


2N3675-2N3765

TYPE	MATERIAL		REPLACE- MENT	PAGE NUMBER	USE	MAXIMUM RATINGS					ELECTRICAL CHARACTERISTICS									
	S	N				P _D @ 25°C	Ref Point	T _J °C	V _{CB} (volts)	V _{CE} - (volts)	Subscript	h _{FE} @ I _C		V _{CE(SAT)} @ I _C		h _{FE}	Subscript	f _T	Subscript	
Units																				
2N3675	S	N			PMS	8.8W	C	200	90	55	0	12	60	1.0A	0.8	1.0A			1.0M	T
2N3676	S	N			PMS	8.8W	C	200	90	90	0	12	60	1.0A	0.8	1.0A			1.0M	T
2N3677	S	N			CHP	0.4W	A	200	30	20	0								5.0M	T
2N3678	S	N			HSS	0.8W	A	200	75	55	0	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	0	150	600	10*	0.7	10M	300	E	60M	T
2N3681	S	N			RFA	0.2W	A	200	10	7.0	0	20	220	2.0M	0.37	4.0M	20	E	1.0G	T
2N3682	S	N			RFA	0.36W	A	200	40	15	0	40	120	1.0M			45	E	600M	T
2N3683	S	N			RFA	0.2W	A	200	30	12	0	20	150	8.0M			30	E	1.0G	T
2N3684	Field Effect Transistors, see Table on Page 1-166																			
2N3687																				
2N3688	S	N			RFC	0.2W	A	125	40	40	0	30		4.0M					400M	T
2N3689	S	N			RFC	0.2W	A	125	40	40	0	30		4.0M					400M	T
2N3690	S	N			RFC	0.2W	A	125	40	40	0	30		4.0M					400M	T
2N3691	S	N	MPS6512	5-109	AFIC	0.25W	A	125	35	20	0	40	160	10M	0.7	10M	40	E	200M	T
2N3692	S	N	MPS6513	5-109	AFIC	0.2W	A	125	35	20	0	100	400	10M	0.7	10M	100	E	200M	T
2N3693	S	N			RFC	0.25W	A	125	45	45	0	40	160	10M					200M	T
2N3694	S	N			RFC	0.2W	A	125	45	45	0	100	400	10M					200M	T
2N3695	Field Effect Transistors, see Table on Page 1-166																			
2N3698																				
2N3700	S	N			RFA	0.5W	A	200	140	80	0	100	300	0.15A	0.2	0.15A	80	E	100M	T
2N3701	S	N			RFA	0.5W	A	200	140	80	0	40	120	0.15A	0.2	0.15A	30	E	80M	T
2N3702	S	P			AFIC	0.3W	A	150	40	25	0	60	300	50M	0.25	50M			100M	T
2N3703	S	P			AFIC	0.3W	A	150	50	30	0	30	150	50M	0.25	50M			100M	T
2N3704	S	N			AFIC	0.36W	A	150	50	30	0	100	300	50M	0.6	0.1A			100M	T
2N3705	S	N			AFIC	0.36W	A	150	50	30	0	50	150	50M	0.8	0.1A			100M	T
2N3706	S	N			AFIC	0.36W	A	150	40	20	0	30	600	50M	1.0	0.1A			100M	T
2N3707	S	N			AFIC	0.25W	A	150	30	30	0	100	400	0.1M	1.0	10M	100	E	100M	T
2N3708	S	N			AFIC	0.25W	A	150	30	30	0	45	660	1.0M	1.0	10M	45	E	45	T
2N3709	S	N			AFIC	0.25W	A	150	30	30	0	45	165	1.0M	1.0	10M	45	E	45	T
2N3710	S	N			AFIC	0.25W	A	150	30	30	0	90	330	1.0M	1.0	10M	90	E	90	T
2N3711	S	N			AFIC	0.25W	A	150	30	30	0	180	660	1.0M	1.0	10M	180	E	180	T
2N3712	S	N			RFC	0.8W	A	200	150	150	0	30	150	30M	2.0	50M	25	E	40M	T
2N3713	S	N		7-125	HPA	150W	C	200	80	60	0	25	75	1.0A	1.0	5.0A	25	E	30K	T
2N3714	S	N		7-125	HPA	150W	C	200	100	80	0	25	75	1.0A	1.0	5.0A	25	E	30K	T
2N3715	S	N		7-125	HPA	150W	C	200	80	60	0	50	150	1.0A	0.8	5.0A	25	E	30K	T
2N3716	S	N		7-125	HPA	150W	C	200	100	80	0	50	150	1.0A	0.8	5.0A	25	E	30K	T
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	0	25	180	1.0A	1.5	3.0A			60M	T
2N3720	S	P		7-129	PHA	6.0W	C	200	60	60	0	25	180	1.0A	1.5	3.0A			60M	T
2N3721	S	N			AFIC	0.2W	A	125	18	18	0						60	E		T
2N3722	S	N			MSS	0.8W	A	200	80	60	0	40	150	0.1A	0.22	0.1A			300M	T
2N3723	S	N			HSS	0.8W	A	200	100	80	0	40	150	0.1A	0.25	10M			300M	T
2N3724	S	N			HSS	0.8W	A	200	50	30	0	60	150	0.1A	0.2	0.1A			300M	T
2N3724A	S	N		8-257	HSS	1W	A	200	50	30	0	60	150	100M	0.2	100M				T
2N3725	S	N			HSS	0.8W	A	200	80	50	0	60	150	0.1A	0.26	0.1A			300M	T
2N3725A	S	N		8-257	HSS	1W	A	200	80	50	0	60	150	100M	0.26	100M	3	E		T
2N3726	S	P			DFA	0.4W	A	200	45	45	0	135	350	1.0M	0.25	50M	135	E	200M	T
2N3727	S	P			DFA	0.4W	A	200	45	45	0	135	350	1.0M	0.25	50M	135	E	200M	T
2N3728	S	N			DFA	0.45W	A	200	60	30	0	80	280	0.15A	0.22	0.15A	50	E	250M	T
2N3729	S	N		8-259	DFA	0.45W	A	200	60	30	0	80	280	0.15A	0.22	0.15A	50	E	250M	T
2N3730	G	P			LPA	10W	A	100	200	200	S									T
2N3731	G	P		8-259	LPA	5.0W	A	100	320	320	S	15		6.0A						T
2N3732	G	P		8-259	LPA	3.0W	A	100	100	100	S	35		0.7A						T
2N3733	S	N		9-82	HPA	23W	C	200	65	40	0	10	150	0.25A	1.0	1.0A			250M	T
2N3734	S	N		8-259	HSS	1.0W	A	200	50	30	0	30	120	1.0A	0.2	10M			300M	T
2N3734A	S	N		8-259	HSS	1.0W	A	200	50	30	0	30	120	1.0A	0.9	1.0A	2.5	E		T
2N3735	S	N		8-259	HSS	1.0W	A	200	75	50	0	20	80	1.0A	0.2	10M			250M	T
2N3735A	S	N		8-259	HSS	1.0W	A	200	75	50	0	20	80	1.0A	0.9	1.0A	2.5	E		T
2N3736	S	N		8-259	HSS	0.5W	A	200	50	30	0	30	120	1.0A	0.2	10M			300M	T
2N3736A	S	N		8-259	HSS	0.5W	A	200	50	30	0	30	120	1.0A	0.9	1.0A	2.5	E		T
2N3737	S	N		8-259	HSS	0.5W	A	200	75	50	0	20	80	1.0A	0.2	10M			250M	T
2N3737A	S	N		8-259	HSS	0.5W	A	200	75	50	0	20	80	1.0A	0.9	1.0A	2.5	E		T
2N3738	S	N		7-133	LPA	20W	C	175	250	225	0	40	200	0.1A	2.5	0.25A	35	E	15M	T
2N3739	S	N		7-133	LPA	20W	C	175	325	300	0	40	200	0.1A	2.5	0.25A	35	E	15M	T
2N3740	S	P		7-137	LPA	25W	C	200	60	60	0	30	100	0.25A	0.6	1.0A	25	E	4.0M	T
2N3741	S	P		7-137	LPA	25W	C	200	80	80	0	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	0	20	200	30M	1.0	10M	20	E	30M	T
2N3743	S	P		8-269	VID	1.0W	A	200	300	300	0	25	250	30M	5.0	10M	30	E	30M	T
2N3744	S	N			HPA	30W	C	200	60	40	0	20	60	1.0A	0.25	1.0A	20	E	30M	T
2N3745	S	N			HPA	30W	C	200	80	60	0	20	60	1.0A	0.25	1.0A	20	E	30M	T
2N3746	S	N			HPA	30W	C	200	100	80	0	20	60	1.0A	0.25	1.0A	20	E	30M	T
2N3747	S	N			HPA	30W	C	200	60	40	0	40	120	1.0A	0.25	1.0A	40	E	40M	T



SILICON POWER TRANSISTOR SELECTOR GUIDE (continued)

Type	V_{CE0}	h_{FE} @ I_C		$V_{CE(sat)}$ @ I_C & I_B		
NPN	Volts (Max)	Min/Max	Amp	Volts (Max)	Amp	Amp
PNP						

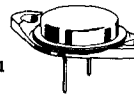
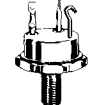
3.0 AMP ($T_{J(Max)} = 200^\circ\text{C}$)

 <p>Case 31 (TO-5) Solid Header</p>	$P_D = 6.0 \text{ W}$ $f_T = 3.0 \text{ MHz}$ $*f_T = 60 \text{ MHz}$	2N3719*	40	25/180	1.0	0.75	1.0	0.1
		2N3720*	60	25/160	1.0	0.75	1.0	0.1
		2N3867*	40	40/200	1.5	0.75	1.5	0.15
		2N3868*	60	30/150	1.5	0.75	1.5	0.15
		2N4234	40	30/150	0.25	0.6	1.0	0.125
		2N4235	60	30/150	0.25	0.6	1.0	0.125
		2N4236	80	30/150	0.25	0.6	1.0	0.125
		2N4237	40	30/150	0.25	0.6	1.0	0.1
		2N4238	60	30/150	0.25	0.6	1.0	0.1
		2N4239	80	30/150	0.25	0.6	1.0	0.1

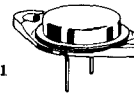
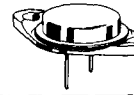

4.0 AMP ($T_{J(Max)} = 200^\circ\text{C}$)

 <p>Case 31 (TO-5)</p>	$P_D = 10 \text{ W}$ $f_T = 4.0 \text{ MHz}$	2N4877	60	20/100	4.0	1.0	4.0	0.4
		 <p>Case 80 (TO-66)</p>	$P_D = 20 \text{ W}$ $f_T = 10 \text{ MHz}$	2N3054*	60	25/100	0.5	1.0
2N3766	60			40/160	0.5	1.0	0.5	0.05
2N3767	80			40/160	0.5	1.0	0.5	0.05
$P_D = 25 \text{ W}$ $*f_T = 1.0 \text{ MHz}$ $f_T = 3.0 \text{ MHz}$ $**f_T = 4.0 \text{ MHz}$	2N3740		60	30/100	0.25	0.6	1.0	0.125
	2N3741		80	30/100	0.25	0.6	1.0	0.125
	2N4898		40	20/100	0.5	0.6	1.0	0.1
	2N4899		60	20/100	0.5	0.6	1.0	0.1
$P_D = 35 \text{ W}$ $f_T = 1.0 \text{ MHz}$	2N4900		80	20/100	0.5	0.6	1.0	0.1
	2N4910		40	20/100	0.5	0.6	1.0	0.1
	2N4911		60	20/100	0.5	0.6	1.0	0.1
2N4912	80	20/100	0.5	0.6	1.0	0.1		
MJ4101**	40	25/100	1.5	1.0	1.5	0.15		
2N4231	40	25/100	1.5	0.7	1.5	0.15		
2N4232	60	25/100	1.5	0.7	1.5	0.15		
2N4233	80	25/100	1.5	0.7	1.5	0.15		

5.0 AMP ($T_{J(Max)} = 200^\circ\text{C}$)

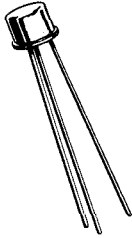
 <p>Case 11 (TO-3)</p>	$P_D = 87.5 \text{ W}$ $f_T = 4.0 \text{ MHz}$	2N4901	40	20/80	1.0	0.4	1.0	0.1
		2N4902	60	20/80	1.0	0.4	1.0	0.1
		2N4903	80	20/80	1.0	0.4	1.0	0.1
		2N4904	40	25/100	2.5	1.0	2.5	0.25
		2N4905	60	25/100	2.5	1.0	2.5	0.25
		2N4906	80	25/100	2.5	1.0	2.5	0.25
		2N4913	40	25/100	2.5	1.0	2.5	0.25
		2N4914	60	25/100	2.5	1.0	2.5	0.25
		2N4915	80	25/100	2.5	1.0	2.5	0.25
		2N5067	40	20/80	1.0	0.4	1.0	0.1
2N5068	60	20/80	1.0	0.4	1.0	0.1		
2N5069	80	20/80	1.0	0.4	1.0	0.1		
 <p>Case 9 (TO-61)</p>	$P_D = 117 \text{ W}$ $f_T = 10 \text{ MHz}$	2N1724	80	20/90	2.0	1.0	2.0	0.2
		2N1725	80	50/150	2.0	1.0	2.0	0.2

7.5 AMP ($T_{J(Max)} = 200^\circ\text{C}$)

 <p>Case 11 (TO-3)</p>	$P_D = 115 \text{ W}$ $f_T = 10 \text{ MHz}$	2N3445	60	20/60	3.0	1.5	3.0	0.3
		2N3446	80	20/60	3.0	1.5	3.0	0.3
		2N3447	60	40/120	5.0	1.5	5.0	0.5
		2N3448	80	40/120	5.0	1.5	5.0	0.5
 <p>Case 1 (TO-3)</p>	$P_D = 117 \text{ W}$ $f_T = 1.0 \text{ MHz}$	2N3232	60	15/75	3.0	2.5	3.0	0.2
 <p>Case 9 (TO-61)</p>	$P_D = 117 \text{ W}$ $f_T = 10 \text{ MHz}$	2N3487	60	20/60	3.0	1.2	3.0	0.3
		2N3488	80	20/60	3.0	1.2	3.0	0.3
		2N3489	100	15/45	3.0	1.2	3.0	0.3
		2N3490	60	40/120	5.0	1.0	3.0	0.3
		2N3491	80	40/120	5.0	1.0	3.0	0.3
		2N3492	100	30/90	5.0	1.0	3.0	0.3

2N3719 (SILICON)
2N3720

$V_{CB} = 40-60 \text{ V}$
 $I_C = 3 \text{ A}$
 $P_D = 1 \text{ W}$



CASE 31
(TO-5)

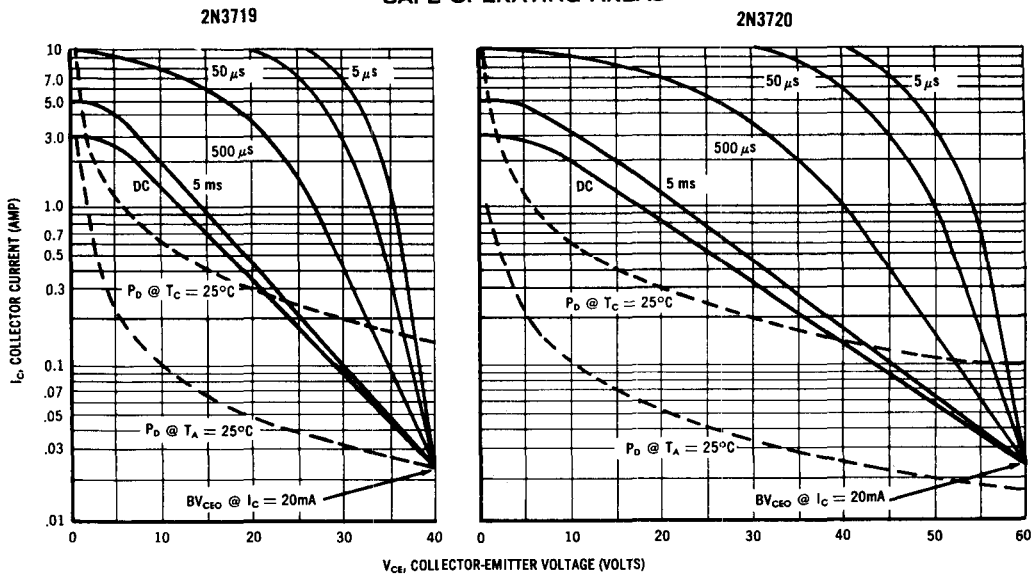
PNP silicon annular power transistors for high-speed, high-current switching in core, driver and Class C power applications.

Collector connected to case

MAXIMUM RATINGS

Rating	Symbol	2N3719	2N3720	Unit
Collector - Base Voltage	V_{CB}	40	60	Volts
Collector - Emitter Voltage	V_{CEO}	40	60	Volts
Emitter - Base Voltage	V_{EB}	4	4	Volts
Collector Current—Continuous	I_C	3	3	Amp
Collector Current—Peak		10	10	Amp
Base Current	I_B	0.5	0.5	Amp
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	1.0		Watt
			5.72	mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	6		Watts
			34.3	mW/ $^\circ\text{C}$
Operating Junction and Storage Temperature Range	T_J and T_{stg}	-65 to +200		$^\circ\text{C}$

SAFE OPERATING AREAS



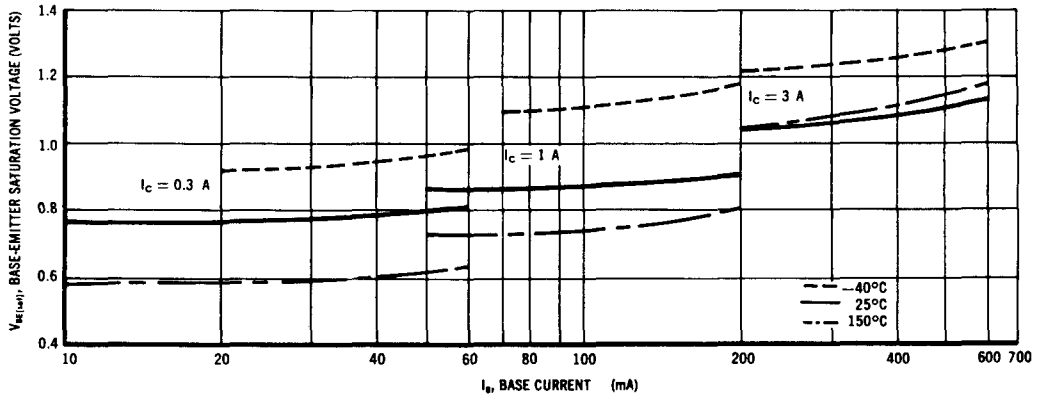
2N3719 and 2N3720 (continued)

ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$ unless otherwise noted)

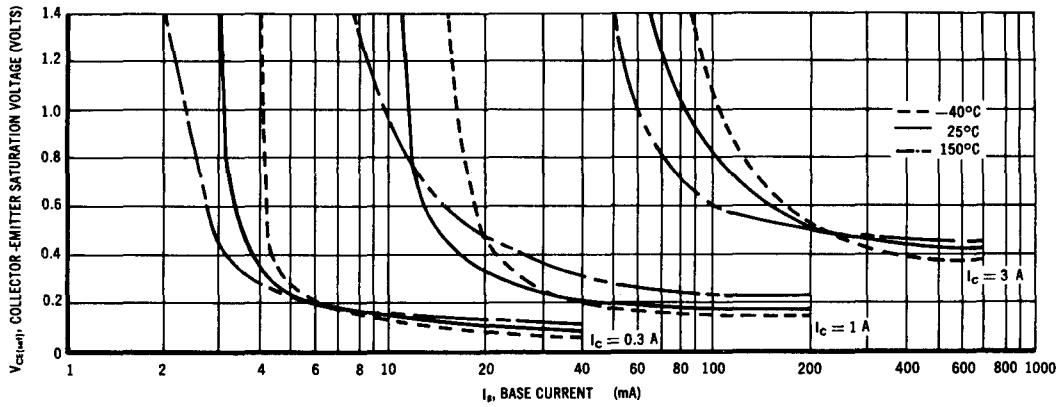
Characteristic		Symbol	Min	Max	Unit
Collector Leakage Current ($V_{CE} = 40 \text{ Vdc}, V_{BE} = 2 \text{ Vdc}$)	2N3719	I_{CEX}	—	10	μAdc
($V_{CE} = 60 \text{ Vdc}, V_{BE} = 2 \text{ Vdc}$)	2N3720		—	10	
Collector-Base Cutoff Current ($V_{CB} = 40 \text{ Vdc}, I_E = 0, T_A = 25^\circ\text{C}$)	2N3719	I_{CBO}	—	0.010	mAdc
($V_{CB} = 40 \text{ Vdc}, I_E = 0, T_A = 150^\circ\text{C}$)	2N3719		—	1	
($V_{CB} = 60 \text{ Vdc}, I_E = 0, T_A = 25^\circ\text{C}$)	2N3720		—	0.010	
($V_{CB} = 60 \text{ Vdc}, I_E = 0, T_A = 150^\circ\text{C}$)	2N3720		—	1	
Emitter-Base Cutoff Current ($V_{BE} = 4 \text{ Vdc}, I_C = 0$)		I_{EBO}	—	1	mAdc
DC Current Gain* ($I_C = 500 \text{ mA}, V_{CE} = 1.5 \text{ V}, T_A = 25^\circ\text{C}$)		h_{FE}^*	20	—	—
($I_C = 1 \text{ A}, V_{CE} = 1.5 \text{ V}, T_A = 25^\circ\text{C}$)			25	180	
($I_C = 1 \text{ A}, V_{CE} = 1.5 \text{ V}, T_A = -40^\circ\text{C}$)			15	—	
Collector-Emitter Saturation Voltage* ($I_C = 1 \text{ A}, I_B = 100 \text{ mA}, T_A = -40 \text{ to } +100^\circ\text{C}$)		$V_{CE(sat)}^*$	—	0.75	Volts
($I_C = 3 \text{ A}, I_B = 300 \text{ mA}, T_A = 25^\circ\text{C}$)			—	1.5	
Base-Emitter Saturation Voltage* ($I_C = 1 \text{ A}, I_B = 100 \text{ mA}$)		$V_{BE(sat)}^*$	—	1.5	Volts
($I_C = 3 \text{ A}, I_B = 300 \text{ mA}$)			—	2.3	
Collector-Emitter Breakdown Voltage* ($I_C = 20 \text{ mA}, I_B = 0$)	2N3719	BV_{CEO}^*	40	—	Volts
	2N3720		60	—	
Collector Output Capacitance ($V_{CB} = 10 \text{ Vdc}, I_E = 0, f = 100 \text{ kHz}$)		C_{ob}	—	120	pF
Input Capacitance ($V_{BE} = 0.5 \text{ Vdc}, I_C = 0, f = 100 \text{ kHz}$)		C_{ib}	—	1000	pF
Current-Gain — Bandwidth Product ($V_{CE} = 10 \text{ Vdc}, I_C = 500 \text{ mAdc}, f = 30 \text{ MHz}$)		f_T	60	—	MHz
Delay Plus Rise Time ($I_C = 1 \text{ Adc}, I_{B1} = 100 \text{ mA}$)		t_{on}	—	75	ns
Storage Time ($I_C = 1 \text{ Adc}, I_{B1} = I_{B2} = 100 \text{ mA}$)		t_s	—	150	ns
Fall Time ($I_C = 1 \text{ Adc}, I_{B1} = I_{B2} = 100 \text{ mA}$)		t_f	—	75	ns

2N3719, 2N3720 (continued)

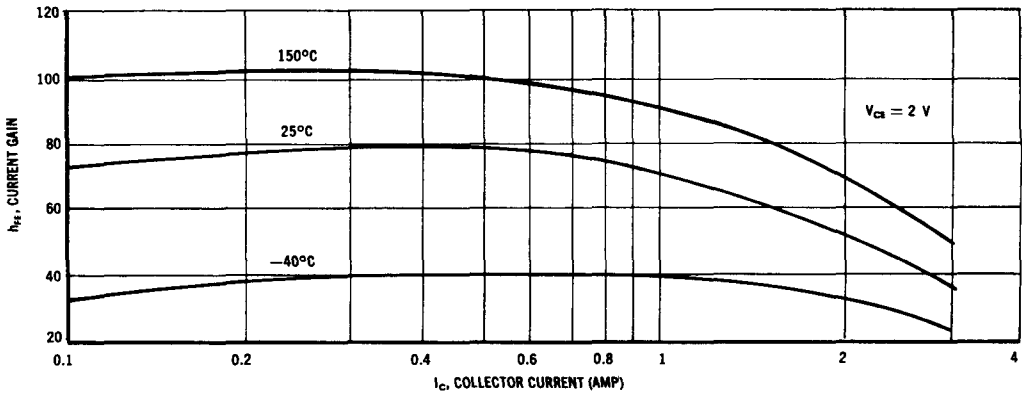
BASE-EMITTER SATURATION VOLTAGE VARIATIONS



COLLECTOR-EMITTER SATURATION VOLTAGE VARIATIONS

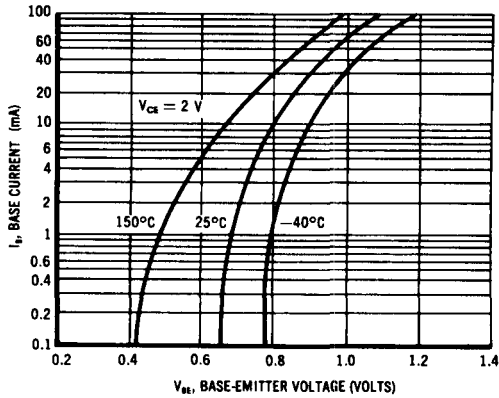


CURRENT GAIN VARIATIONS

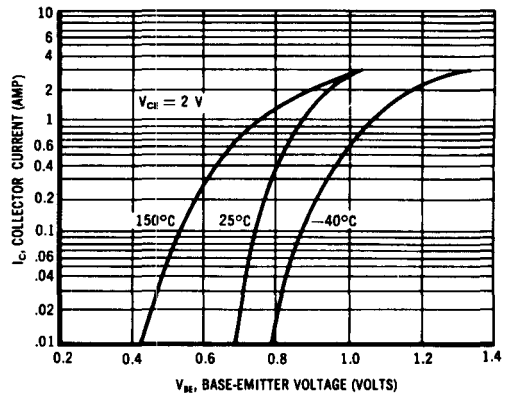


2N3719 and 2N3720 (continued)

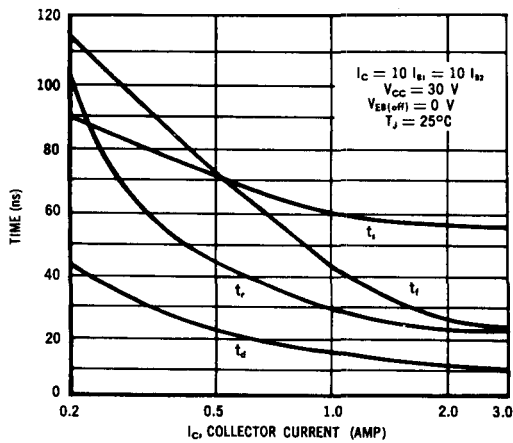
BASE CURRENT – VOLTAGE VARIATIONS



COLLECTOR CURRENT vs BASE-EMITTER VOLTAGE



TYPICAL SWITCHING TIMES



TOTAL CONTROL CHARGE VARIATION

