



PRODUCT SPECIFICATIONS

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TYPE: IT120/71

CASE OUTLINE: TO-71

NPN SILICON DUAL DIFFERENTIAL TRANSISTOR

ABSOLUTE MAXIMUM RATING:

Collector to Base	BV_{CBO}	45	Vdc
Emitter to Base	BV_{EBO}	7.0	Vdc
Collector to Emitter	BV_{CEO}	45	Vdc
Collector Current	I_C	50	mA _{dc}
Power Dissipation $T_A = 25^\circ\text{C}$	P_D		Watts
Power Dissipation $T_C = 25^\circ\text{C}$	P_D	0.5 (Both Sides)	Watts
Storage Temperature	T_{stg}	-65 to +200	$^\circ\text{C}$
Operating Temperature	T_J	-65 to +200	$^\circ\text{C}$
Lead Temperature From Case	T_L		$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS $T_A @ 25^\circ\text{C}$

PARAMETERS	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector to Collector Voltage	BV_{CCO}		60			Vdc
Emitter to Base Voltage	BV_{EBO}					Vdc
Collector to Emitter Voltage	$BV_{CEO(sus)}$	$I_C=1.0\text{mA}$	45			Vdc
Collector to Emitter Voltage	BV_{CEO}					Vdc
Collector Cutoff Current	I_{CBO}	$V_{CB}=45\text{V}$			1.0	nA
Collector Cutoff Current	I_{CBO}	$V_{CB}=45\text{V}, T_A=150^\circ\text{C}$			10	μA
Collector Cutoff Current	I_{CEX}					μA
Collector Cutoff Current	I_{CEX}					μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=5.0\text{V}$			1.0	nA
D.C. Current Gain Pulsed*	h_{FE}	$I_C=10\mu\text{A}, V_{CE}=5.0\text{V}$	200			-
D.C. Current Gain Pulsed*	h_{FE}	$I_C=1.0\text{mA}, V_{CE}=5.0\text{V}$	225			-
D.C. Current Gain Pulsed*	h_{FE}	$I_C=10\mu\text{A}, V_{CE}=5.0\text{V}, T_A=-55^\circ\text{C}$	75			-
D.C. Current Gain Pulsed*	h_{FE}					-
D.C. Current Gain Pulsed*	h_{FE}					-
Saturation Voltage*	$V_{CE(sat)}$	$I_C=0.5\text{mA}, I_B=0.05\text{mA}$			0.5	Vdc
Saturation Voltage*	$V_{CE(sat)}$					Vdc
Base Emitter Voltage*	$V_{BE(sat)}$					Vdc
Base Emitter Voltage*	$V_{BE(sat)}$					Vdc
Base Emitter Voltage*	$V_{BE(on)}$	$I_C=10\mu\text{A}, V_{CE}=5.0\text{V}$			0.7	Vdc
Current Gain at F =	h_{FE}					-
Emitter Transition Capacitance	C_{TE}	$V_{EB}=0.5\text{V}$			2.5	pF
Collector to Collector Capacitance	C_{C1-C2}	$V_{CC}=0$			4.0	pF
Collector to Collector Leakage Current	I_{C1-C2}	$V_{CC}=\pm 60\text{V}$			10	nA
Output Capacitance	C_{ob}	$V_{CB}=5.0\text{V}$			2.0	pF
Frequency Cutoff	f & b					MHz
Transition Frequency	f_T	$I_C=10\mu\text{A}, V_{CE}=5.0\text{V}$ $I_C=1.0\text{mA}, V_{CE}=5.0\text{V}$	10 220			

Notes: *Pulse Width $\leq 300\mu\text{sec}$ 2% Duty Cycle



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SMALL SIGNAL CHARACTERISTICS

	SYMBOL	MIN	TYP	MAX	UNITS
Input Impedance					Ohms
Voltage Feedback Ratio					X10-4
Output Admittance					μmhos
Base Current Differential $I_C = 10\mu A$ $V_{CE} = 5V$	$ I_{B1} - I_{B2} $			5.0	nA
DC Current Gain Ratio	h_{FE1}/h_{FE2}				
Base-Emitter Voltage Differential $I_C = 10\mu A$, $V_{CE} = 5.0V$	$ V_{BE1} - V_{BE2} $			2.0	mV
Base-Emitter Voltage Differential Change Due to Temp $I_C = 10\mu A$, $V_{CE} = 5.0V$ $T_A = -55^\circ C$ to $+125^\circ C$	$\Delta(V_{BE1} - V_{BE2})$			5.0	μV/°C

SWITCHING CHARACTERISTICS

	SYMBOL	MIN	TYP	MAX	UNITS
Turn-On Time	t_{on}				ns
Turn-Off Time	t_{off}				ns
Delay Time	t_d				ns
Rise Time	t_r				ns
Storage Time	t_s				ns
Fall Time	t_f				ns

FUNCTIONAL TEST

	SYMBOL	MIN	TYP	MAX	UNITS
Common-Emitter Amplifier Power Gain	GPE				dB
Power Output	Pout				Watt
Collector Efficiency	η				%
Power Output	Pout				Watt