2N1132,A (SILICON)

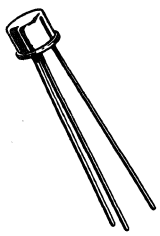
For Specifications, See 2N722 Data

2N1141 thru 2N1143 (GERMANIUM)

2N1142 JAN AVAILABLE

2N1195

2N1195 JAN AVAILABLE



CASE 31
(TO-5)

Collector connected to case

PNP germanium mesa transistors for amplifier, driver, oscillator and doubler applications.

MAXIMUM RATINGS

Rating	Symbol	2N1141	2N1142	2N1143	2N1195	Unit
Collector-Base Voltage	V_{CB}	35	30	25	30	Vdc
Emitter-Base Voltage	V_{EB}	1.0	0.7	0.5	1.0	Vdc
Collector Current-Continuous	I_C	100	100	100	40	mAdc
Base Current	I_B	50	50	50	-	mAdc
Emitter Current-Continuous	I_E	100	100	100	-	mAdc
Total Device Dissipation @ $T_A = 25^oC$	P_D	300	300	300	-	mW
Derate above 25^oC		4.0	4.0	4.0	-	$mW/^oC$
Total Device Dissipation @ $T_C = 25^oC$	P_D	750	750	750	-	mW
Derate above 25^oC		10	10	10	-	$mW/^oC$
Collector Dissipation @ $T_A = 25^oC$	P_C	-	-	-	225	mW
Derate above 25^oC		-	-	-	3.0	$mW/^oC$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +100				^oC

TRANSISTOR SELECTION CHART

TYPE	Minimum BV_{CBO} @ $I_C = -100\mu$ Adc, $I_E = 0$			Typical 100 MHz Noise Figure @ $V_{CE} = -10$Vdc, $I_E = 1$mAdc $R_S = 75\Omega$			Minimum h_{fe} @ $I_C = -10$mAdc, $V_{CE} = -10$Vdc, f = 100 MHz		
	35 Vdc	30 Vdc	25 Vdc	4.0 db	4.5 db	5.0 db	12 db	10 db	8 db
2N1141	✓			✓			✓		
2N1142		✓			✓			✓	
2N1143			✓			✓			✓
2N1195		✓		✓			✓		

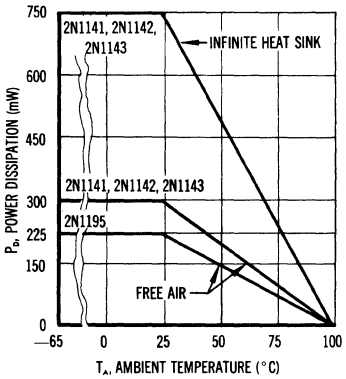
ELECTRICAL CHARACTERISTICS ($T_A = 25^oC$ unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage ($I_C = 100\ \mu$Adc, $I_E = 0$)	2N1141	BV_{CBO}	35	45	-	Vdc
	2N1142		30	45	-	
	2N1143		25	45	-	
	2N1195		30	45	-	
Emitter-Base Breakdown Voltage ($I_E = 100\ \mu$Adc, $I_C = 0$)	2N1141	BV_{EBO}	1.0	1.3	-	Vdc
	2N1142		0.7	1.3	-	
	2N1143		0.5	1.3	-	
	2N1195		1.0	1.3	-	
Collector Cutoff Current ($V_{CB} = 15$ Vdc, $I_E = 0$)		I_{CBO}	-	0.5	5.0	μAdc
($V_{CB} = 20$ Vdc, $I_E = 0$)			-	0.5	5.0	
Emitter Cutoff Current ($V_{BE} = 0.5$ Vdc, $I_C = 0$)		I_{EBO}	-	0.2	-	μAdc
ON CHARACTERISTICS						
DC Current Gain ($I_C = 10$ mAdc, $V_{CE} = 10$ Vdc)	2N1141, 2N1142, 2N1143	h_{FE}	10	25	-	-
($I_C = 10$ mAdc, $V_{CE} = 10$ Vdc)	2N1195		-	25	-	
Collector-Emitter Saturation Voltage ($I_C = 50$ mAdc, $I_B = 10$ mAdc)	2N1141, 2N1142, 2N1143	$V_{CE(sat)}$	-	0.185	2.0	Vdc
($I_C = 50$ mAdc, $I_B = 10$ mAdc)	2N1195		-	0.185	-	

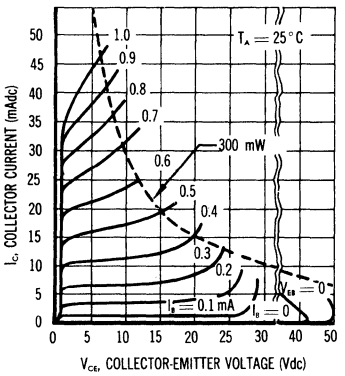
2N1141-2N1143, 2N1195 (continued)

Characteristic	Symbol	Min	Typ	Max	Unit
SMALL-SIGNAL CHARACTERISTICS					
Common-Base Cutoff Frequency (I_C = 10 mAdc, V_{CE} = 10 Vdc) All Types	$f_{\alpha b}$	-	1000	-	MHz
Collector Transition Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 1 MHz) 2N1141	C_{Tc}	-	1.1	1.5	pF
2N1142, 2N1143, 2N1195		-	1.1	-	
Emitter Transition Capacitance (V_{BE} = 0.5 Vdc, I_C = 0, f = 1 MHz) All Types	C_{Te}	-	2.5	-	pF
Small-Signal Current Gain (I_C = 10 mAdc, V_{CE} = 10 Vdc, f = 100 MHz)	h_{fe}				
2N1141, 2N1195		12	18	-	-
2N1142		10	18	-	
2N1143		8.0	18	-	
Small-Signal Current Gain (I_C = 10 mAdc, V_{CB} = 10 Vdc, f = 1 kHz)	h_{fb}				-
2N1141, 2N1142, 2N1143		-	0.98	-	
2N1195		0.96	0.98	0.995	
Output Admittance (I_C = 10 mAdc, V_{CB} = 10 Vdc, f = 1 kHz)	h_{ob}				μmhos
2N1141, 2N1142, 2N1143		-	10	-	
2N1195		-	10	20	
Input Impedance (I_C = 10 mAdc, V_{CB} = 10 Vdc, f = 1 kHz)	h_{ib}				Ohms
2N1141, 2N1142, 2N1143		-	3.6	-	
2N1195		-	3.6	10	
Voltage Feedback Ratio (I_C = 10 mAdc, V_{CB} = 10 Vdc, f = 1 kHz)	h_{rb}				-
2N1141, 2N1142, 2N1143		-	0.0013	-	
2N1195		-	0.0013	0.003	
Collector-Base Time Constant (I_E = 3 mAdc, V_{CB} = 10 Vdc, f = 30 MHz) All Types	$r'_b C_c$	-	23	-	ps
Extrinsic Base Resistance (I_C = 10 mAdc, V_{CE} = 10 Vdc, f = 250 MHz)	r'_b				Ohms
2N1141		-	65	70	
2N1142		-	80	-	
2N1143		-	110	-	
2N1195		-	65	80	
Collector Series Resistance (I_E = 10 mAdc, V_{CB} = 10 Vdc) All Types	r'_c	-	2.0	-	Ohms
Noise Figure	NF				dB
(I_E = 0.8 mAdc, V_{CE} = 5 Vdc, R_S = 300 ohms, f = 4.5 MHz)					
2N1141, 2N1195		-	3.0	-	
2N1142		-	3.5	-	
2N1143		-	4.0	-	
(I_E = 1 mAdc, V_{CE} = 10 Vdc, R_S = 75 ohms, f = 100 MHz)					
2N1141		-	4.0	-	
2N1142, 2N1195		-	4.5	-	
2N1143		-	5.0	-	
(I_E = 1 mAdc, V_{CE} = 10 Vdc, R_S = 50 ohms, f = 200 MHz)					
2N1141		-	5.5	-	
2N1142, 2N1195		-	6.0	-	
2N1143		-	6.5	-	
Oscillator Efficiency (V_{CE} = 20 Vdc, I_C = 10 mAdc, f = 400 MHz)	η				%
2N1141		-	20	-	
2N1142		-	18	-	
2N1143		-	12	-	
2N1195		-	18	-	

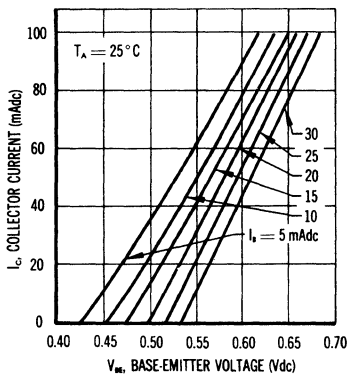
POWER-TEMPERATURE DERATING CURVE



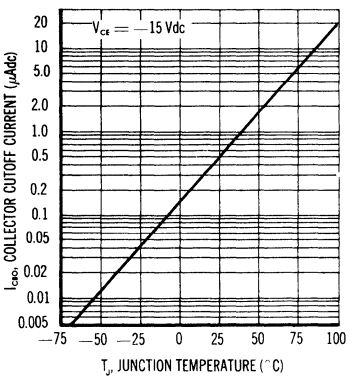
COLLECTOR CHARACTERISTICS, COMMON EMITTER



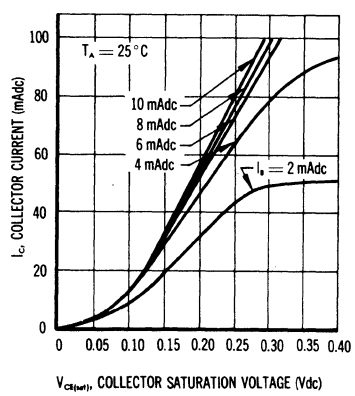
BASE CHARACTERISTICS, COMMON EMITTER



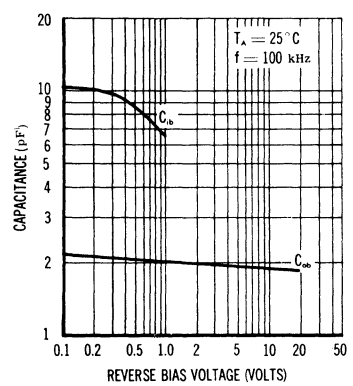
COLLECTOR CUTOFF CURRENT versus JUNCTION TEMPERATURE



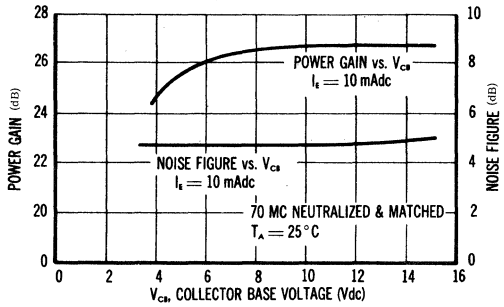
COLLECTOR SATURATION CHARACTERISTICS



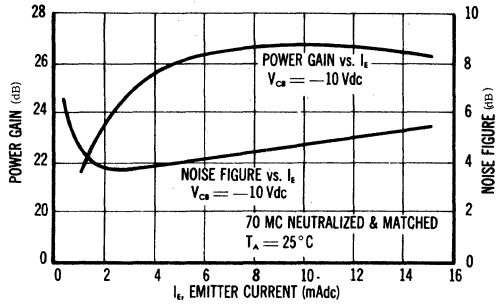
COLLECTOR INPUT AND OUTPUT CAPACITANCE versus VOLTAGE



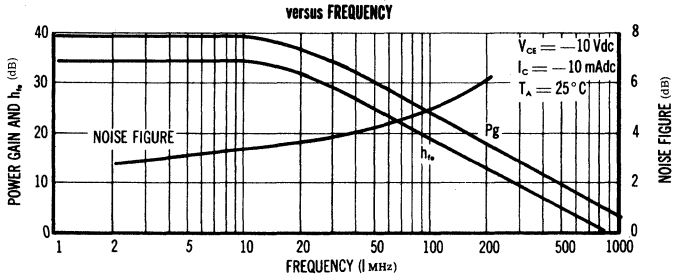
POWER GAIN AND NOISE FIGURE versus COLLECTOR-BASE VOLTAGE



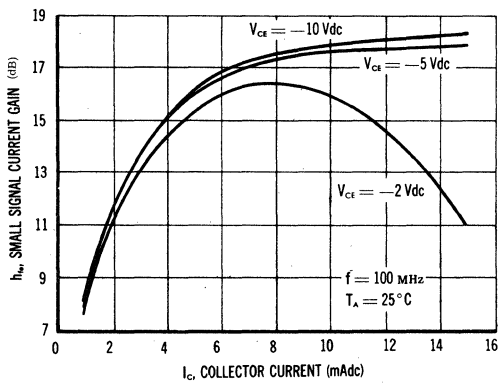
POWER GAIN AND NOISE FIGURE versus EMITTER CURRENT



COMMON EMITTER POWER GAIN, h_{fe}, AND NOISE FIGURE versus FREQUENCY



SMALL SIGNAL CURRENT GAIN (h_{fe}) versus COLLECTOR CURRENT



NORMALIZED h_{FE} versus AMBIENT TEMPERATURE