ITT
SEMICONDUCTORS

2N2368, 2N2369
SILICON SWITCHING TRANSISTORS

HIGH SPEED NPN SILICON PLANAR EPITAXIAL SATURATED SWITCHING TRANSISTORS

- **High f_T: 650 mHz, typ.**
- **High Gain: 40 min. @ I_C = 10mA**
- **Low C_{ob}: 4pf max. @ V_{CB} = 5V**
- **Low T_{on} = 9 nsec typ.**
- **Low t_{off} = 13 nsec typ.**

The ITT 2N2368 and 2N2369 are NPN silicon planar epitaxial saturated switching transistors for applications at current ranges from 0.1 to 100 mA. High gain and narrow base region provide excellent radiation resistance. They can operate at clock rates above 10MHz for commercial computer applications.

ABSOLUTE MAXIMUM RATINGS

CHARACTERISTICS		**UNITS**
Collector-to-Base Voltage	40	Volts
Collector-to-Emitter Voltage (shorted base)	40	Volts
Collector-to-Emitter Voltage (open base)	15	Volts
Emitter-to-Base Voltage	4.5	Volts
Collector Current (10 sec. pulse)	500	mA
Junction Temperature (op. and stg.)	-65 to +200	°C
Total Power Dissipation @ T_C = 25C (derate 6.8 mW/°C above 25°C)	1.2	Watts
@ T_C = 100°C	0.68	Watts
Total Power Dissipation @ T_A = 25°C (derate 2.06 mW/°C above 25°C)	0.36	Watts

ELECTRICAL CHARACTERISTICS @ 25°C unless otherwise noted.

Symbol	**Min.**	**Typ.**	**Max.**	**Unit**	**Conditions**
h_{FE}[1]					I_C= 10mA, V_{CE}= 1V
	20		60		2N2368
	40		120		2N2369
					I_C= 10mA, V_{CE}= 1V, T = -55°C
	10				2N2368
	20				2N2369
					I_C= 100mA, V_{CE}= 2V
	10				2N2368
	20				2N2369
V_{CE} (sat)		0.2	0.25	Vdc	I_C= 10mA, I_B= 1mA
V_{BE} (sat)	0.7	0.75	0.85	Vdc	I_C= 10mA, I_B= 1mA
I_{CBO}		0.1	0.4	A	V_{CB}= 20V, I_E= 0
		10	30	A	V_{CB}= 20V, I_E= 0, T = 150°C
f_T		650		MHz	V_{CE}= 10V, I_C= 10mA
C_{ob}		2.5	4.0	pf	V_{CB}= 5V, I_E= 0
s[2] (charge storage time)					I_C= I_{B1} 10mA, 10mA, I_{B2} -10mA - 10mA
			10	nsec	2N2368
			13	nsec	2N2369

2N2368, 2N2369
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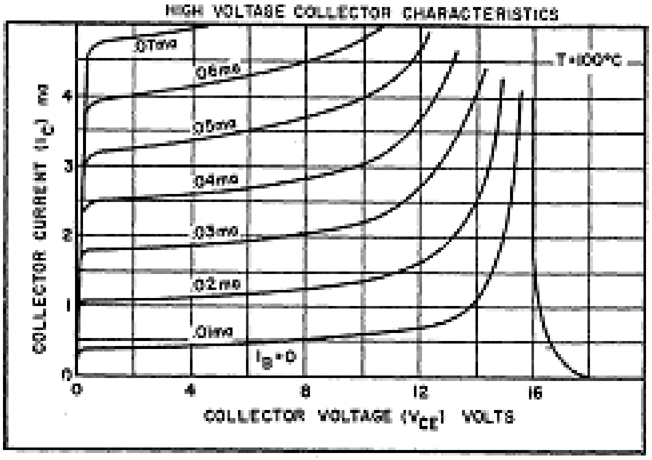
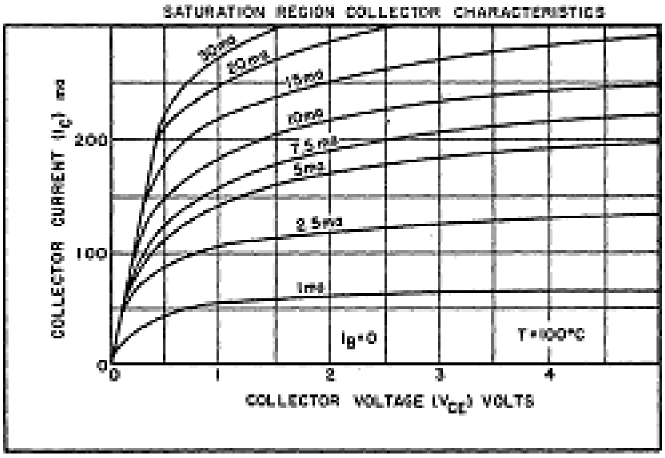
ELECTRICAL CHARACTERISTICS @ 25°C unless otherwise noted. (continued)

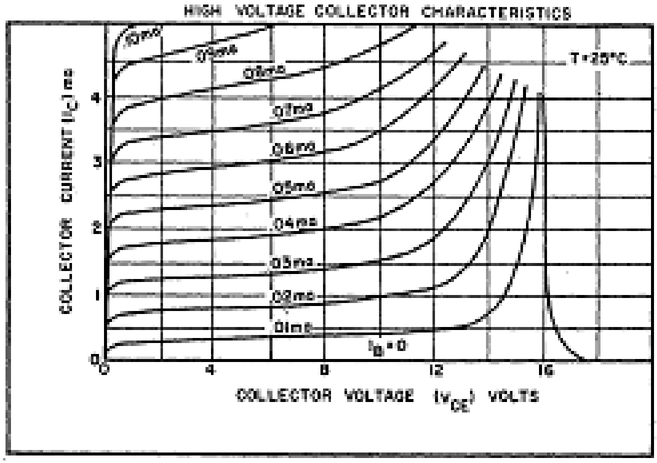
Symbol	Min.	Typ.	Max.	Unit	Conditions
t_{on}[2]		9.0	12	nsec	I_C 10mA, I_{B1} 3mA
t_{off}[2]					I_C 10mA, I_{B1} 3mA, I_{B2} -1.5mA
		10	15	nsec	2N2368
		13	18	nsec	2N2369
BV_{CBO}	40			Vdc	I_C= 10 A, I_E= 0
BV_{CES}	40			Vdc	I_C= 10 A, I_B= 0
V_{CEO} (sust)	15			Vdc	I_C=10mA, I_B= 0
BV_{EBO}	4.5			Vdc	I_E= 10 A, I_C= 0

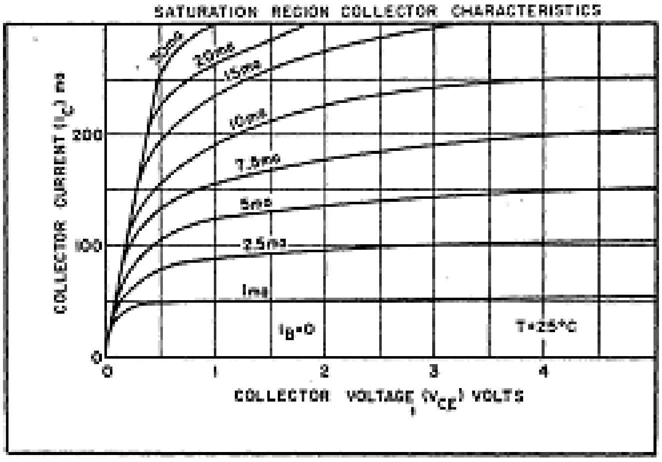
NOTES: 1. Pulse measurement: width 300 sec, duty cycle 2%.
2. Pulse switching circuits for exact IC, IB1, and IB2.

TYPICAL CHARACTERISTICS[1]

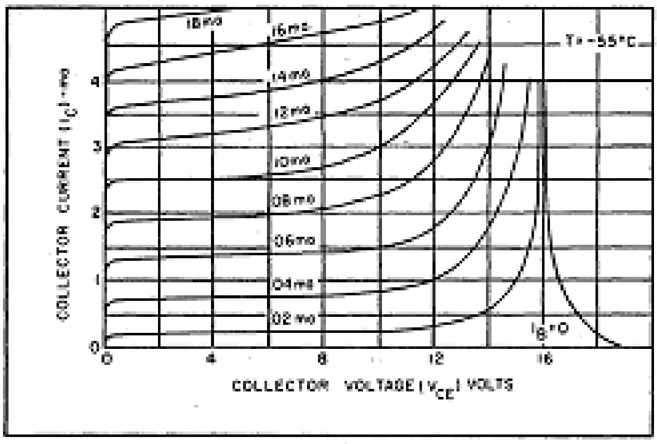

HIGH VOLTAGE COLLECTOR CHARACTERISTICS


SATURATION REGION COLLECTOR CHARACTERISTICS

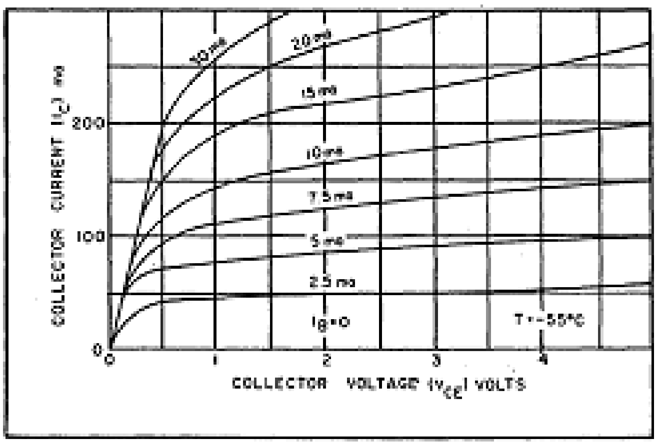

HIGH VOLTAGE COLLECTOR CHARACTERISTICS


SATURATION REGION COLLECTOR CHARACTERISTICS

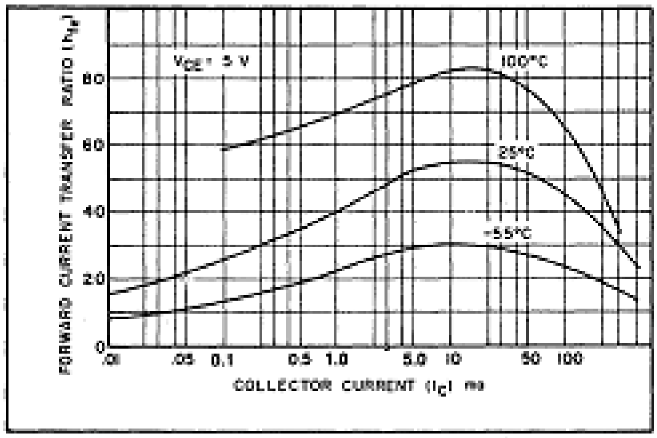
TYPICAL CHARACTERISTICS, continued



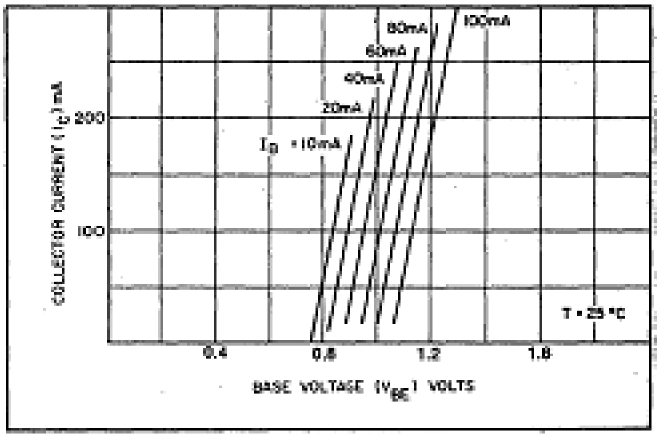
HIGH VOLTAGE COLLECTOR CHARACTERISTICS



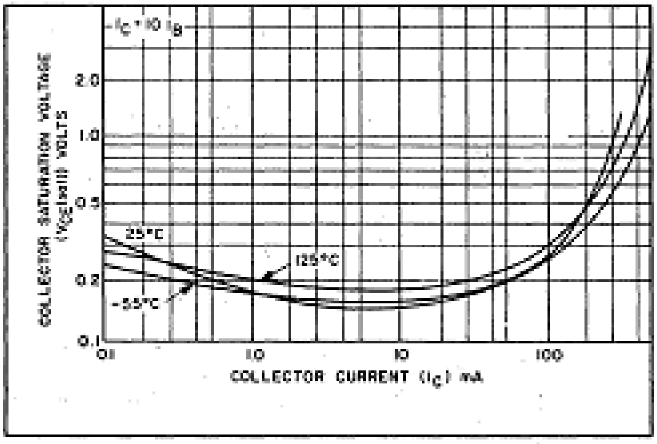
SATURATION REGION COLLECTOR CHARACTERISTICS



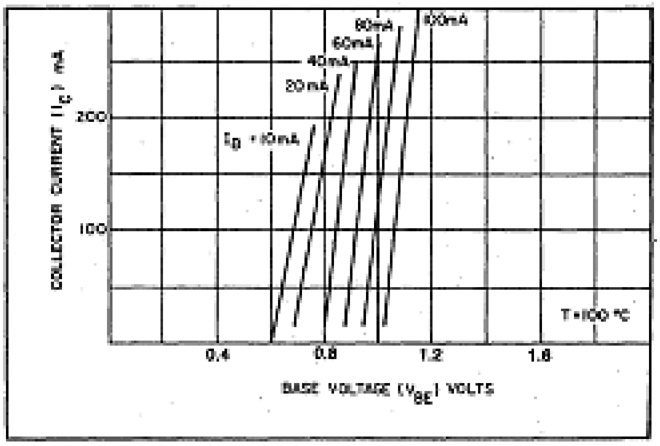
PULSE DC CURRENT GAIN VS COLLECTOR CURRENT



SATURATION REGION BASE CHARACTERISTICS



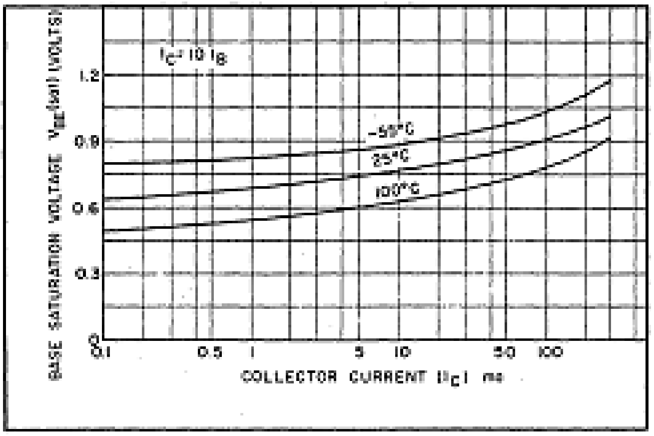
COLLECTOR SATURATION VOLTAGE VERSUS COLLECTOR CURRENT



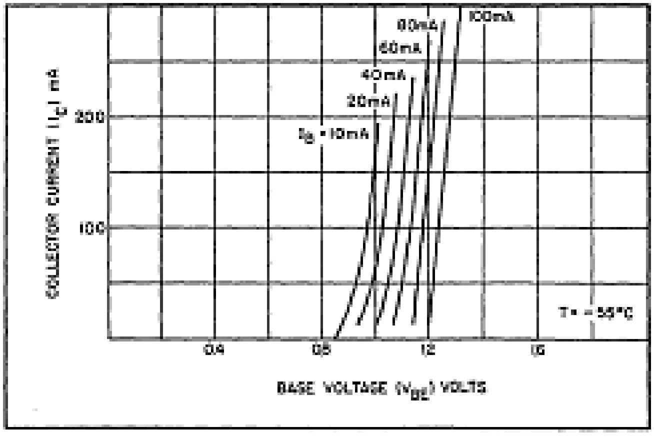
SATURATION REGION BASE CHARACTERISTICS

TYPICAL CHARACTERISTICS, continued

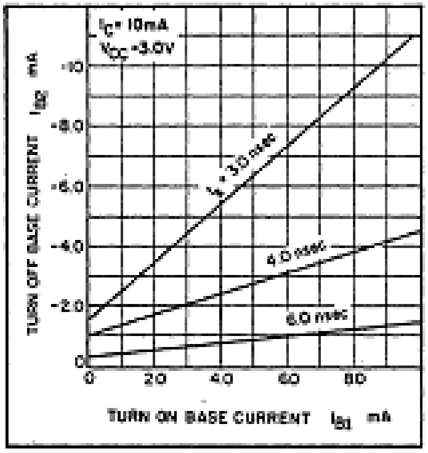
BASE SATURATION VOLTAGE VERSUS COLLECTOR CURRENT



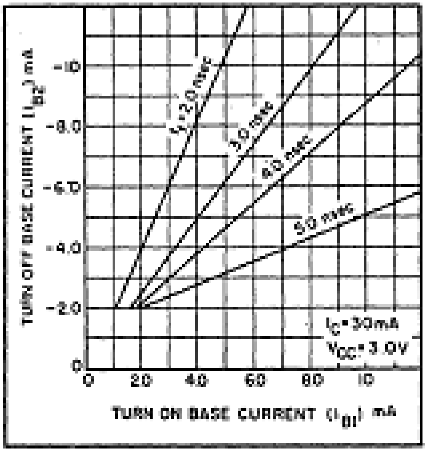
SATURATION REGION BASE CHARACTERISTICS



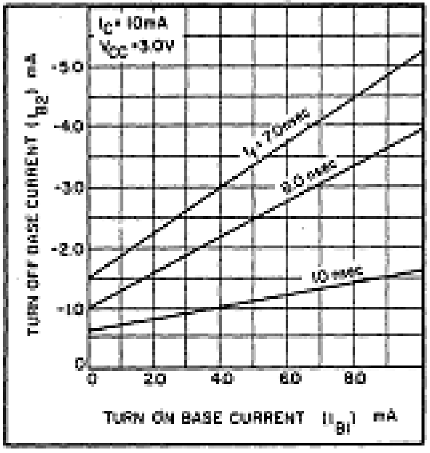
STORAGE TIME VERSUS TURN ON AND TURN OFF BASE CURRENTS



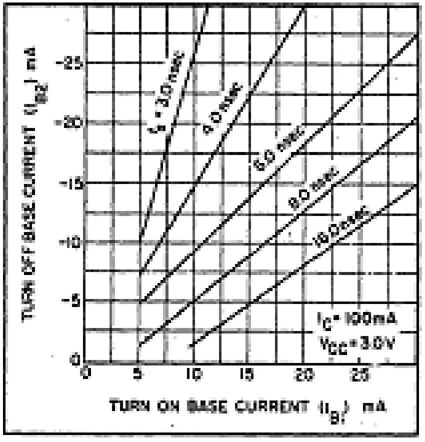
FALL TIME VERSUS TURN ON AND TURN OFF BASE CURRENTS



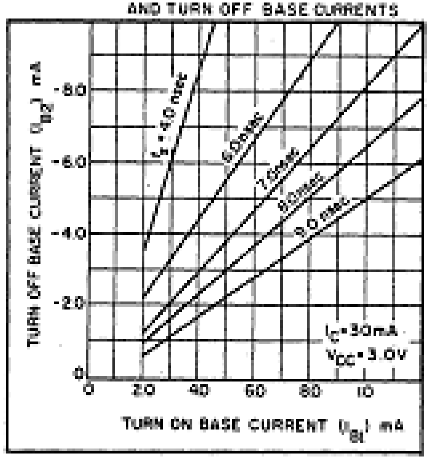
FALL TIME VERSUS TURN ON AND TURN OFF BASE CURRENTS



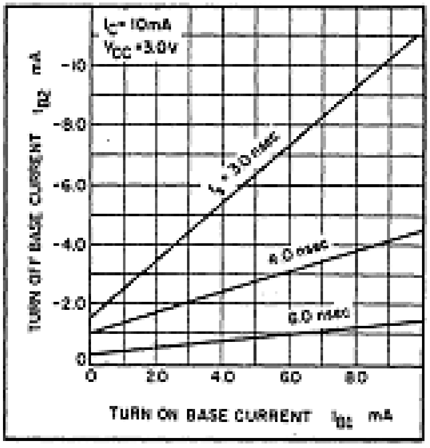
STORAGE TIME VERSUS TURN ON AND TURN OFF BASE CURRENTS



STORAGE TIME VERSUS TURN ON AND TURN OFF BASE CURRENTS

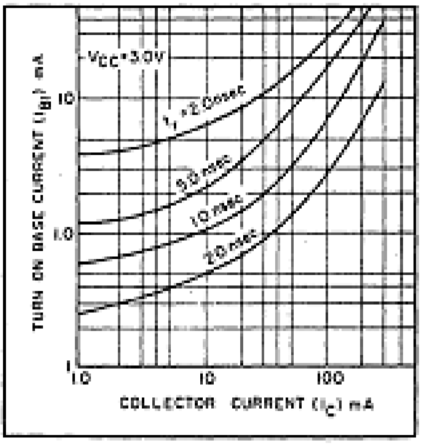


STORAGE TIME VERSUS TURN ON AND TURN OFF BASE CURRENTS

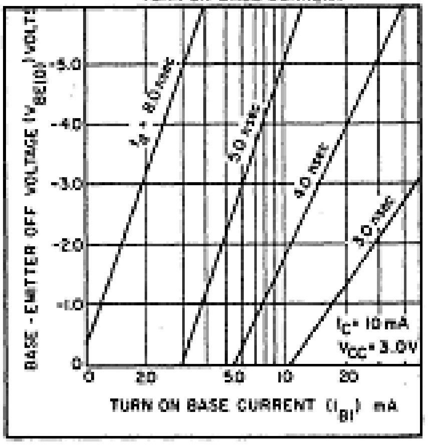


TYPICAL CHARACTERISTICS, continued

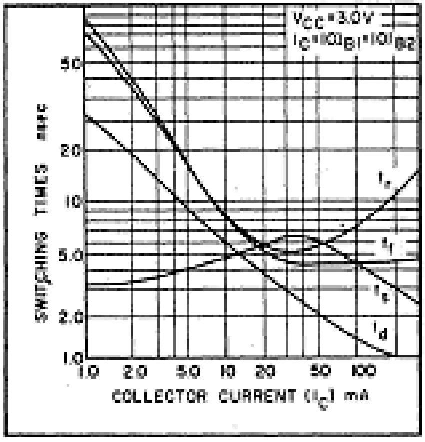
RISE TIME VERSUS TURN ON BASE CURRENT AND COLLECTOR CURRENT



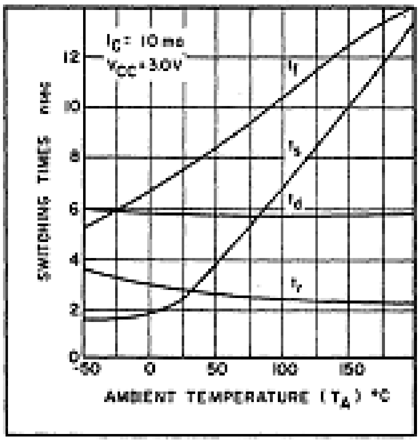
DELAY TIME VERSUS BASE-EMITTER OFF VOLTAGE AND TURN ON BASE CURRENT



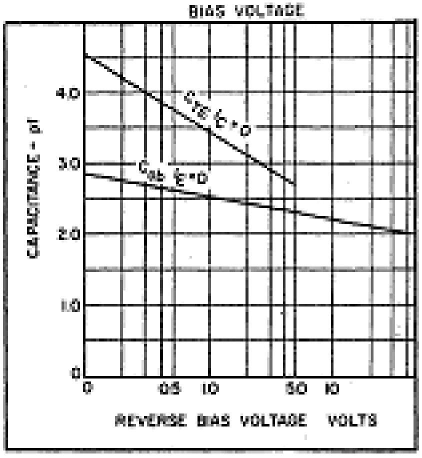
SWITCHING TIMES VERSUS COLLECTOR CURRENT



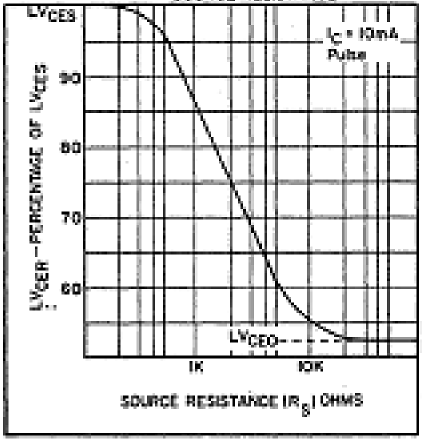
SWITCHING TIMES VERSUS AMBIENT TEMPERATURE



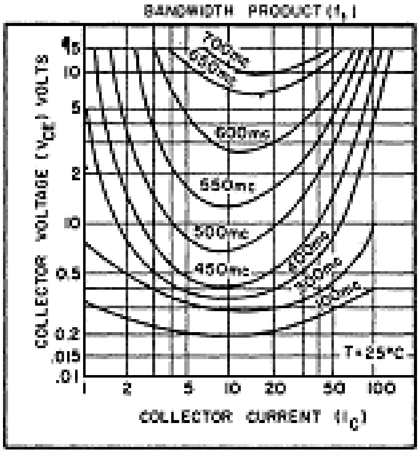
EMITTER TRANSITION AND OUTPUT CAPACITANCES VERSUS REVERSE BIAS VOLTAGE



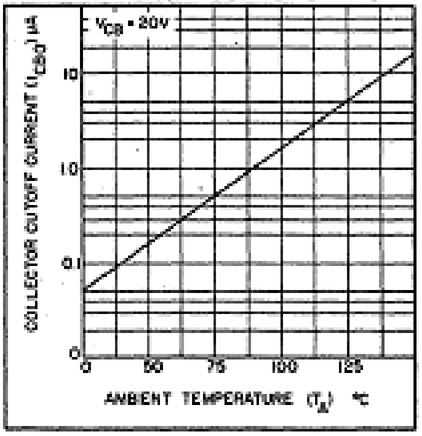
LOWER LIMITING VOLTAGE VERSUS SOURCE RESISTANCE



CONTOURS OF CONSTANT GAIN BANDWIDTH PRODUCT (f_t)



COLLECTOR CUTOFF CURRENT VERSUS AMBIENT TEMPERATURE



STORAGE TIME VERSUS TURN ON AND TURN OFF BASE CURRENTS