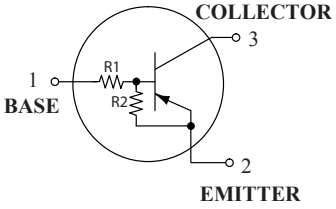
WEITRON

DTA114EE Series

Bias Resistor Transistor PNP Silicon

Lead(Pb)-Free



SC-89
(SOT-523F)

Maximum Ratings (TA=25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	50	V
Collector-Base Voltage	V_{CBO}	50	V
Collector Current-Continuous	I_C	100	mA

Thermal Characteristics

Characteristics	Symbol	Max	Unit
Total Device Dissipation FR-5 Board FR-4 Board(1) T_A=25˚C Derate above 25˚C	P_D	200 1.6	mW mW/ ˚C
Thermal Resistance, Junction to Ambient(1)	$R_{\theta JA}$	600	˚C/W
Total Device Dissipation FR-5 Board FR-4 Board(2) T_A=25˚C Derate above 25˚C	P_D	300 2.4	mW mW/ ˚C
Thermal Resistance, Junction to Ambient(2)	$R_{\theta JA}$	400	˚C/W
Junction Temperature Range	T_J	-55 to +150	˚C
Storage Temperature Range	Tstg	-55 to +150	˚C

1.FR-4 @ Minimum pad
2.FR-4 @1.0 x 1.0 Inch pad

Device Marking and ResistorValues

Device	Marking	R1(K)	R2(K)
DTA114EE	6A	10	10
DTA124EE	6B	22	22
DTA144EE	6C	47	47
DTA114YE	6D	10	47
DTA114TE	6E	10	∞
DTA143TE	6F	4.7	∞

Device	Marking	R1(K)	R2(K)
DTA123EE	6H	2.2	2.2
DTA143EE	43	4.7	4.7
DTA143ZE	6K	4.7	47
DTA124XE	6L	22	47
DTA123JE	6M	2.2	47
DTA115EE	6N	100	100
DTA144WE	6P	47	22

Electrical Characteristics (T_A=25˚C Unless Otherwise noted)

Characteristics		Symbol	Min	Typ	Max	Unit
Off Characteristics						
Collector-Emitter Breakdown Voltage[2] I_C=2.0mA, I_B=0		$V_{(BR)CEO}$	50	-	-	V
Collector-Base Breakdown Voltage I_C=10μA, I_E=0		$V_{(BR)CBO}$	50	-	-	V
Collector-Base Cutoff Voltage V_{CB}=50V, I_E=0		I_{CBO}	-	-	100	nA
Collector-Emitter Cutoff Current V_{CE}=50V, I_B=0		I_{CEO}	-	-	500	nA
Emitter-Base Cutoff Current V_{EB}=6.0V, I_C=0	DTA114EE	I_{EBO}	-	-	0.5	mA
	DTA124EE		-	-	0.2	
	DTA144EE		-	-	0.1	
	DTA114YE		-	-	0.2	
	DTA114TE		-	-	0.9	
	DTA143TE		-	-	1.9	
	DTA123EE		-	-	2.3	
	DTA143EE		-	-	1.5	
	DTA143ZE		-	-	0.18	
	DTA124XE		-	-	0.13	
	DTA123JE		-	-	0.2	
	DTA115EE		-	-	0.05	
	DTA144WE		-	-	0.13	

2. Pulse Test: Pulse Width < 300us, Duty Cycle < 2.0%

Electrical Characteristics (TA=25°C Unless Otherwise noted)

Characteristics		Symbol	Min	Typ	Max	Unit
On Characteristics(3)						
DC Current Gain V_{CE}=-10V, I_C=5.0mA	DTA114EE DTA124EE DTA144EE DTA114YE DTA114TE DTA143TE DTA123EE DTA143EE DTA143ZE DTA124XE DTA123JE DTA115EE DTA144WE	h_{FE}	35 60 80 80 160 160 8.0 15 80 80 80 80 80	60 100 140 140 250 250 15 27 140 130 140 150 140	- - - - - - - - - - - - -	-
Collector-Emitter Saturation Voltage I_C=10mA, I_E=0.3mA I_C=10mA, I_E=5.0mA I_C=10mA, I_E=1.0mA	DTA123EE DTA114TE / DTA143TE DTA143ZE / DTA124XE DTA143EE	$V_{CE(sat)}$	-	-	0.25	-
Output Voltage(on) V_{CC}=5.0V, V_B=2.5V R_L=1.0KΩ V_{CC}=5.0V, V_B=3.5V R_L=1.0KΩ V_{CC}=5.0V, V_B=5.5V R_L=1.0KΩ V_{CC}=5.0V, V_B=4.0V R_L=1.0KΩ	DTA114EE DTA124EE DTA144EE DTA114YE DTA114TE DTA143TE DTA123EE DTA143EE DTA143ZE DTA124XE DTA123JE DTA115EE DTA144WE	V_{OL}	-	-	0.2	V

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

ElectricalCharacteristics (TA=25°C Unless Otherwise noted)

Characteristics		Symbol	Min	Typ	Max	Unit
On Characteristics(4)						
Output Voltage(off) V_{CC}=5.0V, V_B=0.5V R_L=1.0KΩ V_{CC}=5.0V, V_B=0.25V R_L=1.0KΩ	DTA114TE DTA143TE DTA123EE DTA143EE	V_{OH}	4.9	-	-	V
Input Resistor	DTA114EE DTA124EE DTA144EE DTA114YE DTA114TE DTA143TE DTA123EE DTA143EE DTA143ZE DTA124XE DTA123JE DTA115EE DTA144WE	R1	7.0 15.4 32.9 7.0 7.0 3.3 1.5 3.3 3.3 15.4 15.4 70 32.9	10 22 47 10 10 4.7 2.2 4.7 4.7 22 2.2 100 47	13 28.6 61.1 13 13 6.1 2.9 6.1 6.1 28.6 2.86 130 61.1	kΩ
Resistor Ratio	DTA114EE / DTA124EE DTA144EE / DTA115EE DTA114YE DTA114TE / DTA143TE DTA123EE / DTA143EE DTA143ZE DTA124XE DTA123JE DTA144WE	R1/R2	0.8 0.17 - 0.8 0.055 0.38 0.038 1.7	1.0 0.21 - 1.0 0.1 0.47 0.047 2.1	1.2 0.25 - 1.2 0.185 0.56 0.056 2.6	-

4. PulseTest: Pulse Width < 300us, Duty Cycle < 2.0%

DTA114EET1 Series

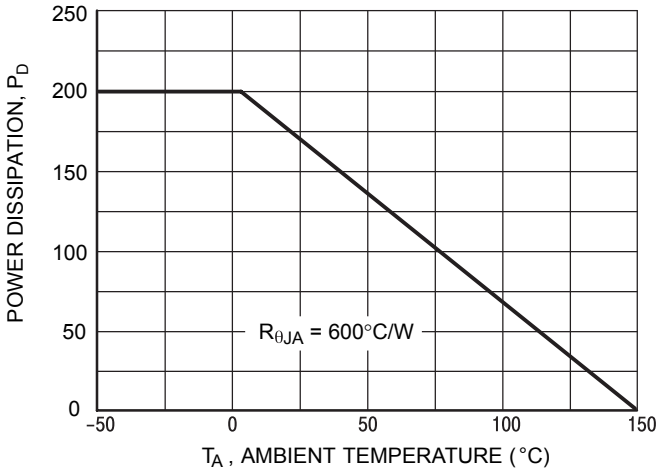


Figure 1. Derating Curve

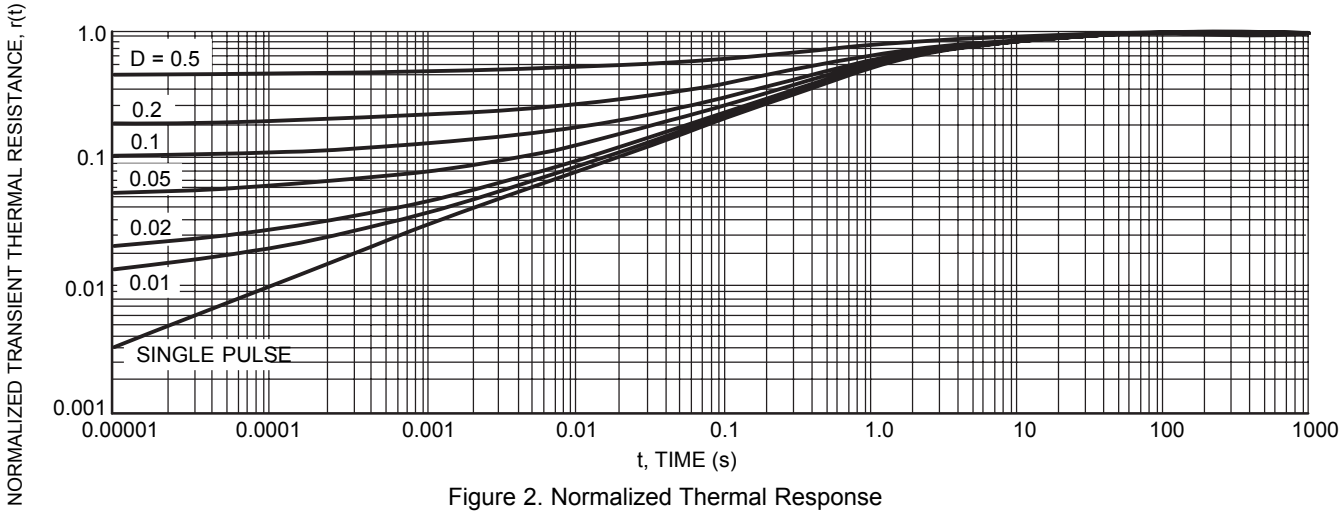


Figure 2. Normalized Thermal Response

TYPICAL ELECTRICAL CHARACTERISTICS − DTA114EET1

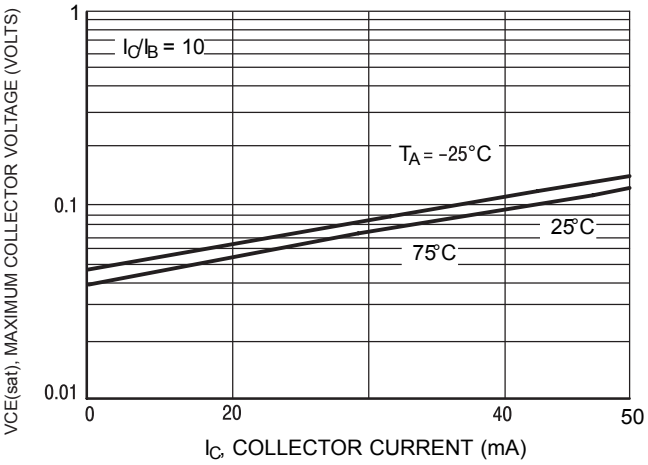


Figure 3. $V_{CE(sat)}$ versus I_C

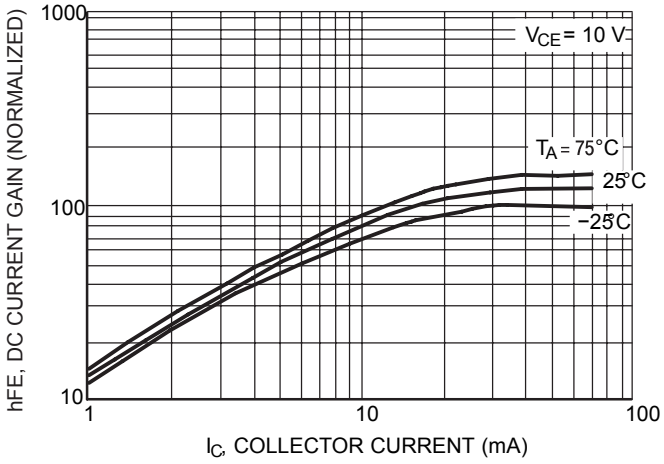


Figure 4. DC Current Gain

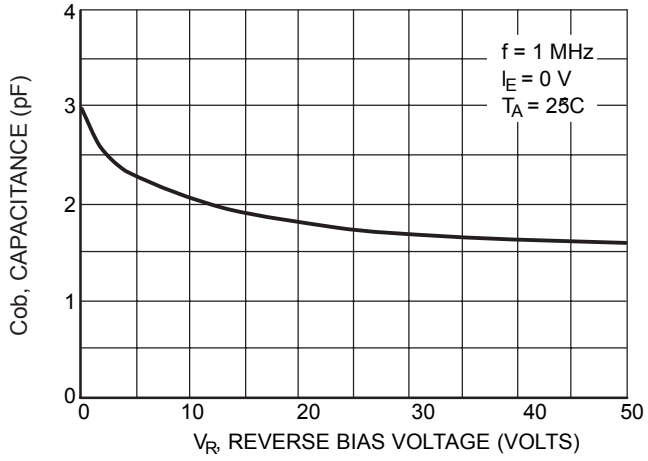


Figure 5. Output Capacitance

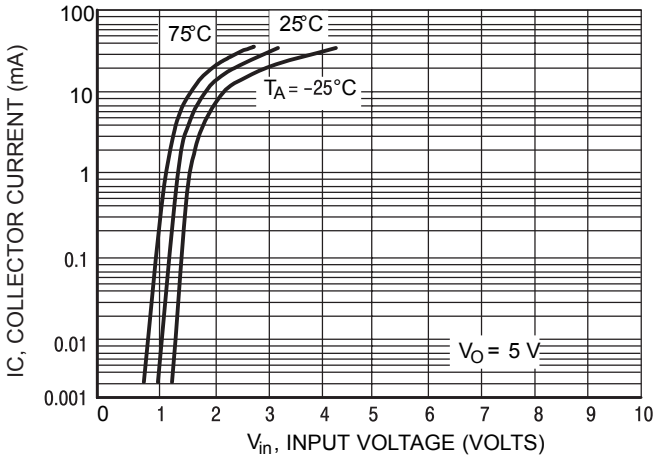


Figure 6. Output Current versus Input Voltage

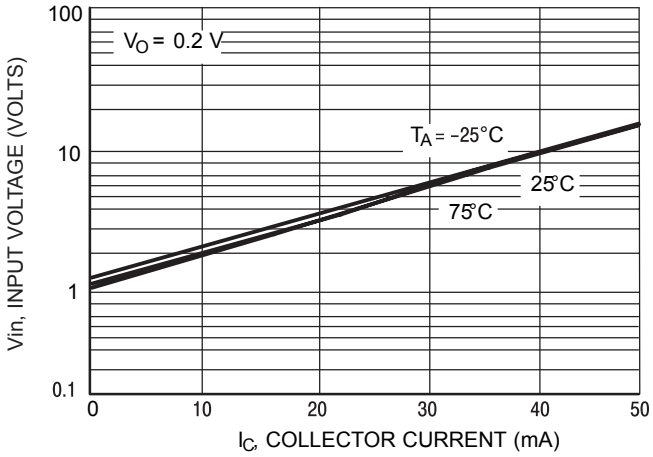


Figure 7. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS − DTA123EET1

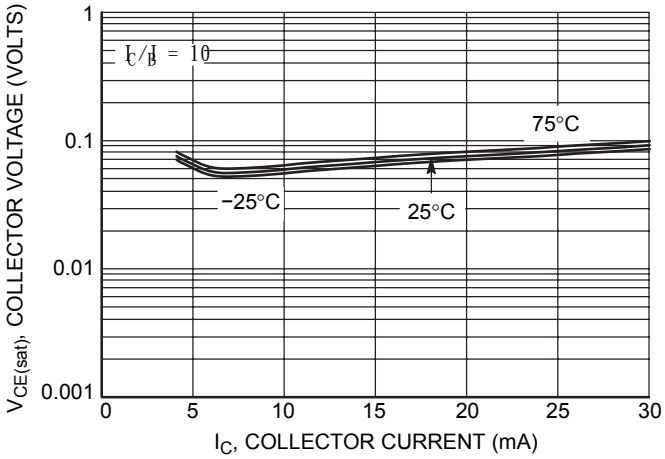


Figure 8. $V_{CE(sat)}$ versus I_C

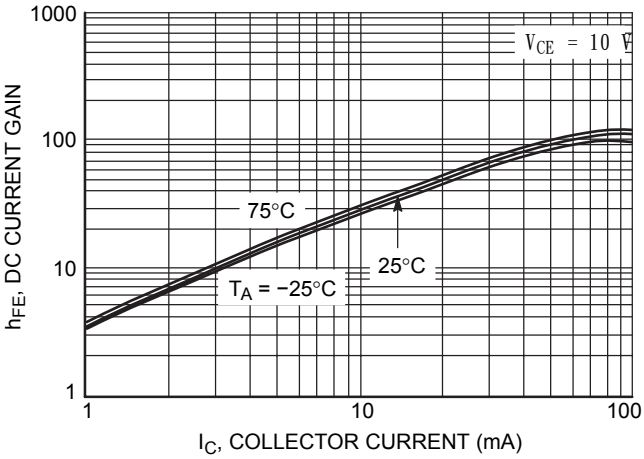


Figure 9. DC Current Gain

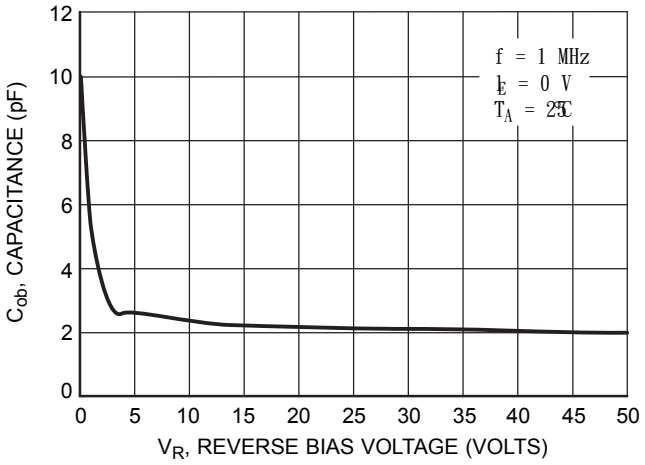


Figure 10. Output Capacitance

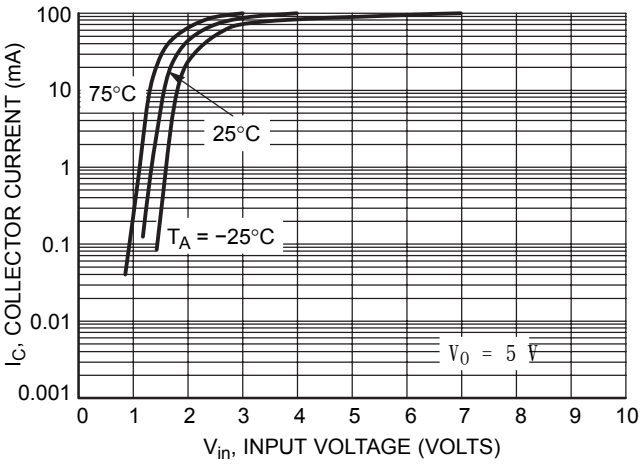


Figure 11. Output Current versus Input Voltage

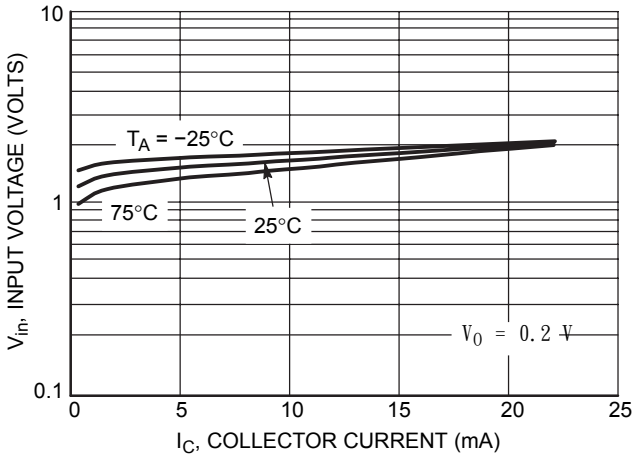


Figure 12. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS − DTA124EET1

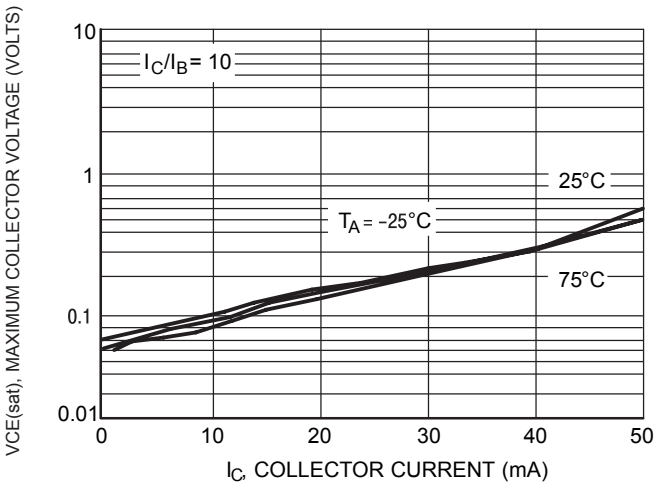


Figure 13. $V_{CE(sat)}$ versus I_C

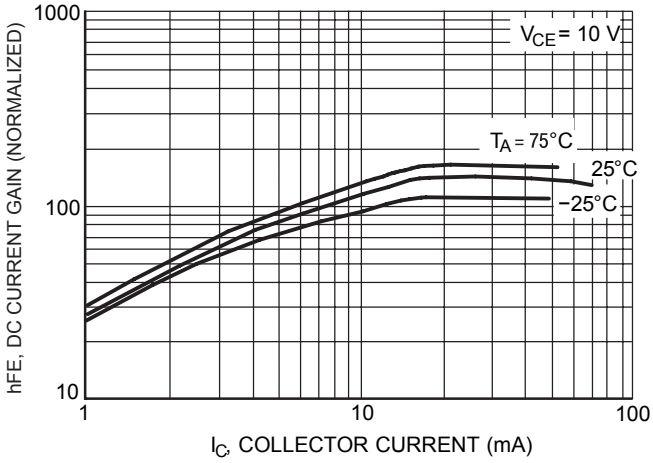


Figure 14. DC Current Gain

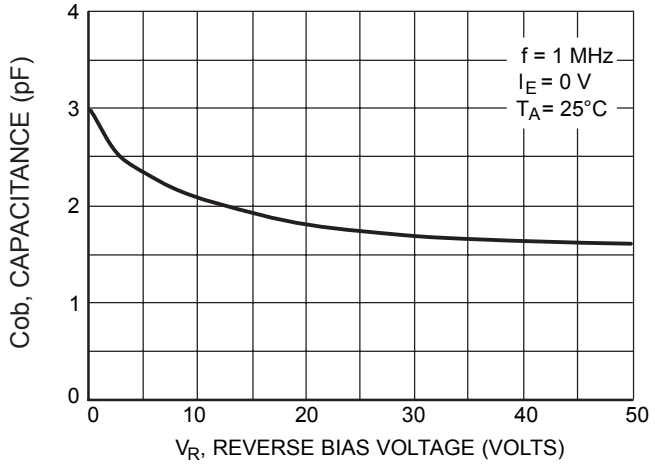


Figure 15. Output Capacitance

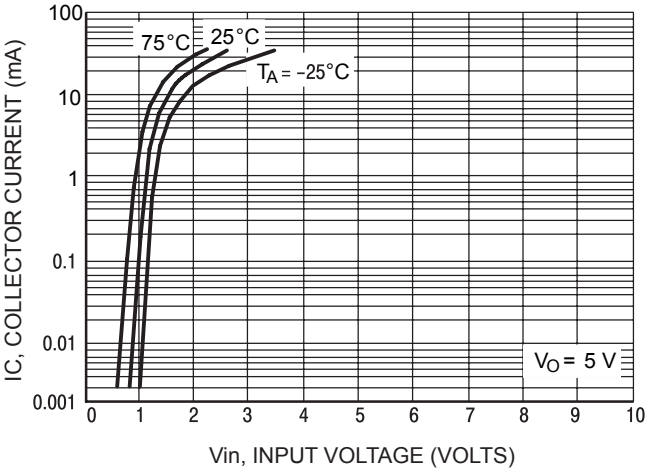


Figure 16. Output Current versus Input Voltage

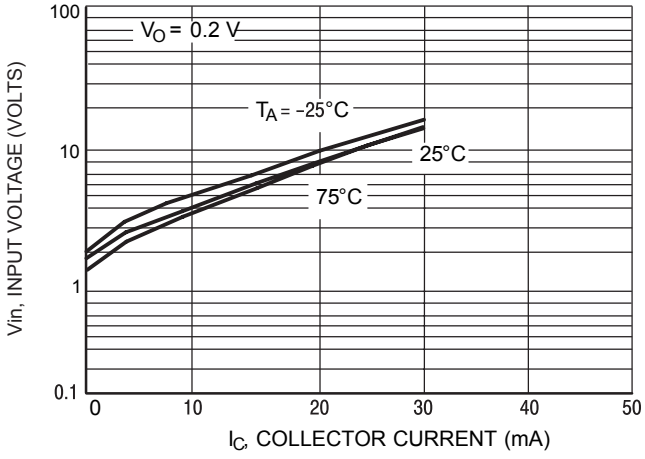


Figure 17. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS − DTA144EET1

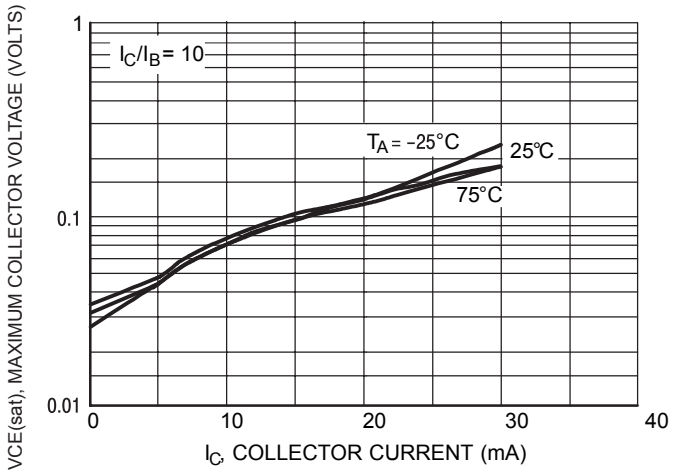


Figure 18. $V_{CE(sat)}$ versus I_C

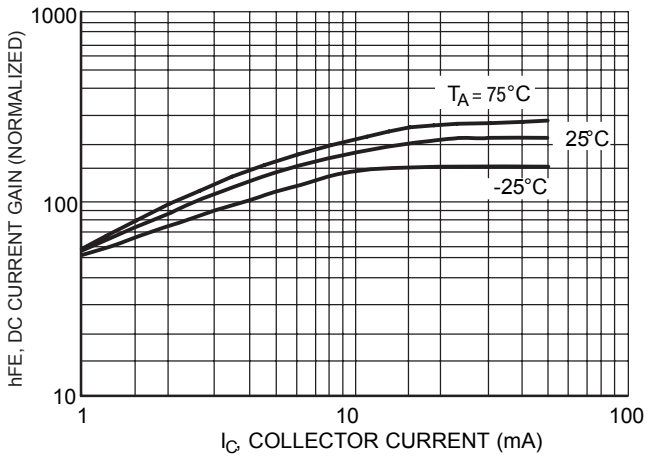


Figure 19. DC Current Gain

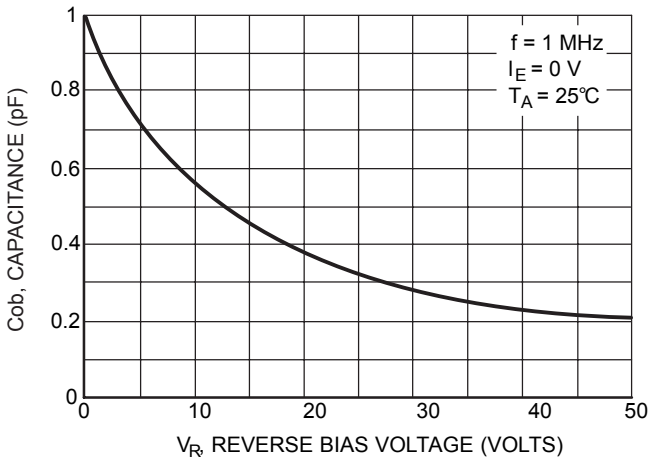


Figure 20. Output Capacitance

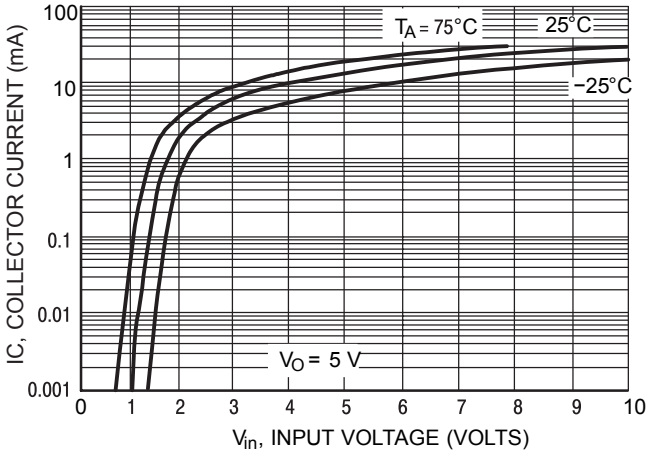


Figure 21. Output Current versus Input Voltage

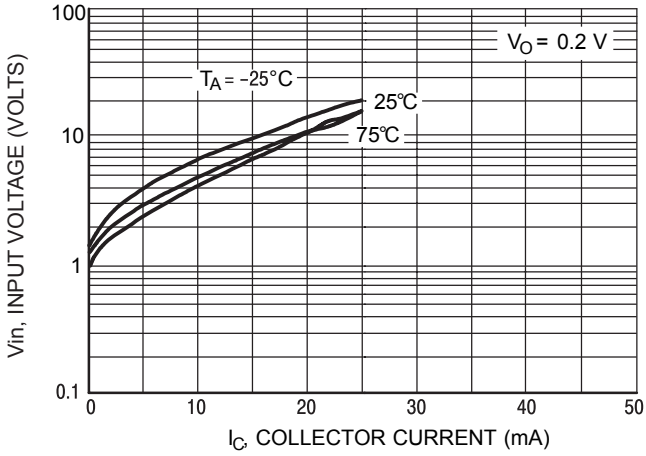


Figure 22. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS − DTA114YET1

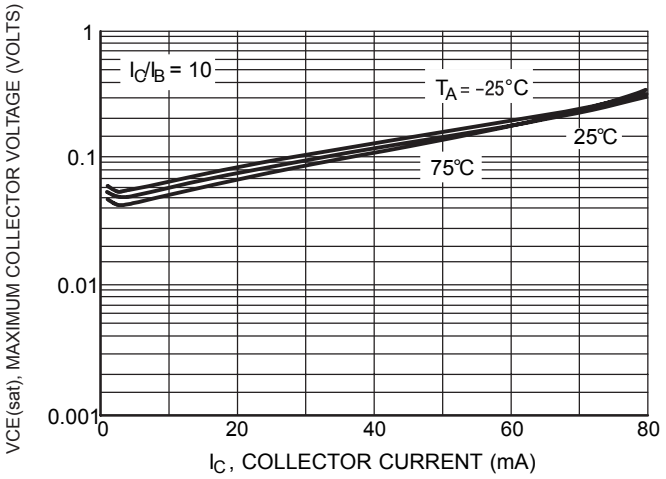


Figure 23. $V_{CE(sat)}$ versus I_C

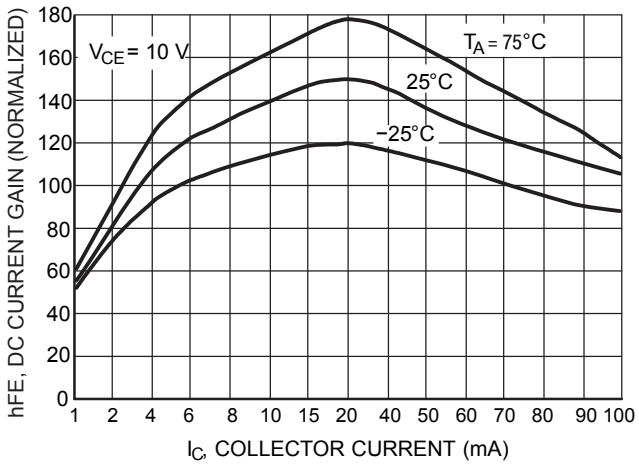


Figure 24. DC Current Gain

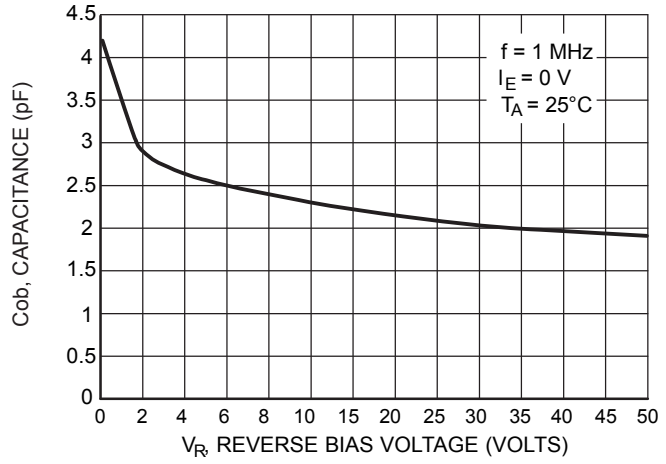


Figure 25. Output Capacitance

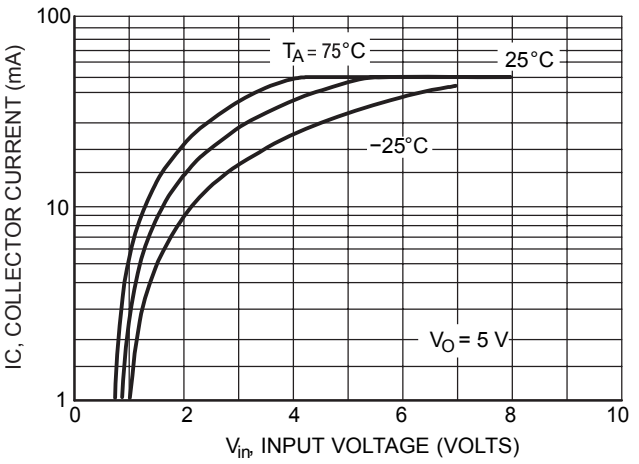


Figure 26. Output Current versus Input Voltage

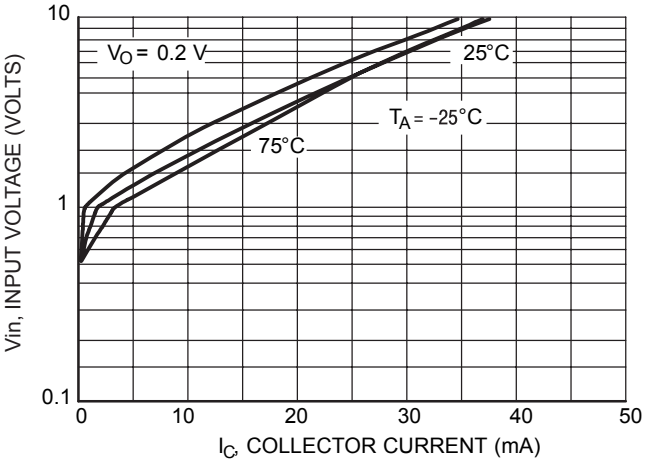


Figure 27. Input Voltage versus Output Current

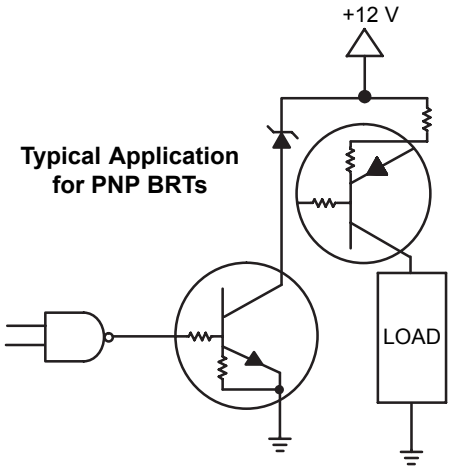


Figure 28. Inexpensive, Unregulated Current Sourc

TYPICAL ELECTRICAL CHARACTERISTICS — DTA115EET1

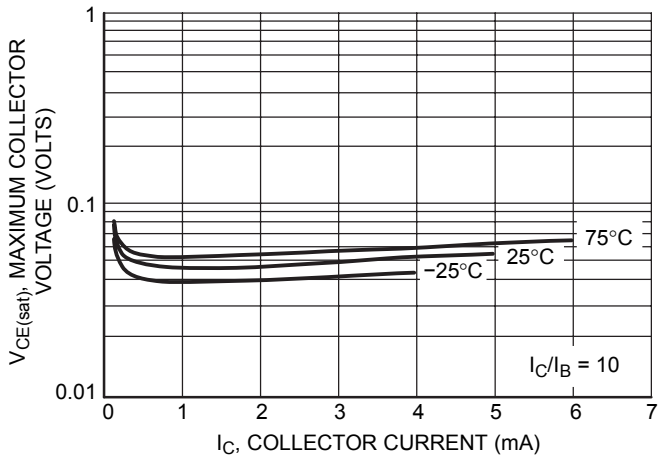


Figure 29. Maximum Collector Voltage versus Collector Current

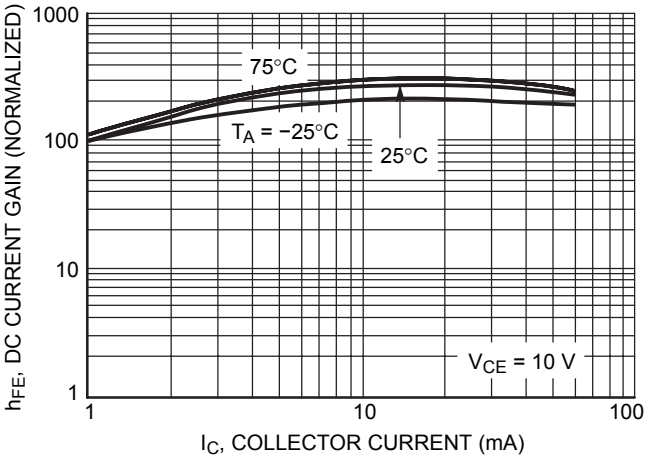


Figure 30. DC Current Gain

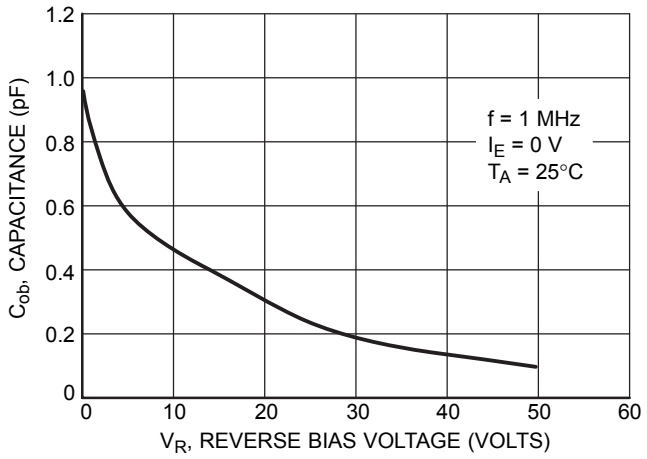


Figure 31. Output Capacitance

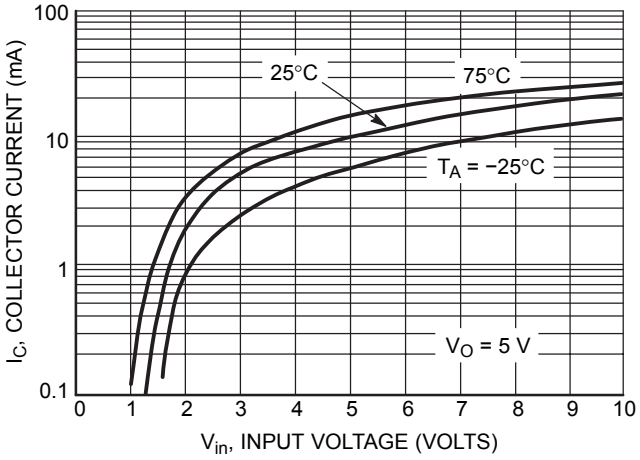


Figure 32. Output Current versus Input Voltage

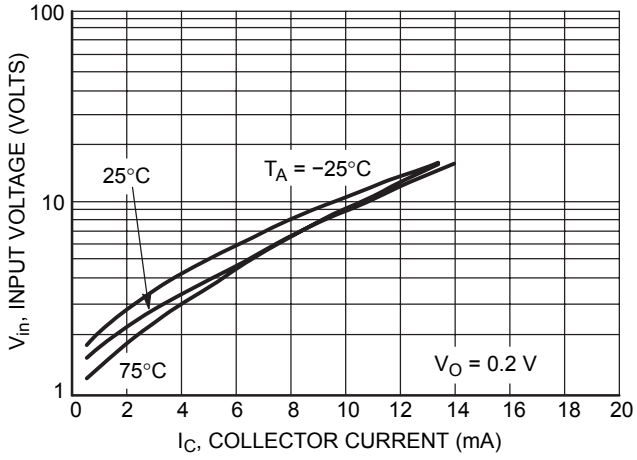


Figure 33. Input Voltage versus Output Current

TYPICAL ELECTRICAL CHARACTERISTICS — DTA144WET1

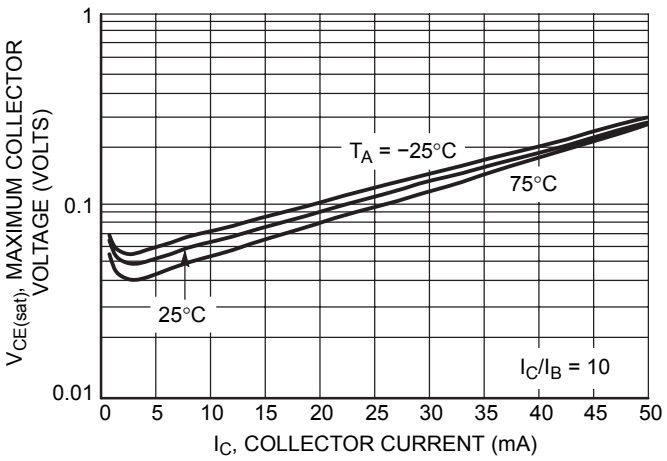


Figure 34. Maximum Collector Voltage versus Collector Current

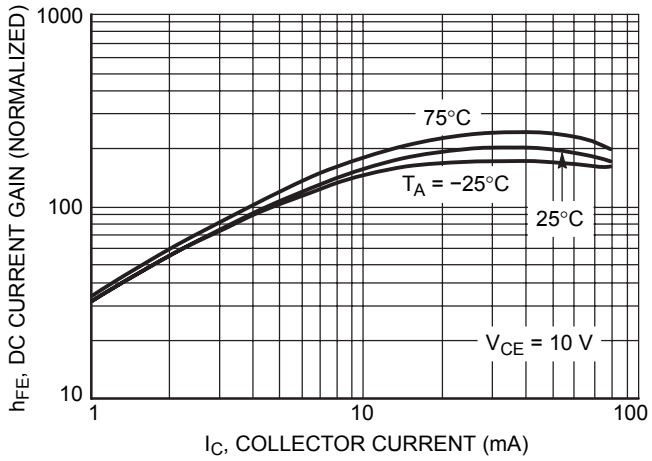


Figure 35. DC Current Gain

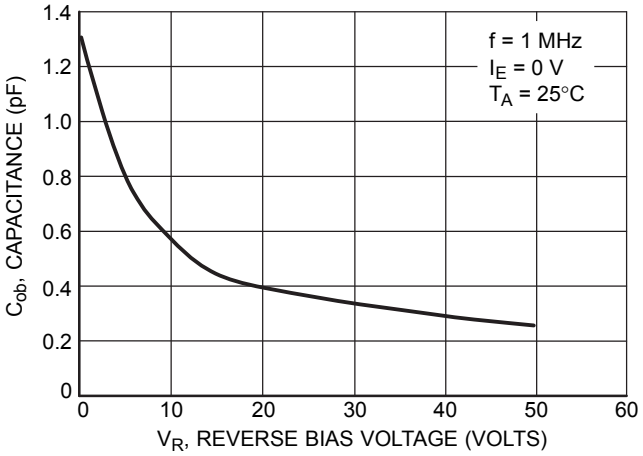


Figure 36. Output Capacitance

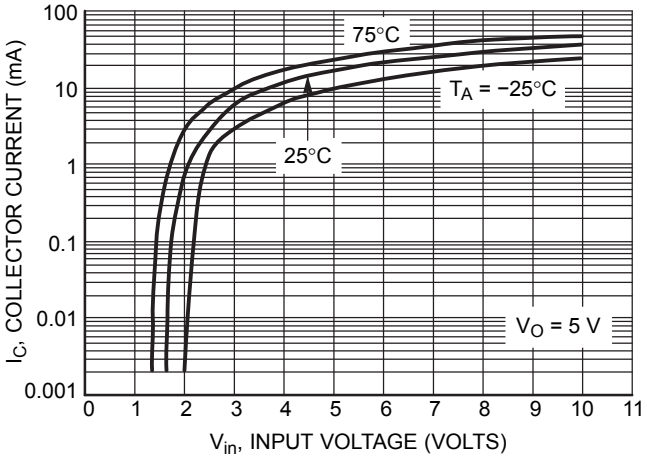


Figure 37. Output Current versus Input Voltage

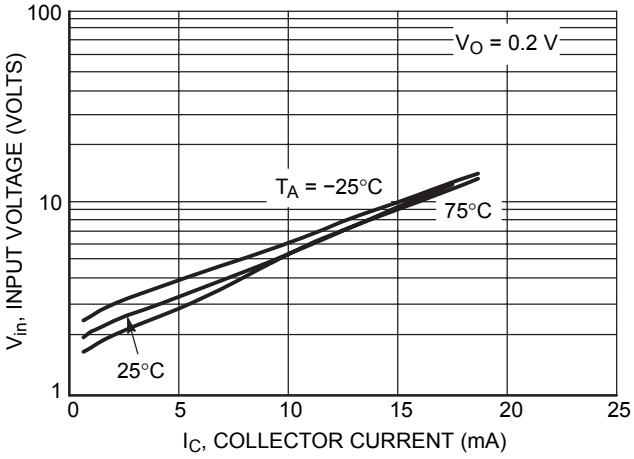
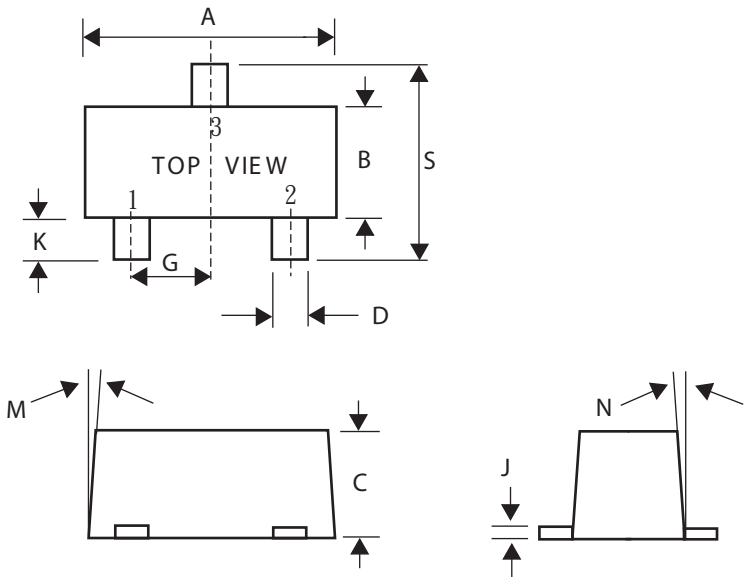


Figure 38. Input Voltage versus Output Current

SC-89 Outline Demensions

Unit:mm



SC-89			
Dim	**Min**	**Nom**	**Max**
A	1.50	1.60	1.70
B	0.75	0.85	0.95
C	0.60	0.70	0.80
D	0.23	0.28	0.33
G	0.50BSC		
J	0.10	0.15	0.20
K	0.30	0.40	0.50
M	---	---	10°
N	---	---	10°
S	1.50	1.60	1.70