2N3675–2N3765

TYPE	MATERIAL	POLARITY	REPLACEMENT	PAGE NUMBER	USE	MAXIMUM RATINGS					ELECTRICAL CHARACTERISTICS							
						P_D @ 25°C	Ref Point	T_J °C	V_{CB} (volts)	V_{CE-} (volts)	Subscript	h_{FE} @ I_C (min)	(max)	Units	$V_{CE(SAT)}$ @ I_C (volts)	Units	h_{f-}	Subscript	f_- Units	Subscript
2N3675	S	N			PMS	8.8W	C	200	90	55	O	12	60	1.0A	0.8	1.0A			1.0M	T
2N3676	S	N			PMS	8.8W	C	200	90	90	O	12	60	1.0A	0.8	1.0A			1.0M	T
2N3677	S	P			CHP	0.4W	A	200	30	20	O								5.0M	T
2N3678	S	N			HSS	0.8W	A	200	75	55	O	40	120	0.15A	0.4	0.15A			250M	T
2N3679	Unijunction Transistor, see Table on Page 1-174																			
2N3680	S	N			DFA	0.3W	A	200	60	50	O	150	600	10*	0.7	10M	300	E	60M	T
2N3681	S	N			RFA	0.2W	A	200	10	7.0	O	20	220	2.0M	0.37	4.0M	20	E	1.0G	T
2N3682	S	N			RFA	0.36W	A	200	40	15	O	40	120	10M			45	E	600M	T
2N3683	S	N			RFA	0.2W	A	200	30	12	O	20	150	8.0M			30	E	1.0G	T
2N3684 thru 2N3687	Field Effect Transistors, see Table on Page 1-166																			
2N3688	S	N			RFC	0.2W	A	125	40	40	O	30		4.0M					400M	T
2N3689	S	N			RFC	0.2W	A	125	40	40	O	30		4.0M					400M	T
2N3690	S	N			RFC	0.2W	A	125	40	40	O	30		4.0M					400M	T
2N3691	S	N	MPS6512	5-109	AFC	0.2W	A	125	35	20	O	40	160	10M	0.7	10M	40	E	200M	T
2N3692	S	N	MPS6513	5-109	AFC	0.2W	A	125	35	20	O	100	400	10M	0.7	10M	100	E	200M	T
2N3693	S	N			RFC	0.2W	A	125	45	45	O	40	160	10M					200M	T
2N3694	S	N			RFC	0.2W	A	125	45	45	O	100	400	10M					200M	T
2N3695 thru 2N3698	Field Effect Transistors, see Table on Page 1-166																			
2N3700	S	N			RFA	0.5W	A	200	140	80	O	100	300	0.15A	0.2	0.15A	80	E	100M	T
2N3701	S	N			RFA	0.5W	A	200	140	80	O	40	120	0.15A	0.2	0.15A	30	E	80M	T
2N3702	S	P			AFC	0.3W	A	150	40	25	O	60	300	50M	0.25	50M			100M	T
2N3703	S	P			AFC	0.3W	A	150	50	30	O	30	150	50M	0.25	50M			100M	T
2N3704	S	N			AFC	0.36W	A	150	50	30	O	100	300	50M	0.6	0.1A			100M	T
2N3705	S	N			AFC	0.36W	A	150	50	30	O	50	150	50M	0.8	0.1A			100M	T
2N3706	S	N			AFC	0.36W	A	150	40	20	O	30	600	50M	1.0	0.1A			100M	T
2N3707	S	N			AFC	0.25W	A	150	30	30	O	100	400	0.1M	1.0	10M	100	E		
2N3708	S	N			AFC	0.25W	A	150	30	30	O	45	660	1.0M	1.0	10M	45	E		
2N3709	S	N			AFC	0.25W	A	150	30	30	O	45	165	1.0M	1.0	10M	45	E		
2N3710	S	N			AFC	0.25W	A	150	30	30	O	90	330	1.0M	1.0	10M	90	E		
2N3711	S	N			AFC	0.25W	A	150	30	30	O	180	660	1.0M	1.0	10M	180	E		
2N3712	S	N			RFC	0.8W	A	200	150	150	O	30	150	30M	2.0	50M	25	E	40M	T
2N3713	S	N		7-125	HPA	150W	C	200	80	60	O	25	75	1.0A	1.0	5.0A	25	E	30K	E
2N3714	S	N		7-125	HPA	150W	C	200	100	80	O	25	75	1.0A	1.0	5.0A	25	E	30K	E
2N3715	S	N		7-125	HPA	150W	C	200	80	60	O	50	150	1.0A	0.8	5.0A	25	E	30K	E
2N3716	S	N		7-125	HPA	150W	C	200	100	80	O	50	150	1.0A	0.8	5.0A	25	E	30K	E
2N3717	S	N			HPA	7.5W	C	200	60	60	S	2.0	100	0.5A	1.0	0.5A			250M	T
2N3718	S	N			HPA	10W	C	200	60	60	S	2.0	100	0.5A	1.0	0.5A			250M	T
2N3719	S	P		7-129	PHS	6.0W	C	200	40	40	O	25	180	1.0A	1.5	0.3A			60M	T
2N3720	S	P		7-129	PHA	6.0W	C	200	60	60	O	25	180	1.0A	1.5	3.0A			60M	T
2N3721	S	N			AFC	0.2W	A	125	18	18	O						60	E		
2N3722	S	N			MSS	0.8W	A	200	80	60	O	40	150	0.1A	0.22	0.1A			300M	T
2N3723	S	N			HSS	0.8W	A	200	100	80	O	40	150	0.1A	0.25	10M			300M	T
2N3724	S	N			HSS	0.8W	A	200	50	30	O	60	150	0.1A	0.2	0.1A			300M	T
2N3724A	S	N		8-257	HSS	1W	A		50	30	O	60	150	100M	0.2	100M				
2N3725	S	N			HSS	0.8W	A	200	80	50	O	60	150	0.1A	0.26	0.1A			300M	T
2N3725A	S	N		8-257	HSS	1W	A		80	50	O	60	150	100M	0.26	100M	3	E		
2N3726	S	P			DFA	0.4W	A	200	45	45	O	135	350	1.0M	0.25	50M	135	E	200M	T
2N3727	S	P			DFA	0.4W	A	200	45	45	O	135	350	1.0M	0.25	50M	135	E	200M	T
2N3728	S	N			DFA	0.45W	A	200	60	30	O	80	280	0.15A	0.22	0.15A	50	E	250M	T
2N3729	S	N			DFA	0.45W	A	200	60	30	O	80	280	0.15A	0.22	0.15A	50	E	250M	T
2N3730	G	P		8-259	LPA	10W	A	100	200	200	S									
2N3731	G	P		8-259	LPA	5.0W	A	100	320	320	S	15		6.0A						
2N3732	G	P		8-259	LPA	3.0W	A	100	100	100	S	35	500	0.7A					1.0M	T
2N3733	S	N		9-82	HPA	23W	C	200	65	40	O	10	150	0.25A	1.0	1.0A			250M	T
2N3734	S	N		8-259	HSS	1.0W	A	200	50	30	O	30	120	1.0A	0.2	10M			300M	T
2N3734A	S	N		8-259	HSS	1.0W	A		50	30	O	30	120	1.0A	0.9	1.0A	2.5	E		
2N3735	S	N		8-259	HSS	1.0W	A	200	75	50	O	20	80	1.0A	0.2	10M			250M	T
2N3735A	S	N		8-259	HSS	1.0W	A		75	50	O	20	80	1.0A	0.9	1.0A	2.5	E		
2N3736	S	N		8-259	HSS	0.5W	A	200	50	30	O	30	120	1.0A	0.2	10M			300M	T
2N3736A	S	N		8-259	HSS	0.5W	A		50	30	O	30	120	1.0A	0.9	1.0A	2.5	E		
2N3737	S	N		8-259	HSS	0.5W	A	200	75	50	O	20	80	1.0A	0.2	10M			250M	T
2N3737A	S	N		8-259	HSS	0.5W	A		75	50	O	20	80	1.0A	0.9	1.0A	2.5	E		
2N3738	S	N		7-133	LPA	20W	C	175	250	225	O	40	200	0.1A	2.5	0.25A	35	E	15M	T
2N3739	S	N		7-133	LPA	20W	C	175	325	300	O	40	200	0.1A	2.5	0.25A	35	E	15M	T
2N3740	S	P		7-137	LPA	25W	C	200	60	60	O	30	100	0.25A	0.6	1.0A	25	E	4.0M	T
2N3741	S	P		7-137	LPA	25W	C	200	80	80	O	30	100	0.25A	0.6	1.0A	25	E	4.0M	T
2N3742	S	N		8-265	VID	1.0W	A	200	300	300	O	20	200	30M	1.0	10M	20	E	30M	T
2N3743	S	P		8-269	VID	1.0W	A	200	300	300	O	25	250	30M	5.0	10M	30	E	30M	T
2N3744	S	N			HPA	30W	C	200	60	40	O	20	60	1.0A	0.25	1.0A	20	E	30M	T
2N3745	S	N			HPA	30W	C	200	80	60	O	20	60	1.0A	0.25	1.0A	20	E	30M	T
2N3746	S	N			HPA	30W	C	200	100	80	O	20	60	1.0A	0.25	1.0A	20	E	30M	T
2N3747	S	N			HPA	30W	C	200	60	40	O	40	120	1.0A	0.25	1.0A	40	E	40M	T
2N3748	S	N			HPA	30W	C	200	80	60	O	40	120	1.0A	0.25	1.0A	40	E	40M	T
2N3749	S	N			HPA	30W	C	200	100	80	O	40	120	1.0A	0.25	1.0A	40	E	40M	T
2N3750	S	N			HPA	30W	C	200	60	40	O	100	300	1.0A	0.25	1.0A	100	E	50M	T
2N3751	S	N			HPA	30W	C	200	80	60	O	100	300	1.0A	0.25	1.0A	100	E	50M	T
2N3752	S	N			HPA	30W	C	200	100	80	O	100	300	1.0A	0.25	1.0A	100	E	50M	T
2N3753 thru 2N3761	Thyristors, see Table on Page 1-154																			
2N3762	S	P		8-273	HSS	1.0W	A	200	40	40	O	30	120	1.0A	0.1	10M			180M	T
2N3763	S	P		8-273	HSS	1.0W	A	200	60	60	O	20	80	1.0A	0.1	10M			150M	T
2N3764	S	P		8-273	HSS	0.5W	A	200	40	40	O	30	120	1.0A	0.1	10M			180M	T
2N3765	S	P		8-273	HSS	0.5W	A	200	60	60	O	20	80	1.0A	0.1	10M			150M	T

GENERAL PURPOSE SWITCHING AND AMPLIFIER TRANSISTORS (SILICON)

Current versus Voltage

BV_{CEO} Min Volts	OPTIMUM COLLECTOR CURRENT									
	0 to 10 mA		10 mA to 100 mA		100 mA to 500 mA		500 mA to 1.0 A		1.0 A to 3.0 A	
	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN	PNP
15 ↓ 29	2N916 2N2330 2N2331		2N916 2N1983 2N1984		2N696 2N697 2N718 2N1420 2N2195	2N1991				
30 ↓ 39			2N2218 2N2219 2N2221 2N2222	2N3133 2N3134 2N3135 2N3136	2N2218 2N2219 2N2221 2N2222 2N3299 2N3300 2N3301 2N3302	2N2800 2N2801 2N2837 2N2838 2N3133 2N3134 2N3135 2N3136				
49 ↓ 59	2N758 2N795 2N760 2N915 2N929 2N930 2N3946 2N3947	2N3250 2N3251 MM4048	2N2218A 2N2219A 2N2221A 2N2222A 2N2224 2N3946 2N3947	2N3250 2N3251	2N2194 2N2218A 2N2219A 2N2221A 2N2222A	2N2904 2N2905 2N2906 2N2907 2N3485 2N3486 2N4890	2N2192 2N2193	2N3244 2N3245	2N3506 2N3507	
60 ↓ 79	2N758A 2N759A 2N760A 2N929A 2N930A MM2483 MM2484	2N3798 2N3799 2N3250A 2N3251A	2N910 2N911 2N1990	2N3250A 2N3251A	2N656 2N699	2N2904A 2N2905A 2N2906A 2N2907A 2N3485A 2N3486A				
80 ↓ 99	2N739 2N740	2N3494 2N3496	2N720A 2N1893 2N2405	2N3494 2N3496	2N720A 2N3019 2N3020		2N3019 2N3020			
100 ↓ 149	2N4924	2N3495 2N3497 2N4928	2N3498 2N3499 2N4924	2N3495 2N3497 2N3634 2N3635 2N4928	2N3498 2N3499 2N4924	2N3634 2N3635				
150 ↓ 249	2N3114 2N4925 2N4926	2N4929 2N4930	2N3500 2N3501 2N4925 2N4926	2N3635 2N3637 2N4929 2N4930	2N3500 2N3501 2N4925	2N3636 2N3637				
250 UP	2N3742 2N4927	2N3743 2N4931	2N3742 2N4927	2N3743 2N4931						

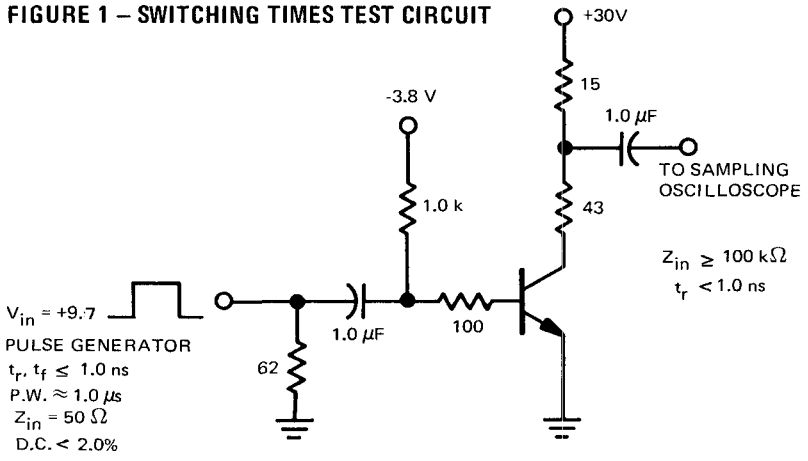
2N3724, 2N3725 — 2N4013, 2N4014 (continued)

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

Characteristic		Symbol	Min	Max	Unit
ON CHARACTERISTICS (continued)					
Collector-Emitter Saturation Voltage*		$V_{CE(sat)}$*			Vdc
(I_C = 10 mAdc, I_B = 1.0 mAdc)			-	0.25	
(I_C = 100 mAdc, I_B = 10 mAdc)	2N3724, 2N4013		-	0.20	
	2N3725, 2N4014		-	0.26	
(I_C = 300 mAdc, I_B = 30 mAdc)	2N3724, 2N4013		-	0.32	
	2N3725, 2N4014		-	0.40	
(I_C = 500 mAdc, I_B = 50 mAdc)	2N3724, 2N4013		-	0.42	
	2N3725, 2N4014		-	0.52	
(I_C = 800 mAdc, I_B = 80 mAdc)	2N3724, 2N4013		-	0.65	
	2N3725, 2N4014		-	0.80	
(I_C = 1.0 Adc, I_B = 100 mAdc)	2N3724, 2N4013		-	0.75	
	2N3725, 2N4014		-	0.95	
Base-Emitter Saturation Voltage*		$V_{BE(sat)}$*			Vdc
(I_C = 10 mAdc, I_B = 1.0 mAdc)			-	0.76	
(I_C = 100 mAdc, I_B = 10 mAdc)			-	0.86	
(I_C = 300 mAdc, I_B = 30 mAdc)			-	1.1	
(I_C = 500 mAdc, I_B = 50 mAdc)			0.9	1.2	
(I_C = 800 mAdc, I_B = 80 mAdc)			-	1.5	
(I_C = 1.0 Adc, I_B = 100 mAdc)			-	1.7	
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain—Bandwidth Product (I_C = 50 mAdc, V_{CE} = 10 Vdc, f = 100 MHz)		f_T	300	-	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 140 kHz)	2N3724, 2N4013	C_{ob}	-	12	pF
	2N3725, 2N4014		-	10	
Input Capacitance (V_{BE} = 0.5 Vdc, I_C = 0, f = 140 kHz)		C_{ib}	-	55	pF
SWITCHING CHARACTERISTICS					
Turn-On Time	(V_{CC} = 30 Vdc, $V_{BE(off)}$ = 3.8 Vdc, I_C = 500 mAdc, I_{B1} = 50 mAdc) (See Figure 1)	t_{on}	-	35	ns
Delay Time		t_d	-	10	ns
Rise Time		t_r	-	30	ns
Turn-Off Time	(V_{CC} = 30 Vdc, I_C = 500 mAdc, I_{B1} = I_{B2} = 50 mAdc) (See Figure 1)	t_{off}	-	60	ns
Storage Time		t_s	-	50	ns
Fall Time	2N3724, 2N4013	t_f	-	25	ns
	2N3725, 2N4014		-	30	

* Pulse Test: Pulse Width = 300 μs, Duty Cycle = 1.0%.

FIGURE 1 — SWITCHING TIMES TEST CIRCUIT



2N3743 (SILICON)

$V_{CEO} = 300$ V
$I_C = 50$ mA

CASE 31
(TO-5)

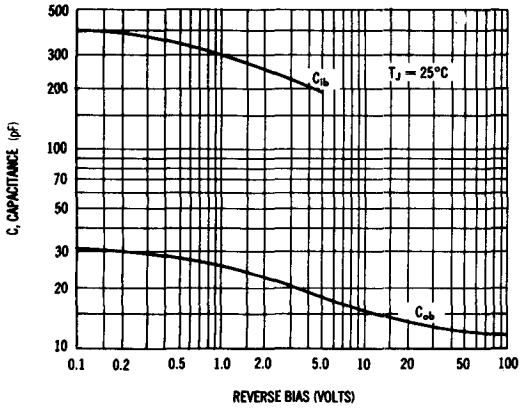
PNP silicon annular transistor for high-voltage amplifier applications from dc to VHF.

Collector connected to case

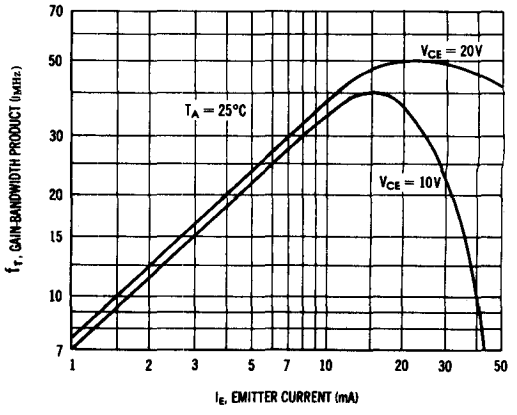
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Base Voltage	V_{CB}	300	Vdc
Collector-Emitter Voltage	V_{CEO}	300	Vdc
Emitter-Base Voltage	V_{EB}	5	Vdc
Collector Current	I_C	50	mAdc
Total Device Dissipation @ $T_A = 25^oC$ Derate Above 25°C	P_D	 1.0 5.7	 Watt mW/°C
Total Device Dissipation@ $T_C = 25^oC$ Derate Above 25°C	P_D	5.0 28.6	Watts mW/°C
Operating Junction Temperature	T_J	+200	°C
Storage Temperature Range	T_{stg}	-65 to +200	°C

JUNCTION CAPACITANCE



GAIN-BANDWIDTH PRODUCT



2N3743 (continued)

ELECTRICAL CHARACTERISTICS ($T_A = 25°C$ unless otherwise specified)

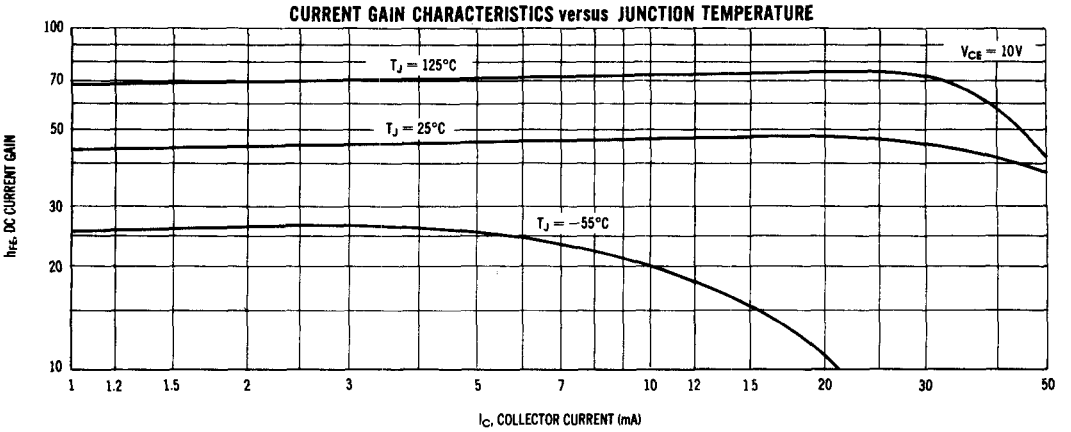
Characteristic	Symbol	Min	Max	Unit
Collector-Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	BV_{CBO}	300	—	Vdc
Collector-Emitter Breakdown Voltage* (I_C = 10 mAdc, I_B = 0)	BV_{CEO}*	300	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0)	BV_{EBO}	5	—	Vdc
Collector Saturation Voltage** (I_C = 10 mAdc, I_B = 1 mAdc)	$V_{CE(sat)}$**	—	5	Vdc
(I_C = 30 mAdc, I_B = 3 mAdc)		—	8	
Base-Emitter Saturation Voltage** (I_C = 10 mAdc, I_B = 1 mAdc)	$V_{BE(sat)}$**	—	1.0	Vdc
(I_C = 30 mAdc, I_B = 3 mAdc)		—	1.2	
DC Forward Current Gain** (I_C = 100 μAdc, V_{CE} = 10 Vdc)	h_{FE}**	20	—	—
(I_C = 1 mAdc, V_{CE} = 10 Vdc)		25	—	
(I_C = 10 mAdc, V_{CE} = 10 Vdc)		25	—	
(I_C = 30 mAdc, V_{CE} = 10 Vdc)		25	250	
(I_C = 50 mAdc, V_{CE} = 20 Vdc)		25	—	
Collector Cutoff Current (V_{CB} = 200 Vdc, I_E = 0)	I_{CBO}	—	0.3	μAdc
(V_{CB} = 200 Vdc, I_E = 0, T_A = 100°C)		—	30	
Emitter-Base Leakage Current (V_{EB} = 3 Vdc, I_C = 0)	I_{EBO}	—	0.1	μAdc
Small-Signal Current Gain (I_C = 10 mAdc, V_{CE} = 20 Vdc, f = 20 MHz)	$\|h_{fe}\|$	1.5	—	—
Output Capacitance (V_{CB} = 20 Vdc, I_E = 0, f = 100 kHz)	C_{ob}	—	15	pF
Input Capacitance (V_{EB} = 1 Vdc, I_C = 0, f = 100 kHz)	C_{ib}	—	400	pF
Small Signal Current Gain (V_{CE} = 10 V, I_C = 10 mA, f = 1 kHz)	h_{fe}	30	300	—
Voltage Feedback Ratio (V_{CE} = 10 V, I_C = 10 mA, f = 1 kHz)	h_{re}	—	4.0	X10^{-4}
Input Impedance (V_{CE} = 10 V, I_C = 10 mA, f = 1 kHz)	h_{ie}	—	1.0	kohms
Output Admittance (V_{CE} = 10 V, I_C = 10 mA, f = 1 kHz)	h_{oe}	—	200	μmhos
Real Part of Input Impedance (I_C = 10 mAdc, V_{CE} = 10 Vdc, f = 5 MHz)	$Re(h_{ie})$	—	40	ohms

*PW ≤ 30 μs, Duty Cycle ≤ 1%

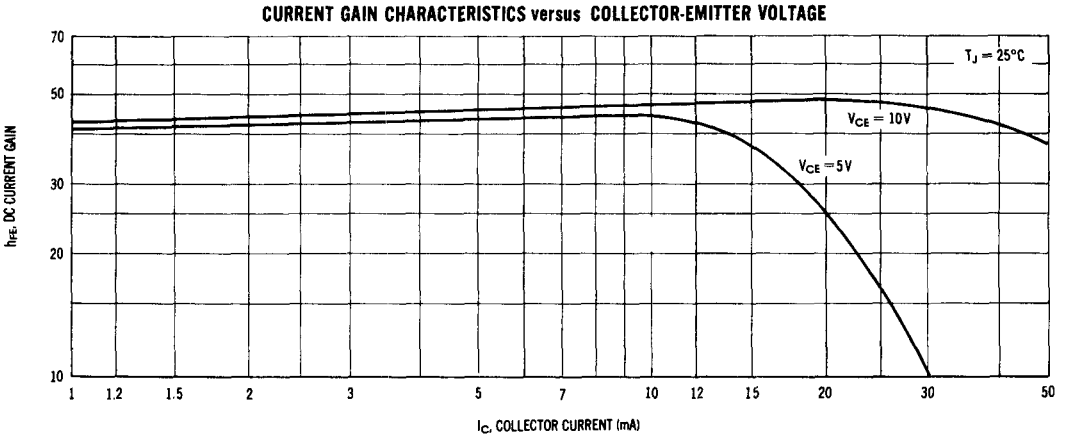
**PW ≤ 300 μs, Duty Cycle ≤ 2%

2N3743 (continued)

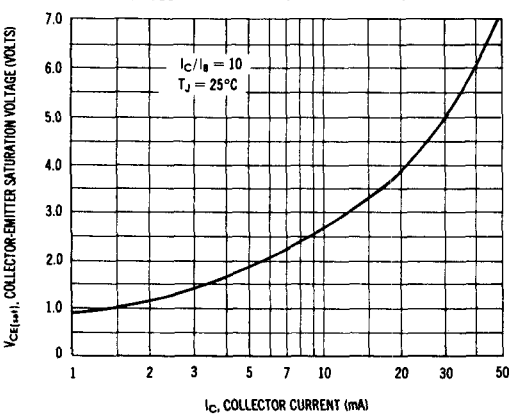
CURRENT GAIN CHARACTERISTICS versus JUNCTION TEMPERATURE



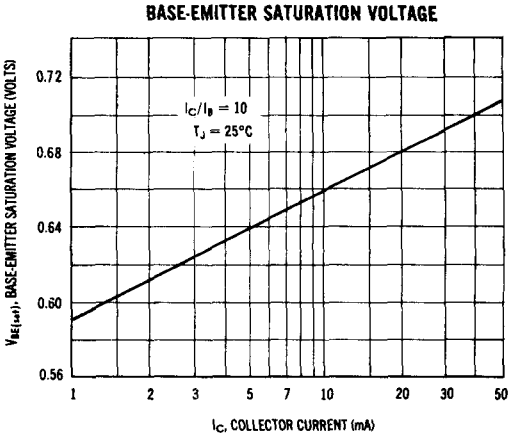
CURRENT GAIN CHARACTERISTICS versus COLLECTOR-EMITTER VOLTAGE



COLLECTOR-EMITTER SATURATION VOLTAGE



BASE-EMITTER SATURATION VOLTAGE



2N3743 (continued)

SMALL SIGNAL y PARAMETERS

$T_A = 25°C$