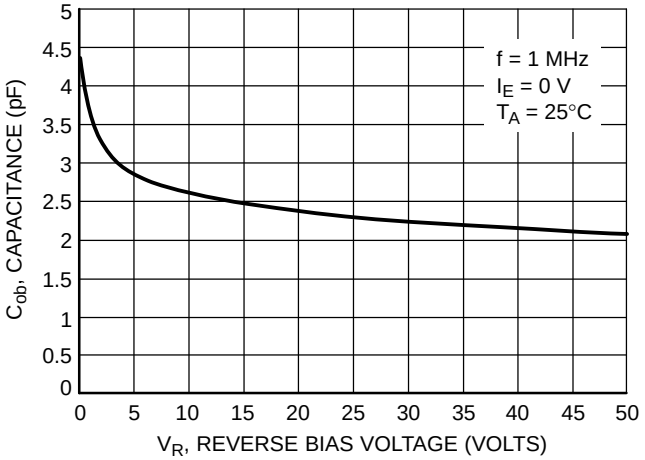


Figure 69. Output Capacitance

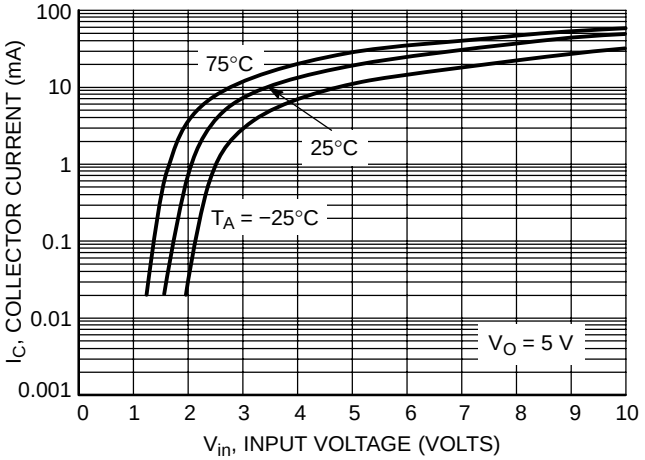


Figure 70. Output Current versus Input Voltage

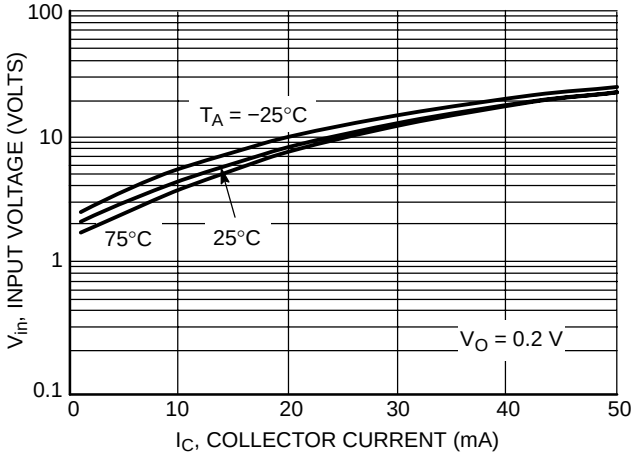
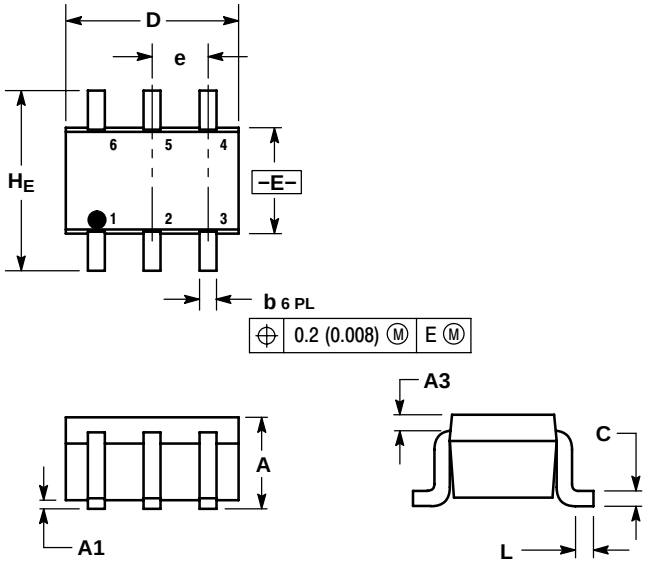


Figure 71. Input Voltage versus Output Current

PACKAGE DIMENSIONS

SC−88 (SOT−363)
CASE 419B−02
ISSUE V

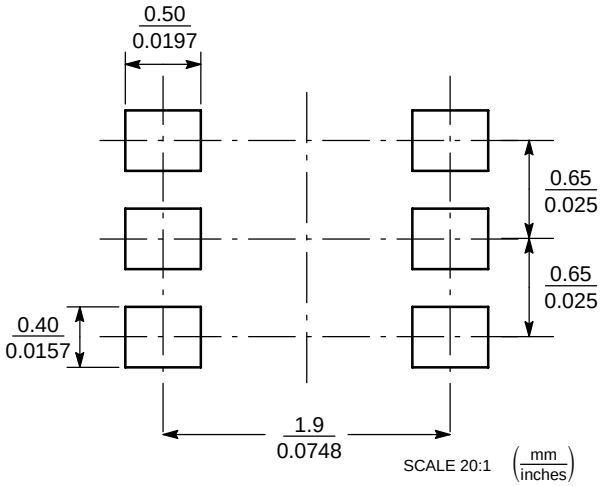


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 419B−01 OBSOLETE, NEW STANDARD 419B−02.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.95	1.10	0.031	0.037	0.043
A1	0.00	0.05	0.10	0.000	0.002	0.004
A3	0.20 REF			0.008 REF		
b	0.10	0.21	0.30	0.004	0.008	0.012
C	0.10	0.14	0.25	0.004	0.005	0.010
D	1.80	2.00	2.20	0.070	0.078	0.086
E	1.15	1.25	1.35	0.045	0.049	0.053
e	0.65 BSC			0.026 BSC		
L	0.10	0.20	0.30	0.004	0.008	0.012
H_E	2.00	2.10	2.20	0.078	0.082	0.086

STYLE 1:
PIN 1. EMITTER 2
2. BASE 2
3. COLLECTOR 1
4. EMITTER 1
5. BASE 1
6. 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.

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