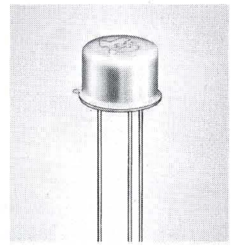
TYPES 2N395, 2N396, 2N397
BULLETIN NO. DL-S 1119, JULY 1959



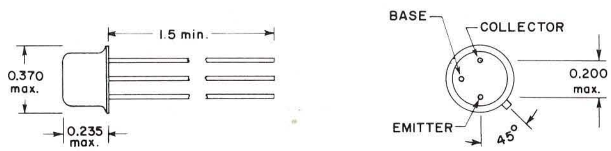
High-Frequency Transistors

Specifically Designed for Computer and Switching Applications

mechanical data:

WELDED JEDEC TO-5 CASE

THE BASE IS CONNECTED INTERNALLY TO THE CASE



ALL DIMENSIONS IN INCHES

maximum ratings at 25°C case temperature (unless otherwise noted)

	2N395	2N396	2N397	Unit
Collector-Base Voltage	−30	−30	−30	v
Collector-Emitter Voltage	−15	−20	−15	v
Emitter-Base Voltage	−20	−20	−20	v
Collector Current	−250	−250	−250	ma
Total Device Dissipation (25°C ambient)*	150	150	150	mw
Storage Temperature Range		−65 to +100		°C

*Derate 2.5 mw/°C increase in ambient temperature above 25°C.

design characteristics at 25°C case temperature

Type 2N395

		TEST CONDITIONS	min.	typ.	max.	unit
V_{PT}	Punch-Through Voltage	$V_{EBF} = -1v$*	−15	−25		v
I_{CBO}	Collector Reverse Current	$V_{CB} = -15v;\ I_E = 0$		−2	−6	μa
I_{EBO}	Emitter Reverse Current	$V_{EB} = -10v;\ I_C = 0$		−2	−6	μa
h_{FE}	d-c Forward Current Transfer Ratio	$V_{CE} = -1v;\ I_C = -10ma$	20		150	
h_{FE}	d-c Forward Current Transfer Ratio	$V_{CE} = -0.35v;\ I_C = -200ma$	10			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -50ma;\ I_B = -5ma$		−0.1	−0.2	v
$f_{\alpha b}$	Alpha-Cutoff Frequency	$V_{CB} = -5v;\ I_E = 1ma$	3	4.5		mc
C_{ob}	Output Capacitance	$V_{CB} = -5v;\ I_E = 1ma;\ f = 1mc$		12	20	μμf
$t_d + t_r$	Turn-On Time	$I_C = -10ma$		0.76		μsec
t_s	Storage Time	$I_{B(1)} = -1.0ma$		0.50		μsec
t_f	Fall Time	$I_{B(2)} = 1.0ma$		0.40		μsec

*V_{PT} is determined by measuring the emitter floating potential, V_{EBF}. The collector voltage V_{CB} is increased until $V_{EBF} = -1$ volt, this value of $V_{CB} = V_{PT}$.

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design characteristics at 25°C case temperature

Type 2N396

		TEST CONDITIONS	min.	typ.	max.	unit
V_{PT}	Punch-Through Voltage	$V_{EBF} = -1v$*	−20	−35		v
I_{CBO}	Collector Reverse Current	$V_{CB} = -20v;\ I_E = 0$		−2	−6	μa
I_{EBO}	Emitter Reverse Current	$V_{EB} = -10v;\ I_C = 0$		−2	−6	μa
h_{FE}	d-c Forward Current Transfer Ratio	$V_{CE} = -1v;\ I_C = -10ma$	30		150	
h_{FE}	d-c Forward Current Transfer Ratio	$V_{CE} = -0.35v;\ I_C = -200ma$	15			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -50ma;\ I_B = -3.3ma$		−0.08	−0.2	v
$f_{\alpha b}$	Alpha-Cutoff Frequency	$V_{CB} = -5v;\ I_E = 1ma$	5	8		mc
C_{ob}	Output Capacitance	$V_{CB} = -5v;\ I_E = 1ma;\ f = 1mc$		12	20	μμf
$t_d + t_r$	Turn-On Time	$I_C = -10ma$		0.59		μsec
t_s	Storage Time	$I_{B(1)} = -1.0ma$		0.60		μsec
t_f	Fall Time	$I_{B(2)} = 1.0ma$		0.30		μsec

*V_{PT} is determined by measuring the emitter floating potential, V_{EBF}. The collector voltage V_{CB} is increased until $V_{EBF} = -1$ volt, this value of $V_{CB} = V_{PT}$.

Type 2N397

		TEST CONDITIONS	min.	typ.	max.	unit
V_{PT}	Punch-Through Voltage	$V_{EBF} = -1v$*	−15	−20		v
I_{CBO}	Collector Reverse Current	$V_{CB} = -15v;\ I_E = 0$		−2	−6	μa
I_{EBO}	Emitter Reverse Current	$V_{EB} = -10v;\ I_C = 0$		−2	−6	μa
h_{FE}	d-c Forward Current Transfer Ratio	$V_{CE} = -1v;\ I_C = -10ma$	40		150	
h_{FE}	d-c Forward Current Transfer Ratio	$V_{CE} = -0.35v;\ I_C = -200ma$	20			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -50ma;\ I_B = -2.5ma$		−0.07	−0.2	v
$f_{\alpha b}$	Alpha-Cutoff Frequency	$V_{CB} = -5v;\ I_E = 1ma$	10	12		mc
C_{ob}	Output Capacitance	$V_{CB} = -5v;\ I_E = 1ma;\ f = 1mc$		12	20	μμf
$t_d + t_r$	Turn-On Time	$I_C = -10ma$		0.47		μsec
t_s	Storage Time	$I_{B(1)} = -1.0ma$		0.70		μsec
t_f	Fall Time	$I_{B(2)} = 1.0ma$		0.28		μsec

*V_{PT} is determined by measuring the emitter floating potential, V_{EBF}. The collector voltage V_{CB} is increased until $V_{EBF} = -1$ volt, this value of $V_{CB} = V_{PT}$.

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